

Changing the Financial Services Customer Experience by Going Digital and Embracing Automation

How can financial services companies provide superior outcomes for customers and increase their competitive edge in the market? By engaging with Stelligent to digitally transform their IT infrastructure and applications on AWS.



Working from the Customer Backwards – The Importance of Taking a Digital-First Approach for Financial Services Companies

Looking back just ten years ago, how often would you estimate people took the time to visit financial institutions to check their available balance, deposit or withdraw funds, apply for a loan, or file an insurance claim?

Consumer interactions with financial institutions have traditionally required a physical act on the consumer's part, such as visiting a local financial organization's branch, to conduct financial activities efficiently. But we're seeing a significant shift in consumer preference and action. According to Forrester, most financial services organizations will not see **half of their customers, members, or customers in 2018**. What's changed?

Human interaction is progressively driven through digital means.

As individuals, people increasingly communicate with each other personally and professionally through digital channels such as email, video conferencing, messaging applications, and online collaborative workspaces.

And as consumers, the preferred method of interaction with institutions has shifted in large part to a digital-first mentality.

Customers expect to be able to conduct transactions with financial institutions using a mobile or web-based interface to simplify and streamline the interaction and maximize their time. Financial institutions must anticipate customer needs and keep pace with an ever-evolving digital market, while continuously modernizing to strengthen and improve the overall customer experience and meet customer expectations.

What Does Digital Transformation Mean for Financial Services Institutions?

In a 2018 report on the worldwide banking industry, IDC characterizes digital transformation as, "the ability to use technology to break out of the constraints forced by legacy systems and processes and enable a more efficient and responsive institution." To transform digitally means that from both product development and organizational mindset perspectives, a financial services company is embracing and either gradually or rapidly evolving to adopt new technologies and:

- Provide customers with novel products and features that empower preferred customer modes of interaction, including self-service and on-the-go options for conducting transactions;
- Respond to customer feedback in an accelerated fashion;
- Decentralize development cycles;
- Push products to market more rapidly;

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- Drive high quality and consistent code development through automation;
- Increase security posture through automation, and
- Increase employee satisfaction by fostering a culture of experimentation.

The digitalization undertaken today in large financial institutions was in large part motivated by both an influx of cloud- and automation-focused financial technology (or FinTech) companies who upended the financial service customer experience by taking a digital-first approach. Companies in other industries, such as Media and Entertainment, Logistics, and Energy, have also served as compelling examples of how proactively embracing new technology solutions can enable rapid product development and faster response times to customers.

But arguably, the biggest driver for digital transformation across all industries is the availability of large-scale and on-demand compute and storage resources from cloud computing providers. Taking advantage of the benefits of digitalization simply wouldn't be possible without the agility, scalability, reliability, security, and cost savings afforded by building and deploying on the cloud. And the industry-leading cloud provider enabling companies to transform digitally is Amazon Web Services (AWS).

How Amazon Web Services (AWS) Enables Companies to Go Digital

Many of the world's top financial services firms have chosen to drive a digital transformation strategy on AWS, including [Barclays](#), [Capital One](#), [Citi](#), [IHS Markit](#), [NASDAQ OMX](#), and [Radian](#), and for good reason. With security as its top priority and a focus on always working from the customer backward, AWS enables companies large and small to experiment often, fail quickly, and bring superior products to market. Essential for all customers but especially those in highly regulated industries, such as Financial Services, AWS offers many security and compliance-focused services, including [Amazon Identity and Access Management \(IAM\)](#), [AWS Key Management Service \(KMS\)](#), [Amazon Cognito](#), [Amazon GuardDuty](#), [AWS Artifact](#), and [Amazon Inspector](#). AWS also employs a well-defined [Shared Responsibility Model](#) for approaching security on AWS.

AWS offers over 100 fully featured services for compute, storage, databases, networking, analytics, machine learning and artificial intelligence (AI), Internet of Things (IoT), mobile, security, hybrid, virtual and augmented reality (VR and AR), media, and application development, deployment, and [management from 54 Availability Zones \(AZs\) across 18 geographic Regions worldwide](#). In addition to the broad and deep offerings AWS provides customers, the

company also engages with tens of thousands of Consulting and Technology Partners worldwide who offer value-added services on AWS. Of the thousands of consulting firms who work with AWS, only a select handful, including [Stelligent](#), meet the high bar to qualify as a Premier AWS Consulting Partner.

