



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

**Color Coding**

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Matrix

|                                     |            | Asset Category                  | Rolling Stock   | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|-------------------------------------|------------|---------------------------------|---|---------------|----------------|----------------|----------------|------------------|------------|----------------|
|                                     |            | Asset Class                     | Locomotive  | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category                    | Feature    | Req Name                        | Req Desc   Asset Type   | General       | General        | General        | General        | General          | General    | General        |
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record        | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | Essential     | Essential      | Essential      | Essential      | Essential        | Essential  | Essential      |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes          | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.  | Essential     | Essential      | Essential      | Essential      | Essential        | Desired    | Optional       |
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes        | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.   | Essential     | Essential      | Essential      | Desired        | Optional         | Desired    | Optional       |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers   | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | Essential     | Essential      | Essential      | Optional       | Essential        | Desired    | Essential      |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration          | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | Essential     | Essential      | Essential      | Optional       | Essential        | Optional   | Optional       |
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc. for both digital and paper documents   | Essential     | Desired        | Essential      | Essential      | Essential        | Essential  | Essential      |



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|                                     |            | Asset Category                       | Rolling Stock  | Rolling Stock | Fixed Guideway   | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|-------------------------------------|------------|--------------------------------------|--|---------------|------------------|----------------|----------------|------------------|------------|----------------|
|                                     |            | Asset Class                          | Locomotive   | Railcars      | Track            | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category                    | Feature    | Req Name                             | Req Desc   Asset Type  | General       | General          | General        | General        | General          | General    | General        |
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets | Essential     | Optional         | Desired        | Essential      | Essential        | Desired    | Essential      |
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS              | Support hyperlinking from asset management system to GIS and from GIS to asset management  | Desired       | Optional         | Desired        | Desired        | Desired          | Desired    | Desired        |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | Essential     | Priority Not Set | Desired        | Desired        | Essential        | Desired    | Essential      |
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | Essential     | Priority Not Set | Essential      | Essential      | Essential        | Desired    | Essential      |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Asset Hierarchy                      | Model and enforce hierarchical relationships between assets; particularly parent-child   | Essential     | Optional         | Essential      | Essential      | Essential        | Desired    | Essential      |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Classes or Grouping of Assets        | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting                                       | Essential     | Essential        | Optional       | Essential      | Desired          | Desired    | Desired        |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Components                           | Include components and sub-components, assemblies, systems and similar entities  | Essential     | Desired          | Essential      | Desired        | Desired          | Desired    | Optional       |
| Asset Availability and Status       | Ownership  | Ownership Status                     | Ability to indicate owner and any interested parties in the asset  | Essential     | Optional         | Optional       | Essential      | Optional         | Optional   | Desired        |
| Asset Availability and Status       | Ownership  | Owner Info                           | Contact information of the owner of assets; especially leased or rented equipment  | Essential     | Optional         | Optional       | Essential      | Essential        | Optional   | Essential      |



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### Matrix

|                               |         | Asset Category                        |   | Rolling Stock | Rolling Stock    | Fixed Guideway   | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|-------------------------------|---------|---------------------------------------|---|---------------|------------------|------------------|----------------|----------------|------------------|------------|----------------|
|                               |         | Asset Class                           |   | Locomotive    | Railcars         | Track            | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category              | Feature | Req Name                              | Req Desc   Asset Type   | General       | General          | General          | General        | General        | General          | General    | General        |
| Asset Availability and Status | Status  | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy                    | Essential     | Optional         | Desired          | Essential      | Desired        | Optional         | Desired    | Desired        |
| Asset Availability and Status | Status  | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person  | Essential     | Priority Not Set | Priority Not Set | Optional       | Desired        | Optional         | Optional   | Optional       |
| Asset Availability and Status | Status  | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile  | Desired       | Priority Not Set | Priority Not Set | Optional       | Optional       | Essential        | Optional   | Desired        |
| Asset Availability and Status | Status  | Asset Assignment                      | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)      | Essential     | Optional         | Priority Not Set | Optional       | Essential      | Essential        | Optional   | Essential      |
| Asset Availability and Status | Status  | Asset Rate and Usage Calculation      | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | Essential     | Optional         | Priority Not Set | Optional       | Optional       | Essential        | Optional   | Optional       |
| Asset Availability and Status | Status  | Condition Rating System               | Support a condition rating system for assets (e.g. 1 to 5)  | Essential     | Essential        | Desired          | Essential      | Essential      | Essential        | Desired    | Desired        |
| Asset Availability and Status | Status  | Condition Assessment                  | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment       | Essential     | Essential        | Essential        | Essential      | Essential      | Essential        | Desired    | Essential      |
| Asset Availability and Status | Status  | Import External Transaction Data      | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | Essential     | Optional         | Priority Not Set | Optional       | Optional       | Essential        | Desired    | Desired        |



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|                               |              | Asset Category                                    | Rolling Stock  | Rolling Stock | Fixed Guideway   | Fixed Guideway | Fixed Guideway   | Service Vehicles | Facilities | Communications |
|-------------------------------|--------------|---|--|---------------|------------------|----------------|------------------|------------------|------------|----------------|
|                               |              | Asset Class                                       | Locomotive   | Railcars      | Track            | Bridge         | Signal           | General          | Buildings  | General        |
| Feature Category              | Feature      | Req Name  | Req Desc   Asset Type  | General       | General          | General        | General          | General          | General    | General        |
| Asset Availability and Status | Availability | Out of Service Coding and Duration                | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Essential     | Essential        | Optional       | Optional         | Essential        | Optional   | Essential      |
| Asset Availability and Status | Availability | Availability Calculations                         | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | Essential     | Essential        | Essential      | Optional         | Essential        | Optional   | Essential      |
| Asset Availability and Status | Availability | Availability - Seasonal Variations                | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | Desired       | Desired          | Desired        | Optional         | Optional         | Optional   | Optional       |
| Configuration Management      | General      | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | Essential     | Desired          | Desired        | Priority Not Set | Optional         | Desired    | Optional       |
| Configuration Management      | General      | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc.   | Essential     | Desired          | Desired        | Essential        | Optional         | Desired    | Optional       |
| Configuration Management      | General      | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.   | Essential     | Priority Not Set | Optional       | Priority Not Set | Essential        | Desired    | Optional       |
| Fault/Problem Detection       | General      | Capture Reasons for Failure                       | Ability to capture reason(s) for failure; preferably through standardized coding   | Essential     | Priority Not Set | Desired        | Optional         | Essential        | Desired    | Essential      |



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|                                    |         | Asset Category  |   | Rolling Stock | Rolling Stock | Fixed Guideway   | Fixed Guideway   | Fixed Guideway | Service Vehicles | Facilities | Communications |
|------------------------------------|---------|---|---|---------------|---------------|------------------|------------------|----------------|------------------|------------|----------------|
|                                    |         | Asset Class   |   | Locomotive    | Railcars      | Track            | Bridge           | Signal         | General          | Buildings  | General        |
| Feature Category                   | Feature | Req Name  | Req Desc   Asset Type   | General       | General       | General          | General          | General        | General          | General    | General        |
| Fault/Problem Detection            | General | Data from Diagnostic Systems                          | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors   | Desired       | Essential     | Desired          | Desired          | Optional       | Optional         | Desired    | Essential      |
| Fault/Problem Detection            | General | Data from External Asset Management Systems           | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues                    | Essential     | Essential     | Optional         | Priority Not Set | Essential      | Optional         | Desired    | Essential      |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)            | Essential     | Essential     | Essential        | Essential        | Essential      | Optional         | Desired    | Optional       |
| Planned Maintenance and Inspection | General | Inspection Data Retention Periods                     | Ability to retain electronic copies of records indefinitely; Federal agencies usually allow for only a certain period of time                                 | Desired       | Essential     | Desired          | Desired          | Optional       | Priority Not Set | Desired    | Optional       |
| Planned Maintenance and Inspection | General | Digital Workflows for Review and Approval             | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | Desired       | Optional      | Essential        | Essential        | Optional       | Optional         | Desired    | Desired        |
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists            | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics          | Essential     | Essential     | Priority Not Set | Priority Not Set | Optional       | Essential        | Desired    | Desired        |
| Planned Maintenance and Inspection | General | Digital-First Inspections                             | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements       | Essential     | Essential     | Essential        | Essential        | Essential      | Essential        | Desired    | Desired        |



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|                                    |         | Asset Category                               |   | Rolling Stock | Rolling Stock | Fixed Guideway   | Fixed Guideway   | Fixed Guideway | Service Vehicles | Facilities | Communications |
|------------------------------------|---------|--|---|---------------|---------------|------------------|------------------|----------------|------------------|------------|----------------|
|                                    |         | Asset Class                                  |   | Locomotive    | Railcars      | Track            | Bridge           | Signal         | General          | Buildings  | General        |
| Feature Category                   | Feature | Req Name                                     | Req Desc   Asset Type   | General       | General       | General          | General          | General        | General          | General    | General        |
| Planned Maintenance and Inspection | General | Inspection Schedules                         | Support ability to schedule recurring inspections that will automatically create a work order   | Essential     | Desired       | Essential        | Essential        | Essential      | Essential        | Essential  | Essential      |
| Planned Maintenance and Inspection | General | PM Service Calculation                       | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)        | Essential     | Essential     | Optional         | Priority Not Set | Optional       | Essential        | Essential  | Optional       |
| Planned Maintenance and Inspection | General | Automated Compliance Tracking and Planning   | Automated planning and compliance tracking of regulatory inspection requirements  | Essential     | Essential     | Essential        | Essential        | Optional       | Essential        | Desired    | Optional       |
| Planned Maintenance and Inspection | General | PM Job Plan                                  | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed | Desired       | Desired       | Desired          | Desired          | Optional       | Desired          | Essential  | Optional       |
| Planned Maintenance and Inspection | General | Generate Work Orders from Inspection Results | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)                                  | Essential     | Essential     | Essential        | Essential        | Essential      | Essential        | Essential  | Essential      |
| Planned Maintenance and Inspection | General | PM Notification                              | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)           | Desired       | Desired       | Desired          | Priority Not Set | Optional       | Essential        | Desired    | Optional       |
| Planned Maintenance and Inspection | General | Contractors for Preventative Maintenance     | Ability to define vendors which are used for PM and inspection activities on assets, systems or components                                      | Desired       | Desired       | Priority Not Set | Desired          | Optional       | Optional         | Optional   | Optional       |
| Planned Maintenance and Inspection | General | Incorporate Season and Weather               | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                         | Essential     | Optional      | Optional         | Priority Not Set | Optional       | Optional         | Desired    | Optional       |



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|                                       |         | Asset Category                                    | Rolling Stock  | Rolling Stock | Fixed Guideway | Fixed Guideway   | Fixed Guideway   | Service Vehicles | Facilities | Communications |
|---------------------------------------|---------|---|--|---------------|----------------|------------------|------------------|------------------|------------|----------------|
|                                       |         | Asset Class                                       | Locomotive   | Railcars      | Track          | Bridge           | Signal           | General          | Buildings  | General        |
| Feature Category                      | Feature | Req Name  | Req Desc   Asset Type  | General       | General        | General          | General          | General          | General    | General        |
| Work Orders and Work Order Management | General | Task Coding on Work Orders                        | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs             | Desired       | Desired        | Essential        | Essential        | Essential        | Essential  | Essential      |
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's)             | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution   | Essential     | Optional       | Priority Not Set | Essential        | Essential        | Desired    | Essential      |
| Work Orders and Work Order Management | General | Mobile Digital Work Orders                        | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.  | Essential     | Essential      | Essential        | Essential        | Essential        | Desired    | Essential      |
| Work Orders and Work Order Management | General | SLAs for Response Times                           | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | Desired       | Optional       | Priority Not Set | Optional         | Essential        | Desired    | Desired        |
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | Desired       | Optional       | Essential        | Essential        | Essential        | Desired    | Essential      |
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations                    | Accommodate multiple shops and work locations including ARRC shops and work in the field   | Optional      | Optional       | Priority Not Set | Priority Not Set | Optional         | Desired    | Optional       |



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|                                       |         | Asset Category                        | Rolling Stock   | Rolling Stock | Fixed Guideway   | Fixed Guideway   | Fixed Guideway   | Service Vehicles | Facilities | Communications |           |
|---------------------------------------|---------|---------------------------------------|---|---------------|------------------|------------------|------------------|------------------|------------|----------------|-----------|
|                                       |         | Asset Class                           | Locomotive  | Railcars      | Track            | Bridge           | Signal           | General          | Buildings  | General        |           |
| Feature Category                      | Feature | Req Name                              | Req Desc   Asset Type   | General       | General          | General          | General          | General          | General    | General        |           |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened  | Essential     | Desired          | Priority Not Set | Priority Not Set | Optional         | Essential  | Desired        | Optional  |
| Work Orders and Work Order Management | General | Record Checklist and Results          | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order  | Essential     | Desired          | Essential        | Essential        | Optional         | Essential  | Desired        | Desired   |
| Work Orders and Work Order Management | General | Work Packages                         | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assessment, complaint, etc  | Essential     | Essential        | Essential        | Desired          | Essential        | Essential  | Essential      | Desired   |
| Work Orders and Work Order Management | General | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location  | Essential     | Priority Not Set | Essential        | Priority Not Set | Essential        | Desired    | Essential      | Essential |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX)         | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable)) | Desired       | Essential        | Desired          | Desired          | Essential        | Essential  | Desired        | Desired   |
| Work Orders and Work Order Management | General | Work Order Source                     | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)  | Essential     | Optional         | Essential        | Desired          | Essential        | Essential  | Essential      | Essential |





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|                                       |         | Asset Class                             | Locomotive   | Railcars      | Track            | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category                      | Feature | Req Name                                | Req Desc   Asset Type  | General       | General          | General        | General        | General          | General    | General        |
| Work Orders and Work Order Management | General | Prioritization of Work Orders           | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | Essential     | Essential        | Essential      | Essential      | Essential        | Optional   | Essential      |
| Work Orders and Work Order Management | General | Reimbursable Work                       | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance   | Optional      | Essential        | Desired        | Desired        | Essential        | Optional   | Optional       |
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes      | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | Desired       | Priority Not Set | Desired        | Desired        | Optional         | Essential  | Optional       |
| Work Orders and Work Order Management | General | Integrate Financial System              | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | Essential     | Optional         | Optional       | Optional       | Essential        | Essential  | Essential      |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | Essential     | Essential        | Essential      | Essential      | Desired          | Optional   | Optional       |
| Work Orders and Work Order Management | General | Ease of Use                             | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | Essential     | Desired          | Desired        | Essential      | Essential        | Desired    | Essential      |
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area    | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | Desired       | Optional         | Desired        | Desired        | Essential        | Desired    | Essential      |
| Work Orders and Work Order Management | General | Minor Work                              | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | Essential     | Optional         | Desired        | Desired        | Essential        | Desired    | Desired        |



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|                                       |         | Asset Class                      | Locomotive  | Railcars      | Track            | Bridge           | Signal         | General          | Buildings  | General        |
| Feature Category                      | Feature | Req Name                         | Req Desc   Asset Type   | General       | General          | General          | General        | General          | General    | General        |
| Work Orders and Work Order Management | General | Contractor or Vendor Work        | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders  | Essential     | Priority Not Set | Optional         | Desired        | Optional         | Essential  | Desired        |
| Work Orders and Work Order Management | General | Mechanic/Technician Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done.  | Essential     | Essential        | Priority Not Set | Optional       | Essential        | Desired    | Essential      |
| Work Orders and Work Order Management | General | Parts on Work Order              | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchased with a purchasing card  | Essential     | Essential        | Optional         | Optional       | Essential        | Optional   | Optional       |
| Work Orders and Work Order Management | General | Failure Analysis                 | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.  | Essential     | Essential        | Optional         | Optional       | Essential        | Desired    | Essential      |
| Work Orders and Work Order Management | General | Reporting Tools                  | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Desired       | Essential        | Desired          | Desired        | Essential        | Essential  | Essential      |



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|---------------------------------------|---------|--------------------------------------|--|---------------|------------------|------------------|------------------|------------------|------------|----------------|
|                                       |         | Asset Class                          | Locomotive   | Railcars      | Track            | Bridge           | Signal           | General          | Buildings  | General        |
| Feature Category                      | Feature | Req Name                             | Req Desc   Asset Type  | General       | General          | General          | General          | General          | General    | General        |
| Work Orders and Work Order Management | General | Work Order Notifications             | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)  | Essential     | Optional         | Desired          | Desired          | Essential        | Desired    | Essential      |
| Work Orders and Work Order Management | General | Usage Readings                       | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)   | Essential     | Priority Not Set | Priority Not Set | Optional         | Optional         | Desired    | Optional       |
| Work Orders and Work Order Management | General | End-User Field Service               | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)   | Essential     | Desired          | Desired          | Priority Not Set | Optional         | Desired    | Optional       |
| Work Orders and Work Order Management | General | Work Order Attachments               | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | Essential     | Optional         | Desired          | Essential        | Essential        | Essential  | Desired        |
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders   | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | Essential     | Optional         | Essential        | Essential        | Essential        | Desired    | Desired        |
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | Desired       | Priority Not Set | Desired          | Optional         | Essential        | Desired    | Essential      |
| Work Orders and Work Order Management | General | Scheduling and Planning              | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)   | Essential     | Essential        | Essential        | Essential        | Desired          | Essential  | Essential      |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

**Color Coding**

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Matrix

|                                       |         | Asset Category                     | Rolling Stock   | Rolling Stock | Fixed Guideway   | Fixed Guideway   | Fixed Guideway | Service Vehicles | Facilities | Communications |
|---------------------------------------|---------|------------------------------------|---|---------------|------------------|------------------|----------------|------------------|------------|----------------|
|                                       |         | Asset Class                        | Locomotive  | Railcars      | Track            | Bridge           | Signal         | General          | Buildings  | General        |
| Feature Category                      | Feature | Req Name                           | Req Desc   Asset Type   | General       | General          | General          | General        | General          | General    | General        |
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders    | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users  | Desired       | Optional         | Optional         | Desired        | Essential        | Desired    | Optional       |
| Materials Management                  | General | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | Desired       | Priority Not Set | Priority Not Set | Optional       | Desired          | Optional   | Optional       |
| Materials Management                  | General | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | Desired       | Priority Not Set | Essential        | Desired        | Desired          | Optional   | Desired        |
| Materials Management                  | General | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)   | Desired       | Optional         | Priority Not Set | Optional       | Essential        | Essential  | Optional       |
| Materials Management                  | General | Component Parts - Criticality      | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed  | Desired       | Desired          | Optional         | Optional       | Essential        | Essential  | Desired        |
| Materials Management                  | General | Min-Max Parts Inventory            | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes   | Essential     | Desired          | Optional         | Desired        | Desired          | Essential  | Optional       |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Matrix

|                                |         | Asset Category                     | Rolling Stock   | Rolling Stock | Fixed Guideway   | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|--------------------------------|---------|------------------------------------|---|---------------|------------------|----------------|----------------|------------------|------------|----------------|
|                                |         | Asset Class                        | Locomotive  | Railcars      | Track            | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category               | Feature | Req Name                           | Req Desc   Asset Type   | General       | General          | General        | General        | General          | General    | General        |
| Materials Management           | General | Inventory Purchase Plan            | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)  | Desired       | Optional         | Optional       | Optional       | Essential        | Optional   | Optional       |
| Component Tracking and Rebuild | General | Component Serial Number Tracking   | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")              | Essential     | Priority Not Set | Desired        | Optional       | Desired          | Optional   | Desired        |
| Component Tracking and Rebuild | General | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | Desired       | Priority Not Set | Desired        | Optional       | Desired          | Optional   | Optional       |
| Component Tracking and Rebuild | General | Component Service Life             | Ability to specify expected service life of a component or part   | Essential     | Desired          | Optional       | Essential      | Desired          | Optional   | Optional       |
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | Essential     | Desired          | Desired        | Essential      | Desired          | Optional   | Optional       |
| Component Tracking and Rebuild | General | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | Desired       | Priority Not Set | Optional       | Optional       | Desired          | Optional   | Optional       |
| Component Tracking and Rebuild | General | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | Desired       | Essential        | Optional       | Optional       | Essential        | Optional   | Optional       |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Matrix

|                                |         | Asset Category                               | Rolling Stock   | Rolling Stock             | Fixed Guideway            | Fixed Guideway            | Fixed Guideway            | Service Vehicles          | Facilities                | Communications          |
|--------------------------------|---------|--|---|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------|
|                                |         | Asset Class                                  | Locomotive  | Railcars                  | Track                     | Bridge                    | Signal                    | General                   | Buildings                 | General                 |
| Feature Category               | Feature | Req Name                                     | Req Desc   Asset Type   | General                   | General                   | General                   | General                   | General                   | General                   | General                 |
| Warranty Management            | General | Warranty                                     | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchased or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | Essential (High Priority) | Priority Not Set          | Optional (Low Priority)   | Optional (Low Priority)   | Optional (Low Priority)   | Essential (High Priority) | Optional (Low Priority) |
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting            | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement     | Essential (High Priority) | Essential (High Priority) | Optional (Low Priority)   | Desired (Medium Priority) | Optional (Low Priority)   | Essential (High Priority) | Optional (Low Priority) |
| Capital Projects and Campaigns | General | Capital Projects Reporting                   | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source    | Essential (High Priority) | Essential (High Priority) | Optional (Low Priority)   | Essential (High Priority) | Essential (High Priority) | Essential (High Priority) | Optional (Low Priority) |
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)   | Desired (Medium Priority) | Optional (Low Priority)   | Desired (Medium Priority) | Desired (Medium Priority) | Essential (High Priority) | Optional (Low Priority)   | Optional (Low Priority) |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

**Color Coding**

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Matrix

|                                |         | Asset Category                        | Rolling Stock   | Rolling Stock | Fixed Guideway   | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities       | Communications |
|--------------------------------|---------|---------------------------------------|---|---------------|------------------|----------------|----------------|------------------|------------------|----------------|
|                                |         | Asset Class                           | Locomotive  | Railcars      | Track            | Bridge         | Signal         | General          | Buildings        | General        |
| Feature Category               | Feature | Req Name                              | Req Desc   Asset Type   | General       | General          | General        | General        | General          | General          | General        |
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence) | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented) | Desired       | Essential        | Optional       | Essential      | Essential        | Desired          | Desired        |
| Timekeeping                    | General | Hours of Service (HOS)                | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies  | Desired       | Optional         | Optional       | Essential      | Priority Not Set | Priority Not Set | Desired        |
| Timekeeping                    | General | Hours Worked on Work Order / Asset    | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.  | Desired       | Desired          | Desired        | Essential      | Essential        | Desired          | Essential      |
| Timekeeping                    | General | Asset Field on Timecards              | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to)                    | Essential     | Priority Not Set | Optional       | Essential      | Optional         | Desired          | Desired        |
| Timekeeping                    | General | Time Tracking                         | Avoid duplicate entry or manipulation of time records in more than one system   | Desired       | Desired          | Essential      | Desired        | Essential        | Essential        | Optional       |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Scored

|                                     |            |                                 | Asset Category  | Overall | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|-------------------------------------|------------|---------------------------------|---|---------|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|
|                                     |            |                                 | Asset Class   | General | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category                    | Feature    | Req Name                        | Req Desc   Asset Type   | General | General       | General       | General        | General        | General        | General          | General    | General        |
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record        | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | 24      | 3             | 3             | 3              | 3              | 3              | 3                | 3          | 3              |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes          | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.  | 21      | 3             | 3             | 3              | 3              | 3              | 3                | 2          | 1              |
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes        | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.   | 17      | 3             | 3             | 3              | 2              | 1              | 2                | 2          | 1              |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers   | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | 21      | 3             | 3             | 3              | 1              | 3              | 3                | 2          | 3              |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration          | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | 16      | 3             | 3             | 3              | 1              | 1              | 3                | 1          | 1              |
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc. for both digital and paper documents   | 23      | 3             | 2             | 3              | 3              | 3              | 3                | 3          | 3              |
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents      | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets  | 20      | 3             | 1             | 2              | 3              | 3              | 3                | 2          | 3              |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Scored

|                                     |            |                                       | Asset Category   | Overall | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|-------------------------------------|------------|---------------------------------------|--|---------|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|
|                                     |            |                                       | Asset Class  | General | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category                    | Feature    | Req Name                              | Req Desc   Asset Type  | General | General       | General       | General        | General        | General        | General          | General    | General        |
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS               | Support hyperlinking from asset management system to GIS and from GIS to asset management  | 15      | 2             | 1             | 2              | 2              | 2              | 2                | 2          | 2              |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed)  | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | 16      | 3             | 0             | 2              | 2              | 3              | 1                | 2          | 3              |
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post                 | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | 18      | 3             | 0             | 3              | 3              | 3              | 1                | 2          | 3              |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Asset Hierarchy                       | Model and enforce hierarchical relationships between assets; particularly parent-child   | 21      | 3             | 1             | 3              | 3              | 3              | 3                | 2          | 3              |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Classes or Grouping of Assets         | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting   | 19      | 3             | 3             | 1              | 3              | 2              | 3                | 2          | 2              |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Components                            | Include components and sub-components, assemblies, systems and similar entities  | 17      | 3             | 2             | 3              | 2              | 2              | 2                | 2          | 1              |
| Asset Availability and Status       | Ownership  | Ownership Status                      | Ability to indicate owner and any interested parties in the asset  | 15      | 3             | 1             | 1              | 3              | 1              | 3                | 1          | 2              |
| Asset Availability and Status       | Ownership  | Owner Info                            | Contact information of the owner of assets; especially leased or rented equipment  | 18      | 3             | 1             | 1              | 3              | 3              | 3                | 1          | 3              |
| Asset Availability and Status       | Status     | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy | 16      | 3             | 1             | 2              | 3              | 2              | 1                | 2          | 2              |
| Asset Availability and Status       | Status     | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person   | 9       | 3             | 0             | 0              | 1              | 2              | 1                | 1          | 1              |
| Asset Availability and Status       | Status     | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile   | 10      | 2             | 0             | 0              | 1              | 1              | 3                | 1          | 2              |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

**Color Coding**

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

**Scored**

|                               |              | Asset Category                     |  | Overall | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|-------------------------------|--------------|------------------------------------|--|---------|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|
|                               |              | Asset Class                        |  | General | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category              | Feature      | Req Name                           | Req Desc   Asset Type  | General | General       | General       | General        | General        | General        | General          | General    | General        |
| Asset Availability and Status | Status       | Asset Assignment                   | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)   | 15      | 3             | 1             | 0              | 1              | 3              | 3                | 1          | 3              |
| Asset Availability and Status | Status       | Asset Rate and Usage Calculation   | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation.  | 11      | 3             | 1             | 0              | 1              | 1              | 3                | 1          | 1              |
| Asset Availability and Status | Status       | Condition Rating System            | Support a condition rating system for assets (e.g. 1 to 5)   | 21      | 3             | 3             | 2              | 3              | 3              | 3                | 2          | 2              |
| Asset Availability and Status | Status       | Condition Assessment               | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment  | 23      | 3             | 3             | 3              | 3              | 3              | 3                | 2          | 3              |
| Asset Availability and Status | Status       | Import External Transaction Data   | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)  | 13      | 3             | 1             | 0              | 1              | 1              | 3                | 2          | 2              |
| Asset Availability and Status | Availability | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | 18      | 3             | 3             | 1              | 1              | 3              | 3                | 1          | 3              |
| Asset Availability and Status | Availability | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | 20      | 3             | 3             | 3              | 1              | 3              | 3                | 1          | 3              |
| Asset Availability and Status | Availability | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | 11      | 2             | 2             | 2              | 1              | 1              | 1                | 1          | 1              |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Scored

| Feature Category                   | Feature | Req Name  | Req Desc   Asset Type  | Asset Category | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|------------------------------------|---------|---|--|----------------|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|
|                                    |         |   |  | Overall        | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |
| Asset Class                        | General | General   | General  | General        | General       | General       | General        | General        | General        | General          | General    | General        |
| Configuration Management           | General | Asset Model Configuration                             | Control over asset configuration design with ability to define rules for components and parts  | 12             | 3             | 2             | 2              | 0              | 1              | 2                | 1          | 1              |
| Configuration Management           | General | Change Management Process                             | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc. | 16             | 3             | 2             | 2              | 2              | 3              | 1                | 2          | 1              |
| Configuration Management           | General | Integration with Configuration Management Systems     | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.         | 13             | 3             | 0             | 1              | 0              | 3              | 3                | 2          | 1              |
| Fault/Problem Detection            | General | Capture Reasons for Failure                           | Ability to capture reason(s) for failure; preferably through standardized coding   | 17             | 3             | 0             | 2              | 1              | 3              | 3                | 2          | 3              |
| Fault/Problem Detection            | General | Data from Diagnostic Systems                          | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors  | 16             | 2             | 3             | 2              | 2              | 1              | 1                | 2          | 3              |
| Fault/Problem Detection            | General | Data from External Asset Management Systems           | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues             | 16             | 3             | 3             | 1              | 0              | 3              | 1                | 2          | 3              |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)     | 19             | 3             | 3             | 3              | 3              | 3              | 1                | 2          | 1              |
| Planned Maintenance and Inspection | General | Inspection Data Retention Periods                     | Ability to retain electronic copies of records indefinitely; Federal agencies usually allow for only a certain period of time                          | 13             | 2             | 3             | 2              | 2              | 1              | 0                | 2          | 1              |





Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Scored

| Feature Category                      | Feature | Req Name                                 | Asset Category<br>Asset Class   Asset Type<br>Req Desc   Asset Type  | Overall | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|---------------------------------------|---------|--|--|---------|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|
|                                       |         |  |  | General | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |
|                                       |         |  |  | General | General       | General       | General        | General        | General        | General          | General    | General        |
| Planned Maintenance and Inspection    | General | PM Notification                          | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)  | 13      | 2             | 2             | 2              | 0              | 1              | 3                | 2          | 1              |
| Planned Maintenance and Inspection    | General | Contractors for Preventative Maintenance | Ability to define vendors which are used for PM and inspection activities on assets, systems or components   | 10      | 2             | 2             | 0              | 2              | 1              | 1                | 1          | 1              |
| Planned Maintenance and Inspection    | General | Incorporate Season and Weather           | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and  | 10      | 3             | 1             | 1              | 0              | 1              | 1                | 2          | 1              |
| Work Orders and Work Order Management | General | Task Coding on Work Orders               | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs | 22      | 2             | 2             | 3              | 3              | 3              | 3                | 3          | 3              |
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's)    | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution                             | 18      | 3             | 1             | 0              | 3              | 3              | 3                | 2          | 3              |
| Work Orders and Work Order Management | General | Mobile Digital Work Orders               | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.  | 23      | 3             | 3             | 3              | 3              | 3              | 3                | 2          | 3              |
| Work Orders and Work Order Management | General | SLAs for Response Times                  | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | 13      | 2             | 1             | 0              | 1              | 2              | 3                | 2          | 2              |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Scored

|                                       |         | Asset Category                                    | Overall  | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |   |
|---------------------------------------|---------|---|--|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|---|
|                                       |         | Asset Class                                       | General  | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |   |
| Feature Category                      | Feature | Req Name  | Req Desc   Asset Type  | General       | General       | General        | General        | General        | General          | General    | General        |   |
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | 17            | 2             | 1              | 1              | 3              | 3                | 2          | 2              | 3 |
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations                    | Accommodate multiple shops and work locations including ARRC shops and work in the field   | 9             | 1             | 1              | 0              | 0              | 1                | 3          | 2              | 1 |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders             | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened   | 12            | 3             | 2              | 0              | 0              | 1                | 3          | 2              | 1 |
| Work Orders and Work Order Management | General | Record Checklist and Results                      | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order   | 19            | 3             | 2              | 3              | 3              | 1                | 3          | 2              | 2 |
| Work Orders and Work Order Management | General | Work Packages                                     | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assesement, complaint, etc   | 22            | 3             | 3              | 3              | 2              | 3                | 3          | 3              | 2 |
| Work Orders and Work Order Management | General | Assign Work Orders                                | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location   | 17            | 3             | 0              | 3              | 0              | 3                | 2          | 3              | 3 |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX)                     | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable))  | 19            | 2             | 3              | 2              | 2              | 3                | 3          | 2              | 2 |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Scored

|                                       |         | Asset Category                        | Overall  | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|---------------------------------------|---------|---------------------------------------|--|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|
|                                       |         | Asset Class                           | General  | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category                      | Feature | Req Name                              | Req Desc   Asset Type  | General       | General       | General        | General        | General        | General          | General    | General        |
| Work Orders and Work Order Management | General | Work Order Source                     | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)   | 21            | 3             | 1              | 3              | 2              | 3                | 3          | 3              |
| Work Orders and Work Order Management | General | Checklists (Digital)                  | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | 23            | 3             | 3              | 3              | 3              | 3                | 2          | 3              |
| Work Orders and Work Order Management | General | Cost Reporting                        | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography  | 17            | 2             | 3              | 2              | 3              | 2                | 2          | 1              |
| Work Orders and Work Order Management | General | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations  | 15            | 2             | 0              | 3              | 2              | 3                | 1          | 3              |
| Work Orders and Work Order Management | General | End-Users and Work Orders             | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders   | 20            | 3             | 3              | 0              | 2              | 3                | 3          | 3              |
| Work Orders and Work Order Management | General | Custom Categorize Work Orders         | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.   | 18            | 3             | 0              | 2              | 3              | 3                | 2          | 2              |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

**Color Coding**

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

**Scored**

|                                       |         | Asset Category                          | Overall  | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|---------------------------------------|---------|---|--|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|
|                                       |         | Asset Class                             | General  | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category                      | Feature | Req Name                                | Req Desc   Asset Type  | General       | General       | General        | General        | General        | General          | General    | General        |
| Work Orders and Work Order Management | General | Capture All Work on Work Orders         | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | 24            | 3             | 3              | 3              | 3              | 3                | 3          | 3              |
| Work Orders and Work Order Management | General | Prioritization of Work Orders           | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | 22            | 3             | 3              | 3              | 3              | 3                | 1          | 3              |
| Work Orders and Work Order Management | General | Reimbursable Work                       | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance   | 14            | 1             | 3              | 2              | 2              | 3                | 1          | 1              |
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes      | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | 14            | 2             | 0              | 2              | 2              | 1                | 3          | 3              |
| Work Orders and Work Order Management | General | Integrate Financial System              | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | 18            | 3             | 1              | 1              | 3              | 1                | 3          | 3              |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | 19            | 3             | 3              | 3              | 3              | 2                | 3          | 1              |
| Work Orders and Work Order Management | General | Ease of Use                             | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | 21            | 3             | 2              | 2              | 3              | 3                | 3          | 2              |
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area    | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | 17            | 2             | 1              | 2              | 2              | 3                | 2          | 2              |
| Work Orders and Work Order Management | General | Minor Work                              | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | 17            | 3             | 1              | 2              | 2              | 3                | 2          | 2              |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

**Color Coding**

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

**Scored**

|                                       |         | Asset Category                   | Overall   | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |   |
|---------------------------------------|---------|----------------------------------|---|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|---|
|                                       |         | Asset Class                      | General   | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |   |
| Feature Category                      | Feature | Req Name                         | Req Desc   Asset Type   | General       | General       | General        | General        | General        | General          | General    | General        |   |
| Work Orders and Work Order Management | General | Contractor or Vendor Work        | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders  | 14            | 3             | 0              | 1              | 2              | 1                | 3          | 2              | 2 |
| Work Orders and Work Order Management | General | Mechanic/Technician Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done.  | 18            | 3             | 3              | 0              | 1              | 3                | 3          | 2              | 3 |
| Work Orders and Work Order Management | General | Parts on Work Order              | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchased with a purchasing card  | 16            | 3             | 3              | 1              | 1              | 3                | 3          | 1              | 1 |
| Work Orders and Work Order Management | General | Failure Analysis                 | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.  | 19            | 3             | 3              | 1              | 1              | 3                | 3          | 2              | 3 |
| Work Orders and Work Order Management | General | Reporting Tools                  | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | 21            | 2             | 3              | 2              | 2              | 3                | 3          | 3              | 3 |
| Work Orders and Work Order Management | General | Work Order Notifications         | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)   | 19            | 3             | 1              | 2              | 2              | 3                | 2          | 3              | 3 |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

**Color Coding**

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

**Scored**

|                                       |         | Asset Category                       |  | Overall | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |
|---------------------------------------|---------|--------------------------------------|--|---------|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|
|                                       |         | Asset Class                          |  | General | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |
| Feature Category                      | Feature | Req Name                             | Req Desc   Asset Type  | General | General       | General       | General        | General        | General        | General          | General    | General        |
| Work Orders and Work Order Management | General | Usage Readings                       | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)   | 11      | 3             | 0             | 0              | 1              | 1              | 3                | 2          | 1              |
| Work Orders and Work Order Management | General | End-User Field Service               | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)   | 14      | 3             | 2             | 2              | 0              | 1              | 3                | 2          | 1              |
| Work Orders and Work Order Management | General | Work Order Attachments               | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | 20      | 3             | 1             | 2              | 3              | 3              | 3                | 3          | 2              |
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders   | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | 20      | 3             | 1             | 3              | 3              | 3              | 3                | 2          | 2              |
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | 16      | 2             | 0             | 2              | 1              | 3              | 3                | 2          | 3              |
| Work Orders and Work Order Management | General | Scheduling and Planning              | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)   | 23      | 3             | 3             | 3              | 3              | 3              | 2                | 3          | 3              |
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders      | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users   | 13      | 2             | 1             | 1              | 2              | 3              | 2                | 1          | 1              |
| Materials Management                  | General | Equipment Check-Out / Check-In       | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)   | 8       | 2             | 0             | 0              | 1              | 1              | 2                | 1          | 1              |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

Scored

|                                |         | Asset Category                     | Overall   | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |   |
|--------------------------------|---------|------------------------------------|---|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|---|
|                                |         | Asset Class                        | General   | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |   |
| Feature Category               | Feature | Req Name                           | Req Desc   Asset Type   | General       | General       | General        | General        | General        | General          | General    | General        |   |
| Materials Management           | General | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | 13            | 2             | 0              | 3              | 2              | 1                | 2          | 1              | 2 |
| Materials Management           | General | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)   | 12            | 2             | 1              | 0              | 1              | 3                | 3          | 1              | 1 |
| Materials Management           | General | Component Parts - Criticality      | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed  | 15            | 2             | 2              | 1              | 1              | 3                | 3          | 1              | 2 |
| Materials Management           | General | Min-Max Parts Inventory            | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes   | 15            | 3             | 2              | 1              | 2              | 2                | 3          | 1              | 1 |
| Materials Management           | General | Inventory Purchase Plan            | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)  | 11            | 2             | 1              | 1              | 1              | 1                | 3          | 1              | 1 |
| Component Tracking and Rebuild | General | Component Serial Number Tracking   | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")                | 13            | 3             | 0              | 2              | 1              | 2                | 2          | 1              | 2 |
| Component Tracking and Rebuild | General | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | 10            | 2             | 0              | 2              | 1              | 1                | 2          | 1              | 1 |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Scored

|                                |         | Asset Category                     | Overall   | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |   |
|--------------------------------|---------|------------------------------------|---|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|---|
|                                |         | Asset Class                        | General   | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |   |
| Feature Category               | Feature | Req Name                           | Req Desc   Asset Type   | General       | General       | General        | General        | General        | General          | General    | General        |   |
| Component Tracking and Rebuild | General | Component Service Life             | Ability to specify expected service life of a component or part   | 15            | 3             | 2              | 1              | 2              | 3                | 2          | 1              | 1 |
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not.                     | 15            | 3             | 2              | 2              | 1              | 3                | 2          | 1              | 1 |
| Component Tracking and Rebuild | General | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | 9             | 2             | 0              | 1              | 1              | 1                | 2          | 1              | 1 |
| Component Tracking and Rebuild | General | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | 13            | 2             | 3              | 1              | 1              | 1                | 3          | 1              | 1 |
| Warranty Management            | General | Warranty                           | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchased or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | 11            | 3             | 0              | 1              | 1              | 1                | 3          | 1              | 1 |
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting  | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement     | 15            | 3             | 3              | 1              | 2              | 1                | 1          | 3              | 1 |



Reliability Matters

## ARRC TAM Phase 2 Requirements Matrix

### Color Coding

|                           |
|---------------------------|
| Essential (High Priority) |
| Desired (Medium Priority) |
| Optional (Low Priority)   |
| Priority Not Set          |

### Scored

|                                |         | Asset Category                               | Overall  | Rolling Stock | Rolling Stock | Fixed Guideway | Fixed Guideway | Fixed Guideway | Service Vehicles | Facilities | Communications |   |
|--------------------------------|---------|--|--|---------------|---------------|----------------|----------------|----------------|------------------|------------|----------------|---|
|                                |         | Asset Class                                  | General  | Locomotive    | Railcars      | Track          | Bridge         | Signal         | General          | Buildings  | General        |   |
| Feature Category               | Feature | Req Name                                     | Req Desc   Asset Type  | General       | General       | General        | General        | General        | General          | General    | General        |   |
| Capital Projects and Campaigns | General | Capital Projects Reporting                   | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source | 20            | 3             | 3              | 1              | 3              | 3                | 3          | 3              | 1 |
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)  | 13            | 2             | 1              | 2              | 2              | 1                | 3          | 1              | 1 |
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence)        | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)  | 17            | 2             | 3              | 1              | 3              | 3                | 2          | 2              | 1 |
| Timekeeping                    | General | Hours of Service (HOS)                       | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | 9             | 2             | 1              | 1              | 0              | 3                | 0          | 0              | 2 |
| Timekeeping                    | General | Hours Worked on Work Order / Asset           | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.   | 20            | 2             | 2              | 2              | 3              | 3                | 3          | 2              | 3 |
| Timekeeping                    | General | Asset Field on Timecards                     | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to)   | 13            | 3             | 0              | 1              | 3              | 1                | 2          | 2              | 1 |
| Timekeeping                    | General | Time Tracking                                | Avoid duplicate entry or manipulation of time records in more than one system  | 19            | 2             | 2              | 3              | 2              | 3                | 3          | 3              | 1 |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                    | Feature    | Base Req Title           | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                    | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------|---|----------------|-------------|------------|--------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration   | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | Rolling Stock  | Locomotive  | General    | Asset Data Integration   | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | Rolling Stock  | Locomotive  | General    | Central System of Record | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes   | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.  | Rolling Stock  | Locomotive  | General    | Basic Asset Attributes   | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.   | Rolling Stock  | Locomotive  | General    | NTD Reporting Attributes | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.   | ARRC Prioritize from Matrix | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------------------|--|----------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers        | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers   | Rolling Stock  | Locomotive  | General    | Asset Data System Identifiers        | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking      | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc.for both digital and paper documents | Rolling Stock  | Locomotive  | General    | Document Management and Linking      | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc.for both digital and paper documents | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets                             | Rolling Stock  | Locomotive  | General    | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets                             | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS              | Support hyperlinking from asset management system to GIS and from GIS to asset management  | Rolling Stock  | Locomotive  | General    | Link (both ways) to GIS              | Support hyperlinking from asset management system to GIS and from GIS to asset management  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | Rolling Stock  | Locomotive  | General    | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | Rolling Stock  | Locomotive  | General    | Location by Mile Post                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | ARRC Prioritize from Matrix | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------------------|--|----------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS              | Support hyperlinking from asset management system to GIS and from GIS to asset management  | Rolling Stock  | Railcars    | General    | Link (both ways) to GIS              | Support hyperlinking from asset management system to GIS and from GIS to asset management  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | Rolling Stock  | Railcars    | General    | Location by Mile Post                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | ARRC Prioritize from Matrix | Not Set          |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | Rolling Stock  | Railcars    | General    | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | ARRC Prioritize from Matrix | Not Set          |
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets                             | Rolling Stock  | Railcars    | General    | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets                             | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking      | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc.for both digital and paper documents | Rolling Stock  | Railcars    | General    | Document Management and Linking      | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc.for both digital and paper documents | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                    | Feature    | Base Req Title                | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title   | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|-------------------------------|---|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record      | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | Rolling Stock  | Railcars    | General    | Central System of Record                          | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration        | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | Rolling Stock  | Railcars    | General    | Asset Data Integration                            | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes        | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.  | Rolling Stock  | Railcars    | General    | Foreign and Customer Owned Cars                   | Ability to treat foreign (non-ARRC) and customer owned cars as an asset; especially for inspections. Usage is tracked in Operations by GE TMS (Train Management System)   | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | Rolling Stock  | Railcars    | General    | Incorporate Existing Applications and Integration | Everything the four apps and the integration is a requirement for the future: TMS, JDE, Express Yard, UMLER and then internal billing interface.  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                    | Feature    | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                    | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|-------------------------------|--|----------------|-------------|------------|--------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes      | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                  | Rolling Stock  | Railcars    | General    | NTD Reporting Attributes | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel. | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes        | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | Rolling Stock  | Railcars    | General    | ARRC Number              | Unique number to asset  | CTG Consultant              | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes        | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | Rolling Stock  | Railcars    | General    | Non-ARRC Number          | E.g. Customer-owned   | CTG Consultant              | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes        | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | Rolling Stock  | Railcars    | General    | Interchange Identifier   | Unique to asset; includes ARRC or other carrier interchange code  | CTG Consultant              | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers                                       | Rolling Stock  | Railcars    | General    | Foreign Keys             | Unique identifiers in another system; for data integration and cross-application reporting  | CTG Consultant              | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                    | Feature    | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|-------------------------------|--|----------------|-------------|------------|-------------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes        | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | Rolling Stock  | Railcars    | General    | Renumbering                   | Capability needed; determine whether historical data is renumbered  | CTG Consultant              | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Components                    | Include components and sub-components, assemblies, systems and similar entities  | Rolling Stock  | Locomotive  | General    | Components                    | Include components and sub-components, assemblies, systems and similar entities   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Asset Hierarchy               | Model and enforce hierarchical relationships between assets; particular parent-child   | Rolling Stock  | Locomotive  | General    | Asset Hierarchy               | Model and enforce hierarchical relationships between assets; particular parent-child  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Classes or Grouping of Assets | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting   | Rolling Stock  | Locomotive  | General    | Classes or Grouping of Assets | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting                                  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Asset Hierarchy               | Model and enforce hierarchical relationships between assets; particular parent-child   | Rolling Stock  | Railcars    | General    | Asset Hierarchy               | Model and enforce hierarchical relationships between assets; particular parent-child  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Components                    | Include components and sub-components, assemblies, systems and similar entities  | Rolling Stock  | Railcars    | General    | Record Components on Railcars | Components do not have a estimated life ... but need to know what cars have what components, etc > goes to predictive analysis eventually | ARRC Group Interview        | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                    | Feature   | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title            | Description   | Initial Source              | Priority         |
|-------------------------------------|-----------|-------------------------------|--|----------------|-------------|------------|------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Hierarchy | Classes or Grouping of Assets | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting | Rolling Stock  | Railcars    | General    | Asset Series     | Groupings of assets (use Series) which have attributes or characteristics that in common. Passenger cars have different characteristics and key more off of car body type or characteristic than make / manufacturer. Freight cars typically handled by Series. | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status       | Ownership | Ownership Status              | Ability to indicate owner and any interested parties in the asset  | Rolling Stock  | Locomotive  | General    | Ownership Status | Ability to indicate owner and any interested parties in the asset   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status       | Ownership | Owner Info                    | Contact information of the owner of assets; especially leased or rented equipment                        | Rolling Stock  | Locomotive  | General    | Owner Info       | Contact information of the owner of assets; especially leased or rented equipment   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status       | Ownership | Ownership Status              | Ability to indicate owner and any interested parties in the asset  | Rolling Stock  | Railcars    | General    | Ownership Status | Ability to indicate owner and any interested parties in the asset   | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status       | Ownership | Owner Info                    | Contact information of the owner of assets; especially leased or rented equipment                        | Rolling Stock  | Railcars    | General    | Owner Info       | Contact information of the owner of assets; especially leased or rented equipment   | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category              | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                 | Description   | Initial Source              | Priority         |
|-------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|---------------------------------------|---|-----------------------------|------------------|
| Asset Availability and Status | Status  | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy                    | Rolling Stock  | Locomotive  | General    | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy                    | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | Asset Rate and Usage Calculation      | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | Rolling Stock  | Locomotive  | General    | Asset Rate and Usage Calculation      | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile  | Rolling Stock  | Locomotive  | General    | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Status  | Asset Assignment                      | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)      | Rolling Stock  | Locomotive  | General    | Asset Assignment                      | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)      | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person  | Rolling Stock  | Locomotive  | General    | Availability - Status Location        | Where assets are and how they are being used including frequency  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category              | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                      | Description   | Initial Source              | Priority         |
|-------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Asset Availability and Status | Status  | Import External Transaction Data      | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | Rolling Stock  | Locomotive  | General    | Import External Transaction Data           | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | Condition Rating System               | Support a condition rating system for assets (e.g. 1 to 5)  | Rolling Stock  | Locomotive  | General    | Condition Rating System                    | Support a condition rating system for assets (e.g. 1 to 5)  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person  | Rolling Stock  | Locomotive  | General    | Availability - Status Location Integration | The location and status of locomotives would be at least partly from TMS  | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Status  | Condition Assessment                  | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment       | Rolling Stock  | Locomotive  | General    | Condition Assessment                       | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment       | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | Asset Rate and Usage Calculation      | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | Rolling Stock  | Railcars    | General    | Asset Rate and Usage Calculation           | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status  | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile  | Rolling Stock  | Railcars    | General    | GPS/GIS Position Information (Mobile)      | Utilize GPS not only for current but also historical data for assets that are mobile  | ARRC Prioritize from Matrix | Not Set          |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category              | Feature | Base Req Title                   | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                            | Description   | Initial Source              | Priority         |
|-------------------------------|---------|----------------------------------|---|----------------|-------------|------------|----------------------------------|---|-----------------------------|------------------|
| Asset Availability and Status | Status  | Condition Assessment             | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment | Rolling Stock  | Railcars    | General    | Condition Assessment             | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | Condition Assessment - Risk      | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy              | Rolling Stock  | Railcars    | General    | Condition Assessment - Risk      | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy              | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status  | Import External Transaction Data | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | Rolling Stock  | Railcars    | General    | Import External Transaction Data | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status  | Condition Rating System          | Support a condition rating system for assets (e.g. 1 to 5)  | Rolling Stock  | Railcars    | General    | Condition Rating System          | Support a condition rating system for assets (e.g. 1 to 5)  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | Status - Location                | Asset location in as near real-time as it is possible to have the status changed by a system or person  | Rolling Stock  | Railcars    | General    | Status - Location                | Asset location in as near real-time as it is possible to have the status changed by a system or person  | ARRC Prioritize from Matrix | Not Set          |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category              | Feature      | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type   | Title                                       | Description  | Initial Source       | Priority         |
|-------------------------------|--------------|------------------------------------|---|----------------|-------------|--------------|---|--|----------------------|------------------|
| Asset Availability and Status | Status       | Asset Assignment                   | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)          | Rolling Stock  | Railcars    | Freight Cars | Non-Revenue Freight Cars                    | Large non-revenue freight car fleet - used in MOW  | ARRC Group Interview | Optional (Low)   |
| Asset Availability and Status | Availability | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored) | Rolling Stock  | Locomotive  | General      | Availability Calculations                   | Need availability information over time; existing methods would be too manual. Differentiate by status (e.g. intentionally stored or planned overhaul in a downtime vs unintentionally unavailable. By reason for failure) | ARRC Group Interview | Essential (High) |
| Asset Availability and Status | Availability | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)   | Rolling Stock  | Locomotive  | General      | Availability - Seasonal Variations          | Take into account summer plan and winter plan  | ARRC Group Interview | Desired (Medium) |
| Asset Availability and Status | Availability | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored) | Rolling Stock  | Locomotive  | General      | Usage Data for Availability and Reliability | Usage data such as power or standby mode, stored or not-stored, whether failure in terminal or out   | ARRC Group Interview | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category              | Feature      | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|-------------------------------|--------------|------------------------------------|--|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Asset Availability and Status | Availability | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Rolling Stock  | Locomotive  | General    | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.)   | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Availability | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | Rolling Stock  | Railcars    | General    | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Availability | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | Rolling Stock  | Railcars    | General    | Availability Calculations          | For asset management need tracking system of availability and measures. Have not gotten figured out for passenger but run with little to no failures. Key goals for TAM was moving towards availability and reliability measures. | ARRC Group Interview        | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category              | Feature      | Base Req Title            | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source       | Priority         |
|-------------------------------|--------------|---------------------------|---|----------------|-------------|------------|--|--|----------------------|------------------|
| Asset Availability and Status | Availability | Availability Calculations | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored) | Rolling Stock  | Railcars    | General    | Customer Needs and Availability Calculations | No way to track what is needed by the customer and what we actually have: are we fulfilling the need? Unsure that is clear on the operations side. - (not even on operations / dispatch) side. E.g .hopper cars not utilized ... on bad order list but they are not needed so don't have to be repaired. Marketing with transportation is driving what cars are worked; they send direction on what cars / types need to be worked. TOFC side marketing doesn't necessarily know what the demand has been (e.g. electricified) - don't know how many trailers turned away. | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category              | Feature      | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source       | Priority         |
|-------------------------------|--------------|------------------------------------|--|----------------|-------------|------------|--|--|----------------------|------------------|
| Asset Availability and Status | Availability | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | Rolling Stock  | Railcars    | General    | Availability Calculations and FRA Requirements | Manually track availability for FRA requirements because when JDE was used they were getting all kinds of ghost work orders for things not due because it lacks the information or calculations. Have time and usage based calculations and exceptions (e.g. out of service or stored) | ARRC Group Interview | Desired (Medium) |
| Asset Availability and Status | Availability | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Rolling Stock  | Railcars    | General    | Delay Reason Codes                             | Do not have reasons for delay (e.g. wait for shop space, wait for parts, wait for labor)   | ARRC Group Interview | Desired (Medium) |
| Asset Availability and Status | Availability | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Rolling Stock  | Railcars    | General    | Length Time in Bad Order Status                | No historical information on how long a car was in bad order status or why - "falls off the list" Note that whether a car is fixed to be taken off list is often by customer need.   | ARRC Group Interview | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category              | Feature      | Base Req Title                                    | Base Req Desc   | Asset Category | Asset Class | Asset Type     | Title                                  | Description   | Initial Source              | Priority         |
|-------------------------------|--------------|---|---|----------------|-------------|----------------|--|---|-----------------------------|------------------|
| Asset Availability and Status | Availability | Availability Calculations                         | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored) | Rolling Stock  | Railcars    | Passenger Cars | Passenger Car Availability Calculation | Passenger car is demand different than freight and the winter is different because they will open up cars depending on sales, or hold to a set number of cars; or have to turn away business if demand for more than eight cars | ARRC Group Interview        | Desired (Medium) |
| Configuration Management      | General      | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.                                | Rolling Stock  | Locomotive  | General        | RailDOCS Integration                   | RailDOCS used for critical PTC component configuration - avoid manual duplication or cross-checking of data. FRA requirement for tracking PTC components.   | ARRC Group Interview        | Essential (High) |
| Configuration Management      | General      | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts   | Rolling Stock  | Locomotive  | General        | Asset Model Configuration              | Control over asset configuration design with ability to define rules for components and parts   | ARRC Prioritize from Matrix | Essential (High) |
| Configuration Management      | General      | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc.                        | Rolling Stock  | Locomotive  | General        | Change Management Process              | Ability to have a change management process for components of the assets. May include things such as checklists or a testing process to review, etc.  | ARRC Group Interview        | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category         | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type     | Title   | Description   | Initial Source              | Priority         |
|--------------------------|---------|---|--|----------------|-------------|----------------|---|---|-----------------------------|------------------|
| Configuration Management | General | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.         | Rolling Stock  | Railcars    | General        | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.  | ARRC Prioritize from Matrix | Not Set          |
| Configuration Management | General | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc. | Rolling Stock  | Railcars    | General        | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc.  | ARRC Prioritize from Matrix | Desired (Medium) |
| Configuration Management | General | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | Rolling Stock  | Railcars    | General        | General and Specific Configurations               | Freight - the components are all generalized, not much in mismatched or speciality items<br>Passenger - are trying to standardize on components and configurations  | ARRC Group Interview        | Desired (Medium) |
| Configuration Management | General | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | Rolling Stock  | Railcars    | Passenger Cars | Specific Configurations for Assets                | Each Passenger car is a little bit different for each intended route - even for baggage. Passenger has cars that were all UP built and look the same but have all been rebuilt differently so they are relatively unique. | ARRC Group Interview        | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category         | Feature | Base Req Title                              | Base Req Desc  | Asset Category | Asset Class | Asset Type     | Title                                       | Description   | Initial Source       | Priority         |
|--------------------------|---------|---|--|----------------|-------------|----------------|---|---|----------------------|------------------|
| Configuration Management | General | Asset Model Configuration                   | Control over asset configuration design with ability to define rules for components and parts  | Rolling Stock  | Railcars    | Passenger Cars | Detailed Component Tracking                 | For passenger railcars would like to know "everything" about the configuration as each is fairly unique. May have to be more general but would like capability.           | ARRC Group Interview | Optional (Low)   |
| Fault/Problem Detection  | General | Capture Reasons for Failure                 | Ability to capture reason(s) for failure; preferably through standardized coding   | Rolling Stock  | Locomotive  | General        | Capture Reasons for Failure                 | Capture reasons for failure; especially those that affect service time on locomotives (FRA)   | ARRC Group Interview | Essential (High) |
| Fault/Problem Detection  | General | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors                                    | Rolling Stock  | Locomotive  | General        | Integrate Lube Oil Analysis Results         | Automatically generated Work Order for lube oil analysis (currently done by JDE). Ability to record and report on analysis results.                                       | ARRC Group Interview | Desired (Medium) |
| Fault/Problem Detection  | General | Data from External Asset Management Systems | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues | Rolling Stock  | Locomotive  | General        | Problem Detection from Detectors/Operations | Ability to record, attach, or relate info from detectors or operations that is relevant to maintenance (when, where, detector/method, measurement value or fault/problem) | ARRC Group Interview | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category        | Feature | Base Req Title               | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                   | Description   | Initial Source              | Priority         |
|-------------------------|---------|------------------------------|---|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Fault/Problem Detection | General | Data from Diagnostic Systems | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors | Rolling Stock  | Locomotive  | General    | Diagnostic Data Integration or Feedback | Locomotive diagnostics sent to Siemens for EMD, GE for GP for analysis as part of every 92 day inspection or as needed when a problem. Attach vendor analysis to relevant work order and relate to asset. Vendor usually indicates problem info, procedure for diagnosing further or to handle, and parameters for determining if it is a recurring problem | ARRC Group Interview        | Desired (Medium) |
| Fault/Problem Detection | General | Capture Reasons for Failure  | Ability to capture reason(s) for failure; preferably through standardized coding                        | Rolling Stock  | Railcars    | General    | Capture Reasons for Failure             | Ability to capture reason(s) for failure; preferably through standardized coding  | ARRC Prioritize from Matrix | Not Set          |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category        | Feature | Base Req Title                              | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                       | Description  | Initial Source       | Priority         |
|-------------------------|---------|---|--|----------------|-------------|------------|---|--|----------------------|------------------|
| Fault/Problem Detection | General | Data from External Asset Management Systems | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues | Rolling Stock  | Railcars    | General    | Integrate Operations Information            | Need to be able to make connections that don't exist today to inform maintenance - e.g. number of miles travelled by cars. For freight include service types for wheels and bearings for example and for passenger frequency and duration of use. Integrate from TMS rather than capturing manually. | ARRC Group Interview | Essential (High) |
| Fault/Problem Detection | General | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors                                    | Rolling Stock  | Railcars    | General    | Integrate Event Tracking Records            | Event tracking - where freight car is located - becomes a resource management issue. Geographic location may just be a named location versus a position on GIS.  | ARRC Group Interview | Desired (Medium) |
| Fault/Problem Detection | General | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors                                    | Rolling Stock  | Railcars    | General    | Automated Analysis and Problem Notification | Would like analysis and possible problems to be brought to users attention without having to look for it. Configurable by subject matter expert.   | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                   | Feature | Base Req Title                               | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source              | Priority         |
|------------------------------------|---------|--|--|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Fault/Problem Detection            | General | Data from Diagnostic Systems                 | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors                                    | Rolling Stock  | Railcars    | General    | Integrate Event Records                      | Use the event records that came from enroute failures (treat in/out same as enroute failures). Wheel impact load detector (WILD)                         | ARRC Group Interview        | Essential (High) |
| Fault/Problem Detection            | General | Data from External Asset Management Systems  | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues | Rolling Stock  | Railcars    | General    | Automatic Equipment Identification           | Incorporate - if cars do not get read at certain times it alerts; if foreign cars they automatically drop after a period of time                         | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Generate Work Orders from Inspection Results | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)                             | Rolling Stock  | Locomotive  | General    | Generate Work Orders from Inspection Results | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)   | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | PM Service Calculation                       | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)   | Rolling Stock  | Locomotive  | General    | Service Required Dates by Asset / Component  | Have service required by date based on time period or rate of usage (e.g. mileage) on asset and component level  | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | PM Service Calculation                       | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)   | Rolling Stock  | Locomotive  | General    | PM Service Calculation Factors               | For assets as well as components - there are differences between passenger and year-round freight. Not the same weight, power, or tractive requirements. | ARRC Group Interview        | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                   | Feature | Base Req Title                             | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                      | Description  | Initial Source              | Priority         |
|------------------------------------|---------|--|---|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Digital-First Inspections                  | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements | Rolling Stock  | Locomotive  | General    | Digital-First Inspections                  | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements                      | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics    | Rolling Stock  | Locomotive  | General    | Trip Inspections - Electronic              | Ability to record trip inspections digitally without paper - subject to regulatory requirements and agency approval.   | ARRC Group Interview        | Optional (Low)   |
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics    | Rolling Stock  | Locomotive  | General    | Trip Inspections                           | Pre and post trip inspection - who, date, and whether there is a related work order due to it (FRA requires one to be done the day of a trip - retained 90 days)             | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Automated Compliance Tracking and Planning | Automated planning and compliance tracking of regulatory inspection requirements  | Rolling Stock  | Locomotive  | General    | Automated Compliance Tracking and Planning | Automated compliance tracking / planning of the FRA 92 day inspection - quarterly, semi-annual, and annual; formula-based with out of service credits (not done well by JDE) | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                   | Feature | Base Req Title  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title   | Description   | Initial Source              | Priority         |
|------------------------------------|---------|---|---|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Contractors for Preventative Maintenance              | Ability to define vendors which are used for PM and inspection activities on assets, systems or components  | Rolling Stock  | Locomotive  | General    | Contractors for Preventative Maintenance              | Ability to define vendors which are used for PM and inspection activities on assets, systems or components  | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | Digital Workflows for Review and Approval             | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | Rolling Stock  | Locomotive  | General    | Digital Workflows for Review and Approval             | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | PM Notification                                       | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)                         | Rolling Stock  | Locomotive  | General    | PM Notification                                       | Notification or recommended plan for assets and components that are getting close to a service threshold  | ARRC Group Interview        | Desired (Medium) |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)            | Rolling Stock  | Locomotive  | General    | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)            | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | Inspection Data Retention Periods                     | Ability to retain electronic copies of records indefinitely; Federal agencies usually allow for only a certain period of time                                 | Rolling Stock  | Locomotive  | General    | Inspection Data Retention Periods                     | Ability to retain electronic copies of records indefinitely; Federal agencies usually allow for only a certain period of time                                 | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                   | Feature | Base Req Title                    | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                             | Description  | Initial Source              | Priority         |
|------------------------------------|---------|-----------------------------------|---|----------------|-------------|------------|-----------------------------------|--|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Incorporate Season and Weather    | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                         | Rolling Stock  | Locomotive  | General    | Integrate Season and Weather      | For reliability or predictive maintenance planning incorporate weather and seasonal differences                                | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Inspection Schedules              | Support ability to schedule recurring inspections that will automatically create a work order   | Rolling Stock  | Locomotive  | General    | Inspection Schedules              | Support ability to schedule recurring inspections that will automatically create a work order                                  | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | PM Job Plan                       | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed | Rolling Stock  | Locomotive  | General    | Job Plan                          | Standard job plans for labor and parts in system to allow for forecasting of parts and labor needed                            | ARRC Group Interview        | Desired (Medium) |
| Planned Maintenance and Inspection | General | Inspection Data Retention Periods | Ability to retain electronic copieds of records indefinitely; Federal agencies usually allow for only a certain period of time                  | Rolling Stock  | Railcars    | General    | Inspection Data Retention Periods | Ability to retain electronic copieds of records indefinitely; Federal agencies usually allow for only a certain period of time | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                   | Feature | Base Req Title                             | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                               | Description   | Initial Source       | Priority         |
|------------------------------------|---------|--|---|----------------|-------------|------------|-------------------------------------|---|----------------------|------------------|
| Planned Maintenance and Inspection | General | Digital-First Inspections                  | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements | Rolling Stock  | Railcars    | General    | Digital Asset Assessment Inspection | Prefer to go to asset assessment program for day to day inspections, annual assessments, and use digital means (prefer same app with different configuration for passenger and freight cars and subsets)                                      | ARRC Group Interview | Essential (High) |
| Planned Maintenance and Inspection | General | PM Service Calculation                     | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)                | Rolling Stock  | Railcars    | General    | Part Replacement Cycles             | Use cycle on parts to determine replacement - freight has hardline replacement criteria for parts. Field manual provides guidance on everything that's replaced as a component and why; and in some cases also what can be replaced with what | ARRC Group Interview | Essential (High) |
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics    | Rolling Stock  | Railcars    | General    | Inspection Pre and Post Trip        | Perform inbound / outbound air tests - when train leaves station and when train gets back   | ARRC Group Interview | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                   | Feature | Base Req Title                            | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source              | Priority         |
|------------------------------------|---------|---|---|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Digital Workflows for Review and Approval | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | Rolling Stock  | Railcars    | General    | Digital Inspection Workflow - Requirements and Roles | For digital inspections (subject to regulatory requirements and/or approval) should have means to identify that the logged on user is qualified to perform the inspection or to sign off on the inspection. Potential for tie-in to the LMS (Learning Management System) | ARRC Group Interview        | Optional (Low)   |
| Planned Maintenance and Inspection | General | Incorporate Season and Weather            | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                                       | Rolling Stock  | Railcars    | General    | Incorporate Season and Weather                       | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and  | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Contractors for Preventative Maintenance  | Ability to define vendors which are used for PM and inspection activities on assets, systems or components  | Rolling Stock  | Railcars    | General    | Contractors for Preventative Maintenance             | Ability to define vendors which are used for PM and inspection activities on assets, systems or components   | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | PM Notification                           | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)                         | Rolling Stock  | Railcars    | General    | PM Notification                                      | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)  | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                   | Feature | Base Req Title  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description   | Initial Source              | Priority         |
|------------------------------------|---------|---|--|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | PM Job Plan   | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed    | Rolling Stock  | Railcars    | General    | PM Job Plan   | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed   | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | Inspection Schedules                                  | Support ability to schedule recurring inspections that will automatically create a work order  | Rolling Stock  | Railcars    | General    | Inspection Schedules                                  | Support ability to schedule recurring inspections that will automatically create a work order   | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA) | Rolling Stock  | Railcars    | General    | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)  | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | PM Service Calculation                                | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)           | Rolling Stock  | Railcars    | General    | Schedule Work and Open Work Orders Automatically      | Ability to schedule work on a basis (time period, usage, etc.) and have a work order opened for that PM, inspection, or other work (e.g. air tests done yearly). Currently freight cars schedules more with MOW, articulated cars, and air dumps with the remainder largely reactive. | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                   | Feature | Base Req Title                               | Base Req Desc  | Asset Category | Asset Class | Asset Type     | Title                        | Description  | Initial Source       | Priority         |
|------------------------------------|---------|--|--|----------------|-------------|----------------|------------------------------|--|----------------------|------------------|
| Planned Maintenance and Inspection | General | Automated Compliance Tracking and Planning   | Automated planning and compliance tracking of regulatory inspection requirements   | Rolling Stock  | Railcars    | General        | Asset Management Inspections | Missing is asset mgmt inspections (sheets for tracking the status of each asset) - showing that 10% covered yearly - shows it was done but no condition assessment data for analytics (it's not in a system)   | ARRC Group Interview | Essential (High) |
| Planned Maintenance and Inspection | General | Generate Work Orders from Inspection Results | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)                                       | Rolling Stock  | Railcars    | Freight Cars   | Express Yard Integration     | Freight inspections are regulatory or failure - UMLER / Express Yard - does not track that in spreadsheets. Data goes through Express Yard, updates UMLER. Extract data through reports from Express Yard (does little interface capability - doesn't connect to other things) | ARRC Group Interview | Essential (High) |
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists   | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics | Rolling Stock  | Railcars    | Passenger Cars | Scanned Daily Inspection     | Passenger railcar looking to go digital with handwritten then scanned for daily inspection (other locs already doing)  | ARRC Group Interview | Optional (Low)   |



