Hybrid Approach Case Study: Building ArcGIS Online Web Mapping Applications with Data Hosted on Organization Managed Servers

Frank Roberts, Innovate! Inc.

Inn◯vate!

Perform. Excel. Elevate. Innovate.

A leader in Environmental Science and Geospatial Solutions since 2002

✓ Strong Past Performance

✓ DCAA Approved Accounting System

✓ Esri Silver Business Partner, Salesforce Silver Partner, Mulesoft Strategic Partner

✓ Certified Professionals (Scrum Masters, PMP, etc.)

Federal Government
- GSA Schedule IT 70
- GSA 8(a) STARS
- CIO-SP3 Small Business 8(a) Pool

Government Highlights
- Minority and Woman Owned

State and Local Contracts
- City of Ponderay
- City of Plummer
- City of Hayden

Native American
- Coeur d'Alene
- Snoqualmie Tribe
- Umatilla Tribes
- Tulalip Tribes
- Warm Springs Tribes
- Cow Creek Tribe

Commercial Contracts
- Engineering Consulting Services (ECS)

Geospatial Services
- Esri Product Line
- Visualization & Mapping
- Data Collection & Management
- Geospatial Application Development (Widgets, Desktop, web-based, mobile, open source)
- Geospatial Metadata
- Enterprise Architecture, Strategy, and Deployment

Information Technology
- Design and Architecture
- IT Configuration with Geospatial Technologies
- Web Development
- Open Source
- Integration
- Operations and Maintenance
- Hosting
- Information Assurance

Cloud Advisory
- Cloud Migration
- Business Operation Platform
- Customer Relationship Management (CRM)
- Management Information System
- Legacy System Migration
- Organizational Process Automation
- Workflow Modernization

Business Management Consulting
- Business Planning and Strategy Development
- Project Portfolio Management and Analysis
- Business Process Reengineering
- Business Cases, ROI Analyses, and Financial Analysis Tools
- Performance Measures
- CPIC and Exhibit 300 Support
- Executive Coaching and Leadership Development
- CIO Support

- Until now, tribes have had nearly unabridged access to Esri software licensing

- New policy implemented by BIA provides each tribe only **5 Enterprise** Creator Users licenses per tribal Portal instance

- Our Case Study provides an <u>approach to do more with less</u>

- Tribes can purchase an ArcGIS Online license with unlimited Creator users for $**1,693** and can reference web services from their on-premises servers. For some tribes this may be a less expensive alternative then paying for Creator licenses at $**484** a piece.

Benefits:

✓ Keep your data on your servers

✓ Avoid paying credits for data hosting

✓ Avoid cost of maintaining Portal upgrades (let Esri do that, at no cost to you)

✓ Quicker access to AGOL/Portal upgrades

Drawbacks:

• You may need to scale your existing ArcGIS Server(s)

• Reliant on Esri for AGOL

• Reliant on your IT for servers

Hybrid Solution at EPA Region 9:

- Concern over data security
- EPA has a contract to supply Amazon Web Services in the form of Windows Servers
- Hosting data for Emergency Response on EPA's in-house data servers was too locked down and rapid access is needed in Emergency Response situations.