Automate Everything, Enable Internal Teams, and Differentiate: How Stelligent Helps Financial Services Firms Take Advantage of AWS

Automation, education, security, and increased agility are all at the heart of each Stelligent customer engagement.

The team at Stelligent, holds [AWS DevOps](#) and [AWS Financial Services](#) Competencies and embodies a *codify everything* philosophy and has seen the power automation has had within its customer base to transform business processes while increasing security posture. Stelligent takes a very hands-on approach with its customers and embeds within a customer's team to become a part of the customer's delivery lifecycle, from infrastructure to delivery production. Customers are in good hands, as a typical Stelligent engineer has an average of 10+ years of experience implementing AWS solutions for customers. Every Stelligent engineer has earned at least one [AWS Certification](#), while many have earned multiple Associate and Professional Certifications.

Stelligent believes in empowering its customers by enabling them to create self-service solutions and drive better outcomes. In addition to its consultancy services, Stelligent also provides customers with a number of open source tools they can use to drive better automation outcomes on AWS, such as [cfn_nag](#), an [AWS CloudFormation](#) template analysis tool that helps security-focused organizations automatically enforce security standards for infrastructure and application development.

By working with Stelligent to drive digital transformation on AWS, customers have been able to:

- Decrease the time to launch development environments from one month to 30 minutes;
- Reduce time spent on deployments as much as 97%;
- Improve the time it takes to process workloads from six hours to seven minutes;
- Reduce the cost of processing files by 99 percent, and
- Improve the number of product deployments and updates from once a quarter to over 200 a week.

Stelligent solves significant problems for complex organizations and has developed expertise in Financial Services, Healthcare, and Government industry use cases, security and compliance requirements, and desired business outcomes. Stelligent spends most of its time helping customers in highly-regulated industries. By working closely with customers in the Financial Services industry for over a decade, the team realized many of the challenges its customers faced were common across a few specific use cases and addressable through automation and digitalization on AWS.



Use Cases in Financial Services

Stelligent helps customers digitally transform by applying the speed and agility that automation makes possible, while seamlessly integrating dynamic security across the development pipeline and onto the AWS environment itself. By harnessing their experience and expertise supporting customers in highly regulated industries, the Stelligent team helps financial services customers codify every step of the software delivery process by:

- **Automating infrastructure** to reduce the burden and inefficiency tied to a manual deployment of infrastructure by running infrastructure as code to rapidly scale and deploy faster;
- **Automating the deployment of applications** by codifying everything within an application's lifecycle to decrease the time between releases and reduce the risks posed by manual processes;
- **Transforming applications** to take advantage of cloud-native services and capabilities not available when using a legacy application or service, and
- **Automating deployment pipelines** to drive repeatability, consistency, and agility throughout teams seeking to push code to development and production rapidly.

Let's dig into each of these use cases in more detail and take a look at the expertise and support Stelligent has provided global Financial Services organizations with specific examples.

Infrastructure Automation

Financial services organizations use AWS to focus less on managing IT infrastructure internally and more on driving success in the core competencies that differentiate their company. Many organizations, though, don't take full advantage of the opportunity to build and deploy infrastructure on AWS optimized for agility, consistency, repeatability, and scalability.

How is it that financial services organizations take advantage of building and deploying on AWS while still leaving many of the potential benefits they could be gaining on the table?

By relying on manual processes to provision and configure resources on AWS.

Manually provisioning, configuring, deploying, and making changes to AWS infrastructure leaves your organization prone to many vulnerabilities, including:

- Slower build and deployment times;
- Inconsistency across environments as a consequence of a naturally higher likelihood of human error;
- Greater difficulty maintaining the standards your organization needs to have in place for compliance and regulatory purposes due to the absence of repeatable processes, and
- The loss of valuable time that your team could instead put towards application development and industry-differentiating solutions.

Taking an infrastructure-as-code approach where you automate provisioning and configuration management of your AWS resources using code and templates, your organization can optimize its use of AWS to reduce errors, increase agility, and empower teams to move faster.

Through the course of dozens of engagements with financial services companies, Stelligent has developed deep expertise helping organizations take advantage of infrastructure automation through the use of AWS management tools such as AWS CloudFormation and AWS Developer Tools like AWS CodePipeline, AWS CodeCommit, AWS CodeBuild, and AWS CodeDeploy and orchestration tools from AWS Partners including [Ansible](#), [Chef](#), [Docker](#), [HashiCorp](#), [Jenkins](#), [Puppet](#), and [SaltStack](#).