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## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title           | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------|--|----------------|-------------|------------|-------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Failure Analysis         | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.   | Rolling Stock  | Locomotive  | General    | Failure Analysis              | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order. | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Checklists (Digital)     | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | Rolling Stock  | Locomotive  | General    | Record Checklist and Readings | Ability to easily capture and store electronically (rather than paper or scanned paper) checklist data and any required readings for a work order                                    | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Notifications | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)  | Rolling Stock  | Locomotive  | General    | Work Order Notifications      | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)                      | ARRC Prioritize from Matrix | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title         | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                  | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|------------------------|---|----------------|-------------|------------|------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Work Order Attachments | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order  | Rolling Stock  | Locomotive  | General    | Work Order Attachments | Automatically output procedures, checklists, and bills of materials need for work order. Supported currently by JDE.  | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Reporting Tools        | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Rolling Stock  | Locomotive  | General    | Reporting Tools        | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | Usage Readings         | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)  | Rolling Stock  | Locomotive  | General    | Usage Readings         | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)  | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                     | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|------------------------------------|--|----------------|-------------|------------|---------------------------|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | Rolling Stock  | Locomotive  | General    | Cost Accounting - Changes | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs. This includes funding source (Opex / Capex) as well. Currently this does not work well with JDE     | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Capture All Work on Work Orders    | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | Rolling Stock  | Locomotive  | General    | Capture All Work          | Record all work on a work order to ensure there is a record of work performed and costs are consistently captured in the same place. Includes Inspections, PMs, condition assessments, as well as maintenance work regardless of location. | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Mechanic/Technician Records Work   | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | Rolling Stock  | Locomotive  | General    | Track Work as Being Done  | Prefer to have ability to easily record work as it is done by mechanic to avoid after the fact time assignment   | ARRC Group Interview | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|-------------------------------|--|----------------|-------------|------------|-------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Work Packages                 | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assesement, complaint, etc   | Rolling Stock  | Locomotive  | General    | Work Packages                 | Ability to create pre-defined work order template (benchmark) with a standard set of tasks for a particular inspection, condition assesement, bad order code, etc.(similar to a PM Job Plan)                                    | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Mobile Digital Work Orders    | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.  | Rolling Stock  | Locomotive  | General    | Mobile Digital Work Orders    | Record data where and when the work occurs (create, update, and close work orders). Mostly for gang jobs in the field in the summer.  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX) | Abililty to categorize costs by OPEX/CAPEX categories and subcatgory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable) | Rolling Stock  | Locomotive  | General    | Categorize Costs (OPEX/CAPEX) | Abililty to categorize costs by OPEX/CAPEX categories and subcatgory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPX (e.g. ARRC, Agency (if application) or Other (if applicable) | ARRC Group Interview | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist.         | Rolling Stock  | Locomotive  | General    | Checklist Criteria for Repair - Create Work Order | Ability to define criteria for repair or replacement on checklist items (e.g. wheel size is an example). A work order to address is automatically created / or a line item on a work order if already created from this checklist) | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Task Coding on Work Orders                        | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs                     | Rolling Stock  | Locomotive  | General    | Task Coding on Work Orders                        | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs             | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Mechanic/Technican Records Work                   | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | Rolling Stock  | Locomotive  | General    | Who Worked on Work Order                          | For rework analysis, training, and refresher purposes would help to have clarity of worked on work orders  | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title         | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                        | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|------------------------|--|----------------|-------------|------------|------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Minor Work             | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | Rolling Stock  | Locomotive  | General    | Minor Work                   | Ability to quickly record minor work against assets or components such as inspection and service (i.e. ability to avoid using bucket/generic work order for non-parts work less than 1 hour) | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Reimbursable Work      | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance   | Rolling Stock  | Locomotive  | General    | Shop Rates / Work For Others | Locomotives are not in UMLER / Interchange - a few were leased a long time ago and at some points some work was done on Army locomotives. Ability to record work for others for billing.     | ARRC Group Interview        | Optional (Low)   |
| Work Orders and Work Order Management | General | End-User Field Service | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)   | Rolling Stock  | Locomotive  | General    | End-User Field Service       | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)                                       | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

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### Rolling Stock

| Feature Category                      | Feature | Base Req Title                  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                             | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------|--|----------------|-------------|------------|-----------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Custom Categorize Work Orders   | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling. | Rolling Stock  | Locomotive  | General    | Custom Categorize Work Orders     | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling. | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations  | Accommodate multiple shops and work locations including ARRC shops and work in the field   | Rolling Stock  | Locomotive  | General    | Multiple Shop / Work Locations    | Accommodate multiple shop or work locations; which all may offer PM or services but not all corrective or rebuild / overhaul                                       | ARRC Group Interview        | Optional (Low)   |
| Work Orders and Work Order Management | General | Integrate Financial System      | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | Rolling Stock  | Locomotive  | General    | Integration with Financial System | Work Order system must be integrated / interfaced with the financial system; currently JDE.  | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users                                   | Rolling Stock  | Locomotive  | General    | Estimated Effort on Work Orders   | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users                                   | ARRC Prioritize from Matrix | Desired (Medium) |



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## Requirements Data

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### Rolling Stock

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Mechanic/Technician Records Work      | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | Rolling Stock  | Locomotive  | General    | Record of Work by Mechanic            | Only person who knows what is happening on the work order is the mechanic and they should have ability to see the info they need and also record as it is done (as easily as possible)     | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution   | Rolling Stock  | Locomotive  | General    | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | SLAs for Response Times               | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | Rolling Stock  | Locomotive  | General    | SLAs for Response Times               | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened   | Rolling Stock  | Locomotive  | General    | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened   | ARRC Prioritize from Matrix | Essential (High) |



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## Requirements Data

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### Rolling Stock

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                 | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|---------------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location  | Rolling Stock  | Locomotive  | General    | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location  | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Source                     | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)                          | Rolling Stock  | Locomotive  | General    | Work Order Source                     | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)                          | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Cost Reporting                        | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | Rolling Stock  | Locomotive  | General    | Cost Reporting                        | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations   | Rolling Stock  | Locomotive  | General    | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations   | ARRC Prioritize from Matrix | Desired (Medium) |



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## Requirements Data

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### Rolling Stock

| Feature Category                      | Feature | Base Req Title               | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                        | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|------------------------------|--|----------------|-------------|------------|------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Contractor or Vendor Work    | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders                             | Rolling Stock  | Locomotive  | General    | Contractor or Vendor Work    | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders                             | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | End-Users and Work Orders    | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders | Rolling Stock  | Locomotive  | General    | End-Users and Work Orders    | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Parts on Work Order          | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card              | Rolling Stock  | Locomotive  | General    | Parts on Work Order          | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card              | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Record Checklist and Results | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order         | Rolling Stock  | Locomotive  | General    | Record Checklist and Results | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order         | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Scheduling and Planning      | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)                                 | Rolling Stock  | Locomotive  | General    | Scheduling and Planning      | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)                                 | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                          | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                   | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order    | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | Rolling Stock  | Locomotive  | General    | Reassign, Split, or Child Work Order    | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area    | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | Rolling Stock  | Locomotive  | General    | Group Work Orders by Geographic Area    | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders      | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | Rolling Stock  | Locomotive  | General    | Future and Unscheduled Work Orders      | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Ease of Use                             | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | Rolling Stock  | Locomotive  | General    | Ease of Use                             | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | Rolling Stock  | Locomotive  | General    | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                         | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|-------------------------------|---|----------------|-------------|------------|-------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Prioritization of Work Orders | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset   | Rolling Stock  | Locomotive  | General    | Prioritization of Work Orders | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Reporting Tools               | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Rolling Stock  | Railcars    | General    | Reporting Needs               | Repair report to yard, bad order list, maintenance summary, billing, component usage - high-used components such as air valves and wheels (done manually), car mileage (reported every month in TMS), fleet utilization | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Scheduling and Planning       | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)  | Rolling Stock  | Railcars    | General    | Work Planning                 | Freight is largely corrective - about 10% of it is planned which is off asset inspections and mods for capital management - 90% of work corrective  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                            | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|----------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Reporting Tools                       | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Rolling Stock  | Railcars    | General    | Maintenance Analytics and Trends | Bad orders on railcars; how long to repair; see trends on components; defect failures. For example Passenger would like to see they can "toilets" and get the trend over time - so they know what have to do for parts.                           | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Reimbursable Work                     | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance  | Rolling Stock  | Railcars    | General    | Shop Rates                       | Umler - Billing practice is flat rate for ARRC even though may take longer and the parts cost more than in the Lower 48   | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution  | Rolling Stock  | Railcars    | General    | Work Order 3C                    | Complaint / Cause / Correction - is coded for freight. Have a bit more for passenger. Hard copies of daily sheets complaints for 92 days rather than indefinitely ... freight cars are 3 years for back data - but don't have to keep hard copies | ARRC Group Interview | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                             | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|-------------------------------|---|----------------|-------------|------------|-----------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Task Coding on Work Orders    | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs            | Rolling Stock  | Railcars    | General    | Work Order Level of Detail        | Work orders must be able to accommodate multiple lines with coding for system/component (e.g. truck, wheel, decking, electrical) and activity (e.g. diagnose, replace, etc.)  | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX) | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable)) | Rolling Stock  | Railcars    | General    | Corrective vs Planned Maintenance | Ability to look at the corrective vs planned maintenance. Trend analysis. There are differences in season and perhaps quarterly e.g. Wheels and Air   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | End-Users and Work Orders     | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders  | Rolling Stock  | Railcars    | General    | Bad Order Report                  | Receives list every morning of what is in bad order status and there is a small desc of what it is. What does not know is if there are other defects that have been reported or outstanding. There are basic essential tasks that occur whenever a car comes into the shop. | ARRC Group Interview | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title  | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|-----------------|---|----------------|-------------|------------|--|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Ease of Use     | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)   | Rolling Stock  | Railcars    | General    | Maintenance Coding for Consistency and Ease of Use | Inconsistent data due to different people who do not always work on the same asset; need easy to use input. Users past experience everything was coded but at ARRC a lot is manual. | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Reporting Tools | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Rolling Stock  | Railcars    | General    | Maintenance Repair History by Asset / Component    | Not able to track multiple issues for one car unless you remember and go back and look.   | ARRC Group Interview | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                 | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|---------------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Reporting Tools                       | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Rolling Stock  | Railcars    | General    | Reporting - Mock Ups                  | Recommended they mock up reports and dashboard (not just static but also dynamic) that would replace what they manually do and remove rote work. Also a means of gathering more detailed requirements for data or integration that may otherwise be missed. | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | Integrate Financial System            | Work Order system must be integrated or interfaced with the financial system (currently JDE)  | Rolling Stock  | Railcars    | General    | Integrate Financial System            | Work Order system must be integrated or interfaced with the financial system (currently JDE)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | SLAs for Response Times               | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them  | Rolling Stock  | Railcars    | General    | SLAs for Response Times               | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them  | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations        | Accommodate multiple shops and work locations including ARRC shops and work in the field  | Rolling Stock  | Railcars    | General    | Multiple Shop / Work Locations        | Accommodate multiple shops and work locations including ARRC shops and work in the field  | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened  | Rolling Stock  | Railcars    | General    | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened  | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                 | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|---------------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location  | Rolling Stock  | Railcars    | General    | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location  | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Cost Reporting                        | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | Rolling Stock  | Railcars    | General    | Cost Reporting                        | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations   | Rolling Stock  | Railcars    | General    | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations   | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Custom Categorize Work Orders         | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.                          | Rolling Stock  | Railcars    | General    | Custom Categorize Work Orders         | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.                          | ARRC Prioritize from Matrix | Not Set          |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|--|----------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Capture All Work on Work Orders      | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently | Rolling Stock  | Railcars    | General    | Capture All Work on Work Orders      | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders      | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users   | Rolling Stock  | Railcars    | General    | Estimated Effort on Work Orders      | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes   | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | Rolling Stock  | Railcars    | General    | Cost Accounting - Handling Changes   | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Record Checklist and Results         | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order   | Rolling Stock  | Railcars    | General    | Record Checklist and Results         | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | Rolling Stock  | Railcars    | General    | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                   | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                            | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|----------------------------------|--|----------------|-------------|------------|----------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Contractor or Vendor Work        | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders   | Rolling Stock  | Railcars    | General    | Contractor or Vendor Work        | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders   | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Mechanic/Technician Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | Rolling Stock  | Railcars    | General    | Mechanic/Technician Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Parts on Work Order              | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchased with a purchasing card   | Rolling Stock  | Railcars    | General    | Parts on Work Order              | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchased with a purchasing card   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Failure Analysis                 | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.   | Rolling Stock  | Railcars    | General    | Failure Analysis                 | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.   | ARRC Prioritize from Matrix | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|-------------------------------|--|----------------|-------------|------------|-------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Work Order Notifications      | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)    | Rolling Stock  | Railcars    | General    | Work Order Notifications      | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)    | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Usage Readings                | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)   | Rolling Stock  | Railcars    | General    | Usage Readings                | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)   | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | End-User Field Service        | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)             | Rolling Stock  | Railcars    | General    | End-User Field Service        | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)             | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Prioritization of Work Orders | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | Rolling Stock  | Railcars    | General    | Prioritization of Work Orders | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Source             | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated) | Rolling Stock  | Railcars    | General    | Work Order Source             | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated) | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority       |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|----------------|
| Work Orders and Work Order Management | General | Work Order Attachments                            | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | Rolling Stock  | Railcars    | General    | Work Order Attachments                            | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | ARRC Prioritize from Matrix | Optional (Low) |
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order              | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event                             | Rolling Stock  | Railcars    | General    | Reassign, Split, or Child Work Order              | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event                             | ARRC Prioritize from Matrix | Not Set        |
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | Rolling Stock  | Railcars    | General    | Checklist Criteria for Repair - Create Work Order | Ability to define criteria for repair or replacement on checklist items (e.g. wheel size is an example). A work order to address is automatically created / or a line item on a work order if already created from this checklist) | ARRC Group Interview        | Optional (Low) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title            | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                            | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------|--|----------------|-------------|------------|----------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Work Packages             | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assesement, complaint, etc   | Rolling Stock  | Railcars    | General    | Work Packages                    | Ability to create pre-defined work order template (benchmark) with a standard set of tasks for a particular inspection, condition assesement, bad order code, etc.(similar to a PM Job Plan)  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | End-Users and Work Orders | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders   | Rolling Stock  | Railcars    | General    | Bad Order -Work Order Initiation | Initiate a work order from Bad Order report data from TMS - convert Bad Order coding to work order coding with multiple lines if needed   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Minor Work                | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | Rolling Stock  | Railcars    | General    | Minor Work                       | Ability to quickly record minor work against specific railcars such as inspection and service (i.e. ability to avoid using bucket/generic work order for non-parts work less than 30 minutes) | ARRC Group Interview | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|-------------------------------|--|----------------|-------------|------------|-------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Checklists (Digital)          | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | Rolling Stock  | Railcars    | General    | Record Checklist and Results  | Ability to easily capture and store electronically (rather than paper or scanned paper) checklist data and any required readings for a work order   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX) | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable)                                 | Rolling Stock  | Railcars    | General    | Categorize Costs (OPEX/CAPEX) | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPX (e.g. ARRC, Agency (if application) or Other (if applicable) | ARRC Group Interview | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type   | Title                              | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|------------------------------------|--|----------------|-------------|--------------|------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Mobile Digital Work Orders         | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.  | Rolling Stock  | Railcars    | General      | Mobile Digital Work Orders         | Record data when it occurs in the field by those doing the work - two examples (a) work in Whittier and during the passenger season Talkeetna and Seward (b) car men addressing bad orders for release in the yard; create a work order and add parts as needed directly | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | Rolling Stock  | Railcars    | General      | Future and Unscheduled Work Orders | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Task Coding on Work Orders         | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs | Rolling Stock  | Railcars    | Freight Cars | Work Order Coding                  | Express Yard has the detail captured for diagnose, replace, etc. - standard used for ARRC as well as interchange work  | ARRC Group Interview        | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                          | Base Req Desc  | Asset Category | Asset Class | Asset Type     | Title                        | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|----------------|------------------------------|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Reimbursable Work                       | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance | Rolling Stock  | Railcars    | Freight Cars   | Interchange Work and Billing | Do work on a lot of freight cars that come up through interchange; while it is here they have to work on it, log time to it - that's the AAR billing process (Express Yard does interface with Rail Link etc but not with internal systems) ... there is some record keeping of interchange cars - through RailcarX, UMLER.... | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy                       | Rolling Stock  | Railcars    | Freight Cars   | Tracking by Asset            | JDE for freight is tracking time and parts put on cars - but by series. Use Work Order from JDE for Express Yard and there is an interface program.  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy                       | Rolling Stock  | Railcars    | Passenger Cars | Work Order Entry             | Passenger cars are not in billing Express Yard / Umler (believe they could be put in if wanted to). Work orders are in JDE by passenger car number.  | ARRC Group Interview | Optional (Low)   |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy                       | Rolling Stock  | Railcars    | Passenger Cars | Record Maintenance by Asset  | Sometime passenger car is on a consist basis - so costs are not necessarily directly comparable  | ARRC Group Interview | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category                      | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type     | Title                              | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|------------------------------------|---|----------------|-------------|----------------|------------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Scheduling and Planning            | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)  | Rolling Stock  | Railcars    | Passenger Cars | Manage Commitments and Plans       | Passenger railcars manages all kinds of committments and plans (e.g. winterize / non-winterize) through Excel. Work downtime around operations - utilization of passenger cars is about 100% in the summer so small windows for maintenance | ARRC Group Interview        | Optional (Low)   |
| Materials Management                  | General | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | Rolling Stock  | Locomotive  | General        | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post)                       | ARRC Prioritize from Matrix | Desired (Medium) |
| Materials Management                  | General | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | Rolling Stock  | Locomotive  | General        | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category     | Feature | Base Req Title                 | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                          | Description   | Initial Source              | Priority         |
|----------------------|---------|--------------------------------|--|----------------|-------------|------------|--------------------------------|---|-----------------------------|------------------|
| Materials Management | General | Inventory Purchase Plan        | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system) | Rolling Stock  | Locomotive  | General    | Inventory Purchase Plan        | Purchase plan based on forecasted preventative and overhaul work for season (done manually but should be able to forecast based on job plans in system) | ARRC Group Interview        | Desired (Medium) |
| Materials Management | General | Component Parts - Criticality  | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed                               | Rolling Stock  | Locomotive  | General    | Component Parts - Criticality  | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed            | ARRC Group Interview        | Desired (Medium) |
| Materials Management | General | Min-Max Parts Inventory        | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes              | Rolling Stock  | Locomotive  | General    | Min-Max Parts Inventory        | Inventory on-hand requirements that is based on asset and component mix as well as upcoming season expectations   | ARRC Group Interview        | Essential (High) |
| Materials Management | General | Component Parts - Obsolescence | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)                    | Rolling Stock  | Locomotive  | General    | Component Parts - Obsolescence | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support) | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category     | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|----------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Materials Management | General | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | Rolling Stock  | Railcars    | General    | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | ARRC Prioritize from Matrix | Not Set          |
| Materials Management | General | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | Rolling Stock  | Railcars    | General    | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | ARRC Prioritize from Matrix | Not Set          |
| Materials Management | General | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)   | Rolling Stock  | Railcars    | General    | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management | General | Min-Max Parts Inventory            | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes   | Rolling Stock  | Railcars    | General    | Min-Max Parts Inventory            | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes   | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category               | Feature | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description  | Initial Source              | Priority         |
|--------------------------------|---------|-------------------------------|--|----------------|-------------|------------|-------------------------------|--|-----------------------------|------------------|
| Materials Management           | General | Inventory Purchase Plan       | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system) | Rolling Stock  | Railcars    | General    | Inventory Purchase Plan       | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system) | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management           | General | Component Parts - Criticality | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed                               | Rolling Stock  | Railcars    | General    | Component Parts - Criticality | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed                               | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Component Service Life        | Ability to specify expected service life of a component or part  | Rolling Stock  | Locomotive  | General    | Component Service Life        | Ability to specify expected service life of a component / part. If not serial number tracked then can that part be removed, and rebuilt, or put on another asset?          | ARRC Group Interview        | Essential (High) |
| Component Tracking and Rebuild | General | Usage for Components          | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance   | Rolling Stock  | Locomotive  | General    | Usage for Components          | Based on asset(s) installed in; usage of components for reliability and preventative maintenance   | ARRC Group Interview        | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category               | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source       | Priority         |
|--------------------------------|---------|------------------------------------|--|----------------|-------------|------------|------------------------------------|---|----------------------|------------------|
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt)<br>May be differences in handling with components that have serial numbers vs those that do not. | Rolling Stock  | Locomotive  | General    | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. For disposition reporting at end of life is assumed that all locomotive components are present regardless if they have been changed out during the lifetime | ARRC Group Interview | Essential (High) |
| Component Tracking and Rebuild | General | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild   | Rolling Stock  | Locomotive  | General    | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | ARRC Group Interview | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category               | Feature | Base Req Title                   | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                            | Description   | Initial Source              | Priority         |
|--------------------------------|---------|----------------------------------|--|----------------|-------------|------------|----------------------------------|---|-----------------------------|------------------|
| Component Tracking and Rebuild | General | Component Compatibility          | Ability to identify compatibility of components with asset configurations  | Rolling Stock  | Locomotive  | General    | Component Compatibility          | Compatibility of components with asset configurations and different procedures for components or versions of them in different asset configurations (e.g. PTC components in different series; locomotive units have different characteristics and OEM requirements between generations of same model) | ARRC Group Interview        | Desired (Medium) |
| Component Tracking and Rebuild | General | Component Serial Number Tracking | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset") | Rolling Stock  | Locomotive  | General    | Component Serial Number Tracking | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")  | ARRC Group Interview        | Essential (High) |
| Component Tracking and Rebuild | General | Component Compatibility          | Ability to identify compatibility of components with asset configurations  | Rolling Stock  | Railcars    | General    | Component Compatibility          | Ability to identify compatibility of components with asset configurations   | ARRC Prioritize from Matrix | Not Set          |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category               | Feature | Base Req Title                   | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source              | Priority         |
|--------------------------------|---------|----------------------------------|--|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Component Tracking and Rebuild | General | Usage for Components             | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance   | Rolling Stock  | Railcars    | General    | Component Usage (Miles and Time)                                 | Wear and tear comparison over time is manual; no miles to break down; all manually pulled out and crunched   | ARRC Group Interview        | Essential (High) |
| Component Tracking and Rebuild | General | Component Service Life           | Ability to specify expected service life of a component or part  | Rolling Stock  | Railcars    | General    | Component Reliability Tracking                                   | No availability or reliability of components in any way today  | ARRC Group Interview        | Desired (Medium) |
| Component Tracking and Rebuild | General | Component Serial Number Tracking | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset") | Rolling Stock  | Railcars    | General    | Component Serial Number Tracking                                 | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")   | ARRC Prioritize from Matrix | Not Set          |
| Component Tracking and Rebuild | General | Component Service Life           | Ability to specify expected service life of a component or part  | Rolling Stock  | Railcars    | General    | Mark Parts for Installed Components as Obsolete or Special Order | There are cars that are well built and good but parts can no longer be obtained except through very special circumstances. Items need to be identified as obsolete / special. Pass needs every single component - and cannot go by the age of the car. | ARRC Group Interview        | Desired (Medium) |
| Component Tracking and Rebuild | General | Part Rebuild                     | Indicator that a part in inventory or being installed is a rebuild   | Rolling Stock  | Railcars    | General    | Part Rebuild   | Indicator that a part in inventory or being installed is a rebuild   | ARRC Prioritize from Matrix | Not Set          |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category               | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type     | Title                                | Description  | Initial Source              | Priority         |
|--------------------------------|---------|------------------------------------|--|----------------|-------------|----------------|--------------------------------------|--|-----------------------------|------------------|
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not.                    | Rolling Stock  | Railcars    | Passenger Cars | Track Transfer Parts of Assets (FTA) | Passenger cars (FTA funded) have rules to follow on the transfer of components or child assets from one car to another as well as ultimate surplus or disposition  | ARRC Group Interview        | Desired (Medium) |
| Warranty Management            | General | Warranty                           | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | Rolling Stock  | Locomotive  | General        | Warranty                             | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | ARRC Group Interview        | Essential (High) |
| Warranty Management            | General | Warranty                           | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | Rolling Stock  | Railcars    | General        | Warranty                             | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | ARRC Prioritize from Matrix | Not Set          |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category               | Feature | Base Req Title                               | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source              | Priority         |
|--------------------------------|---------|--|--|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Capital Projects Reporting                   | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source | Rolling Stock  | Locomotive  | General    | Capital Projects Reporting                   | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries)  | ARRC Prioritize from Matrix | Essential (High) |
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence)        | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)  | Rolling Stock  | Locomotive  | General    | Investment Plan Placeholders                 | Need ability to designate budget placeholders in the asset plan as an estimate to be refined or available if needed. Locomotive has these areas: Replacements, Truck Overhaul, Engine Overhaul, Head End Power (HEP) Updates, Paint and Car Body, Technology Updates | ARRC Group Interview        | Desired (Medium) |
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)  | Rolling Stock  | Locomotive  | General    | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)  | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category               | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title   | Description   | Initial Source              | Priority         |
|--------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting     | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement | Rolling Stock  | Locomotive  | General    | Total Cost of Ownership Reporting                 | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement   | ARRC Prioritize from Matrix | Essential (High) |
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence) | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)   | Rolling Stock  | Railcars    | General    | Asset Master Plan                                 | Master plan with the spreadsheet used to track the asset data; results only that they are tracking  | ARRC Group Interview        | Essential (High) |
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting     | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement | Rolling Stock  | Railcars    | General    | Railcar Committee - Information and Reporting For | committees are where life cycle decisions are made - prep for meetings; pull of excel sheets to pull together ... pass every 2 weeks - freight couple times a year. Would increase as the age of equip increases. Two committees have business and mechanical members and finance is there as well. | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category               | Feature | Base Req Title                               | Base Req Desc  | Asset Category | Asset Class | Asset Type   | Title  | Description  | Initial Source              | Priority         |
|--------------------------------|---------|--|--|----------------|-------------|--------------|--|--|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Capital Projects Reporting                   | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source | Rolling Stock  | Railcars    | General      | Capital Project Reporting                    | Capital project reports - need to track data, do extracts from JDE, etc to compile   | ARRC Group Interview        | Essential (High) |
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)  | Rolling Stock  | Railcars    | General      | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence)        | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)  | Rolling Stock  | Railcars    | Freight Cars | Railcar Life Cycle                           | Freight lifecycle is simple 50 years with extension possible (either scrap or repurpose to non-revenue until not safe to run anymore) - pass can run as long as they are kept up to safety standards, continuously update and spread the costs over the life | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category               | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type     | Title  | Description  | Initial Source              | Priority         |
|--------------------------------|---------|------------------------------------|--|----------------|-------------|----------------|--|--|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Capital Projects Reporting         | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source | Rolling Stock  | Railcars    | Passenger Cars | Categorize Revenue Improvement Overhaul or Refurbishment | For passenger cars refurbishment costs may be driven by higher customer rates; rather than a simple overhaul   | ARRC Group Interview        | Desired (Medium) |
| Timekeeping                    | General | Hours of Service (HOS)             | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | Rolling Stock  | Locomotive  | General        | Hours of Service (HOS)                                   | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | ARRC Prioritize from Matrix | Desired (Medium) |
| Timekeeping                    | General | Hours Worked on Work Order / Asset | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.   | Rolling Stock  | Locomotive  | General        | Hours Worked on Work Order / Asset                       | Record time worked on a work order and integrate with time keeping. Currently enter info in work orders then update time card separately at end of day.            | ARRC Group Interview        | Desired (Medium) |
| Timekeeping                    | General | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to)   | Rolling Stock  | Locomotive  | General        | Asset Field on Timecards                                 | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to) | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|------------------|---------|------------------------------------|--|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Timekeeping      | General | Time Tracking                      | Avoid duplicate entry or manipulation of time records in more than one system  | Rolling Stock  | Locomotive  | General    | Simplified Time Keeping            | Ability to enter time once - probably on the work order for the most detail - and for it to transfer to time card. Do not want to have an additional step to enter or manage time keeping.                                  | ARRC Group Interview        | Desired (Medium) |
| Timekeeping      | General | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to) | Rolling Stock  | Railcars    | General    | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to)  | ARRC Prioritize from Matrix | Not Set          |
| Timekeeping      | General | Hours Worked on Work Order / Asset | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.   | Rolling Stock  | Railcars    | General    | Hours Worked on Work Order / Asset | Record time worked on a work order and integrate with time keeping. Preference is hours are recorded on work orders (direct and indirect time) that is carried over to the time card to simplify time entry and management. | ARRC Prioritize from Matrix | Desired (Medium) |
| Timekeeping      | General | Hours of Service (HOS)             | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | Rolling Stock  | Railcars    | General    | Hours of Service (HOS)             | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies  | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Rolling Stock