This solution has been used for Emergency Response for past 6 years.
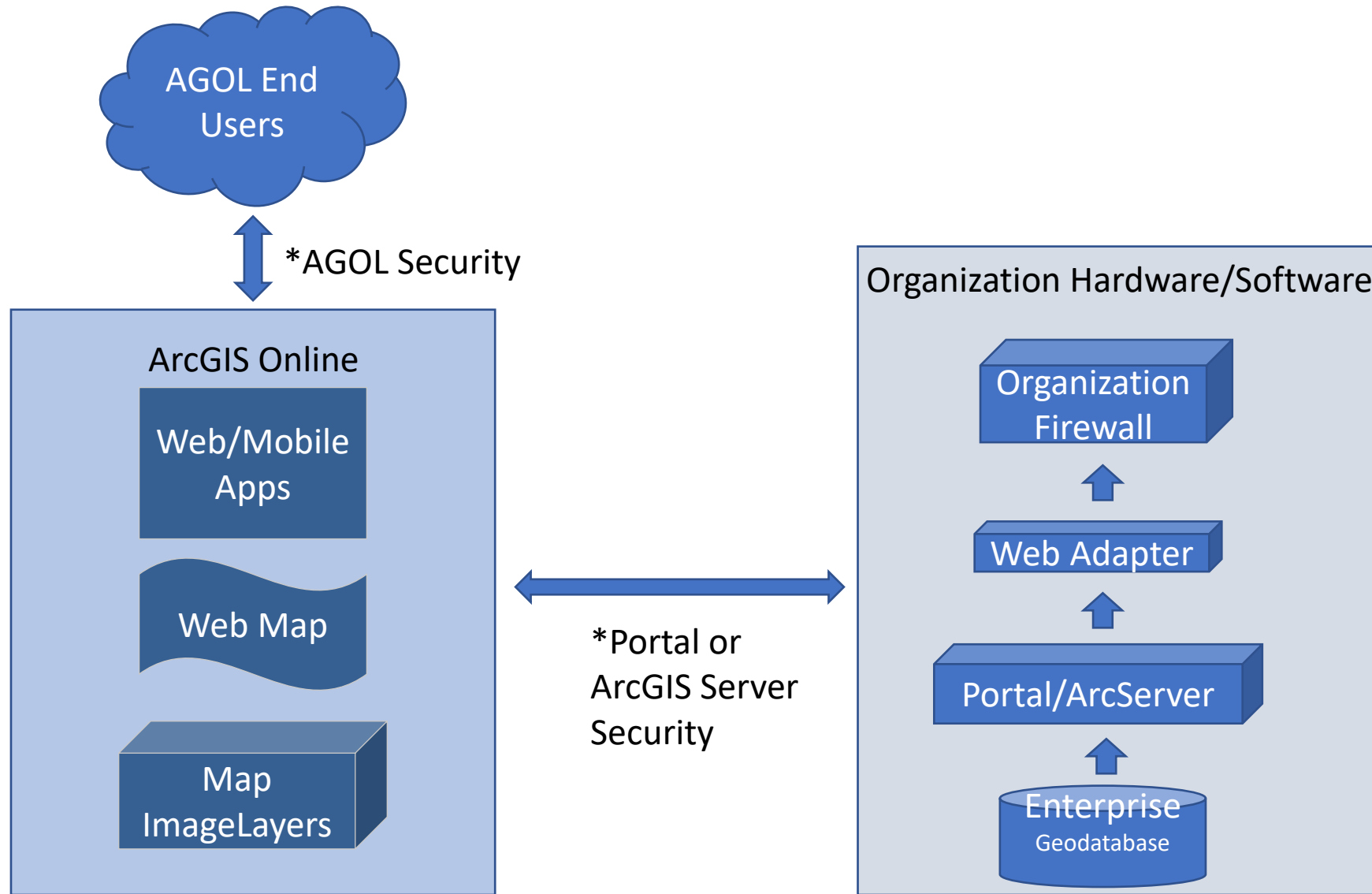
Data on Organization Managed Server Should be Available via a Secure Rest End Point

- ArcGIS Server or Portal can be used to create the REST end point

- Data can be stored in any location that is registered with ArcGIS Server (e.g., enterprise geodatabase, ArcGIS DataStore, file server)

- Data can either be served up and made publicly available or secured, depending upon organizations policy for given feature class