Using Chef and AWS CloudFormation to Automate an Enterprise Banking Customer's Infrastructure on AWS

Customers expect the ability to conduct banking seamlessly and on-demand, whether through a mobile application or an easy-to-use web interface. For banks to stay competitive, they must provide customers the banking experience they demand and move quickly to respond to changing customer expectations and developments in the market.

By using a slow and limited manual process to provision resources on AWS, one enterprise bank found itself unable to make resources available to development engineers on a timely basis. The bank experienced significantly longer development cycles, higher costs, reduced productivity, and slower customer feedback loops that were unacceptable. Stelligent was brought in to help the bank address this problem and suggested taking an infrastructure-as-code approach to help solve the pain points the customer was experiencing.

Stelligent scripted development environments for bank engineers to deploy from a single command and built an enterprise-grade centralized Chef server platform capable of managing upwards of 10,000 nodes at a single time. Stelligent scripted the environments to take advantage of many AWS resources:

Compute Power and Scalability

- **Amazon Elastic Compute Cloud (Amazon EC2)** provides on-demand compute resources for the bank to scale quickly

Automation and Management

- AWS CloudFormation is used with Chef to codify the environments and manage related AWS resources

Driving Security Best Practices

- AWS IAM securely controls user access to AWS services and resources
- **Amazon Virtual Private Cloud (VPC)** securely isolates cloud resources for the bank

Bank developers are now able to launch their own highly secure and consistent environments with the click of a button, rather than relying on others to manually create an environment. Having this ability allows the developers to test and fix their code at an accelerated pace and focus on value-added feature development for customers.

Application Deployment Automation

In today's digital-first market, financial services firms are only as competitive as their ability to rapidly develop and deploy new applications and products, while still maintaining or exceeding industry compliance and security standards. Manually configuring the requirements for each application deployment on AWS can leave a firm prone to delays, errors, and inconsistencies among what teams consider configuration and deployment best practices.

Application deployment automation, or the process of codifying configuration requirements for application installation and deployment on cloud infrastructure, eliminates manual and fallible deployment processes and allows developers to deploy applications into any development and production environment faster and with consistent standards in place.

What exactly does this mean for your company?

Instead of spending time deploying applications to the cloud manually, you're writing in code every step of your application deployment lifecycle. And you're driving shorter development timelines while maintaining high standards for how you configure and deploy your applications on AWS.



Driving Consistent Security and Compliance Excellence Through Application Deployment Automation

Stelligent worked with a large hedge fund to develop an automated reporting and analytic platform so the customer could launch and deploy an entire 140-node analytics platform at the click of a button.

The success of this engagement for the customer hinged on the ability to drive consistent security and compliance standards with every deployment. Each process for delivering code to production with every change significantly impacted the business. Thus, the infrastructure and application deployment automation processes were built to be consistent with AWS security best practices. AWS services used include:

Compute Power:

- Amazon EC2 provides on-demand compute power and scalability
- **Amazon EC2 Auto Scaling** monitors applications running on Amazon EC2 and adjusts capacity across instances for cost-management and predictive performance measures
- **Elastic Load Balancing** automatically distributes application traffic across multiple Amazon EC2 instances

Storage:

- [Amazon Simple Storage Service \(Amazon S3\)](#) provides large-scale data storing capacity
- [Amazon Elastic Block Store \(Amazon EBS\)](#) provisions persistent block storage volumes on Amazon EC2

Security Best Practices:

- Amazon VPC provisions an isolated section of the AWS Cloud to launch AWS resources for the application and use a private IP range
- Encryption is used for the Amazon EBS data, Amazon EC2 storage data, data at rest and in-transit

By automating the deployment of its reporting and analytics platform, the hedge fund was able to develop and deploy new features to production with every change made to its application, which in turn helped their fund managers to make more educated trading decisions and drive greater success.

Application Transformation

Many financial services applications were initially designed to run on legacy infrastructure. And while many legacy applications can move to AWS with little or no re-architecting, they aren't designed to take advantage of the many benefits cloud-native services and cloud-optimized applications bring to end users.