| Feature Category | Feature | Base Req Title | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title         | Description  | Initial Source              | Priority         |
|------------------|---------|----------------|---|----------------|-------------|------------|---------------|--|-----------------------------|------------------|
| Timekeeping      | General | Time Tracking  | Avoid duplicate entry or manipulation of time records in more than one system | Rolling Stock  | Railcars    | General    | Time Tracking | A straightforward method of recording time against work orders that flows to the time card system; avoid duplicate entry or manipulation of time records | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|-------------------------------|--|----------------|-------------|------------|-------------------------------|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes        | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.     | Fixed Guideway | Track       | General    | Asset Attributes              | Support attributes at appropriate levels of hierarchy to include: higher level organization (Subdivision, District); classification (mainline, branch, yard, siding) [if these are not handled in hierarchy], GIS location (both start and end), length, degree curvature, length of spirals, amount of elevation, grade/elevation at Mile Post, loss of track and design speed, and if it is part of a slide zone | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers   | Fixed Guideway | Track       | General    | Asset Data System Identifiers | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration        | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy. | Fixed Guideway | Track       | General    | Asset Data Integration        | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.   | ARRC Prioritize from Matrix | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------------------|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets           | Fixed Guideway | Track       | General    | Mobile Access to Documents                                  | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes             | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                  | Fixed Guideway | Track       | General    | NTD Reporting Attributes                                    | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | Fixed Guideway | Track       | General    | GPS/GIS Position Information (Fixed)                        | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | Fixed Guideway | Track       | General    | Location by Mile Post                                       | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes               | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | Fixed Guideway | Track       | General    | Asset Identifiers consistent with Track Charts and Practice | Support a method of coding asset identifiers consistent with railroad practice and track charts; especially for Mainline / Branch / Yard, Mile Post / Track, Tangent / Curve, Small Culverts | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title                  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                             | Description  | Initial Source       | Priority         |
|-------------------------------------|------------|---------------------------------|---|----------------|-------------|------------|-----------------------------------|--|----------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record        | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | Fixed Guideway | Track       | General    | Single Source for Track Data      | Objective is a single repository / source of information for track including asset and work activity   | ARRC Group Interview | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS         | Support hyperlinking from asset management system to GIS and from GIS to asset management   | Fixed Guideway | Track       | General    | Link (both ways) to GIS           | Support hyperlinking from asset management system to GIS and from GIS to asset management based on assets based upon the asset itself or part of the asset's hierarchy (e.g. mile post)  | ARRC Group Interview | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc.for both digital and paper documents  | Fixed Guideway | Track       | General    | Linking of Track Charts to Assets | Support linking of track chart renditions if not native electronic to the application (CAD, PDF) to assets based upon the asset itself or part of the asset's hierarchy (e.g. mile post) | ARRC Group Interview | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title                  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                           | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|---------------------------------|---|----------------|-------------|------------|---------------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc. for both digital and paper documents | Fixed Guideway | Track       | General    | Support Electronic Track Charts | Desirable to support the creation and maintenance of electronic track charts (common for track linear asset management)   | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post           | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post  | Fixed Guideway | Bridge      | General    | Location by Mile Post           | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS         | Support hyperlinking from asset management system to GIS and from GIS to asset management   | Fixed Guideway | Bridge      | General    | Link (both ways) to GIS         | Support hyperlinking from asset management system to GIS and from GIS to asset management based on assets based upon the asset itself or part of the asset's hierarchy (e.g. mile post) | ARRC Group Interview        | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration          | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.                | Fixed Guideway | Bridge      | General    | Asset Data Integration          | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.                            | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers   | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | Fixed Guideway | Bridge      | General    | Asset Data System Identifiers   | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------------------|--|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes             | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                  | Fixed Guideway | Bridge      | General    | NTD Reporting Attributes           | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.               | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes               | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | Fixed Guideway | Bridge      | General    | Bridges without Track              | Support bridges that do not have track; would not have the same inspection program, etc.  | ARRC Group Interview        | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | Fixed Guideway | Bridge      | General    | Extract GPS Coordinates from Media | To aid in identifying where media (photos, video) was taken at a location extract the GPS coordinates from the media (when available) and link to GIS | CTG Consultant              | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets           | Fixed Guideway | Bridge      | General    | Mobile Access to Documents         | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets        | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title                  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                           | Description   | Initial Source       | Priority         |
|-------------------------------------|------------|---------------------------------|---|----------------|-------------|------------|---------------------------------|---|----------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes          | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.                    | Fixed Guideway | Bridge      | General    | Asset Attributes                | Build out the master data for bridge asset classes by combining asset info, attributes from documentation, and detail on inspection forms   | ARRC Group Interview | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes          | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.                    | Fixed Guideway | Bridge      | General    | Built and Installed Dates       | Support recording separate original build date and installed date of bridge structure assets  | ARRC Group Interview | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc. for both digital and paper documents | Fixed Guideway | Bridge      | General    | Document Management and Linking | Support a centralized approach to storing and accessing documents including drawings, pictures, etc. Support linking to an asset at any part of the hierarchy and to work orders (including inspections). For references to paper files or plans allow for a reference (e.g. name, location, file number etc) | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title           | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source       | Priority         |
|-------------------------------------|------------|--------------------------|---|----------------|-------------|------------|--|--|----------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes   | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.  | Fixed Guideway | Bridge      | General    | Dimensional and Weight Limits                              | Support recording the as-designed and the current operating dimensional and weight limits  | ARRC Group Interview | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | Fixed Guideway | Bridge      | General    | Single Source for Operations and Regulatory Data           | Objective is a single repository / source of information for asset classes managed by Bridge including asset info, inspections, and work activity. Use of this single source should systematically enable consistent processes for managing asset info, documentation, inspections and condition assessment and work management. | ARRC Group Interview | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes   | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.  | Fixed Guideway | Bridge      | General    | Asset Identifiers consistent with Bridge Docs and Practice | Support a method of coding asset identifiers consistent with railroad practice and track charts (e.g. for Bridge Mile Post, Span, etc.)  | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title             | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                      | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|----------------------------|--|----------------|-------------|------------|----------------------------|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets           | Fixed Guideway | Signal      | General    | Mobile Access to Documents | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets                         | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes   | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                  | Fixed Guideway | Signal      | General    | NTD Reporting Attributes   | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                                | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes     | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | Fixed Guideway | Signal      | General    | Basic Asset Attributes     | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.               | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS    | Support hyperlinking from asset management system to GIS and from GIS to asset management  | Fixed Guideway | Signal      | General    | Link (both ways) to GIS    | Support hyperlinking from asset management system to GIS and from GIS to asset management based on assets based upon the asset itself or part of the asset's hierarchy | ARRC Group Interview        | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                      | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------------------|---|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration               | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | Fixed Guideway | Signal      | General    | Asset Data Integration                     | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.   | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map   | Fixed Guideway | Signal      | General    | Extract GPS Coordinates from Media         | To aid in identifying where media (photos, video) was taken at a location extract the GPS coordinates from the media (when available) and link to GIS  | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers        | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | Fixed Guideway | Signal      | General    | Asset Data System Identifiers              | Ability to support multiple external system identifiers for an asset (e.g. PRTG, RailDocs, etc.) - used for reference, asset data comparison between systems, or actual integration                    | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record             | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | Fixed Guideway | Signal      | General    | Central Source for Signals Assets and Work | Objective is a central source of information for Signals including asset and work activity; acknowledging that specialized systems may be used for additional configuration, status, and notifications | ARRC Group Interview        | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title  | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------------------|---|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking      | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc. for both digital and paper documents | Fixed Guideway | Signal      | General    | Document Management and Linking                      | Support a centralized approach to storing and accessing documents including drawings, manuals, pictures, etc. with them associated / indexed to assets  | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map   | Fixed Guideway | Signal      | General    | GPS / GIS Locations                                  | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map   | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post  | Fixed Guideway | Signal      | General    | Location by Mile Post                                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post  | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Classes or Grouping of Assets        | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting  | Fixed Guideway | Track       | General    | Classes or Grouping of Assets                        | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Asset Hierarchy                      | Model and enforce hierarchical relationships between assets; particularly parent-child  | Fixed Guideway | Track       | General    | Child Assets for Work Activity at Specific Locations | Support child assets directly or through hierarchy - it is necessary to perform inspections (including scheduled) and work activity against very specific locations on track such as CWR joints | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature   | Base Req Title  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title            | Description  | Initial Source       | Priority         |
|-------------------------------------|-----------|-----------------|--|----------------|-------------|------------|------------------|--|----------------------|------------------|
| Asset Hierarchy, Registry, and Info | Hierarchy | Asset Hierarchy | Model and enforce hierarchical relationships between assets; particular parent-child | Fixed Guideway | Track       | General    | Track Hierarchy  | Support an asset and reporting hierarchy from the top down: Railroad, Subdivision, District, Sections, Mainline / Branch / Yard, Mile Post / Track, Tangent / Curve, Small Culverts / crossings / grade separations. Railroad and Subdivision would likely not be assets that that have work orders written directly against them but Division and below may | ARRC Group Interview | Essential (High) |
| Asset Hierarchy, Registry, and Info | Hierarchy | Components      | Include components and sub-components, assemblies, systems and similar entities      | Fixed Guideway | Track       | General    | Asset Components | Allow for components of assets to be identified; primarily these are rail, ties (under Tangent / Curve), sidings, slide zone (under Mile Post), road bed; ballast embankment, ditching (under Tangent / Curve)   | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature   | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description   | Initial Source              | Priority         |
|-------------------------------------|-----------|-------------------------------|--|----------------|-------------|------------|--------------------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Hierarchy | Components                    | Include components and sub-components, assemblies, systems and similar entities                          | Fixed Guideway | Bridge      | General    | Asset Components                     | Allow for components of assets to be identified where there are inspection requirements or where work order tasks need to be coded against.   | ARRC Group Interview        | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Hierarchy | Classes or Grouping of Assets | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting | Fixed Guideway | Bridge      | General    | Classes or Grouping of Assets        | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Hierarchy | Asset Hierarchy               | Model and enforce hierarchical relationships between assets; particular parent-child                     | Fixed Guideway | Bridge      | General    | Asset Hierarchy for "Bridge" Classes | Support a parent-child asset hierarchy for major classes of assets managed by Bridge: Bridges, Tunnels, Large Diameter Culverts (>= 10'), Retaining Walls, and Ports (Slips and Docks). Example is Bridges which are composed of Spans, Piers/Towers, and Deck. An asset is something a work order can be written directly against; a component/system is something that can be coded against on an asset's work order. | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                    | Feature   | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description  | Initial Source              | Priority         |
|-------------------------------------|-----------|-------------------------------|--|----------------|-------------|------------|-------------------------------|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Hierarchy | Asset Hierarchy               | Model and enforce hierarchical relationships between assets; particular parent-child                     | Fixed Guideway | Signal      | General    | Signals Hierarchy             | Support an asset and reporting hierarchy from the top down: Railroad, Location, then by asset category and then asset. Must be able to roll up costs and activity by named Location. | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Hierarchy | Classes or Grouping of Assets | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting | Fixed Guideway | Signal      | General    | Classes or Grouping of Assets | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Hierarchy | Components                    | Include components and sub-components, assemblies, systems and similar entities                          | Fixed Guideway | Signal      | General    | Components                    | Include components and sub-components, assemblies, systems and similar entities  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status       | Ownership | Owner Info                    | Contact information of the owner of assets; especially leased or rented equipment                        | Fixed Guideway | Track       | General    | Ownership Indicator           | Support indicating the owners or interested parties in the asset   | ARRC Group Interview        | Optional (Low)   |
| Asset Availability and Status       | Ownership | Ownership Status              | Ability to indicate owner and any interested parties in the asset  | Fixed Guideway | Track       | General    | Ownership Status              | Ability to indicate owner and any interested parties in the asset  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status       | Ownership | Ownership Status              | Ability to indicate owner and any interested parties in the asset  | Fixed Guideway | Bridge      | General    | Ownership Status              | Ability to indicate owner and any interested parties in the asset  | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature   | Base Req Title   | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title               | Description  | Initial Source              | Priority         |
|-------------------------------|-----------|------------------|---|----------------|-------------|------------|---------------------|--|-----------------------------|------------------|
| Asset Availability and Status | Ownership | Owner Info       | Contact information of the owner of assets; especially leased or rented equipment | Fixed Guideway | Bridge      | General    | Ownership Indicator | Support indicating owners or interested parties in the asset (or a specific component of an asset) - for asset classes managed by Bridge the focus is on additional things that are on, run across, or are next to the assets  | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Ownership | Owner Info       | Contact information of the owner of assets; especially leased or rented equipment | Fixed Guideway | Signal      | General    | Ownership Indicator | Support indicating owners or interested parties in the asset (or a specific component of an asset). Also allow for specifying responsibilities under contracts or memorandum of understanding. Business and Technical contact information for other parties should be available from the record. | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Ownership | Ownership Status | Ability to indicate owner and any interested parties in the asset                 | Fixed Guideway | Signal      | General    | Ownership Status    | Ability to indicate owner and any interested parties in the asset  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature | Base Req Title                   | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                  | Description   | Initial Source              | Priority         |
|-------------------------------|---------|----------------------------------|---|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Asset Availability and Status | Status  | Asset Rate and Usage Calculation | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | Fixed Guideway | Track       | General    | Asset Rate and Usage Calculation       | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | ARRC Prioritize from Matrix | Not Set          |
| Asset Availability and Status | Status  | Condition Rating System          | Support a condition rating system for assets (e.g. 1 to 5)  | Fixed Guideway | Track       | General    | Track Quality Index / Condition Rating | Provide a track quality index or condition rating system mechanism. Tie data has previously been manipulated to get a 1 to 5 rating by mile post.                         | ARRC Group Interview        | Desired (Medium) |
| Asset Availability and Status | Status  | Status - Location                | Asset location in as near real-time as it is possible to have the status changed by a system or person  | Fixed Guideway | Track       | General    | Status - Location                      | Asset location in as near real-time as it is possible to have the status changed by a system or person  | ARRC Prioritize from Matrix | Not Set          |
| Asset Availability and Status | Status  | Import External Transaction Data | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | Fixed Guideway | Track       | General    | Import External Transaction Data       | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | ARRC Prioritize from Matrix | Not Set          |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|-------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Asset Availability and Status | Status  | Condition Assessment                  | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment  | Fixed Guideway | Track       | General    | Condition Assessment                  | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile   | Fixed Guideway | Track       | General    | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile   | ARRC Prioritize from Matrix | Not Set          |
| Asset Availability and Status | Status  | Asset Assignment                      | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours) | Fixed Guideway | Track       | General    | Asset Assignment                      | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours) | ARRC Prioritize from Matrix | Not Set          |
| Asset Availability and Status | Status  | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy               | Fixed Guideway | Track       | General    | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy               | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Status  | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile   | Fixed Guideway | Bridge      | General    | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile   | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature | Base Req Title                   | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                            | Description   | Initial Source              | Priority         |
|-------------------------------|---------|----------------------------------|---|----------------|-------------|------------|----------------------------------|---|-----------------------------|------------------|
| Asset Availability and Status | Status  | Asset Rate and Usage Calculation | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | Fixed Guideway | Bridge      | General    | Asset Rate and Usage Calculation | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status  | Import External Transaction Data | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | Fixed Guideway | Bridge      | General    | Import External Transaction Data | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status  | Condition Rating System          | Support a condition rating system for assets (e.g. 1 to 5)  | Fixed Guideway | Bridge      | General    | Condition Rating System          | Support a condition rating system for assets (e.g. 1 to 5); this has been done but is not currently used for FTA purposes   | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Status  | Asset Assignment                 | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)      | Fixed Guideway | Bridge      | General    | Asset Assignment                 | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)      | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status  | Status - Location                | Asset location in as near real-time as it is possible to have the status changed by a system or person  | Fixed Guideway | Bridge      | General    | Status - Location                | Asset location in as near real-time as it is possible to have the status changed by a system or person  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature | Base Req Title       | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                            | Description   | Initial Source       | Priority         |
|-------------------------------|---------|----------------------|---|----------------|-------------|------------|----------------------------------|---|----------------------|------------------|
| Asset Availability and Status | Status  | Condition Assessment | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment | Fixed Guideway | Bridge      | General    | Known Condition / Issue Tracking | Method to record or attach information (e.g. media) from an inspection or observation on an asset which will carry forward on future inspections and work documents to inform users that it was previously known and enable comparison of whether it has worsened. Objective is to reduce reliance on individual or unrecorded institutional knowledge. | ARRC Group Interview | Essential (High) |
| Asset Availability and Status | Status  | Condition Assessment | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment | Fixed Guideway | Bridge      | General    | Condition Assessment Methodology | Support condition assessment at any level of asset hierarchy and then one or more methods to assess higher level: weakest link - the worst rating on child assets is applied to the parent or a weighted condition assessment based on child asset types and their relative risk  | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature | Base Req Title                   | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                            | Description   | Initial Source              | Priority         |
|-------------------------------|---------|----------------------------------|---|----------------|-------------|------------|----------------------------------|---|-----------------------------|------------------|
| Asset Availability and Status | Status  | Condition Assessment Risk        | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy                    | Fixed Guideway | Bridge      | General    | Condition Assessment Risk        | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy (e.g. entire Bridge) | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Status  | Asset Rate and Usage Calculation | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | Fixed Guideway | Signal      | General    | Asset Rate and Usage Calculation | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation.   | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status  | Import External Transaction Data | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | Fixed Guideway | Signal      | General    | Import External Transaction Data | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|-------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Asset Availability and Status | Status  | Condition Assessment                  | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment | Fixed Guideway | Signal      | General    | Condition Assessment                  | Ability to record, store, and report condition assessment and criteria guidance as well as previous ratings and work performed since the last assessment - for assets that have a physical condition and are not simply working or not working | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Status  | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person  | Fixed Guideway | Signal      | General    | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Status  | Condition Rating System               | Support a condition rating system for assets (e.g. 1 to 5)  | Fixed Guideway | Signal      | General    | Condition Rating System               | Support a condition rating system for assets (e.g. 1 to 5)   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy              | Fixed Guideway | Signal      | General    | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Status  | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile  | Fixed Guideway | Signal      | General    | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile   | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature      | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                     | Description   | Initial Source              | Priority         |
|-------------------------------|--------------|------------------------------------|--|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Asset Availability and Status | Status       | Asset Assignment                   | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)   | Fixed Guideway | Signal      | General    | Asset Assignment                          | Ability to assign assets to a department or end user (including external ones) with a start / end date  | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Availability | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | Fixed Guideway | Track       | General    | Record Availability Changes and Durations | Ability to record track availability changes and durations that correlate to asset hierarchy such as In Service, Restricted (through either condition based - a repair is needed or protective and whether it is temporary or permanent, Out of Service, etc) | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Availability | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | Fixed Guideway | Track       | General    | Availability - Seasonal Variations        | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Availability | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Fixed Guideway | Track       | General    | Out of Service Coding and Duration        | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting                                | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature      | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description  | Initial Source              | Priority         |
|-------------------------------|--------------|------------------------------------|--|----------------|-------------|------------|------------------------------------|--|-----------------------------|------------------|
| Asset Availability and Status | Availability | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | Fixed Guideway | Bridge      | General    | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Availability | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | Fixed Guideway | Bridge      | General    | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Availability | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Fixed Guideway | Bridge      | General    | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Availability | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | Fixed Guideway | Signal      | General    | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. service down or intentional maintenance)   | ARRC Group Interview        | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category              | Feature      | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|-------------------------------|--------------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Asset Availability and Status | Availability | Out of Service Coding and Duration                | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Fixed Guideway | Signal      | General    | Out of Service Coding and Duration                | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, technician, outside service/vendor, etc.) | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Availability | Availability - Seasonal Variations                | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | Fixed Guideway | Signal      | General    | Availability - Seasonal Variations                | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Configuration Management      | General      | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.   | Fixed Guideway | Track       | General    | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.   | ARRC Prioritize from Matrix | Optional (Low)   |
| Configuration Management      | General      | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc.   | Fixed Guideway | Track       | General    | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc.                                 | ARRC Prioritize from Matrix | Desired (Medium) |
| Configuration Management      | General      | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | Fixed Guideway | Track       | General    | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category         | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|--------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Configuration Management | General | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.         | Fixed Guideway | Bridge      | General    | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.         | ARRC Prioritize from Matrix | Not Set          |
| Configuration Management | General | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc. | Fixed Guideway | Bridge      | General    | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc. | ARRC Prioritize from Matrix | Desired (Medium) |
| Configuration Management | General | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | Fixed Guideway | Bridge      | General    | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | ARRC Prioritize from Matrix | Not Set          |
| Configuration Management | General | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | Fixed Guideway | Signal      | General    | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | ARRC Prioritize from Matrix | Optional (Low)   |
| Configuration Management | General | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc. | Fixed Guideway | Signal      | General    | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc. | ARRC Prioritize from Matrix | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category         | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|--------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Configuration Management | General | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data. | Fixed Guideway | Signal      | General    | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.                               | ARRC Prioritize from Matrix | Essential (High) |
| Fault/Problem Detection  | General | Capture Reasons for Failure                       | Ability to capture reason(s) for failure; preferably through standardized coding   | Fixed Guideway | Track       | General    | Capture Reasons for Failure                       | Ability to capture reason(s) for failure; preferably through standardized coding   | ARRC Prioritize from Matrix | Desired (Medium) |
| Fault/Problem Detection  | General | Data from External Asset Management Systems       | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues     | Fixed Guideway | Track       | General    | Data from External Asset Management Systems       | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues                                   | ARRC Prioritize from Matrix | Optional (Low)   |
| Fault/Problem Detection  | General | Data from Diagnostic Systems                      | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors  | Fixed Guideway | Track       | General    | Correlate Condition Assessment to Assets          | Ability to correlate technical condition assessment methods for rail (Holland), ties (Georgetown), and road bed (ground penetrating radar) to assets through ARRC Mile Posts | ARRC Group Interview        | Desired (Medium) |
| Fault/Problem Detection  | General | Data from Diagnostic Systems                      | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors  | Fixed Guideway | Track       | General    | Condition Assessment Comparison                   | Ability to compare technical condition assessment for rail (Holland), ties (Georgetown), and road bed (ground penetrating radar) over time                                   | ARRC Group Interview        | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category        | Feature | Base Req Title                              | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                       | Description  | Initial Source              | Priority         |
|-------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Fault/Problem Detection | General | Data from External Asset Management Systems | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues | Fixed Guideway | Bridge      | General    | Data from External Asset Management Systems | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues   | ARRC Prioritize from Matrix | Not Set          |
| Fault/Problem Detection | General | Capture Reasons for Failure                 | Ability to capture reason(s) for failure; preferably through standardized coding   | Fixed Guideway | Bridge      | General    | Capture Reasons for Failure                 | Ability to capture reason(s) for failure; preferably through standardized coding   | ARRC Prioritize from Matrix | Optional (Low)   |
| Fault/Problem Detection | General | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors                                    | Fixed Guideway | Bridge      | General    | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors  | ARRC Prioritize from Matrix | Desired (Medium) |
| Fault/Problem Detection | General | Capture Reasons for Failure                 | Ability to capture reason(s) for failure; preferably through standardized coding   | Fixed Guideway | Signal      | General    | Capture Reasons for Failure                 | Ability to capture reason(s) for failure; preferably through standardized coding   | ARRC Group Interview        | Essential (High) |
| Fault/Problem Detection | General | Data from External Asset Management Systems | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues | Fixed Guideway | Signal      | General    | Data from Signal Management Systems         | Ability to hyperlink to or compile information from various existing communication management systems which may include configuration, status, and notifications (PRTG, Subversion, etc) | ARRC Group Interview        | Essential (High) |
| Fault/Problem Detection | General | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors                                    | Fixed Guideway | Signal      | General    | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors  | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                   | Feature | Base Req Title  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|------------------------------------|---------|---|---|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | PM Job Plan   | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed         | Fixed Guideway | Track       | General    | PM Job Plan   | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed    | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | Digital-First Inspections                             | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements | Fixed Guideway | Track       | General    | Digital-First Inspections                             | Subject to regulatory requirements and/or approval provide ability to record inspections digitally in the field (with an offline mode available)   | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Generate Work Orders from Inspection Results          | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)  | Fixed Guideway | Track       | General    | Generate Work Orders from Inspection Results          | Ability to generate or identify work orders created from inspection results (corrective actions)   | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Inspection Schedules                                  | Support ability to schedule recurring inspections that will automatically create a work order   | Fixed Guideway | Track       | General    | Inspection Schedules                                  | Support ability to schedule recurring inspections that will create a work order (such as twice weekly FRA)   | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)      | Fixed Guideway | Track       | General    | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA) | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                   | Feature | Base Req Title                             | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                      | Description   | Initial Source              | Priority         |
|------------------------------------|---------|--|---|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Inspection Data Retention Periods          | Ability to retain electronic copieds of records indefinitely; Federal agencies usually allow for only a certain period of time                                | Fixed Guideway | Track       | General    | Inspection Data Retention Periods          | Ability to retain electronic copieds of records indefinitely; Federal agencies usually allow for only a certain period of time                                | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | Digital Workflows for Review and Approval  | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | Fixed Guideway | Track       | General    | Digital Workflows for Review and Approval  | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics          | Fixed Guideway | Track       | General    | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics          | ARRC Prioritize from Matrix | Not Set          |
| Planned Maintenance and Inspection | General | PM Service Calculation                     | Ability to calculate PM servce requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)                       | Fixed Guideway | Track       | General    | PM Service Calculation                     | Ability to calculate PM servce requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)                       | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Automated Compliance Tracking and Planning | Automated planning and compliance tracking of regulatory inspection requirements  | Fixed Guideway | Track       | General    | Automated Compliance Tracking and Planning | Automated planning and compliance tracking of regulatory inspection requirements  | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                   | Feature | Base Req Title                            | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                    | Description  | Initial Source              | Priority         |
|------------------------------------|---------|---|---|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Incorporate Season and Weather            | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                                       | Fixed Guideway | Track       | General    | Incorporate Season and Weather           | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and  | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | PM Notification                           | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)                         | Fixed Guideway | Track       | General    | PM Notification                          | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)  | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | Contractors for Preventative Maintenance  | Ability to define vendors which are used for PM and inspection activities on assets, systems or components  | Fixed Guideway | Track       | General    | Contractors for Preventative Maintenance | Ability to define vendors which are used for PM and inspection activities on assets, systems or components   | ARRC Prioritize from Matrix | Not Set          |
| Planned Maintenance and Inspection | General | Digital Workflows for Review and Approval | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | Fixed Guideway | Bridge      | General    | Digital Workflows                        | Support digital workflows for review and approval (e.g. Inspectors, Bridge Engineer) for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Inspection Schedules                      | Support ability to schedule recurring inspections that will automatically create a work order   | Fixed Guideway | Bridge      | General    | Inspection Schedules                     | Support ability to schedule recurring inspections on assets that will create a work order  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                   | Feature | Base Req Title  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source       | Priority         |
|------------------------------------|---------|---|---|----------------|-------------|------------|--|--|----------------------|------------------|
| Planned Maintenance and Inspection | General | Digital-First Inspections                             | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements | Fixed Guideway | Bridge      | General    | Digital Inspections                          | Capture inspections on a digital form (including an offline mode) so the results are stored directly in a database   | ARRC Group Interview | Essential (High) |
| Planned Maintenance and Inspection | General | Generate Work Orders from Inspection Results          | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)  | Fixed Guideway | Bridge      | General    | Generate Work Orders from Inspection Results | Ability to generate or identify work orders created from inspection results (corrective actions)   | ARRC Group Interview | Essential (High) |
| Planned Maintenance and Inspection | General | Contractors for Preventative Maintenance              | Ability to define vendors which are used for PM and inspection activities on assets, systems or components  | Fixed Guideway | Bridge      | General    | Support Inspection Contractors               | Support inspections that are performed by external contractors; this may impact inspection data format, how it is received from contractor, and any digital workflows. There are a few bridges where external contractors have been used for inspection. | ARRC Group Interview | Desired (Medium) |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)      | Fixed Guideway | Bridge      | General    | Common Inspection Record to Satisfy FRA /FTA | Desire a means of managing asset and inspection information that can be used to satisfy both FRA and FTA requirements  | ARRC Group Interview | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                   | Feature | Base Req Title                             | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                      | Description  | Initial Source              | Priority         |
|------------------------------------|---------|--|--|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Inspection Data Retention Periods          | Ability to retain electronic copieds of records indefinitely; Federal agencies usually allow for only a certain period of time                       | Fixed Guideway | Bridge      | General    | Inspection Data Retention Periods          | Ability to retain electronic copieds of records indefinitely; Federal agencies usually allow for only a certain period of time                       | ARRC Group Interview        | Desired (Medium) |
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics | Fixed Guideway | Bridge      | General    | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics | ARRC Prioritize from Matrix | Not Set          |
| Planned Maintenance and Inspection | General | Incorporate Season and Weather             | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                              | Fixed Guideway | Bridge      | General    | Incorporate Season and Weather             | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                              | ARRC Prioritize from Matrix | Not Set          |
| Planned Maintenance and Inspection | General | PM Service Calculation                     | Ability to calculate PM servce requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)              | Fixed Guideway | Bridge      | General    | PM Service Calculation                     | Ability to calculate PM servce requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)              | ARRC Prioritize from Matrix | Not Set          |
| Planned Maintenance and Inspection | General | Automated Compliance Tracking and Planning | Automated planning and compliance tracking of regulatory inspection requirements   | Fixed Guideway | Bridge      | General    | Automated Compliance Tracking and Planning | Automated planning and compliance tracking of regulatory inspection requirements   | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                   | Feature | Base Req Title  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | PM Job Plan   | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed    | Fixed Guideway | Bridge      | General    | PM Job Plan   | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed    | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | PM Notification                                       | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)              | Fixed Guideway | Bridge      | General    | PM Notification                                       | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)              | ARRC Prioritize from Matrix | Not Set          |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA) | Fixed Guideway | Signal      | General    | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA) | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | Contractors for Preventative Maintenance              | Ability to define vendors which are used for PM and inspection activities on assets, systems or components   | Fixed Guideway | Signal      | General    | Contractors for Preventative Maintenance              | Ability to define vendors which are used for PM and inspection activities on assets, systems or components   | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                   | Feature | Base Req Title                               | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source              | Priority         |
|------------------------------------|---------|--|--|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Incorporate Season and Weather               | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                              | Fixed Guideway | Signal      | General    | Incorporate Season and Weather               | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and  | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Inspection Schedules                         | Support ability to schedule recurring inspections that will automatically create a work order  | Fixed Guideway | Signal      | General    | Inspection Schedules                         | Support ability to schedule recurring inspections that will create a work order for regulatory and non-regulatory purposes including 30 day, 90 day, and annual inspections. | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Generate Work Orders from Inspection Results | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)                                       | Fixed Guideway | Signal      | General    | Generate Work Orders from Inspection Results | Ability to generate work orders from inspection results (these would be corrective actions)  | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists   | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics | Fixed Guideway | Signal      | General    | Pre-Use and Frequent Inspection Checklists   | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics                         | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Automated Compliance Tracking and Planning   | Automated planning and compliance tracking of regulatory inspection requirements   | Fixed Guideway | Signal      | General    | Automated Compliance Tracking and Planning   | Automated planning and compliance tracking of regulatory inspection requirements   | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                   | Feature | Base Req Title                            | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                     | Description   | Initial Source              | Priority         |
|------------------------------------|---------|---|---|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | PM Job Plan                               | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed               | Fixed Guideway | Signal      | General    | PM Job Plan                               | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed               | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | PM Service Calculation                    | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)                      | Fixed Guideway | Signal      | General    | PM Service Calculation                    | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)                      | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Digital-First Inspections                 | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements       | Fixed Guideway | Signal      | General    | Digital-First Inspections                 | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements       | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | Digital Workflows for Review and Approval | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | Fixed Guideway | Signal      | General    | Digital Workflows for Review and Approval | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                             | Description  | Initial Source              | Priority       |
|---------------------------------------|---------|-----------------------------------|--|----------------|-------------|------------|-----------------------------------|--|-----------------------------|----------------|
| Planned Maintenance and Inspection    | General | PM Notification                   | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)  | Fixed Guideway | Signal      | General    | PM Notification                   | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)  | ARRC Prioritize from Matrix | Optional (Low) |
| Planned Maintenance and Inspection    | General | Inspection Data Retention Periods | Ability to retain electronic copied of records indefinitely; Federal agencies usually allow for only a certain period of time  | Fixed Guideway | Signal      | General    | Inspection Data Retention Periods | Ability to retain electronic copied of records indefinitely; Federal agencies usually allow for only a certain period of time  | ARRC Prioritize from Matrix | Optional (Low) |
| Work Orders and Work Order Management | General | Parts on Work Order               | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card  | Fixed Guideway | Track       | General    | Parts on Work Order               | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card  | ARRC Prioritize from Matrix | Optional (Low) |
| Work Orders and Work Order Management | General | Mechanic/Technican Records Work   | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | Fixed Guideway | Track       | General    | Mechanic/Technican Records Work   | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | ARRC Prioritize from Matrix | Not Set        |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|--|----------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event                                 | Fixed Guideway | Track       | General    | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event                                 | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Contractor or Vendor Work            | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders   | Fixed Guideway | Track       | General    | Contractor or Vendor Work            | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Work Packages                        | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assesement, complaint, etc   | Fixed Guideway | Track       | General    | Work Packages                        | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assesement, complaint, etc   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Minor Work                           | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | Fixed Guideway | Track       | General    | Minor Work                           | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                       | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                      | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|---|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment   | Fixed Guideway | Track       | General    | Group Work Orders by Geographic Area       | Group work orders by geographic area so they do not need to be manually grouped for review and assignment   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Custom Categorize Work Orders        | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.                          | Fixed Guideway | Track       | General    | Custom Categorize Work Orders              | Ability to categorize work orders in a custom way such as by campaign, program, or season   | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders   | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling  | Fixed Guideway | Track       | General    | Support Future and Unscheduled Work Orders | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling  | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Cost Reporting                       | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | Fixed Guideway | Track       | General    | Cost Reporting                             | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Scheduling and Planning              | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)  | Fixed Guideway | Track       | General    | Steady-State Planning                      | Ability to use steady-state level of resourcing to plan and prioritize work   | ARRC Group Interview        | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title             | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|----------------------------|--|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | End-User Field Service     | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)                               | Fixed Guideway | Track       | General    | End-User Field Service                             | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)                               | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Failure Analysis           | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order. | Fixed Guideway | Track       | General    | Failure Analysis                                   | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order. | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Scheduling and Planning    | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)   | Fixed Guideway | Track       | General    | Continuous Work Planning (Schedule, Inspect, Work) | Support work planning that includes schedule-driven inspections and work activity (i.e. has to be more actionable and manageable than a list of open work orders)                    | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Mobile Digital Work Orders | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.  | Fixed Guideway | Track       | General    | Mobile Work Orders                                 | Ability to view, initiate, update, and close work orders in the field in online or offline mode.   | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                          | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------|--|----------------|-------------|------------|--------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Checklists (Digital)            | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | Fixed Guideway | Track       | General    | Checklists (Digital)           | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Source               | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)   | Fixed Guideway | Track       | General    | Work Order Source              | Ability to record the source of a work order (e.g. result of an inspection or an operations observation)   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Capture All Work on Work Orders | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | Fixed Guideway | Track       | General    | Capture all Work on Work Order | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | ARRC Group Interview        | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                          | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                   | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|---|---|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Work Order Attachments                  | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order  | Fixed Guideway | Track       | General    | Work Order Attachments                  | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order  | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Assign Work Orders                      | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location                  | Fixed Guideway | Track       | General    | Assign Work Orders                      | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location  | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Ease of Use                             | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding) | Fixed Guideway | Track       | General    | Ease of Use                             | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy  | Fixed Guideway | Track       | General    | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy including District, Sections, Mainline / Branch / Yard, Mile Post / Track, Tangent / Curve, Small Culverts | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Usage Readings                          | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)                                | Fixed Guideway | Track       | General    | Usage Readings                          | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)  | ARRC Prioritize from Matrix | Not Set          |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                 | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|---------------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Work Order Notifications              | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)   | Fixed Guideway | Track       | General    | Work Order Notifications              | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Reporting Tools                       | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Fixed Guideway | Track       | General    | Reporting Tools                       | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations   | Fixed Guideway | Track       | General    | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for single locations as well as start and end points for linear (possibly also midpoints)  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders       | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users   | Fixed Guideway | Track       | General    | Estimated Effort on Work Orders       | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users           | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Task Coding on Work Orders            | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs | Fixed Guideway | Track       | General    | Task Coding                           | Support task coding on work orders to identify the work activity (e.g. diagnose, repair, replace, clean, inspect, gauging)                 | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | End-Users and Work Orders             | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders   | Fixed Guideway | Track       | General    | End-Users and Work Orders             | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened   | Fixed Guideway | Track       | General    | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened                             | ARRC Prioritize from Matrix | Not Set          |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Reimbursable Work                                 | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance   | Fixed Guideway | Track       | General    | Reimbursable Work                                 | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | Fixed Guideway | Track       | General    | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Record Checklist and Results                      | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order   | Fixed Guideway | Track       | General    | Record Checklist and Results                      | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Prioritization of Work Orders                     | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | Fixed Guideway | Track       | General    | Prioritization of Work Orders                     | Ability to prioritize or rank work orders  | ARRC Group Interview        | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes    | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | Fixed Guideway | Track       | General    | Cost Accounting - Handling Changes    | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution                                       | Fixed Guideway | Track       | General    | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution                                       | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Integrate Financial System            | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | Fixed Guideway | Track       | General    | Integrate Financial System            | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX)         | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable) | Fixed Guideway | Track       | General    | Categorize Costs (OPEX/CAPEX)         | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable) | ARRC Group Interview        | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|--|----------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | SLAs for Response Times              | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | Fixed Guideway | Track       | General    | SLAs for Response Times              | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations       | Accommodate multiple shops and work locations including ARRC shops and work in the field   | Fixed Guideway | Track       | General    | Multiple Shop / Work Locations       | Accommodate multiple shops and work locations including ARRC shops and work in the field   | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Work Packages                        | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assesement, complaint, etc   | Fixed Guideway | Bridge      | General    | Work Packages                        | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assesement, complaint, etc   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations       | Accommodate multiple shops and work locations including ARRC shops and work in the field   | Fixed Guideway | Bridge      | General    | Multiple Shop / Work Locations       | Accommodate multiple shops and work locations including ARRC shops and work in the field   | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | Fixed Guideway | Bridge      | General    | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | Fixed Guideway | Bridge      | General    | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Attachments                            | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | Fixed Guideway | Bridge      | General    | Work Order Attachments                            | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Cost Reporting                                    | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography  | Fixed Guideway | Bridge      | General    | Cost Reporting                                    | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography  | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | SLAs for Response Times                           | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | Fixed Guideway | Bridge      | General    | SLAs for Response Times                           | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title           | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                    | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------|---|----------------|-------------|------------|--------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | End-User Field Service   | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)  | Fixed Guideway | Bridge      | General    | End-User Field Service   | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)  | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Reporting Tools          | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Fixed Guideway | Bridge      | General    | Reporting Tools          | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Work Order Notifications | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)   | Fixed Guideway | Bridge      | General    | Work Order Notifications | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)   | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Checklists (Digital)                  | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | Fixed Guideway | Bridge      | General    | Checklists (Digital)                  | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Usage Readings                        | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)   | Fixed Guideway | Bridge      | General    | Usage Readings                        | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location   | Fixed Guideway | Bridge      | General    | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location   | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution   | Fixed Guideway | Bridge      | General    | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution   | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                           | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------|--|----------------|-------------|------------|---------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Failure Analysis                | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.   | Fixed Guideway | Bridge      | General    | Failure Analysis                | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Mechanic/Technican Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | Fixed Guideway | Bridge      | General    | Mechanic/Technican Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Integrate Financial System      | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | Fixed Guideway | Bridge      | General    | Integrate Financial System      | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                       | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|---|----------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX)        | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable)) | Fixed Guideway | Bridge      | General    | Categorize Costs (OPEX/CAPEX)        | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPX (e.g. ARRC, Agency (if application) or Other (if applicable)) | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | Contractor or Vendor Work            | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders  | Fixed Guideway | Bridge      | General    | Contractor Work and Costs            | Ability to record contractor work activity (inspection, repair, replacement, etc.) and costs against a work order  | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | Ease of Use                          | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)   | Fixed Guideway | Bridge      | General    | Ease of Use                          | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes   | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.  | Fixed Guideway | Bridge      | General    | Cost Accounting - Handling Changes   | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment   | Fixed Guideway | Bridge      | General    | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                          | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------|--|----------------|-------------|------------|--------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Minor Work                      | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | Fixed Guideway | Bridge      | General    | Minor Work                     | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Mobile Digital Work Orders      | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.  | Fixed Guideway | Bridge      | General    | Mobile Work Orders             | Ability to view, initiate, update, and close work orders in the field in online or offline mode. Supports inspections and bridge gang work activity.   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Capture All Work on Work Orders | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | Fixed Guideway | Bridge      | General    | Capture all Work on Work Order | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | End-Users and Work Orders       | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders   | Fixed Guideway | Bridge      | General    | End-Users and Work Orders      | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders   | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                      | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Parts on Work Order                   | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card | Fixed Guideway | Bridge      | General    | Parts on Work Order                        | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders    | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling        | Fixed Guideway | Bridge      | General    | Support Future and Unscheduled Work Orders | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling        | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened                | Fixed Guideway | Bridge      | General    | Capture Usage Readings on Work Orders      | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened                | ARRC Prioritize from Matrix | Not Set          |
| Work Orders and Work Order Management | General | Reimbursable Work                     | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance                  | Fixed Guideway | Bridge      | General    | Reimbursable Work                          | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance                  | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Scheduling and Planning               | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)                    | Fixed Guideway | Bridge      | General    | Scheduling and Planning                    | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)                    | ARRC Group Interview        | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                          | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                   | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Work Order Source                       | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated) | Fixed Guideway | Bridge      | General    | Work Order Source                       | Ability to record the source of a work order (e.g. result of an inspection or an operations observation)   | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | Fixed Guideway | Bridge      | General    | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy (e.g. the Bridge in general instead of specific Spans)                      | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders         | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users                                   | Fixed Guideway | Bridge      | General    | Estimated Effort on Work Orders         | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling  | CTG Consultant       | Desired (Medium) |
| Work Orders and Work Order Management | General | Custom Categorize Work Orders           | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling. | Fixed Guideway | Bridge      | General    | Custom Categorize Work Orders           | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling. | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Prioritization of Work Orders           | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | Fixed Guideway | Bridge      | General    | Prioritization of Work Orders           | Ability to prioritize or rank work orders  | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Task Coding on Work Orders            | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs | Fixed Guideway | Bridge      | General    | Task Coding                           | Support task coding on work orders to identify the work activity (e.g. diagnose, repair, replace, install, inspect, etc)                         | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Record Checklist and Results          | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order   | Fixed Guideway | Bridge      | General    | Record Checklist and Results          | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order               | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations  | Fixed Guideway | Bridge      | General    | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations  | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Work Packages                         | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assesement, complaint, etc   | Fixed Guideway | Signal      | General    | Work Packages                         | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assesement, complaint, etc | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                          | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------|--|----------------|-------------|------------|--------------------------------|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Capture All Work on Work Orders | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently | Fixed Guideway | Signal      | General    | Capture all Work on Work Order | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Source               | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)                   | Fixed Guideway | Signal      | General    | Work Order Source              | Ability to record the source of a work order (e.g. result of an inspection, end user request, alarm/notification, or internally initiated)   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Mobile Digital Work Orders      | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.  | Fixed Guideway | Signal      | General    | Mobile Work Orders             | Ability to view, initiate, update, and close work orders in the field in online or offline mode.   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Ease of Use                     | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | Fixed Guideway | Signal      | General    | Task Coding Ease of Use        | Focus on the ease of use in task coding - as an example filter task codes available on a work order to those that are applicable for the asset                                       | ARRC Group Interview | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|--|----------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Task Coding on Work Orders           | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs | Fixed Guideway | Signal      | General    | Task Coding on Work Orders           | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Prioritization of Work Orders        | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | Fixed Guideway | Signal      | General    | Prioritization of Work Orders        | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | Fixed Guideway | Signal      | General    | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Cost Reporting                       | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography                            | Fixed Guideway | Signal      | General    | Cost Reporting                       | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography                            | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                           | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------|--|----------------|-------------|------------|---------------------------------|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users   | Fixed Guideway | Signal      | General    | Estimated Effort on Work Orders | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Assign Work Orders              | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location   | Fixed Guideway | Signal      | General    | Assign Work Orders              | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Notifications        | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)                      | Fixed Guideway | Signal      | General    | Work Order Notification         | Ability to configure notifications for work including inspections or work orders to recipients (end users, technicians, management, operations) based on criteria and action(e.g. newly created, modified, closed) | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Failure Analysis                | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order. | Fixed Guideway | Signal      | General    | Failure Analysis                | Ability to analyze failures and their causes; particularly when there are system interdependencies (e.g. power, network)   | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                 | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                          | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------|--|----------------|-------------|------------|--------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations | Accommodate multiple shops and work locations including ARRC shops and work in the field   | Fixed Guideway | Signal      | General    | Multiple Shop / Work Locations | Accommodate multiple shops and work locations including ARRC shops and work in the field   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Reimbursable Work              | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance   | Fixed Guideway | Signal      | General    | Reimbursable Work              | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | SLAs for Response Times        | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them                                 | Fixed Guideway | Signal      | General    | SLAs for Response Times        | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them                                 | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | End-Users and Work Orders      | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders             | Fixed Guideway | Signal      | General    | End-Users and Work Orders      | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders             | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | End-User Field Service         | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution) | Fixed Guideway | Signal      | General    | End-User Field Service         | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution) | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                          | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                   | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Parts on Work Order                     | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchased with a purchasing card         | Fixed Guideway | Signal      | General    | Parts on Work Order                     | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchased with a purchasing card         | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Contractor or Vendor Work               | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders                         | Fixed Guideway | Signal      | General    | Contractor or Vendor Work               | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders                         | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes      | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs. | Fixed Guideway | Signal      | General    | Cost Accounting - Handling Changes      | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs. | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | Fixed Guideway | Signal      | General    | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Integrate Financial System              | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | Fixed Guideway | Signal      | General    | Integrate Financial System              | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders   | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened                         | Fixed Guideway | Signal      | General    | Capture Usage Readings on Work Orders   | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened                         | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders                | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | Fixed Guideway | Signal      | General    | Support Future and Unscheduled Work Orders        | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Usage Readings                                    | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)   | Fixed Guideway | Signal      | General    | Usage Readings                                    | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | Fixed Guideway | Signal      | General    | Checklist Criteria for Repair - Create Work Order | Ability to define criteria for repair or replacement on checklist items. A work order to address is automatically created / or a line item on a work order if already created from this checklist) | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|-------------------------------|--|----------------|-------------|------------|-------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Checklists (Digital)          | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | Fixed Guideway | Signal      | General    | Digital Checklists            | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order / asset | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX) | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable)                                 | Fixed Guideway | Signal      | General    | Categorize Costs (OPEX/CAPEX) | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPX (e.g. ARRC, Agency (if application) or Other (if applicable)         | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Record Checklist and Results  | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order   | Fixed Guideway | Signal      | General    | Record Checklist and Results  | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------|--|----------------|-------------|------------|-------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Custom Categorize Work Orders   | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.   | Fixed Guideway | Signal      | General    | Custom Categorize Work Orders | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Mechanic/Technican Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | Fixed Guideway | Signal      | General    | Record of Work by Technican   | Only person who knows what is happening on the work order is the technican and they should have ability to see the info they need and also record as it is done (as easily as possible)   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Minor Work                      | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour)     | Fixed Guideway | Signal      | General    | Minor Work                    | Ability to quickly record minor work such as inspection and service (i.e. ability to avoid using bucket/generic work order for non-parts work less than 15 minutes) - repetitive minor fixes could indicate a recurring problem | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|--------------------------------------|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Work Order Attachments                | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | Fixed Guideway | Signal      | General    | Work Order Attachments               | Automatically output or link / present (if digital) procedures, checklists, and bills of materials needed for work order   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Scheduling and Planning               | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)   | Fixed Guideway | Signal      | General    | Scheduling and Planning              | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order  | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | Fixed Guideway | Signal      | General    | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution             | Fixed Guideway | Signal      | General    | Work Order 3C                        | Ability to record Complaint / Cause / Correction with simple coding to allow for identifying common problems and their resolution  | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|---------------------------------------|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Reporting Tools                       | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Fixed Guideway | Signal      | General    | Reporting Tools                       | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations   | Fixed Guideway | Signal      | General    | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations  | ARRC Group Interview | Essential (High) |
| Materials Management                  | General | Material Inventory Field Locations    | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post)   | Fixed Guideway | Track       | General    | Material Inventory Field Locations    | Ability to easily add and remove materials (ties, ballast, etc.) in field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post)                  | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category     | Feature | Base Req Title                 | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                          | Description   | Initial Source              | Priority       |
|----------------------|---------|--------------------------------|---|----------------|-------------|------------|--------------------------------|---|-----------------------------|----------------|
| Materials Management | General | Min-Max Parts Inventory        | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes | Fixed Guideway | Track       | General    | Min-Max Parts Inventory        | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes | ARRC Prioritize from Matrix | Optional (Low) |
| Materials Management | General | Equipment Check-Out / Check-In | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | Fixed Guideway | Track       | General    | Equipment Check-Out / Check-In | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | ARRC Prioritize from Matrix | Not Set        |
| Materials Management | General | Component Parts - Criticality  | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed                  | Fixed Guideway | Track       | General    | Component Parts - Criticality  | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed                  | ARRC Prioritize from Matrix | Optional (Low) |
| Materials Management | General | Component Parts - Obsolescence | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)       | Fixed Guideway | Track       | General    | Component Parts - Obsolescence | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)       | ARRC Prioritize from Matrix | Not Set        |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category     | Feature | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description  | Initial Source              | Priority         |
|----------------------|---------|-------------------------------|--|----------------|-------------|------------|-------------------------------|--|-----------------------------|------------------|
| Materials Management | General | Inventory Purchase Plan       | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system) | Fixed Guideway | Track       | General    | Inventory Purchase Plan       | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system) | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management | General | Component Parts - Criticality | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed                               | Fixed Guideway | Bridge      | General    | Component Parts - Criticality | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed                               | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management | General | Min-Max Parts Inventory       | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes              | Fixed Guideway | Bridge      | General    | Min-Max Parts Inventory       | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes              | ARRC Prioritize from Matrix | Desired (Medium) |
| Materials Management | General | Inventory Purchase Plan       | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system) | Fixed Guideway | Bridge      | General    | Inventory Purchase Plan       | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system) | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category     | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description  | Initial Source              | Priority         |
|----------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|--|-----------------------------|------------------|
| Materials Management | General | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)   | Fixed Guideway | Bridge      | General    | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management | General | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | Fixed Guideway | Bridge      | General    | Material Inventory Field Locations | Ability to easily add and remove materials (ties, pilings, spans, etc.) in field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post). Note that structures / components that have been uninstalled/recovered and could be reused should have any asset data follow | ARRC Group Interview        | Desired (Medium) |
| Materials Management | General | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | Fixed Guideway | Bridge      | General    | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)   | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category     | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|----------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Materials Management | General | Min-Max Parts Inventory            | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes   | Fixed Guideway | Signal      | General    | Min-Max Parts Inventory            | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes   | ARRC Prioritize from Matrix | Desired (Medium) |
| Materials Management | General | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | Fixed Guideway | Signal      | General    | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management | General | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | Fixed Guideway | Signal      | General    | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management | General | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)   | Fixed Guideway | Signal      | General    | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)   | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category               | Feature | Base Req Title                   | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                            | Description  | Initial Source              | Priority         |
|--------------------------------|---------|----------------------------------|--|----------------|-------------|------------|----------------------------------|--|-----------------------------|------------------|
| Materials Management           | General | Inventory Purchase Plan          | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)                             | Fixed Guideway | Signal      | General    | Inventory Purchase Plan          | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)                             | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management           | General | Component Parts - Criticality    | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed   | Fixed Guideway | Signal      | General    | Component Parts - Criticality    | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed   | ARRC Group Interview        | Essential (High) |
| Component Tracking and Rebuild | General | Component Serial Number Tracking | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset") | Fixed Guideway | Track       | General    | Component Serial Number Tracking | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset") | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Part Rebuild                     | Indicator that a part in inventory or being installed is a rebuild   | Fixed Guideway | Track       | General    | Part Rebuild                     | Indicator that a part in inventory or being installed is a rebuild   | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category               | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|--------------------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | Fixed Guideway | Track       | General    | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Component Service Life             | Ability to specify expected service life of a component or part   | Fixed Guideway | Track       | General    | Component Service Life             | Ability to specify expected service life of a component or part   | ARRC Prioritize from Matrix | Optional (Low)   |
| Component Tracking and Rebuild | General | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | Fixed Guideway | Track       | General    | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | ARRC Prioritize from Matrix | Optional (Low)   |
| Component Tracking and Rebuild | General | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | Fixed Guideway | Track       | General    | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Component Serial Number Tracking   | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")              | Fixed Guideway | Bridge      | General    | Component Serial Number Tracking   | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")              | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category               | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|--------------------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Component Tracking and Rebuild | General | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | Fixed Guideway | Bridge      | General    | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | ARRC Prioritize from Matrix | Optional (Low)   |
| Component Tracking and Rebuild | General | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | Fixed Guideway | Bridge      | General    | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | ARRC Prioritize from Matrix | Optional (Low)   |
| Component Tracking and Rebuild | General | Component Service Life             | Ability to specify expected service life of a component or part   | Fixed Guideway | Bridge      | General    | Component Service Life             | Ability to specify expected service life of a component or part   | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | Fixed Guideway | Bridge      | General    | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | ARRC Prioritize from Matrix | Optional (Low)   |
| Component Tracking and Rebuild | General | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | Fixed Guideway | Bridge      | General    | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | ARRC Prioritize from Matrix | Optional (Low)   |
| Component Tracking and Rebuild | General | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | Fixed Guideway | Signal      | General    | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | ARRC Prioritize from Matrix | Optional (Low)   |
| Component Tracking and Rebuild | General | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | Fixed Guideway | Signal      | General    | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category               | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|--------------------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | Fixed Guideway | Signal      | General    | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | ARRC Prioritize from Matrix | Essential (High) |
| Component Tracking and Rebuild | General | Component Service Life             | Ability to specify expected service life of a component or part   | Fixed Guideway | Signal      | General    | Component Service Life             | Ability to specify expected service life of a component or part   | ARRC Prioritize from Matrix | Essential (High) |
| Component Tracking and Rebuild | General | Component Serial Number Tracking   | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")              | Fixed Guideway | Signal      | General    | Component Serial Number Tracking   | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")              | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | Fixed Guideway | Signal      | General    | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category    | Feature | Base Req Title | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title    | Description  | Initial Source              | Priority       |
|---------------------|---------|----------------|--|----------------|-------------|------------|----------|--|-----------------------------|----------------|
| Warranty Management | General | Warranty       | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | Fixed Guideway | Track       | General    | Warranty | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | ARRC Prioritize from Matrix | Optional (Low) |
| Warranty Management | General | Warranty       | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | Fixed Guideway | Bridge      | General    | Warranty | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | ARRC Prioritize from Matrix | Optional (Low) |
| Warranty Management | General | Warranty       | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | Fixed Guideway | Signal      | General    | Warranty | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchaed or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | ARRC Prioritize from Matrix | Optional (Low) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category               | Feature | Base Req Title                               | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title  | Description   | Initial Source              | Priority         |
|--------------------------------|---------|--|--|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Capital Projects Reporting                   | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source | Fixed Guideway | Track       | General    | Capital Projects Reporting                   | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)  | Fixed Guideway | Track       | General    | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)   | ARRC Prioritize from Matrix | Desired (Medium) |
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting            | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement  | Fixed Guideway | Track       | General    | Total Cost of Ownership Reporting            | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category               | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|--------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence) | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)  | Fixed Guideway | Track       | General    | Replacement Plan (ULB / Obsolescence) | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Capital Projects and Campaigns | General | Capital Projects Reporting            | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source | Fixed Guideway | Bridge      | General    | Planning                              | Support multi-year asset planning (currently Bridge has 5 year plan with other list with items in 10/15 year period) - inputs to planning include condition assessment / ranking, traffic volume, budget, and prioritization | ARRC Group Interview        | Essential (High) |
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence) | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)  | Fixed Guideway | Bridge      | General    | Replacement Plan (ULB / Obsolescence) | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)  | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category               | Feature | Base Req Title                               | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title  | Description   | Initial Source              | Priority         |
|--------------------------------|---------|--|--|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)  | Fixed Guideway | Bridge      | General    | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)   | ARRC Prioritize from Matrix | Desired (Medium) |
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting            | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement  | Fixed Guideway | Bridge      | General    | Total Cost of Ownership Reporting            | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement                                       | ARRC Prioritize from Matrix | Desired (Medium) |
| Capital Projects and Campaigns | General | Capital Projects Reporting                   | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source | Fixed Guideway | Signal      | General    | Capital Planning - Inputs                    | Accommodate inputs to capital planning: track and signal issue history, extended timeframe for external parties responsible for maintenance (2-5 years), obsolescence / loss of support indications, ability to "level" system upgrading and replacement costs over years | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category               | Feature | Base Req Title                               | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title  | Description   | Initial Source              | Priority         |
|--------------------------------|---------|--|---|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence)        | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)   | Fixed Guideway | Signal      | General    | Replacement Plan (ULB / Obsolescence)        | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)   | ARRC Prioritize from Matrix | Essential (High) |
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting            | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement | Fixed Guideway | Signal      | General    | Total Cost of Ownership Reporting            | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement | ARRC Prioritize from Matrix | Optional (Low)   |
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)   | Fixed Guideway | Signal      | General    | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)   | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|------------------|---------|------------------------------------|--|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Timekeeping      | General | Hours Worked on Work Order / Asset | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.   | Fixed Guideway | Track       | General    | Hours Worked on Work Order / Asset | Record time worked on a work order and integrate with time keeping. Preference is hours are recorded on work orders (direct and indirect time) that is carried over to the time card to simplify time entry and management. | ARRC Prioritize from Matrix | Desired (Medium) |
| Timekeeping      | General | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to) | Fixed Guideway | Track       | General    | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Timekeeping      | General | Time Tracking                      | Avoid duplicate entry or manipulation of time records in more than one system  | Fixed Guideway | Track       | General    | Time Tracking                      | A straightforward method of recording time against work orders that flows to the time card system; avoid duplicate entry or manipulation of time records  | ARRC Group Interview        | Essential (High) |
| Timekeeping      | General | Hours of Service (HOS)             | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | Fixed Guideway | Track       | General    | Hours of Service (HOS)             | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|------------------|---------|------------------------------------|--|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Timekeeping      | General | Time Tracking                      | Avoid duplicate entry or manipulation of time records in more than one system  | Fixed Guideway | Bridge      | General    | Time Tracking                      | A straightforward method of recording time against work orders that flows to the time card system; avoid duplicate entry or manipulation of time records  | ARRC Group Interview        | Desired (Medium) |
| Timekeeping      | General | Hours Worked on Work Order / Asset | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.   | Fixed Guideway | Bridge      | General    | Hours Worked on Work Order / Asset | Record time worked on a work order and integrate with time keeping. Preference is hours are recorded on work orders (direct and indirect time) that is carried over to the time card to simplify time entry and management. | ARRC Prioritize from Matrix | Essential (High) |
| Timekeeping      | General | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to) | Fixed Guideway | Bridge      | General    | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to)  | ARRC Prioritize from Matrix | Essential (High) |
| Timekeeping      | General | Hours of Service (HOS)             | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | Fixed Guideway | Bridge      | General    | Hours of Service (HOS)             | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies  | ARRC Prioritize from Matrix | Not Set          |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Fixed Guideway