- Think of a MapImageLayer as a LayerFile but in AGOL
  - MapImageLayer is view only, but you can create an AGOL Feature Layer by referencing a feature service too.
- Panda's Paint Box
- Stores:
  - Path to rest end point
  - Cartography
 - Embed Credential (optional)
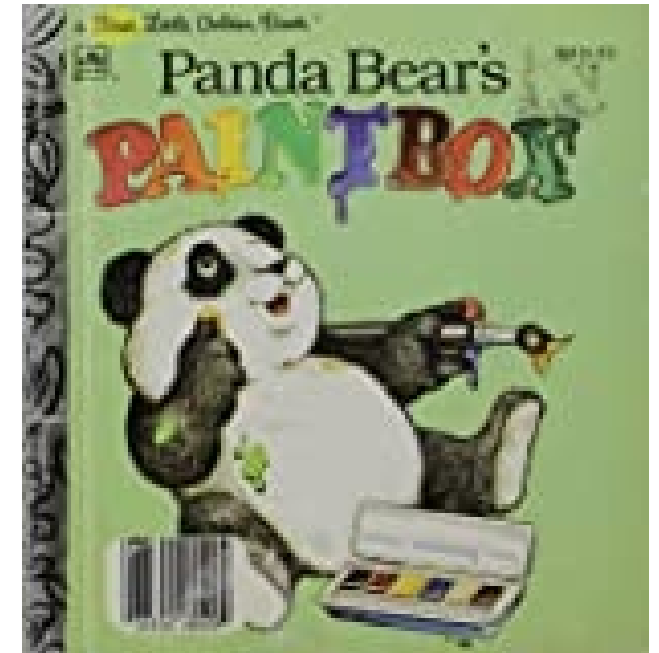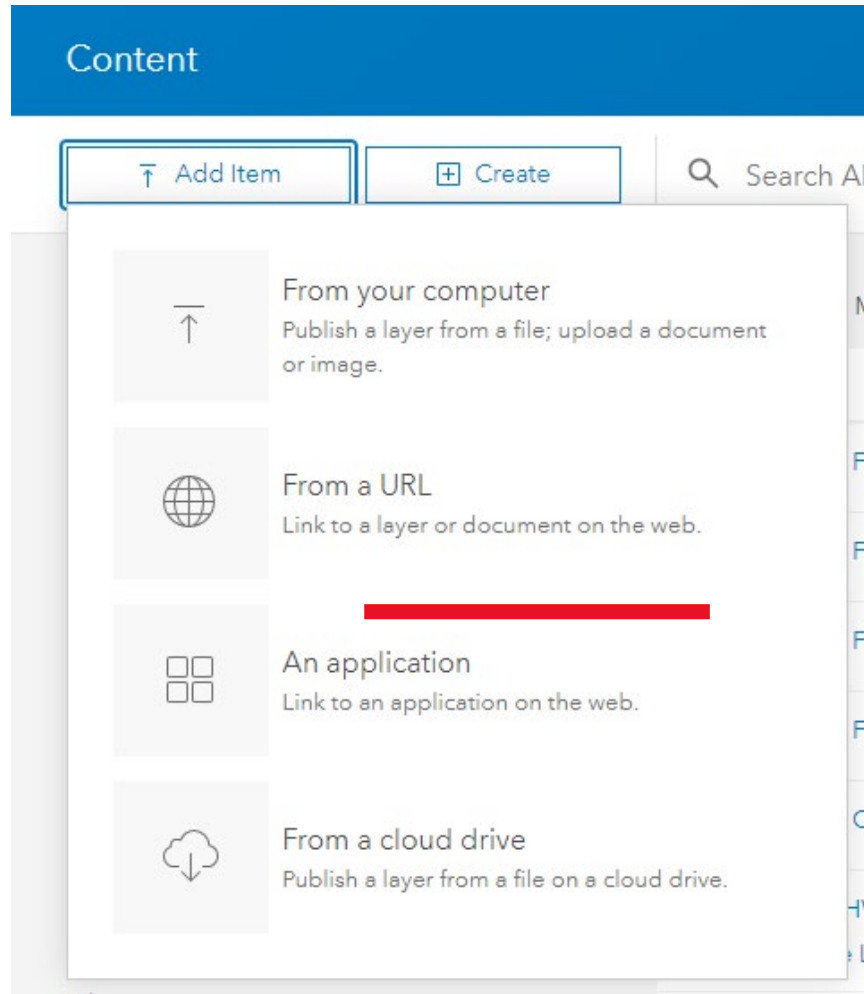
Share MapImageLayer with groups in AGOL that need access to them

- If credentials are embedded into the MapImageLayer item, it is important that the item is only shared with the appropriate users in AGOL.

