

Building Resilience, One Step at a Time

Learn how AWS teams foster and develop a culture of resilience, one step at a time, and use structured best practices to improve the resilience of teams, business functions, and systems

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Resilient organizations can better withstand a crisis, recover from it more quickly, and often emerge with better performance than their competitors. Resilient organizations do well during turbulent times and build market value, while others wait for things to calm down before they resume innovating.

But business resilience is not easy to achieve.

The Chinese adage “cross the river by feeling the stones”—taking one step, stabilizing yourself, and assessing your options before taking another—refers to a programmatic approach to undertaking change and dealing with uncertainty. I like to use this metaphor to describe how one can think about building a resilient business, another journey best done one step at a time.

But just as crossing a river requires patience, determination, and adaptability, so does the journey toward resilience. By carefully choosing your path, testing the waters, preparing with solid strategies, and taking incremental steps, you can successfully navigate uncertainty. In this eBook, we’ll explore the parallels between building resilience and crossing a river, shedding light on the essential elements of a resilience journey.

“In the early days, resilience planning focused on responding to failures,” says Harish Mekerira, Principal Architect at AWS. “However, as technology and customer demands evolved, companies have had to build resilience for the entire business operation proactively. A single failure can impact the entire organization and lead to financial and reputational damage.”

Four stepping stones

At Amazon, we know that in the real world, everything fails all the time. The goal is to prevent or minimize the impact of failures to the business and your customers. To do this, it can be helpful to think about your organization's resilience journey as a sequence of four stepping stones.

1. Work backwards from the customer

Resilient teams relentlessly [prioritize their customers](#) and continuously seek to understand their needs and preferences, while non-resilient teams often lose touch with customer demands, resulting in wasted effort and lowered productivity. At AWS, our first stepping stone to achieving resiliency is understanding what constitutes resilience for our customer's business. We work backward from the customer journey—the complete sum of experiences and processes customers go through, from awareness to engagement, purchase, and beyond—to figure out the vulnerabilities and how to make the customer experience resilient. We don't start with the underlying technology or application workload in mind; we start by understanding the business model in terms of its customer journeys. The image on the right shows a typical customer journey in the hospitality industry.

The greatest value of starting resilience planning with a customer journey map is that it forces you to take an outside-in perspective before diving into technical aspects and gathering data and experiences from throughout the organization. Working backwards from the customer is the crucial first step in defining what truly matters to them and the business. It allows you to evaluate the dependencies between business jobs and underlying systems, recognize vulnerabilities, and assess the impacts of potential points of failure.

Identify stages of the customer journey



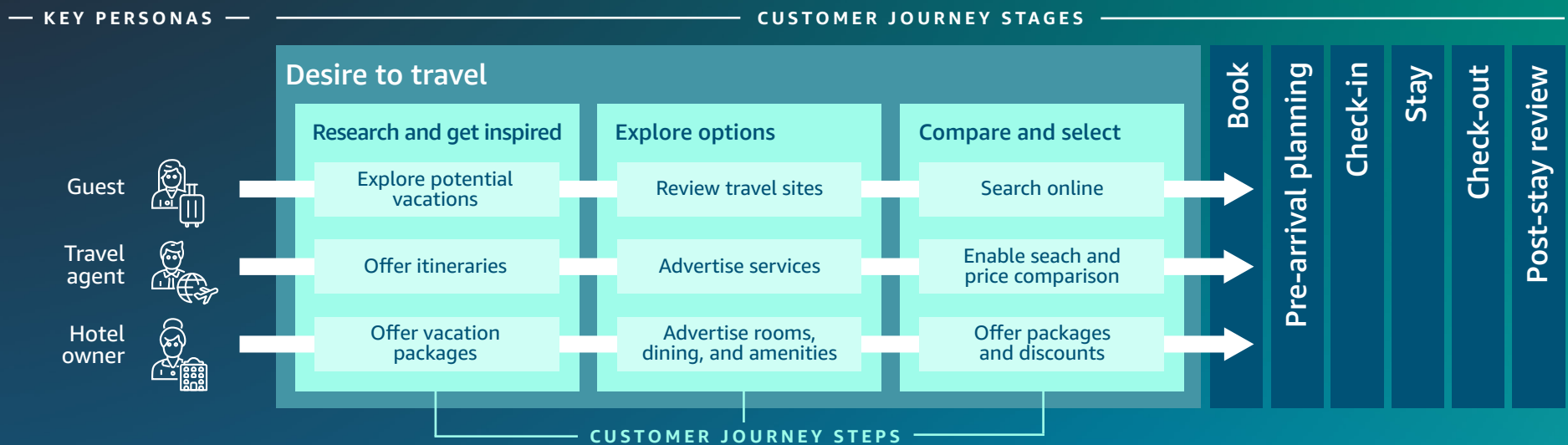
Then, for each customer journey, we develop a map—a visual representation of the experience a customer has with a product, service, or brand from the beginning to the end of that journey. Customers can be internal (contact center staff) or external (hotel owners), and final (hotel guest) or intermediate (travel agent), so we represent them with personas, that is, archetypes of typical customers. The image below shows the steps of the “Desire to Travel” stage for several personas.