| Feature Category | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description  | Initial Source              | Priority         |
|------------------|---------|------------------------------------|--|----------------|-------------|------------|------------------------------------|--|-----------------------------|------------------|
| Timekeeping      | General | Time Tracking                      | Avoid duplicate entry or manipulation of time records in more than one system  | Fixed Guideway | Signal      | General    | Simplified Time Keeping            | Ability to enter time once - on the work order rder for the most detail - and for it to transfer to time card - and for Hours of Service (HOS) to be accomodated. Biggest obstacle to simplified timekeeping for Signals is HOS. | ARRC Group Interview        | Essential (High) |
| Timekeeping      | General | Hours Worked on Work Order / Asset | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.   | Fixed Guideway | Signal      | General    | Hours Worked on Work Order / Asset | Record time worked on a work order and integrate with time keeping. Capture indirect as well as direct time.   | ARRC Group Interview        | Essential (High) |
| Timekeeping      | General | Hours of Service (HOS)             | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | Fixed Guideway | Signal      | General    | Hours of Service (HOS)             | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | ARRC Group Interview        | Essential (High) |
| Timekeeping      | General | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to) | Fixed Guideway | Signal      | General    | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to)   | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------------------|--|------------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes               | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | Service Vehicles | General     | General    | Basic Asset Attributes               | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | Service Vehicles | General     | General    | Location by Mile Post                | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | Service Vehicles | General     | General    | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS              | Support hyperlinking from asset management system to GIS and from GIS to asset management  | Service Vehicles | General     | General    | Link (both ways) to GIS              | Support hyperlinking from asset management system to GIS and from GIS to asset management  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets           | Service Vehicles | General     | General    | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets           | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes             | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                  | Service Vehicles | General     | General    | NTD Reporting Attributes             | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                  | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                    | Feature    | Base Req Title                | Base Req Desc   | Asset Category   | Asset Class | Asset Type | Title                         | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|-------------------------------|---|------------------|-------------|------------|-------------------------------|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record      | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | Service Vehicles | General     | General    | Central System of Record      | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications                | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | Service Vehicles | General     | General    | Asset Data System Identifiers | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC (e.g. ARI Fleet, Verizon Fleet) - may include things like a SIM/GPS identifier, a fuel card number, an account number, etc. | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration        | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | Service Vehicles | General     | General    | Asset Data Integration        | Ability to synchronize or integrate basic asset information with external vendors / systems (e.g. ARI Fleet and Verizon Fleet) - minimize need to manually check and update records for accuracy.                                  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                    | Feature    | Base Req Title                  | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title  | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|---------------------------------|--|------------------|-------------|------------|--|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data |                                 |  | Service Vehicles | General     | General    | Asset Attributes and Asset "Type" or "Pools" | Support attributes to identify the make, model, year, VIN/serial, and additional info (engine size, etc.) to enable grouping similar assets into a "type", "family", or "pool" which can help for parts management, setup of PM and maintenance work packages, and reporting | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc.for both digital and paper documents | Service Vehicles | General     | General    | Document Management and Linking              | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc.for both digital and paper documents   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Components                      | Include components and sub-components, assemblies, systems and similar entities  | Service Vehicles | General     | General    | Components                                   | Include components and sub-components, assemblies, systems and similar entities  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Asset Hierarchy                 | Model and enforce hierarchical relationships between assets; particulary parent-child  | Service Vehicles | General     | General    | Asset Hierarchy                              | Allow for categorization of assets at several levels (e.g. Heavy Equipment > Dirt Work > Excavator <125CY); allow for NTD category / description.  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                    | Feature   | Base Req Title                        | Base Req Desc   | Asset Category   | Asset Class | Asset Type | Title                                 | Description   | Initial Source              | Priority         |
|-------------------------------------|-----------|---------------------------------------|---|------------------|-------------|------------|---------------------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Hierarchy | Classes or Grouping of Assets         | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting              | Service Vehicles | General     | General    | Classes or Grouping of Assets         | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting  | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status       | Ownership | Ownership Status                      | Ability to indicate owner and any interested parties in the asset   | Service Vehicles | General     | General    | Ownership Indicator                   | Support indicating the owners or interested parties in the asset (e.g. rental or lease)   | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status       | Ownership | Owner Info                            | Contact information of the owner of assets; especially leased or rented equipment                                     | Service Vehicles | General     | General    | Owner Info                            | Contact information of the owner of assets; especially leased or rented equipment   | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status       | Status    | Import External Transaction Data      | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually) | Service Vehicles | General     | General    | Fuel Records                          | Ability to import fuel records from an external fuel card system (or manually if needed) that includes equipment number, fuel card, and odometer. | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status       | Status    | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person                | Service Vehicles | General     | General    | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status       | Status    | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile                                  | Service Vehicles | General     | General    | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile  | ARRC Prioritize from Matrix | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category              | Feature | Base Req Title                   | Base Req Desc   | Asset Category   | Asset Class | Asset Type | Title                                | Description   | Initial Source              | Priority         |
|-------------------------------|---------|----------------------------------|---|------------------|-------------|------------|--------------------------------------|---|-----------------------------|------------------|
| Asset Availability and Status | Status  | Condition Assessment             | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment       | Service Vehicles | General     | General    | Condition Assessment                 | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment               | ARRC Prioritize from Matrix | Essential (High) |
| Asset Availability and Status | Status  | Condition Rating System          | Support a condition rating system for assets (e.g. 1 to 5)  | Service Vehicles | General     | General    | Condition Rating System              | Support a condition rating system for assets (e.g. 1 to 5)  | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Status  | Condition Assessment - Risk      | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy                    | Service Vehicles | General     | General    | Condition Assessment - Risk          | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy                            | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status  | Asset Rate and Usage Calculation | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | Service Vehicles | General     | General    | Equipment Rate and Usage Calculation | Support mechanism to calculate costs of equipment and which groups used the equipment during the period. This calculation may be an initial input to Finance for cost allocation. | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category              | Feature      | Base Req Title                     | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                              | Description  | Initial Source              | Priority         |
|-------------------------------|--------------|------------------------------------|--|------------------|-------------|------------|------------------------------------|--|-----------------------------|------------------|
| Asset Availability and Status | Status       | Asset Assignment                   | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)   | Service Vehicles | General     | General    | Asset Assignment                   | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)   | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Availability | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Service Vehicles | General     | General    | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Availability | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | Service Vehicles | General     | General    | Availability Calculations          | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Availability | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | Service Vehicles | General     | General    | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category         | Feature | Base Req Title                                    | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|--------------------------|---------|---|--|------------------|-------------|------------|---|--|-----------------------------|------------------|
| Configuration Management | General | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.         | Service Vehicles | General     | General    | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.         | ARRC Prioritize from Matrix | Essential (High) |
| Configuration Management | General | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | Service Vehicles | General     | General    | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | ARRC Prioritize from Matrix | Desired (Medium) |
| Configuration Management | General | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc. | Service Vehicles | General     | General    | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc. | ARRC Prioritize from Matrix | Optional (Low)   |
| Fault/Problem Detection  | General | Data from Diagnostic Systems                      | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors  | Service Vehicles | General     | General    | Data from Diagnostic Systems                      | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors  | ARRC Prioritize from Matrix | Optional (Low)   |
| Fault/Problem Detection  | General | Data from External Asset Management Systems       | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues             | Service Vehicles | General     | General    | Data from External Asset Management Systems       | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues             | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                   | Feature | Base Req Title  | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|------------------------------------|---------|---|--|------------------|-------------|------------|---|--|-----------------------------|------------------|
| Fault/Problem Detection            | General | Capture Reasons for Failure                           | Ability to capture reason(s) for failure; preferably through standardized coding   | Service Vehicles | General     | General    | Capture Reasons for Failure                           | Ability to capture reason(s) for failure; preferably through standardized coding   | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Inspection Data Retention Periods                     | Ability to retain electronic copied of records indefinitely; Federal agencies usually allow for only a certain period of time                      | Service Vehicles | General     | General    | Inspection Data Retention Periods                     | Ability to retain electronic copied of records indefinitely; Federal agencies usually allow for only a certain period of time                      | ARRC Prioritize from Matrix | Not Set          |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA) | Service Vehicles | General     | General    | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA) | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Automated Compliance Tracking and Planning            | Automated planning and compliance tracking of regulatory inspection requirements   | Service Vehicles | General     | General    | Automated Compliance Tracking and Planning            | Automated planning and compliance tracking of regulatory inspection requirements   | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | Generate Work Orders from Inspection Results          | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)                                     | Service Vehicles | General     | General    | Generate Work Orders from Inspection Results          | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)                                     | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | Inspection Schedules                                  | Support ability to schedule recurring inspections that will automatically create a work order  | Service Vehicles | General     | General    | Inspection Schedules                                  | Support ability to schedule recurring inspections that will create a work order  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                   | Feature | Base Req Title                             | Base Req Desc   | Asset Category   | Asset Class | Asset Type | Title                                     | Description   | Initial Source              | Priority         |
|------------------------------------|---------|--|---|------------------|-------------|------------|---|---|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | PM Notification                            | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)                         | Service Vehicles | General     | General    | PM Notification                           | Ability to send a notification to maintenance and user group when a PM is close to due  | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | PM Service Calculation                     | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)                      | Service Vehicles | General     | General    | PM Service Calculation                    | Ability to calculate PM service requirements on one or more aspects of usage including hours and miles  | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics          | Service Vehicles | General     | General    | Daily or Pre-Use Inspections              | Ability to record daily or pre-use inspections with a checklist; support different checklist based on equipment type.   | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Digital Workflows for Review and Approval  | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | Service Vehicles | General     | General    | Digital Workflows for Review and Approval | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Contractors for Preventative Maintenance   | Ability to define vendors which are used for PM and inspection activities on assets, systems or components  | Service Vehicles | General     | General    | Contractors for Preventative Maintenance  | Ability to define vendors which are used for PM and inspection activities on assets, systems or components  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                 | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                          | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------|--|------------------|-------------|------------|--------------------------------|--|-----------------------------|------------------|
| Planned Maintenance and Inspection    | General | PM Job Plan                    | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed  | Service Vehicles | General     | General    | PM Job Plan                    | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed  | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection    | General | Digital-First Inspections      | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements  | Service Vehicles | General     | General    | Digital-First Inspections      | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements  | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection    | General | Incorporate Season and Weather | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and  | Service Vehicles | General     | General    | Incorporate Season and Weather | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and  | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Task Coding on Work Orders     | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs | Service Vehicles | General     | General    | Task Coding on Work Orders     | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs | ARRC Group Interview        | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                          | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------------|--|------------------|-------------|------------|--------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution | Service Vehicles | General     | General    | Complaint / Cause / Correction | Support the ability to record complaint, cause, and correction in a standardized way for easier failure analysis                                  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Work Packages                         | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assessment, complaint, etc   | Service Vehicles | General     | General    | Work Packages                  | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assessment, complaint, etc  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Record Checklist and Results          | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order   | Service Vehicles | General     | General    | Record Checklist and Results   | Ability to easily capture and store electronically (rather than paper or scanned paper) checklist data and any required readings for a work order | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Contractor or Vendor Work             | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders   | Service Vehicles | General     | General    | Outside Work                   | Ability to record work details (possibly through an import) from outside vendors (e.g. ARI Fleet)   | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                                    | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title   | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---|--|------------------|-------------|------------|---|--|----------------------|------------------|
| Work Orders and Work Order Management | General | End-User Field Service                            | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)   | Service Vehicles | General     | General    | User Field Service                                | Ability for end users to quickly record any field service performed (for efficiency and consistency would probably require a digital mobile offline solution)  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Ease of Use                                       | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | Service Vehicles | General     | General    | Ease of Use                                       | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders             | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened   | Service Vehicles | General     | General    | Capture Usage on Work Orders                      | Ability to capture the current usage measures (hours, miles) on work orders and PMs  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | Service Vehicles | General     | General    | Checklist Criteria for Repair - Create Work Order | Ability to define criteria for repair or replacement on checklist items (e.g. wheel size is an example). A work order to address is automatically created / or a line item on a work order if already created from this checklist) | ARRC Group Interview | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                          | Base Req Desc   | Asset Category   | Asset Class | Asset Type | Title                                   | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|---|---|------------------|-------------|------------|---|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Failure Analysis                        | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.  | Service Vehicles | General     | General    | Failure Analysis                        | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.  | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy  | Service Vehicles | General     | General    | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy  | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Reporting Tools                         | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Service Vehicles | General     | General    | Reporting Tools                         | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Usage Readings                          | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)  | Service Vehicles | General     | General    | Usage Readings                          | Ability to quickly record (or import from external systems) hour or mile readings for an asset  | ARRC Group Interview        | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                         | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|-------------------------------|--|------------------|-------------|------------|-------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Minor Work                    | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | Service Vehicles | General     | General    | Minor Work                    | Ability to quickly record minor work such as inspection and service (i.e. ability to avoid using bucket/generic work order for non-parts work less than 1 hour)   | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX) | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable))      | Service Vehicles | General     | General    | Categorize Costs (OPEX/CAPEX) | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable)) | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Attachments        | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | Service Vehicles | General     | General    | Work Order Attachments        | Automatically output or link / present (if digital) procedures, checklists, and bills of materials needed for work order  | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                   | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                           | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|----------------------------------|--|------------------|-------------|------------|---------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Mechanic/Technician Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | Service Vehicles | General     | General    | Record of Work by Mechanic      | Only person who knows what is happening on the work order is the mechanic and they should have ability to see the info they need and also record as it is done (as easily as possible) | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations   | Accommodate multiple shops and work locations including ARRC shops and work in the field   | Service Vehicles | General     | General    | Multiple Shop / Work Locations  | Accommodate multiple shops or work locations (e.g. Heavy Shop, field service Cantwell and Whittier, Mobile Oiler, mechanics assigned to gangs in summer)                               | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Parts on Work Order              | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchased with a purchasing card   | Service Vehicles | General     | General    | Parts on Work Order             | Ability to specify parts on work order and whether they came from inventory, were ordered, or with a purchasing card   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Capture All Work on Work Orders  | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | Service Vehicles | General     | General    | Capture All Work on Work Orders | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|--|------------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Checklists (Digital)                  | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | Service Vehicles | General     | General    | Checklists (Digital)                  | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Source                     | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)   | Service Vehicles | General     | General    | Work Order Source                     | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location   | Service Vehicles | General     | General    | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations  | Service Vehicles | General     | General    | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations  | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                | Base Req Desc   | Asset Category   | Asset Class | Asset Type | Title                         | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|-------------------------------|---|------------------|-------------|------------|-------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | End-Users and Work Orders     | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders  | Service Vehicles | General     | General    | End-Users and Work Orders     | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders  | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Mobile Digital Work Orders    | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.   | Service Vehicles | General     | General    | Mobile Digital Work Orders    | Record data where and when the work occurs (create, update, and close work orders) supporting offline mode.   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Custom Categorize Work Orders | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.                          | Service Vehicles | General     | General    | Custom Categorize Work Orders | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.                          | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Cost Reporting                | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | Service Vehicles | General     | General    | Cost Reporting                | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                       | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|--|------------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Scheduling and Planning              | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)             | Service Vehicles | General     | General    | Scheduling and Planning              | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)             | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | SLAs for Response Times              | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them | Service Vehicles | General     | General    | SLAs for Response Times              | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Prioritization of Work Orders        | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset        | Service Vehicles | General     | General    | Prioritization of Work Orders        | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset        | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment              | Service Vehicles | General     | General    | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment              | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Reimbursable Work                    | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance           | Service Vehicles | General     | General    | Reimbursable Work                    | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance           | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                       | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|--|------------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | Service Vehicles | General     | General    | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes   | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | Service Vehicles | General     | General    | Cost Accounting - Handling Changes   | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders   | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | Service Vehicles | General     | General    | Future and Unscheduled Work Orders   | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Integrate Financial System           | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | Service Vehicles | General     | General    | Integrate Financial System           | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Notifications             | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)  | Service Vehicles | General     | General    | Work Order Notifications             | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)  | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category                      | Feature | Base Req Title                     | Base Req Desc   | Asset Category   | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|------------------------------------|---|------------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders    | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users  | Service Vehicles | General     | General    | Estimated Effort on Work Orders    | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users  | ARRC Prioritize from Matrix | Desired (Medium) |
| Materials Management                  | General | Component Parts - Criticality      | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed  | Service Vehicles | General     | General    | Component Parts - Criticality      | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed  | ARRC Group Interview        | Essential (High) |
| Materials Management                  | General | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | Service Vehicles | General     | General    | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | ARRC Prioritize from Matrix | Desired (Medium) |
| Materials Management                  | General | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | Service Vehicles | General     | General    | Equipment Check-Out / Check-In     | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category               | Feature | Base Req Title                   | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                            | Description  | Initial Source              | Priority         |
|--------------------------------|---------|----------------------------------|--|------------------|-------------|------------|----------------------------------|--|-----------------------------|------------------|
| Materials Management           | General | Min-Max Parts Inventory          | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes  | Service Vehicles | General     | General    | Min-Max Parts Inventory          | Inventory on-hand requirements that is based on asset and component mix; including when assets are added or surplus  | ARRC Group Interview        | Essential (High) |
| Materials Management           | General | Inventory Purchase Plan          | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)                             | Service Vehicles | General     | General    | Inventory Purchase Plan          | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)                             | ARRC Group Interview        | Essential (High) |
| Materials Management           | General | Component Parts - Obsolescence   | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)  | Service Vehicles | General     | General    | Component Parts - Obsolescence   | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)  | ARRC Prioritize from Matrix | Essential (High) |
| Component Tracking and Rebuild | General | Component Serial Number Tracking | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset") | Service Vehicles | General     | General    | Component Serial Number Tracking | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset") | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category               | Feature | Base Req Title                     | Base Req Desc   | Asset Category   | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|--------------------------------|---------|------------------------------------|---|------------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Component Tracking and Rebuild | General | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | Service Vehicles | General     | General    | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | Service Vehicles | General     | General    | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Component Service Life             | Ability to specify expected service life of a component or part   | Service Vehicles | General     | General    | Component Service Life             | Ability to specify expected service life of a component or part   | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | Service Vehicles | General     | General    | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | Service Vehicles | General     | General    | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category               | Feature | Base Req Title                               | Base Req Desc   | Asset Category   | Asset Class | Asset Type | Title                                 | Description   | Initial Source              | Priority         |
|--------------------------------|---------|--|---|------------------|-------------|------------|---------------------------------------|---|-----------------------------|------------------|
| Warranty Management            | General | Warranty                                     | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchased or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | Service Vehicles | General     | General    | Warranty                              | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchased or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | ARRC Prioritize from Matrix | Essential (High) |
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence)        | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)   | Service Vehicles | General     | General    | Replacement Plan (ULB / Obsolescence) | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and fleet composition (owned vs leased / rented)   | ARRC Group Interview        | Desired (Medium) |
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)   | Service Vehicles | General     | General    | Fleet Composition over Time           | Ability to show the fleet composition over time by equipment hierarchy / groupings as well as ownership (ARRC, leased, rented)  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category               | Feature | Base Req Title                     | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|--------------------------------|---------|------------------------------------|--|------------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Capital Projects Reporting         | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source | Service Vehicles | General     | General    | Capital Projects Reporting         | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries)   | ARRC Prioritize from Matrix | Essential (High) |
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting  | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement  | Service Vehicles | General     | General    | Total Cost of Ownership Reporting  | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement | ARRC Prioritize from Matrix | Optional (Low)   |
| Timekeeping                    | General | Hours Worked on Work Order / Asset | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.   | Service Vehicles | General     | General    | Hours Worked on Work Order / Asset | Record time worked on a work order and integrate with time keeping. Currently enter work order numbers on time card (opposite of many work management systems). Capture indirect as well as direct time.                            | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Service Vehicles