- If credentials are not embedded, users will be prompted to log into ArcGIS Server or Portal to view the item, in addition to logging into AGOL.

- MapImageLayers can be added to an AGOL Web Map like any other item
- If an editable feature service is added to a map, it will allow users to edit data stored on-premises through an AGOL web map
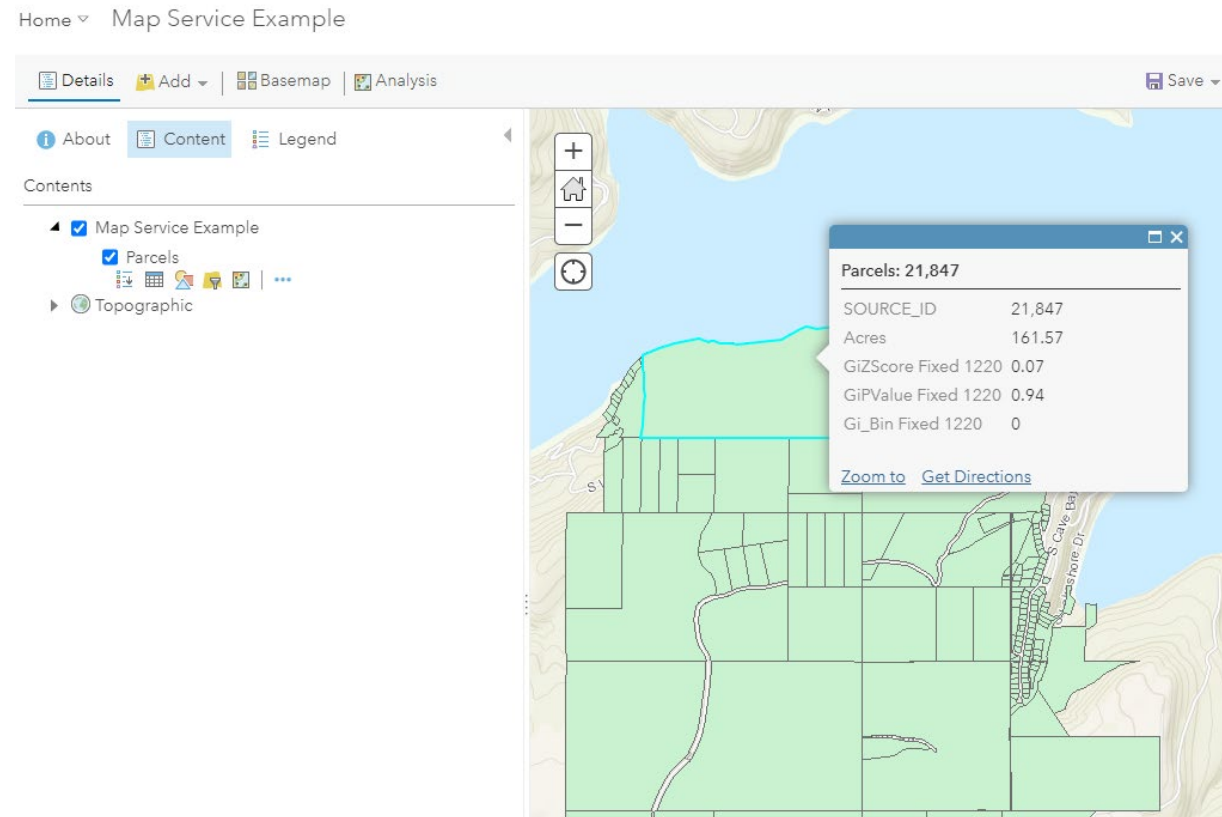
- To better facilitate grouping of data from a wide variety of services, Innovate while under contract with World Wildlife Federation (WWF) created the Group Layer List widget