A customer journey map takes an outside-in perspective. We sometimes call it a “Jobs to Get Done” framework. Once you have one, you can work with the product and marketing teams and the business to identify the critical steps that can [make or break the customers’ experiences](#). Each

persona has different steps in each journey, as shown below. These steps are the level at which resilience analysis must be conducted.

Demonstrating your commitment to understanding the customer reassures business and IT stakeholders that you prioritize their interests over internal priorities. Once you have this understanding and trust with the business, you can better tailor technical resilience requirements and related investments. With insights and data from business resilience planning, you can make informed decisions about resource allocation, [technology investments](#), and risk mitigation strategies, whether for redundancy, failover mechanisms, or data recovery plans.

Identify key personas and the steps of customer journeys





Using cross-functional teams, we demolished barriers, exposed false assumptions, and maximized transparency. We also resolved difficult discussions into measurable goals, which helped teams prioritize resources and investments.”

Chief Digital Officer

2. Analyze the business with cross-functional teams

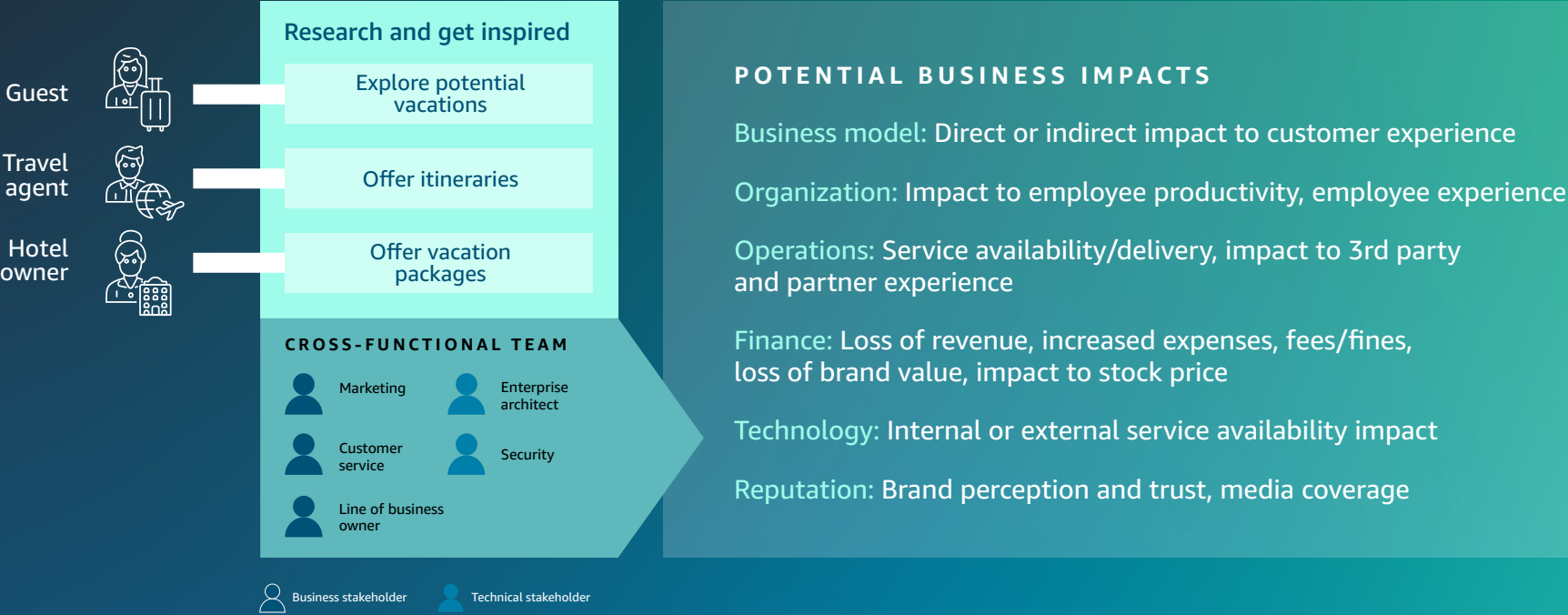
Resilience starts with people, so our second stepping stone is about alignment. [Resilient teams](#) break down silos and maintain open communications with stakeholders, including other teams and internal and external customers. They must be data-driven and collect experiences from every level of the organization to understand and enhance customer experiences.