| Feature Category | Feature | Base Req Title           | Base Req Desc  | Asset Category   | Asset Class | Asset Type | Title                         | Description  | Initial Source              | Priority         |
|------------------|---------|--------------------------|--|------------------|-------------|------------|-------------------------------|--|-----------------------------|------------------|
| Timekeeping      | General | Asset Field on Timecards | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to) | Service Vehicles | General     | General    | Equipment Fields on Timecards | Have an equipment field on time cards across ARRC groups to ensure that equipment usage can be captured  | ARRC Group Interview        | Desired (Medium) |
| Timekeeping      | General | Time Tracking            | Avoid duplicate entry or manipulation of time records in more than one system  | Service Vehicles | General     | General    | Time Tracking                 | A straightforward method of recording time against work orders that flows to the time card system; avoid duplicate entry or manipulation of time records | ARRC Prioritize from Matrix | Essential (High) |
| Timekeeping      | General | Hours of Service (HOS)   | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | Service Vehicles | General     | General    | Hours of Service (HOS)        | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies                               | ARRC Prioritize from Matrix | Not Set          |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category                    | Feature    | Base Req Title           | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                    | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------|---|----------------|-------------|------------|--------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | Facilities     | Buildings   | General    | Central System of Record | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | ARRC Prioritize from Matrix | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post    | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post  | Facilities     | Buildings   | General    | Location by Mile Post    | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration   | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | Facilities     | Buildings   | General    | Asset Data Integration   | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes   | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.  | Facilities     | Buildings   | General    | Basic Asset Attributes   | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc.  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS  | Support hyperlinking from asset management system to GIS and from GIS to asset management   | Facilities     | Buildings   | General    | Link (both ways) to GIS  | Support hyperlinking from asset management system to GIS and from GIS to asset management   | ARRC Group Interview        | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category                    | Feature    | Base Req Title                  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                           | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|---------------------------------|---|----------------|-------------|------------|---------------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes        | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                                     | Facilities     | Buildings   | General    | NTD Reporting Attributes        | Facility assets should have attributes that allow for direct or easy mapping for NTD reporting. This includes coding for Maintenance Facility size, Facility Type, and indicators for Passenger Station Accessibility, Escalators, and Elevators. | ARRC Group Interview        | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents      | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets                              | Facilities     | Buildings   | General    | Mobile Access to Documents      | Ability to access digital documents for facilities outside of the office  | ARRC Group Interview        | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers   | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | Facilities     | Buildings   | General    | Asset Data System Identifiers   | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc. for both digital and paper documents | Facilities     | Buildings   | General    | Document Management and Linking | Support a centralized approach to storing and accessing facility-related documents including drawings, panel schedules, pictures, etc. Currently a mix of paper and digital documents.  | ARRC Group Interview        | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description   | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------------------|--|----------------|-------------|------------|-------------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map    | Facilities     | Buildings   | General    | GPS / GIS Locations           | Ability to record GPS locations for GIS at facilities; for the facility itself as well as points of interest on the property  | ARRC Group Interview        | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Components                           | Include components and sub-components, assemblies, systems and similar entities                          | Facilities     | Buildings   | General    | Facility System Components    | Allow for key components of assets to be identified under a system (e.g. elevator, generator) and have their own attributes such as make,model, serial number, vendor   | ARRC Group Interview        | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Classes or Grouping of Assets        | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting | Facilities     | Buildings   | General    | Classes or Grouping of Assets | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Asset Hierarchy                      | Model and enforce hierarchical relationships between assets; particular parent-child                     | Facilities     | Buildings   | General    | Facility Hierarchy            | Support a simple hierarchy where a facility may belong to a larger facility and facilities have one or more systems such as Substructure, Shell, Roof, Interior, Conveyance, Plumbing, HVAC, Fire Protection, Electrical, Equipment and Site - more detail is unlikely because facilities and systems are not large and not complex | ARRC Group Interview        | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category              | Feature   | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                 | Description   | Initial Source              | Priority         |
|-------------------------------|-----------|---------------------------------------|---|----------------|-------------|------------|---------------------------------------|---|-----------------------------|------------------|
| Asset Availability and Status | Ownership | Owner Info                            | Contact information of the owner of assets; especially leased or rented equipment   | Facilities     | Buildings   | General    | Owner Info                            | Contact information of the owner of assets; especially leased or rented equipment   | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Ownership | Ownership Status                      | Ability to indicate owner and any interested parties in the asset   | Facilities     | Buildings   | General    | Ownership Indicator                   | Support indicating the owners and/or interested parties in the facility asset   | ARRC Group Interview        | Optional (Low)   |
| Asset Availability and Status | Status    | Condition Rating System               | Support a condition rating system for assets (e.g. 1 to 5)  | Facilities     | Buildings   | General    | Condition Rating System               | Support a condition rating system for assets (e.g. 1 to 5)  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Status    | Asset Rate and Usage Calculation      | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | Facilities     | Buildings   | General    | Asset Rate and Usage Calculation      | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation. | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status    | Asset Assignment                      | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)      | Facilities     | Buildings   | General    | Asset Assignment                      | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours)      | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status    | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile  | Facilities     | Buildings   | General    | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile  | ARRC Prioritize from Matrix | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category              | Feature      | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                       | Description  | Initial Source              | Priority         |
|-------------------------------|--------------|------------------------------------|---|----------------|-------------|------------|-----------------------------|--|-----------------------------|------------------|
| Asset Availability and Status | Status       | Condition Assessment - Risk        | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy              | Facilities     | Buildings   | General    | Condition Assessment - Risk | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy                       | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Status       | Import External Transaction Data   | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)   | Facilities     | Buildings   | General    | Utilities Tracking          | Ability to record utilities monthly volume and costs over time to support and track reduction efforts. Currently an Excel workbook is used to capture and report energy use. | ARRC Group Interview        | Desired (Medium) |
| Asset Availability and Status | Status       | Status - Location                  | Asset location in as near real-time as it is possible to have the status changed by a system or person  | Facilities     | Buildings   | General    | Status - Location           | Asset location in as near real-time as it is possible to have the status changed by a system or person   | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status       | Condition Assessment               | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment | Facilities     | Buildings   | General    | Condition Assessment        | Ability to record, store, and report annual facility condition assessment and criteria guidance as well as previous ratings and work performed since the last assessment     | ARRC Group Interview        | Desired (Medium) |
| Asset Availability and Status | Availability | Availability - Seasonal Variations | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)   | Facilities     | Buildings   | General    | Seasonal Status             | Indication of whether the facility is open or closed for season - "winterized"   | ARRC Group Interview        | Optional (Low)   |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category              | Feature      | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|-------------------------------|--------------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Asset Availability and Status | Availability | Availability Calculations                         | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | Facilities     | Buildings   | General    | Availability Calculations                         | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Availability | Out of Service Coding and Duration                | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Facilities     | Buildings   | General    | Out of Service Coding and Duration                | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | ARRC Prioritize from Matrix | Optional (Low)   |
| Configuration Management      | General      | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc.   | Facilities     | Buildings   | General    | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc.   | ARRC Prioritize from Matrix | Desired (Medium) |
| Configuration Management      | General      | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.   | Facilities     | Buildings   | General    | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.   | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category                   | Feature | Base Req Title                              | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|------------------------------------|---------|---|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Configuration Management           | General | Asset Model Configuration                   | Control over asset configuration design with ability to define rules for components and parts  | Facilities     | Buildings   | General    | Asset Model Configuration             | Control over asset configuration design with ability to define rules for components and parts  | ARRC Prioritize from Matrix | Optional (Low)   |
| Fault/Problem Detection            | General | Capture Reasons for Failure                 | Ability to capture reason(s) for failure; preferably through standardized coding   | Facilities     | Buildings   | General    | Capture Reasons for Failure           | Ability to capture reason(s) for failure; preferably through standardized coding   | ARRC Prioritize from Matrix | Desired (Medium) |
| Fault/Problem Detection            | General | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors                                    | Facilities     | Buildings   | General    | Data from Diagnostic Systems          | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors                                  | ARRC Prioritize from Matrix | Desired (Medium) |
| Fault/Problem Detection            | General | Data from External Asset Management Systems | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues | Facilities     | Buildings   | General    | Data from Building Management Systems | Ability to hyperlink to or compile information from various existing building management systems (Siemens, Apogee, Tracer, N4 etc)       | ARRC Group Interview        | Desired (Medium) |
| Planned Maintenance and Inspection | General | PM Service Calculation                      | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)   | Facilities     | Buildings   | General    | PM Service Calculation                | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.) | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | Inspection Schedules                        | Support ability to schedule recurring inspections that will automatically create a work order  | Facilities     | Buildings   | General    | Inspection Schedules                  | Support ability to schedule recurring inspections that will automatically create a work order  | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category                   | Feature | Base Req Title                             | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                      | Description  | Initial Source              | Priority         |
|------------------------------------|---------|--|--|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics | Facilities     | Buildings   | General    | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | PM Job Plan                                | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed      | Facilities     | Buildings   | General    | PM Job Plan                                | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed      | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | Inspection Data Retention Periods          | Ability to retain electronic copieds of records indefinitely; Federal agencies usually allow for only a certain period of time                       | Facilities     | Buildings   | General    | Inspection Data Retention Periods          | Ability to retain electronic copieds of records indefinitely; Federal agencies usually allow for only a certain period of time                       | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | PM Notification                            | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)                | Facilities     | Buildings   | General    | PM Notification                            | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)                | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category                   | Feature | Base Req Title  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title   | Description   | Initial Source              | Priority         |
|------------------------------------|---------|---|---|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Digital Workflows for Review and Approval             | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | Facilities     | Buildings   | General    | Digital Workflows for Review and Approval             | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | Incorporate Season and Weather                        | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                                       | Facilities     | Buildings   | General    | Incorporate Season and Weather                        | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                                       | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | Contractors for Preventative Maintenance              | Ability to define vendors which are used for PM and inspection activities on assets, systems or components  | Facilities     | Buildings   | General    | Contractors for Preventative Maintenance              | Ability to define vendors which are used for PM and inspection activities on systems or components (e.g. fire safety system, elevators)                       | ARRC Group Interview        | Optional (Low)   |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)            | Facilities     | Buildings   | General    | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)            | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                               | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title  | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|--|--|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Planned Maintenance and Inspection    | General | Automated Compliance Tracking and Planning   | Automated planning and compliance tracking of regulatory inspection requirements   | Facilities     | Buildings   | General    | Automated Compliance Tracking and Planning   | Automated planning and compliance tracking of regulatory inspection requirements  | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection    | General | Generate Work Orders from Inspection Results | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)   | Facilities     | Buildings   | General    | Generate Work Orders from Inspection Results | Ability to generate work orders from inspection results (these would be corrective actions)                                       | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection    | General | Digital-First Inspections                    | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements                                    | Facilities     | Buildings   | General    | Digital-First Inspections                    | Ability to record inspections and condition assessments digitally in the field (with an offline mode available)                   | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | Contractor or Vendor Work                    | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders   | Facilities     | Buildings   | General    | Contractor Work and Costs                    | Ability to record contractor work activity and costs against a work order   | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's)        | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution | Facilities     | Buildings   | General    | Work Order 3C                                | Ability to record Complaint / Cause / Correction with simple coding to allow for identifying common problems and their resolution | ARRC Group Interview        | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title            | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                     | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------|--|----------------|-------------|------------|---------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Checklists (Digital)      | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | Facilities     | Buildings   | General    | Digital Checklists        | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results indicated by the user and are attached to work order. | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Work Order Notifications  | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)  | Facilities     | Buildings   | General    | Work Order Notification   | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned)   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | End-Users and Work Orders | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders   | Facilities     | Buildings   | General    | End-Users and Work Orders | Ability for end users to initiate work orders through a complaint process and to see status and history of work orders  | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                  | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                           | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------|--|----------------|-------------|------------|---------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Capture All Work on Work Orders | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | Facilities     | Buildings   | General    | Capture All Work on Work Orders | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Mobile Digital Work Orders      | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.  | Facilities     | Buildings   | General    | Mobile Work Orders              | Ability to view, initiate, update, and close work orders in the field in online or offline mode.  | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX)   | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable) | Facilities     | Buildings   | General    | Categorize Costs (OPEX/CAPEX)   | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPX (e.g. ARRC, Agency (if application) or Other (if applicable) | ARRC Group Interview | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Cost Reporting                        | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography                            | Facilities     | Buildings   | General    | Cost Reporting                        | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations  | Facilities     | Buildings   | General    | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations   | ARRC Group Interview | Optional (Low)   |
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area  | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | Facilities     | Buildings   | General    | Group Work Orders by Geographic Area  | Group work orders by geographic area so they do not need to be manually grouped for review and assignment   | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Task Coding on Work Orders            | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs | Facilities     | Buildings   | General    | Task Coding                           | Support activity task coding on work orders to identify work activity (e.g. diagnose, repair, replace, install, inspect)  | ARRC Group Interview | Essential (High) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                          | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                   | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Work Order Source                       | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)                   | Facilities     | Buildings   | General    | Work Order Source                       | Ability to record the source of a work order (e.g. result of an inspection or an operations observation)   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Failure Analysis                        | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order. | Facilities     | Buildings   | General    | Failure Analysis                        | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order. | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Integrate Financial System              | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | Facilities     | Buildings   | General    | Integrate Financial System              | Work Order system must be integrated or interfaced with the financial system (currently JDE)   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | Facilities     | Buildings   | General    | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Ease of Use                             | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | Facilities     | Buildings   | General    | Ease of Use                             | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)  | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|------------------------------------|--|----------------|-------------|------------|------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Minor Work                         | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | Facilities     | Buildings   | General    | Minor Work                         | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders    | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users   | Facilities     | Buildings   | General    | Estimated Effort on Work Orders    | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | Facilities     | Buildings   | General    | Cost Accounting - Handling Changes | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Scheduling and Planning            | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)   | Facilities     | Buildings   | General    | Scheduling and Planning            | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)   | ARRC Prioritize from Matrix | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                           | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------|---|----------------|-------------|------------|---------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Mechanic/Technican Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done.  | Facilities     | Buildings   | General    | Mechanic/Technican Records Work | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done.  | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Reporting Tools                 | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Facilities     | Buildings   | General    | Reporting Tools                 | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Usage Readings                  | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)  | Facilities     | Buildings   | General    | Usage Readings                  | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)  | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|--|----------------|-------------|------------|--------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | End-User Field Service               | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)   | Facilities     | Buildings   | General    | End-User Field Service               | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Work Order Attachments               | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | Facilities     | Buildings   | General    | Work Order Attachments               | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order   | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders   | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | Facilities     | Buildings   | General    | Future and Unscheduled Work Orders   | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | Facilities     | Buildings   | General    | Reassign, Split, or Child Work Order | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Parts on Work Order                               | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card  | Facilities     | Buildings   | General    | Parts on Work Order                               | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card  | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | Facilities     | Buildings   | General    | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist. | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Prioritization of Work Orders                     | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | Facilities     | Buildings   | General    | Prioritization of Work Orders                     | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Custom Categorize Work Orders                     | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.   | Facilities     | Buildings   | General    | Custom Categorize Work Orders                     | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling.   | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location                                     | Facilities     | Buildings   | General    | Assign Work Orders                    | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location                                     | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Work Packages                         | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assessment, complaint, etc | Facilities     | Buildings   | General    | Work Packages                         | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assessment, complaint, etc | ARRC Prioritize from Matrix | Essential (High) |
| Work Orders and Work Order Management | General | Record Checklist and Results          | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order               | Facilities     | Buildings   | General    | Record Checklist and Results          | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order               | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened                                   | Facilities     | Buildings   | General    | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened                                   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations        | Accommodate multiple shops and work locations including ARRC shops and work in the field   | Facilities     | Buildings   | General    | Multiple Shop / Work Locations        | Accommodate multiple shops and work locations including ARRC shops and work in the field   | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | SLAs for Response Times               | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them                           | Facilities     | Buildings   | General    | SLAs for Response Times               | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them                           | ARRC Prioritize from Matrix | Desired (Medium) |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category                      | Feature | Base Req Title                 | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                          | Description   | Initial Source              | Priority       |
|---------------------------------------|---------|--------------------------------|---|----------------|-------------|------------|--------------------------------|---|-----------------------------|----------------|
| Work Orders and Work Order Management | General | Reimbursable Work              | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance  | Facilities     | Buildings   | General    | Reimbursable Work              | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance  | ARRC Prioritize from Matrix | Optional (Low) |
| Materials Management                  | General | Min-Max Parts Inventory        | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes | Facilities     | Buildings   | General    | Min-Max Parts Inventory        | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes | ARRC Prioritize from Matrix | Optional (Low) |
| Materials Management                  | General | Component Parts - Criticality  | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed                  | Facilities     | Buildings   | General    | Component Parts - Criticality  | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed                  | ARRC Prioritize from Matrix | Optional (Low) |
| Materials Management                  | General | Component Parts - Obsolescence | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)       | Facilities     | Buildings   | General    | Component Parts - Obsolescence | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)       | ARRC Prioritize from Matrix | Optional (Low) |
| Materials Management                  | General | Equipment Check-Out / Check-In | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | Facilities     | Buildings   | General    | Equipment Check-Out / Check-In | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)  | ARRC Prioritize from Matrix | Optional (Low) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category               | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority       |
|--------------------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|----------------|
| Materials Management           | General | Inventory Purchase Plan            | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)  | Facilities     | Buildings   | General    | Inventory Purchase Plan            | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)  | ARRC Prioritize from Matrix | Optional (Low) |
| Materials Management           | General | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | Facilities     | Buildings   | General    | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | ARRC Prioritize from Matrix | Optional (Low) |
| Component Tracking and Rebuild | General | Component Service Life             | Ability to specify expected service life of a component or part   | Facilities     | Buildings   | General    | Component Service Life             | Ability to specify expected service life of a component or part   | ARRC Prioritize from Matrix | Optional (Low) |
| Component Tracking and Rebuild | General | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | Facilities     | Buildings   | General    | Part Rebuild                       | Indicator that a part in inventory or being installed is a rebuild  | ARRC Prioritize from Matrix | Optional (Low) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category               | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority       |
|--------------------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|----------------|
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | Facilities     | Buildings   | General    | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not. | ARRC Prioritize from Matrix | Optional (Low) |
| Component Tracking and Rebuild | General | Component Serial Number Tracking   | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")              | Facilities     | Buildings   | General    | Component Serial Number Tracking   | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset")              | ARRC Prioritize from Matrix | Optional (Low) |
| Component Tracking and Rebuild | General | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | Facilities     | Buildings   | General    | Usage for Components               | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance  | ARRC Prioritize from Matrix | Optional (Low) |
| Component Tracking and Rebuild | General | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | Facilities     | Buildings   | General    | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | ARRC Prioritize from Matrix | Optional (Low) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category               | Feature | Base Req Title                    | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                             | Description   | Initial Source              | Priority         |
|--------------------------------|---------|-----------------------------------|---|----------------|-------------|------------|-----------------------------------|---|-----------------------------|------------------|
| Warranty Management            | General | Warranty                          | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchased or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | Facilities     | Buildings   | General    | Warranty                          | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchased or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | ARRC Prioritize from Matrix | Optional (Low)   |
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement     | Facilities     | Buildings   | General    | Total Cost of Ownership Reporting | Method for recording and displaying TCO; what is spent to maintain facilities and the frequency of maintenance versus replacement of systems; allow for long term planning of system replacement  | ARRC Group Interview        | Essential (High) |
| Capital Projects and Campaigns | General | Capital Projects Reporting        | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source    | Facilities     | Buildings   | General    | Capital Projects Reporting        | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries)   | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Facilities