Application transformation is the process of taking an application that was built without the cloud in mind and re-architecting it to run optimally on the cloud, often using natively-built AWS services in place of traditional services. Native AWS services are optimally designed for automation, scalability, and availability, and inherently embody AWS architectural best practices. And many AWS services, such as [AWS CodeCommit](#), [AWS CodeBuild](#), [Amazon DynamoDB](#), and [AWS Batch](#) are fully managed by AWS, removing the burden of third-party software management from your team.

Simply put, AWS has built its services to run optimally on its cloud. By re-architecting your environment to take advantage of AWS-native services, you increase the ability to quickly codify your environment and take advantage of automation while also removing much of the operational burden of managing software.



Re-architecting a Monolithic Application to Take Advantage of Microservices on AWS

Stelligent's goal is to help customers understand the benefits of application optimization for the cloud and learn how applications can be re-architectured with a cloud-first mentality.

For one retail bank, trying to run a legacy monolithic application resulted in a cumbersome update process in which even a small change to the application involved the coordination of hundreds of developers and could take many months to complete.

To resolve this challenge, Stelligent helped the bank re-architect its monolithic application infrastructure into a microservices-based architecture and leverage AWS to quickly provision the infrastructure necessary for each microservice team. AWS services used include:

Compute Power:

- Amazon EC2 provides on-demand compute resources for the bank to scale quickly
- Amazon EC2 Auto Scaling monitors applications running on Amazon EC2 and adjusts capacity across instances for cost-management and predictive performance measures
- Elastic Load Balancing automatically distributes application traffic across multiple Amazon EC2 instances

Storage:

- [Amazon Elastic File System \(Amazon EFS\)](#) provides scalable, elastic file storage for use with the bank's AWS services

Management Tools:

- AWS CloudFormation manages related AWS resources and provisions the resources in an orderly and predictable fashion
- [Amazon CloudWatch](#) monitors the bank's AWS cloud resources and application
- [AWS Config](#) continuously monitors and records the bank's AWS resource configurations

Security Best Practices:

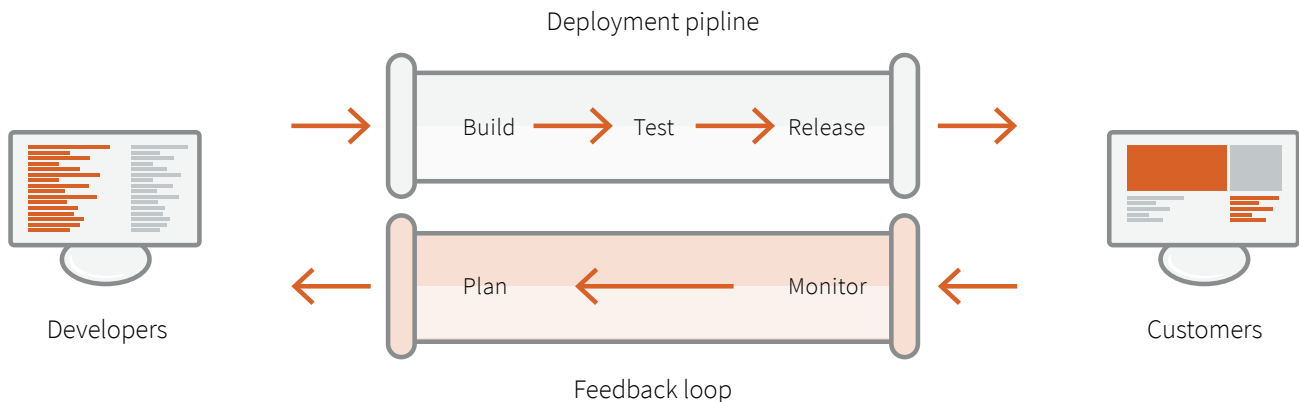
- Amazon VPC securely isolates the bank's AWS resources
- AWS IAM securely controls access to AWS services and resources for users

Stelligent also developed for the customer continuous delivery pipelines to orchestrate the building and deployment of its microservices in a continuous and automated manner.

Pipeline Automation

How can you ensure your software goes through a consistent and repeatable testing and deployment process before getting to production?