Diversity and inclusion also enhance resilience. Diverse teams bring different perspectives, which can lead to innovative solutions. This diversity can be in skills, experiences, or backgrounds. By embracing diversity, teams can tap into a broader range of ideas and insights.

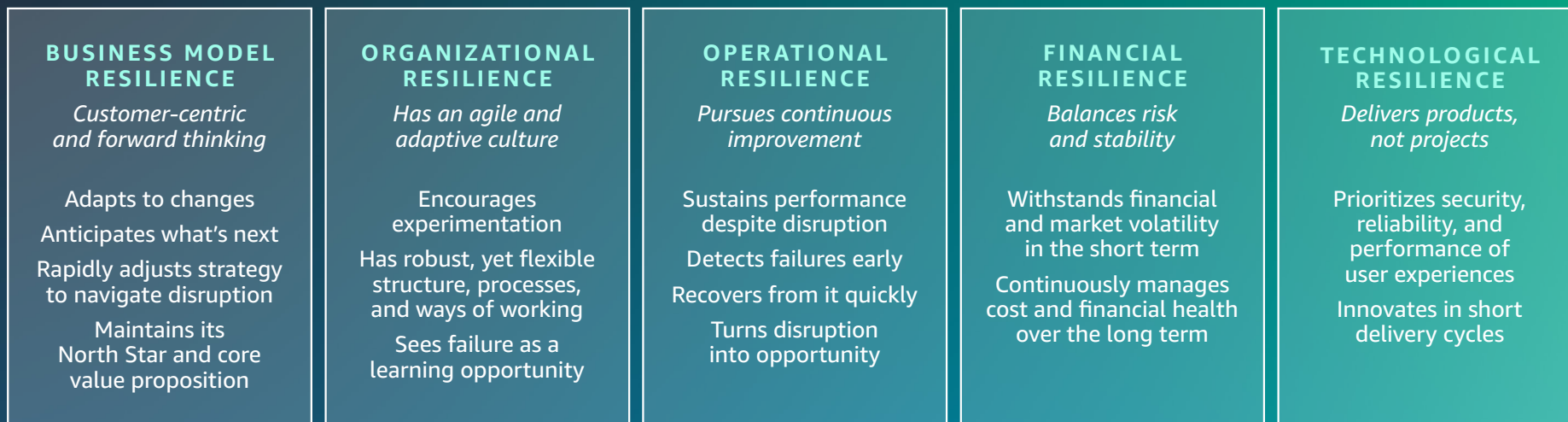
For effective collaboration, everyone needs a clear understanding of the shared goals. This alignment ensures that all efforts are directed toward achieving the desired outcomes. Open communication is a cornerstone of effective collaboration. Team members need to be honest, transparent, and willing to share their thoughts and feedback. This ensures that everyone is on the same page and can work towards a common goal.