- This widget allows the user to create custom groups and then add any map image layers into those groups

- The widget does require Web AppBuilder Developers addition

- EPA Region 9 currently is using this widget

- This widget can be freely downloaded from the following GitHub site: https://github.com/Innovate-Inc/GroupedLayerListWidget
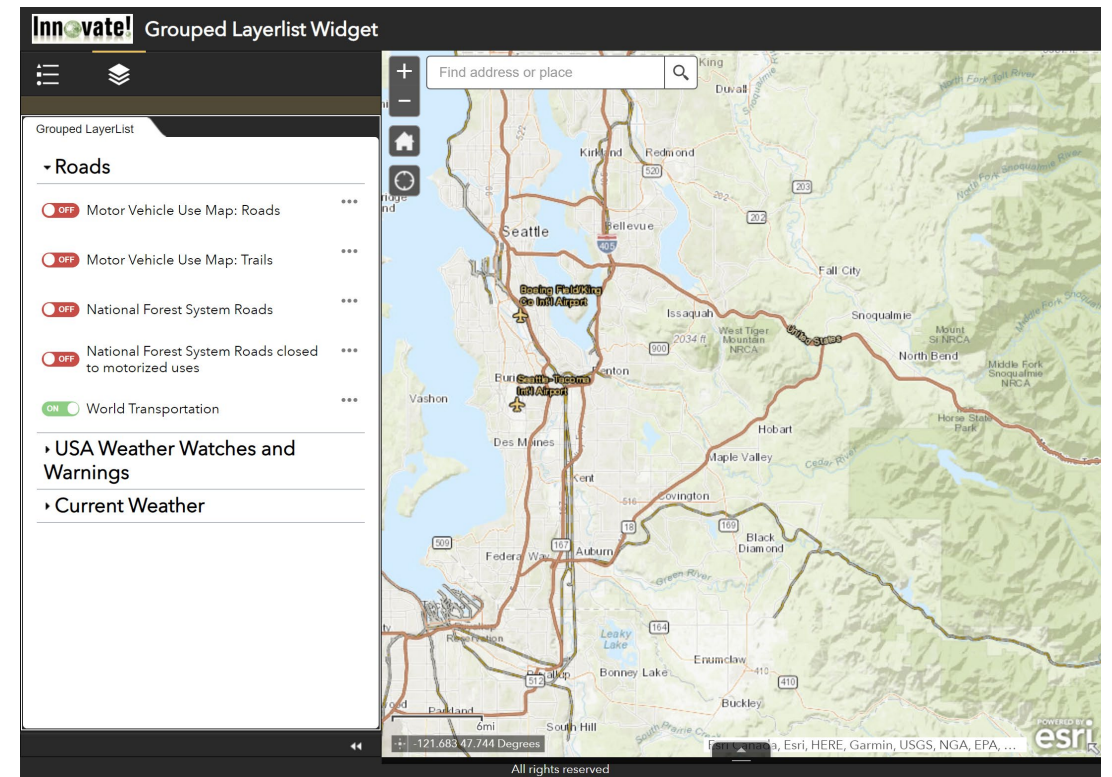
- Overall, this is been a very effective solution

- Have very rarely had any issues with AGOL reliability

- Halfway through the project, an integration was done with AGOL to allow it to accept PIV card authentication. This has streamlined the process for end users, not having to know two logins/passwords.

- Most issues encountered are around EPA providing enough memory and upgrades on AWS systems.

Frank Roberts, Director of IT/GIS Innovate! Inc.

froberts@innovateteam.com

Check us out at www.innovateteam.com

Check out some of our projects at
https://it.innovateteam.com/top10.html