| Feature Category               | Feature | Base Req Title                               | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title  | Description   | Initial Source              | Priority         |
|--------------------------------|---------|--|---|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence)        | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented) | Facilities     | Buildings   | General    | Replacement Plan (ULB / Obsolescence)        | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented) | ARRC Prioritize from Matrix | Desired (Medium) |
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)                     | Facilities     | Buildings   | General    | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)                     | ARRC Prioritize from Matrix | Optional (Low)   |
| Timekeeping                    | General | Time Tracking                                | Avoid duplicate entry or manipulation of time records in more than one system   | Facilities     | Buildings   | General    | Time Tracking                                | A straightforward method of recording time against work orders that flows to the time card system; avoid duplicate entry or manipulation of time records                              | ARRC Group Interview        | Essential (High) |
| Timekeeping                    | General | Hours of Service (HOS)                       | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies  | Facilities     | Buildings   | General    | Hours of Service (HOS)                       | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies  | ARRC Prioritize from Matrix | Not Set          |



## ARRC TAM Phase 2

### Requirements Data

Reliability Matters

### Facilities

| Feature Category | Feature | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|------------------|---------|------------------------------------|--|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Timekeeping      | General | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to) | Facilities     | Buildings   | General    | Asset Field on Timecards           | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to)  | ARRC Prioritize from Matrix | Desired (Medium) |
| Timekeeping      | General | Hours Worked on Work Order / Asset | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.   | Facilities     | Buildings   | General    | Hours Worked on Work Order / Asset | Record time worked on a work order and integrate with time keeping. Preference is hours are recorded on work orders (direct and indirect time) that is carried over to the time card to simplify time entry and management. | ARRC Prioritize from Matrix | Desired (Medium) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Communications

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                      | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|--------------------------------------|--|----------------|-------------|------------|----------------------------|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data Integration               | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy. | Communications | General     | General    | Asset Data Integration     | Ability to synchronize or integrate basic asset information with external vendors / systems minimize need to manually check and update records for accuracy.           | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | Link (both ways) to GIS              | Support hyperlinking from asset management system to GIS and from GIS to asset management  | Communications | General     | General    | Link (both ways) to GIS    | Support hyperlinking from asset management system to GIS and from GIS to asset management based on assets based upon the asset itself or part of the asset's hierarchy | ARRC Group Interview        | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Mobile Access to Documents           | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets               | Communications | General     | General    | Mobile Access to Documents | Ability to access digital documents outside of the office; if on mobile possibly allow offline mode by caching documents related to the assets                         | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | Communications | General     | General    | GPS / GIS Locations        | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Communications

| Feature Category                    | Feature    | Base Req Title                       | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title   | Description   | Initial Source       | Priority         |
|-------------------------------------|------------|--------------------------------------|---|----------------|-------------|------------|---|---|----------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Document Management and Linking      | Support a centralized approach to storing and accessing asset-related documents including drawings, schedules, manuals, pictures, etc. for both digital and paper documents   | Communications | General     | General    | Document Management and Linking                   | Support a centralized approach to storing and accessing documents including drawings, manuals, pictures, etc. with them associated / indexed to assets  | ARRC Group Interview | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | GPS/GIS Position Information (Fixed) | Ability to record GPS locations for GIS at the asset level; either from device or by selecting on map   | Communications | General     | General    | Extract GPS Coordinates from Media                | To aid in identifying where media (photos, video) was taken at a location extract the GPS coordinates from the media (when available) and link to GIS   | ARRC Group Interview | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Asset Data | Asset Data System Identifiers        | Ability to support multiple external system identifiers for an asset if they differ from internal ARRC identifiers  | Communications | General     | General    | Asset Data System Identifiers                     | Ability to support multiple external system identifiers for an asset (e.g. Cisco, PRTG) - used for reference, asset data comparison between systems, or actual integration                      | ARRC Group Interview | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | Central System of Record             | Objective is a central source of information including asset and work activity; acknowledging that specialized systems may be used (and possibly linked or integrated) for configuration, status, and notifications | Communications | General     | General    | Central Source for Communications Assets and Work | Objective is a central source of information for communications including asset and work activity; acknowledging that specialized systems are used for configuration, status, and notifications | ARRC Group Interview | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Communications

| Feature Category                    | Feature    | Base Req Title                | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                         | Description  | Initial Source              | Priority         |
|-------------------------------------|------------|-------------------------------|--|----------------|-------------|------------|-------------------------------|--|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Asset Data | Location by Mile Post         | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | Communications | General     | General    | Location by Mile Post         | In addition to a named location and GPS / GIS coordinates support the location by ARRC Mile Post   | ARRC Group Interview        | Essential (High) |
| Asset Hierarchy, Registry, and Info | Asset Data | NTD Reporting Attributes      | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                  | Communications | General     | General    | NTD Reporting Attributes      | Assets should have attributes that allow for direct or easy mapping for NTD reporting without the need to maintain separately in Excel.                  | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Asset Data | Basic Asset Attributes        | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | Communications | General     | General    | Basic Asset Attributes        | Ability to record basic asset data common to asset management systems including an ARRC unique identifier, year, make, model, serial number, color, etc. | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Classes or Grouping of Assets | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting   | Communications | General     | General    | Classes or Grouping of Assets | Organize and manage equipment as a class or group; useful for planned maintenance programs and reporting   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Hierarchy, Registry, and Info | Hierarchy  | Components                    | Include components and sub-components, assemblies, systems and similar entities  | Communications | General     | General    | Components                    | Include components and sub-components, assemblies, systems and similar entities  | ARRC Prioritize from Matrix | Optional (Low)   |