To help the hospitality company plan its business resilience program, we brought together cross-functional teams from marketing, sales, IT, and the contact center to focus on a single goal: providing the best possible experience for guests, travel agents, and hotel owners, that was resilient, recoverable, and reliable. They analyzed the business impact of downtime across six areas for each step and each persona, shown below.

Resilience planning and impact analysis



The five requirements for resilience



REPUTATION

Raising resilience in all five areas protects the brand and its reputation with customers, employees, and partners

Having cross-functional teams lets us fully understand the impact of disruptions on every aspect of the customer experience. We gain valuable insights into the consequences of various scenarios by analyzing them against the five requirements of a resilient organization.

Impact analysis for one customer journey step and one key persona

DOWNTIME	BUSINESS MODEL	ORGANIZATION	OPERATIONS	FINANCE	TECHNOLOGY	REPUTATION
0-1 hour	Moderate	Minor	Moderate	Major	Moderate	Minor
2-8 hours	Major	Moderate	Moderate	Catastrophic	Major	Moderate
9-24 hours	Catastrophic	Moderate	Major	Catastrophic	Catastrophic	Major
25-72 hours	Catastrophic	Major	Major	Catastrophic	Catastrophic	Catastrophic

Once the teams have analyzed the need for resilience at this granular level, maximum allowable downtime can be aggregated for each step and each of the five requirements of resilience, as well as the resultant protection from reputational damage (left). Leaders can then better prioritize and allocate business and IT resources across the business model, minimizing the guesswork in capacity and resilience planning.

3. Learn from failures

In cloud-based development, success hinges on navigating through challenges and delivering results. Incidents and failures happen, but our job is to minimize the customer impact. At Amazon, we say that failure and invention are inseparable twins, and to invent, you have to experiment without fear of failure. But what happens when errors occur? Non-resilient teams focus on fixing the problem rather than learning from it. Our third stepping stone involves doing both: fix and learn. But this is where broader culture comes into play: if learning from incidents is given low priority by the organization, then the quality and depth of the results will reflect this. And non-resilient teams will be prone to repeating past mistakes. So, how do you introduce this learning culture to teams? AWS uses a structured mechanism called [Correction of Errors \(COE\)](#).

At Amazon, post-incident activity is never treated as either a repair or fix. A huge part of the postmortem is determining actions to prevent such errors from occurring again. COE is a proactive AWS mechanism that empowers anyone to take control. It involves identifying, analyzing, and rectifying an error to minimize its impact on a project and, more broadly, the organization. COE is how we avoid repeating past mistakes. It is a powerful mechanism to change how teams handle, perceive, value, and treat the incidents they experience.

One customer who adopted the COE mechanism in their business and IT organizations said, "COE encourages my developers to dive deep and collect all possible data from the incident internally and from the customer. It forces them to seek information that is not initially collected but is crucial to identifying the root cause. No learning is left on the table, and teams generate a list of actionable and trackable actions to prioritize and focus on."

Working like this, with [small agile teams that can quickly make good decisions](#) about which ideas to pursue, promotes innovation. They are constantly building resilient, recoverable, and always available products that directly serve customer needs and stay ahead of competitors.





4. Build a culture of resilience

Now, we come to the most difficult part: crossing the river without getting your socks wet or being swept away by the current. Building a culture of resilience and improving the resilience of your products and services takes time, effort, and resources.

Imagine the banks of a river forming the letter “S.” The safest place to cross is typically the straight section in the middle. If you lose your footing, the current will likely carry you to the bank outside the bend. In a [culture of resilience](#), this current is the collective mindset and approach to working that promotes and nurtures the ability to adapt, recover, and thrive in the face of challenges, setbacks, or adversity—and to plan for it.