Continuous Delivery



By codifying every step of your infrastructure and application deployment process and producing a single path to production. Through pipeline automation, financial services companies can orchestrate all of the different steps they need to take for infrastructure and application deployment into one pipeline:

Whenever there is a change to your code, it will be run within the same repeatable process through an automated pipeline to verify and validate its quality, ensuring consistency across production deployments. And by removing traditionally inflexible (not to mention inconsistent) operational requirements for making changes to or deploying new code, developers can quickly test code, have immediate visibility into any errors or changes needed, update the code to meet quality standards, and then test through the same process.

Driving Consistency, Reproducibility, and Fast Feedback Loops for Developers through Pipeline Automation

One insurance organization invested in building on AWS to support its suite of mortgage processing applications. However, many of the organization's build-and-deployment steps for its applications were not automated. In cases where steps were automated, they were often disjointed and not connected to one another in a coherent end-to-end fashion. This lack of end-to-end automation made reproducible deployments difficult and delayed feedback to developers about the impact of changes to a given system.

To make deployments reproducible and provide fast feedback to the organization's developers, Stelligent created a Continuous Integration (CI) and Continuous Delivery (CD) pipeline running on AWS. The pipeline provides realistic feedback per commit and builds a production-like environment from the code in a repeatable, reproducible way, affording developers the opportunity to run automated tests against it in a relatively short amount of time.

All of the organization's application code is now captured as code in a version control repository, allowing every change to the system to

be built, analyzed, and tested. Additionally, most of the steps in the pipeline were implemented in such a way to allow developers to run them on local development workstations before ever pushing changes to a shared version control repository.

AWS services used include:

Compute Power:

- Amazon EC2 provides on-demand compute resources for the insurance organization to scale quickly

Storage:

- Amazon S3 enables the large-scale storage of data

Database:

- Amazon DynamoDB stores and queries persistent data and Amazon DynamoDB Local supports fast integration testing of data access code

Management Tools:

- AWS CloudFormation manages related AWS resources and provisions the resources in an orderly and predictable fashion

Driving Security Best Practices:

- AWS IAM and AWS STS securely control access to AWS services and resources for users

The CI/CD pipeline built by Stelligent gives developers the ability to focus time adding new features to the organization's product suite rather than spending months trying to release updates to its software. In turn, the organization can focus on the driving business value of its software for customers and has experienced significant cost savings by releasing new and updated software by using a single, coherent pipeline for provisioning, testing, developing, and pushing to production.

Taking Advantage of Digitalization to Earn Customer Trust and Drive Efficiency

At its core, taking advantage of new technologies to streamline product development cycles and respond proactively to customer needs demonstrates the deep commitment of a financial services organization to help drive short- and long-term success for both customers and internal teams. By using the power of automation to optimize security posture while also decreasing the time between product releases and updates, an organization can deliver new features and products to customers on a more consistent basis and with greater confidence in its software security and quality.

Going digital presents your firm an opportunity to proactively respond to the ever-changing needs and expectations of the market in a way that helps you establish new customer expectations of excellence. And by embracing digital transformation as an organization, you're able to drive internal excellence and improve employee satisfaction through more autonomous work cycles and the ability to innovate and experiment on a more significant scale. It means enabling your service teams to develop new products and iterate existing products faster, more securely, and at scale.

With its industry-leading commitment to maintaining robust security standards, driving innovation, and working from the customer backward, the AWS Cloud enables financial services companies globally to transform their approach to technology and provide customers experiences tailored to meet specific wants, needs, and evolving expectations. As an AWS Premier Partner, AWS DevOps and Financial Services Competency Partner the team at Stelligent are uniquely positioned to help your team at any stage of your digital transformation journey on AWS.

The question isn't what you risk by taking a digital-first approach...it's what do you risk by not embracing digital transformation?

For faster, more consistent software deployment, get in touch with Stelligent.

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About Stelligent

Stelligent, a professional services and consulting firm with deep expertise in DevOps automation services on Amazon Web Services (AWS), enables security-conscious enterprises to focus on developing software users love by leveraging automation on AWS. Our goal is to work closely with customers to develop fundamentally secure infrastructure automation code, deployment pipelines, and feedback mechanisms for faster, more consistent software and infrastructure deployments. By embedding with our customers' engineering teams, we empower customers through education and knowledge transfer of our expertise while developing the automation to make them self-sufficient on AWS. As a Premier AWS Consulting Partner, AWS Public Sector Partner, and AWS DevOps and Financial Services Competency holder, we use our demonstrated expertise to help customers benefit from continuous AWS innovation.