# ARRC TAM Phase 2

## Requirements Data

Reliability Matters

### Communications

| Feature Category                    | Feature   | Base Req Title   | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                    | Description   | Initial Source              | Priority         |
|-------------------------------------|-----------|------------------|--|----------------|-------------|------------|--------------------------|---|-----------------------------|------------------|
| Asset Hierarchy, Registry, and Info | Hierarchy | Asset Hierarchy  | Model and enforce hierarchical relationships between assets; particularly parent-child   | Communications | General     | General    | Communications Hierarchy | Support an asset and reporting hierarchy from the top down: Railroad, Location, then by asset category and then asset. Must be able to roll up costs and activity by named Location.  | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status       | Ownership | Owner Info       | Contact information of the owner of assets; especially leased or rented equipment  | Communications | General     | General    | Ownership Indicator      | Support indicating owners or interested parties in the asset (or a specific component of an asset). Also allow for specifying responsibilities under contracts or memorandum of understanding. Technical contact information for other parties should be available from the record. | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status       | Ownership | Ownership Status | Ability to indicate owner and any interested parties in the asset  | Communications | General     | General    | Ownership Status         | Ability to indicate owner and any interested parties in the asset   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status       | Status    | Asset Assignment | Ability to assign assets to a department with a start / end date that will also summarize usage from readings, PMs, and work orders (e.g. costs, fuel, miles, hours) | Communications | General     | General    | Asset Assignment         | Ability to assign assets to a department or end user with a start / end date. Assets may have more than one department user.  | ARRC Group Interview        | Essential (High) |



# ARRC TAM Phase 2

## Requirements Data

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### Communications

| Feature Category              | Feature | Base Req Title                        | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|-------------------------------|---------|---------------------------------------|---|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Asset Availability and Status | Status  | Condition Assessment                  | Ability to record, store, and report periodic condition assessments with criteria guidance as well as previous ratings and work performed since the last assessment | Communications | General     | General    | Condition Assessment                  | Ability to record, store, and report condition assessment and criteria guidance as well as previous ratings and work performed since the last assessment - for assets that have a physical condition and are not simply working or not working | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Status  | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy              | Communications | General     | General    | Condition Assessment - Risk           | Support a risk / consequence assessment on assets (or their components); could be used for weighting condition assessment at higher level of hierarchy   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Status  | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person  | Communications | General     | General    | Status - Location                     | Asset location in as near real-time as it is possible to have the status changed by a system or person   | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status  | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile  | Communications | General     | General    | GPS/GIS Position Information (Mobile) | Utilize GPS not only for current but also historical data for assets that are mobile   | ARRC Prioritize from Matrix | Desired (Medium) |



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| Feature Category              | Feature      | Base Req Title                     | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                              | Description  | Initial Source              | Priority         |
|-------------------------------|--------------|------------------------------------|--|----------------|-------------|------------|------------------------------------|--|-----------------------------|------------------|
| Asset Availability and Status | Status       | Asset Rate and Usage Calculation   | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation.  | Communications | General     | General    | Asset Rate and Usage Calculation   | Support mechanism to calculate costs of asset and which groups used the asset during the period. This calculation may be an initial input to Finance for cost allocation.              | ARRC Prioritize from Matrix | Optional (Low)   |
| Asset Availability and Status | Status       | Condition Rating System            | Support a condition rating system for assets (e.g. 1 to 5)   | Communications | General     | General    | Condition Rating System            | Support a condition rating system for assets (e.g. 1 to 5)   | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Status       | Import External Transaction Data   | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)  | Communications | General     | General    | Import External Transaction Data   | Ability to import transaction data from external systems (and when needed ability to enter that transaction manually)  | ARRC Prioritize from Matrix | Desired (Medium) |
| Asset Availability and Status | Availability | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, shop space, labor, etc.); intent is to support reliability analysis and reporting | Communications | General     | General    | Out of Service Coding and Duration | Capture out of service codes and time duration (e.g delay impacting operations, or no impact - may include status such as waiting for parts, technician, outside service/vendor, etc.) | ARRC Group Interview        | Essential (High) |



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| Feature Category              | Feature      | Base Req Title                                    | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title   | Description  | Initial Source              | Priority         |
|-------------------------------|--------------|---|---|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Asset Availability and Status | Availability | Availability Calculations                         | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. seasonal or intentionally stored) | Communications | General     | General    | Availability Calculations                         | Show availability over time at asset and also at hierarchy (grouping of assets) levels. Differentiate between types of out of service (e.g. service down or intentional maintenance) | ARRC Group Interview        | Essential (High) |
| Asset Availability and Status | Availability | Availability - Seasonal Variations                | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)   | Communications | General     | General    | Availability - Seasonal Variations                | Ability to indicate seasonal status (e.g. open /closed, not being used, etc.)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Configuration Management      | General      | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.                                | Communications | General     | General    | Integration with Configuration Management Systems | Ability to integrate or synchronize data with external configuration management systems to avoid manual duplication or cross-checking of data.                                       | ARRC Prioritize from Matrix | Optional (Low)   |
| Configuration Management      | General      | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc.                        | Communications | General     | General    | Change Management Process                         | Ability to have a change management process for components of the assets. May include things such as checklists, test procedures, review process, etc.                               | ARRC Prioritize from Matrix | Optional (Low)   |
| Configuration Management      | General      | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts   | Communications | General     | General    | Asset Model Configuration                         | Control over asset configuration design with ability to define rules for components and parts  | ARRC Prioritize from Matrix | Optional (Low)   |



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| Feature Category                   | Feature | Base Req Title                              | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                       | Description  | Initial Source              | Priority         |
|------------------------------------|---------|---|---|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Fault/Problem Detection            | General | Capture Reasons for Failure                 | Ability to capture reason(s) for failure; preferably through standardized coding  | Communications | General     | General    | Capture Reasons for Failure                 | Ability to capture reason(s) for failure; preferably through standardized coding   | ARRC Group Interview        | Essential (High) |
| Fault/Problem Detection            | General | Data from External Asset Management Systems | Ability to hyperlink to or compile information from external asset management systems including current state, alerts, and errors / issues      | Communications | General     | General    | Data from Communications Management Systems | Ability to hyperlink to or compile information from various existing communication management systems which may include configuration, status, and notifications | ARRC Group Interview        | Essential (High) |
| Fault/Problem Detection            | General | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors   | Communications | General     | General    | Data from Diagnostic Systems                | Ability to hyperlink to or record and report on information from diagnostic systems and testing vendors  | ARRC Prioritize from Matrix | Essential (High) |
| Planned Maintenance and Inspection | General | PM Job Plan                                 | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed | Communications | General     | General    | PM Job Plan                                 | Ability to setup standard template for labor and parts for preventative maintenance routines to allow for forecasting of parts and labor needed                  | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | PM Service Calculation                      | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)        | Communications | General     | General    | PM Service Calculation                      | Ability to calculate PM service requirements on more than one aspect of asset usage (e.g. calendar time, hours, miles, fuel usage, etc.)                         | ARRC Prioritize from Matrix | Optional (Low)   |



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### Communications

| Feature Category                   | Feature | Base Req Title                             | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                                      | Description   | Initial Source              | Priority         |
|------------------------------------|---------|--|---|----------------|-------------|------------|--|---|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Inspection Schedules                       | Support ability to schedule recurring inspections that will automatically create a work order   | Communications | General     | General    | Inspection Schedules                       | Support ability to schedule recurring inspections that will create a work order   | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Incorporate Season and Weather             | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                                       | Communications | General     | General    | Incorporate Season and Weather             | Accommodate recording season and weather into usage information for preventative or predictive maintenance planning and                                       | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | PM Notification                            | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)                         | Communications | General     | General    | PM Notification                            | Ability for notifications to be automatically sent to maintenance and assigned user group when a PM is due (or created by the system)                         | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Automated Compliance Tracking and Planning | Automated planning and compliance tracking of regulatory inspection requirements  | Communications | General     | General    | Automated Compliance Tracking and Planning | Automated planning and compliance tracking of regulatory inspection requirements  | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Digital Workflows for Review and Approval  | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | Communications | General     | General    | Digital Workflows for Review and Approval  | Support digital workflows for review and approval for inspections (and where otherwise required) that is consistent with any regulatory workflow requirements | ARRC Prioritize from Matrix | Desired (Medium) |



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| Feature Category                   | Feature | Base Req Title  | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title   | Description   | Initial Source              | Priority         |
|------------------------------------|---------|---|---|----------------|-------------|------------|---|---|-----------------------------|------------------|
| Planned Maintenance and Inspection | General | Generate Work Orders from Inspection Results          | Ability to generate work orders from inspection results (would typically be categorized as corrective actions)  | Communications | General     | General    | Generate Work Orders from Inspection Results          | Ability to generate work orders from inspection results (these would be corrective actions)   | ARRC Group Interview        | Essential (High) |
| Planned Maintenance and Inspection | General | Digital-First Inspections                             | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements | Communications | General     | General    | Digital-First Inspections                             | Ability to record inspections digitally in the field (with an offline mode available); subject to any regulatory requirements and workflow requirements | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection | General | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)      | Communications | General     | General    | Common Inspection Record to Satisfy Multiple Agencies | Desire a means of managing asset and inspection information that can be used to satisfy multiple agency regulatory requirements (e.g. FRA and FTA)      | ARRC Prioritize from Matrix | Optional (Low)   |
| Planned Maintenance and Inspection | General | Inspection Data Retention Periods                     | Ability to retain electronic copies of records indefinitely; Federal agencies usually allow for only a certain period of time                           | Communications | General     | General    | Inspection Data Retention Periods                     | Ability to retain electronic copies of records indefinitely; Federal agencies usually allow for only a certain period of time                           | ARRC Prioritize from Matrix | Optional (Low)   |



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| Feature Category                      | Feature | Base Req Title                             | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                      | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|--|--|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Planned Maintenance and Inspection    | General | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics | Communications | General     | General    | Pre-Use and Frequent Inspection Checklists | Ability to record frequent (daily) or pre-use inspections with a checklist; support different checklists based on asset category and characteristics | ARRC Prioritize from Matrix | Desired (Medium) |
| Planned Maintenance and Inspection    | General | Contractors for Preventative Maintenance   | Ability to define vendors which are used for PM and inspection activities on assets, systems or components   | Communications | General     | General    | Contractors for Preventative Maintenance   | Ability to define vendors which are used for PM and inspection activities on assets, systems or components   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Estimated Effort on Work Orders            | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users                     | Communications | General     | General    | Estimated Effort on Work Orders            | Ability to set an estimated labor or costs on work orders to aid in planning and scheduling or to provide estimates to end users                     | ARRC Group Interview        | Optional (Low)   |
| Work Orders and Work Order Management | General | Ease of Use                                | Focus on ease of use for recording work yet need the ability to record meaningful information to be useful (e.g. Task Coding)                        | Communications | General     | General    | Task Coding Ease of Use                    | Focus on the ease of use in task coding - as an example filter task codes available on a work order to those that are applicable for the asset       | ARRC Group Interview        | Essential (High) |



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| Feature Category                      | Feature | Base Req Title             | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                      | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|----------------------------|---|----------------|-------------|------------|----------------------------|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Reporting Tools            | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. Currently Excel is the reporting tool - either data is manually entered or exported from JDE | Communications | General     | General    | Reporting Tools            | Base requirement are tools that are better than an Excel export. There is a need for analytics for trending, analysis, failure, and investment planning. Analytics may be in a separate tool but the information to support it must be reportable. | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Task Coding on Work Orders | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs  | Communications | General     | General    | Task Coding on Work Orders | Ability to code tasks on work orders that may include system, subsystem, component, position, and activity (e.g. inspect, install, remove, repair, replace) for accurate information on maintenance activity and costs                             | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Failure Analysis           | Improved ability to analyze failures and their causes. Currently can only rely on what has been written on the work orders; and its necessary to look at each individual work order.  | Communications | General     | General    | Failure Analysis           | Ability to analyze failures and their causes; particularly when there are system interdependencies (e.g. power, network)   | ARRC Group Interview | Essential (High) |



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| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                      | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|--|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Prioritization of Work Orders         | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | Communications | General     | General    | Prioritization of Work Orders              | Ability to prioritize or rank work orders; a default prioritization may be based on criticality rating of asset  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Scheduling and Planning               | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)   | Communications | General     | General    | Scheduling and Planning                    | Ability to plan and schedule work within the system rather than having to track outside of it (e.g. Excel)   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Record GPS Locations to Work Location | Ability to record GPS locations (from device itself or selection from a map) for work order locations  | Communications | General     | General    | Record GPS Locations to Work Location      | Ability to record GPS locations (from device itself or selection from a map) for work order locations  | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Future and Unscheduled Work Orders    | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | Communications | General     | General    | Support Future and Unscheduled Work Orders | Support the ability to have unscheduled or future date work orders to record work and have it available for scheduling   | ARRC Group Interview | Desired (Medium) |
| Work Orders and Work Order Management | General | Custom Categorize Work Orders         | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling. | Communications | General     | General    | Custom Categorize Work Orders              | Ability to categorize work orders in a custom way such as by campaign, program, or season. This may aid in grouping work as part of prioritization and scheduling. | ARRC Group Interview | Desired (Medium) |



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| Feature Category                      | Feature | Base Req Title            | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                     | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------|---|----------------|-------------|------------|---------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Assign Work Orders        | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location  | Communications | General     | General    | Assign Work Orders        | Ability to assign work orders to technicians within the appropriate skillset pool and/or geographic location   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Usage Readings            | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)  | Communications | General     | General    | Usage Readings            | Ability to quickly record (or import from external systems) usage readings (e.g. miles, hours)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | End-Users and Work Orders | Ability for end users (e.g. Operations) to initiate work requests through a complaint process and to see status and history of work orders                      | Communications | General     | General    | End-Users and Work Orders | Ability for end users to initiate work requests through a complaint process and to see status and history of work orders   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Notifications  | Ability to configure notifications for new or outstanding work including PM, inspection, or work orders to designated users (e.g. on being created or assigned) | Communications | General     | General    | Work Order Notification   | Ability to configure notifications for work including inspections or work orders to recipients (end users, technicians, management, operations) based on criteria and action(e.g. newly created, modified, closed) | ARRC Group Interview        | Essential (High) |



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| Feature Category                      | Feature | Base Req Title                                    | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title   | Description   | Initial Source       | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|---|----------------------|------------------|
| Work Orders and Work Order Management | General | Checklist Criteria for Repair - Create Work Order | Ability to define criteria indicating repair/adjustment or replacement is required on checklist items. Automatically create a work order to with the task or add a line item to work order if already created from this checklist.                               | Communications | General     | General    | Checklist Criteria for Repair - Create Work Order | Ability to define criteria for repair or replacement on checklist items. A work order to address is automatically created / or a line item on a work order if already created from this checklist)                                      | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Checklists (Digital)                              | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order and may be available from asset. | Communications | General     | General    | Digital Checklists                                | Ability to define digital (not paper) checklists for condition assessments, inspections, or regular work activities connected to a work orders. Checklists save the results recorded by the user and are attached to work order / asset | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Categorize Costs (OPEX/CAPEX)                     | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPEX (e.g. ARRC, Agency (if application) or Other (if applicable)                                 | Communications | General     | General    | Categorize Costs (OPEX/CAPEX)                     | Ability to categorize costs by OPEX/CAPEX categories and subcategory (e.g. OPEX - Preventative (e.g. Inspection), Corrective, or Break-Fix (must fix now) and CAPX (e.g. ARRC, Agency (if application) or Other (if applicable)         | ARRC Group Interview | Desired (Medium) |



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| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                        | Description  | Initial Source       | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|------------------------------|--|----------------------|------------------|
| Work Orders and Work Order Management | General | Mobile Digital Work Orders            | Record data where and when the work occurs (create, update, and close) through mobile digital work orders that support an offline mode.  | Communications | General     | General    | Mobile Work Orders           | Ability to view, initiate, update, and close work orders in the field in online or offline mode.   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Work Order Source                     | Ability to record the source of a work order (e.g. result of an inspection, end user request, operations observation, alarm/notification, or internally initiated)   | Communications | General     | General    | Work Order Source            | Ability to record the source of a work order (e.g. result of an inspection, end user request, alarm/notification, or internally)   | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Mechanic/Technician Records Work      | Mechanic/Technician records their work on the work order and has access to info they need through the system. Only person with direct knowledge of work is Mechanic/Technician and they should be able to record their work as it is done. | Communications | General     | General    | Record of Work by Technician | Only person who knows what is happening on the work order is the technician and they should have ability to see the info they need and also record as it is done (as easily as possible) | ARRC Group Interview | Essential (High) |
| Work Orders and Work Order Management | General | Complaint / Cause / Correction (3C's) | Support the ability to record complaint, cause, and correction in a standardized way for more efficient failure analysis and identification of common issues, causes, and their resolution   | Communications | General     | General    | Work Order 3C                | Ability to record Complaint / Cause / Correction with simple coding to allow for identifying common problems and their resolution  | ARRC Group Interview | Essential (High) |



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| Feature Category                      | Feature | Base Req Title                       | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|--------------------------------------|--|----------------|-------------|------------|--------------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment  | Communications | General     | General    | Group Work Orders by Geographic Area | Group work orders by geographic area so they do not need to be manually grouped for review and assignment   | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | End-User Field Service               | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)   | Communications | General     | General    | End-User Field Service               | Ability for end users to quickly record any field service performed (for efficiency and consistency likely requires a digital mobile offline solution)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Capture All Work on Work Orders      | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently   | Communications | General     | General    | Capture all Work on Work Order       | Ability to easily capture all work (inspection, condition assessment, work activity) on a work order to ensure that a record is made of the work and costs are captured consistently  | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Minor Work                           | Ability to quickly record minor work on a work order against an asset such as inspection and service (i.e. objective is to avoid using a standing or bucket work order that is not asset-specific for non-parts work less than 1 hour) | Communications | General     | General    | Minor Work                           | Ability to quickly record minor work such as inspection and service (i.e. ability to avoid using bucket/generic work order for non-parts work less than 15 minutes) - repetitive minor fixes could indicate a recurring problem | ARRC Group Interview        | Desired (Medium) |



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| Feature Category                      | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Parts on Work Order                   | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card      | Communications | General     | General    | Parts on Work Order                   | Ability to specify parts on work order and whether they came from inventory, were ordered, or purchaed with a purchasing card      | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Multiple Shop / Work Locations        | Accommodate multiple shops and work locations including ARRC shops and work in the field   | Communications | General     | General    | Multiple Shop / Work Locations        | Accommodate multiple shops and work locations including ARRC shops and work in the field   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened                     | Communications | General     | General    | Capture Usage Readings on Work Orders | Ability to capture the current usage readings (hours, miles, etc.) on work orders and PMs when they are opened                     | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Record Checklist and Results          | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order | Communications | General     | General    | Record Checklist and Results          | Ability to capture and store checklist form and recorded data electronically (rather than paper or scanned paper) for a work order | ARRC Prioritize from Matrix | Desired (Medium) |
| Work Orders and Work Order Management | General | Contractor or Vendor Work             | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders                     | Communications | General     | General    | Contractor or Vendor Work             | Ability to record work details (possibly through an import) performed by contractors or vendors on work orders                     | ARRC Prioritize from Matrix | Desired (Medium) |



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| Feature Category                      | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|---------------------------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Cost Reporting                     | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | Communications | General     | General    | Cost Reporting                     | Ability to see aggregate costs on assets by basic criteria including System, "Type", Time Period, PM, Corrective or Break-Fix, By OPEX/CAPEX (or funding source), by hierarchy or geography | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Reimbursable Work                  | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance  | Communications | General     | General    | Reimbursable Work                  | Ability to indicate that work is reimbursable by another party and output can be prepared to support Finance  | ARRC Group Interview        | Optional (Low)   |
| Work Orders and Work Order Management | General | Cost Accounting - Handling Changes | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.  | Communications | General     | General    | Cost Accounting - Handling Changes | Ability to report or pass through changes to costs on a work order to the financial system so it is in sync with the work order costs.  | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | Work Order Attachments             | Automatically output, link, and/or display (if digital) procedures, checklists, and bills of materials needed for work order  | Communications | General     | General    | Work Order Attachments             | Automatically output or link / present (if digital) procedures, checklists, and bills of materials needed for work order  | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | Integrate Financial System         | Work Order system must be integrated or interfaced with the financial system (currently JDE)  | Communications | General     | General    | Integrate Financial System         | Work Order system must be integrated or interfaced with the financial system (currently JDE)  | ARRC Prioritize from Matrix | Essential (High) |



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| Feature Category                      | Feature | Base Req Title                          | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                   | Description  | Initial Source              | Priority         |
|---------------------------------------|---------|---|--|----------------|-------------|------------|---|--|-----------------------------|------------------|
| Work Orders and Work Order Management | General | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | Communications | General     | General    | Work Orders against Assets in Hierarchy | Allow for a work order to be written against assets at various levels of the hierarchy   | ARRC Prioritize from Matrix | Optional (Low)   |
| Work Orders and Work Order Management | General | SLAs for Response Times                 | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | Communications | General     | General    | SLAs for Response Times                 | Support the ability to set SLAs for response time on asset groups or categories and to record performance against them   | ARRC Group Interview        | Desired (Medium) |
| Work Orders and Work Order Management | General | Reassign, Split, or Child Work Order    | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | Communications | General     | General    | Reassign, Split, or Child Work Order    | Ability to reassign, split off part of a work order, or create a child work order so that more than one group can record activity against a work order yet still maintain the link to the single event | ARRC Group Interview        | Essential (High) |
| Work Orders and Work Order Management | General | Work Packages                           | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assessment, complaint, etc   | Communications | General     | General    | Work Packages                           | Ability to create pre-defined work order template with a standard set of tasks for a particular inspection, condition assessment, complaint, etc   | ARRC Group Interview        | Desired (Medium) |
| Materials Management                  | General | Min-Max Parts Inventory                 | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes  | Communications | General     | General    | Min-Max Parts Inventory                 | Inventory minimum and maximum on-hand requirements that is based on asset and component mix; including when assets are added or surplus; and seasonal changes  | ARRC Prioritize from Matrix | Optional (Low)   |



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### Communications

| Feature Category     | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority         |
|----------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|------------------|
| Materials Management | General | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)   | Communications | General     | General    | Component Parts - Obsolescence     | Ability to identify date and category of obsolescence by vendor for asset or its component parts (e.g. vendor sends notice with date of end of support)   | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management | General | Inventory Purchase Plan            | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)  | Communications | General     | General    | Inventory Purchase Plan            | Purchase plan based on forecasted preventative and overhaul work (done manually now but should be able to forecast based on work packages / planned work orders in system)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Materials Management | General | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | Communications | General     | General    | Material Inventory Field Locations | Ability to easily add and remove materials in arbitrary field locations identified with GPS (either by device or selection from map). Material locations correlated to asset hierarchy for reporting (e.g. Mile Post) | ARRC Prioritize from Matrix | Desired (Medium) |
| Materials Management | General | Component Parts - Criticality      | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed  | Communications | General     | General    | Component Parts - Criticality      | Ability to designate as critical parts or components that have long lead times, are obsolete, or are costly or difficult to ship when needed  | ARRC Group Interview        | Desired (Medium) |



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| Feature Category               | Feature | Base Req Title                   | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                            | Description  | Initial Source              | Priority         |
|--------------------------------|---------|----------------------------------|--|----------------|-------------|------------|----------------------------------|--|-----------------------------|------------------|
| Materials Management           | General | Equipment Check-Out / Check-In   | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)   | Communications | General     | General    | Equipment Check-Out / Check-In   | Mechanism to check out and check in equipment (particularly portable equipment that may be issued to a user)   | ARRC Group Interview        | Optional (Low)   |
| Component Tracking and Rebuild | General | Component Serial Number Tracking | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset") | Communications | General     | General    | Component Serial Number Tracking | Ability to track components by serial number and when they were put on, taken off, moved to another asset or put on shelf (serial number of part not on unit could require component to be an "asset") | ARRC Prioritize from Matrix | Desired (Medium) |
| Component Tracking and Rebuild | General | Usage for Components             | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance   | Communications | General     | General    | Usage for Components             | Calculated usage based on the usage measures for asset(s) installed in; for reliability and preventative maintenance   | ARRC Prioritize from Matrix | Optional (Low)   |
| Component Tracking and Rebuild | General | Part Rebuild                     | Indicator that a part in inventory or being installed is a rebuild   | Communications | General     | General    | Part Rebuild                     | Indicator that a part in inventory or being installed is a rebuild   | ARRC Prioritize from Matrix | Optional (Low)   |



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| Feature Category               | Feature | Base Req Title                     | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title                              | Description   | Initial Source              | Priority       |
|--------------------------------|---------|------------------------------------|---|----------------|-------------|------------|------------------------------------|---|-----------------------------|----------------|
| Component Tracking and Rebuild | General | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not.                     | Communications | General     | General    | Component Installation and Removal | Track when components are installed, removed, and their disposition (e.g. transferred, shelved, disposed of, rebuilt) May be differences in handling with components that have serial numbers vs those that do not.                     | ARRC Prioritize from Matrix | Optional (Low) |
| Component Tracking and Rebuild | General | Component Service Life             | Ability to specify expected service life of a component or part   | Communications | General     | General    | Component Service Life             | Ability to specify expected service life of a component or part   | ARRC Prioritize from Matrix | Optional (Low) |
| Component Tracking and Rebuild | General | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | Communications | General     | General    | Component Compatibility            | Ability to identify compatibility of components with asset configurations   | ARRC Prioritize from Matrix | Optional (Low) |
| Warranty Management            | General | Warranty                           | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchased or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | Communications | General     | General    | Warranty                           | Ability to specify for parts whether a serial number is expected, what warranty terms are, and whether it is from purchased or installed date. Associate warranty contact info or procedure with record (procedures vary by Vendor/OEM) | ARRC Prioritize from Matrix | Optional (Low) |



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| Feature Category               | Feature | Base Req Title                        | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                                 | Description   | Initial Source              | Priority       |
|--------------------------------|---------|---------------------------------------|--|----------------|-------------|------------|---------------------------------------|---|-----------------------------|----------------|
| Capital Projects and Campaigns | General | Total Cost of Ownership Reporting     | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement  | Communications | General     | General    | Total Cost of Ownership Reporting     | Method for recording and displaying TCO; what is spent to maintain assets and the frequency of maintenance versus replacement of the asset or systems within the asset; allow for long term planning of asset or system replacement | ARRC Prioritize from Matrix | Optional (Low) |
| Capital Projects and Campaigns | General | Capital Projects Reporting            | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries) in addition to funding by year and by funding source | Communications | General     | General    | Capital Projects Reporting            | Improved reporting on capital projects including estimates for labor, P-Card purchases, etc. prior to posting in the finance system (perhaps estimated from Work Order entries)   | ARRC Prioritize from Matrix | Optional (Low) |
| Capital Projects and Campaigns | General | Replacement Plan (ULB / Obsolescence) | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)  | Communications | General     | General    | Replacement Plan (ULB / Obsolescence) | For multi-year planning support replacement planning including age, useful life benchmark, obsolescence, costs, usage, and asset category composition (e.g. owned vs leased / rented)   | ARRC Prioritize from Matrix | Optional (Low) |



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| Feature Category               | Feature | Base Req Title                               | Base Req Desc   | Asset Category | Asset Class | Asset Type | Title  | Description  | Initial Source              | Priority         |
|--------------------------------|---------|--|---|----------------|-------------|------------|--|--|-----------------------------|------------------|
| Capital Projects and Campaigns | General | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented) | Communications | General     | General    | Asset Category / Class Composition over Time | Ability to show the composition of assets in an asset category / class over time by asset hierarchy or groupings as well as ownership (e.g. ARRC, leased, rented)  | ARRC Prioritize from Matrix | Optional (Low)   |
| Timekeeping                    | General | Hours Worked on Work Order / Asset           | Record hours worked on a work order (both direct and indirect time) and integrate with time keeping.  | Communications | General     | General    | Hours Worked on Work Order / Asset           | Record time worked on a work order and integrate with time keeping. Capture indirect as well as direct time.   | ARRC Group Interview        | Essential (High) |
| Timekeeping                    | General | Time Tracking                                | Avoid duplicate entry or manipulation of time records in more than one system   | Communications | General     | General    | Simplified Time Keeping                      | Ability to enter time once - on the work order for the most detail - and for it to transfer to time card. Do not want to have an additional step to enter or manage time keeping. Does require accomodating HOS (Hours of Service) | ARRC Group Interview        | Optional (Low)   |
| Timekeeping                    | General | Hours of Service (HOS)                       | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies  | Communications | General     | General    | Hours of Service (HOS)                       | Ability to record Hours of Service and availability for work in a way which adheres and is approved by regulatory agencies   | ARRC Group Interview        | Desired (Medium) |



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### Requirements Data

#### Communications

| Feature Category | Feature | Base Req Title           | Base Req Desc  | Asset Category | Asset Class | Asset Type | Title                    | Description  | Initial Source              | Priority       |
|------------------|---------|--------------------------|--|----------------|-------------|------------|--------------------------|--|-----------------------------|----------------|
| Timekeeping      | General | Asset Field on Timecards | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to) | Communications | General     | General    | Asset Field on Timecards | Have an asset field on time cards across ARRC to ensure that asset usage can be captured (usage is a more detailed level than what group the asset is assigned to) | ARRC Prioritize from Matrix | Optional (Low) |