The right culture can ensure that resilience isn’t just a one-off initiative but an integral part of the organization. Resilience is a choice, just as is speed. But you have to establish a culture that embraces resilience, whether for a new application, re-architecting one for the cloud, or reinforcing a business or IT function. A culture of resilience is more important than specific initiatives. If this culture permeates every aspect of the business, including those directly impacting the customer, the right initiatives will follow.

Companies can't achieve resiliency with just a few technology initiatives; they need to build cultural resiliency, which is a sustainable shift in mindset and ways of working.

The culture of an organization is defined by its leaders. They have to live and define the culture by talking about and acting according to it. Governance is critical to creating a culture of resilience, especially when transitioning to new ways of working. Good governance ensures that best practices, such as business resilience planning and COEs, are integrated into everyday work, and that everyone understands the need for a culture of resilience and feedback loops with customers.

So, leaders need to ensure the company has a clear purpose and strategy to guide employees through changes and challenges. Then, they need to bring their people along by making sure they have the information they need to understand what needs to be done. Then, leaders have to let go, which is not easy for many. And they have to instill a culture of continuous learning to equip their employees with the skills and knowledge to adapt to navigate unforeseen challenges and seize new opportunities.

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The role of technology in resilience

The best way to achieve [technology resilience](#) is with the cloud. Applications in the cloud can resist or recover from disruptions, including those related to infrastructure, dependent services, misconfigurations, and transient network issues. The cloud is scalable on demand, has robust backup, recovery, reliability and uptime, stringent security standards, and automatic updates and maintenance. You should think of resilience as a standard process that your organization can operationalize. To help with that, AWS has developed a [resilience lifecycle framework](#) that captures resilience learnings and best practices based on years of working with customers and internal teams.

But the cloud does more for an organization than make it resilient to disruptions. It allows an organization to try things very quickly. People don't have to spend time upfront to figure out which services they will need because they have instant access to hundreds of them. And because the cloud is pay-for-consumption, they can change direction without having to worry about making large investments. If something doesn't work out, they can cut their losses quickly and inexpensively. These companies can respond to customer needs, bringing products and services to market very rapidly. Their ability to quickly adapt lets them better anticipate and forestall disruptions before they inflict damage, adding an additional layer of resilience and the ability to operate more quickly in general.

Make resilience a principle

Resilient organizations deliver sustained performance and innovation despite disruption. They [turn disruption into opportunity](#) by keeping the customer as their North Star and being agile so they can pivot when needed. By staying in tune with their customer's needs, they reduce the risk of innovating and create more value for their customers, driving profitability.

Resilience is built one step at a time. Just like crossing a river, each small move forward counts. At AWS, we look at resiliency from both the business and technology perspectives. Successful businesses thrive on change, but those with longevity tend to anticipate and prepare for disruption. They do this by making resilience a principle—integrated with every element of their business, from technology to culture. Your business is only as resilient as its weakest link.



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About the author

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Nina has more than 20 years of experience in creating value at the intersection of business and technology around the world. She has managed global teams in driving business transformation through augmented intelligence, cloud, data and analytics, and digital transformation.

In her current role as a strategic partner to Amazon's most important customers, Nina advises C-level executives in digitalizing and transforming their businesses to capture new market opportunities and enable superior customer experiences.

Before joining Amazon, Nina led global practices for IBM in 146 countries with 120,000 employees and was a member of the Global Executive Committee. Nina is an advisory board member of Women@Amazon in New York City and a member of the Council of Foreign Relations. Nina holds a Master of Business Administration degree from the University of Adelaide, Australia, and a Bachelor of Business Administration from Acadia University, Canada. Nina is an advocate and external speaker for Amazon's Future Engineers program.

About AWS

For more than 15 years, Amazon Web Services has been the world's most comprehensive and broadly adopted cloud offering. Today, we serve millions of customers, from the fastest-growing startups to the largest enterprises, in a myriad of industries in practically every corner of the globe. We've helped these customers grow their businesses through digital transformation efforts enabled by the cloud. We have worked closely with many clients' C-suites, giving them a unique vantage point into the diverse ways executives approach digital transformation—the thought processes in different C-suite roles, their attitudes and priorities, obstacles to progress, and best practices that have resulted in the greatest successes.