



WHITE PAPER | JOURNEY TO THE CLOUD

Preparing for the Agile Enterprise

SEPTEMBER 2020



To stay competitive in a volatile, uncertain, complex and ambiguous (VUCA) world, an enterprise is expected to react to changes at unprecedented speed, which has ushered in a strong focus on becoming an agile enterprise. The path to agility often requires the business to adjust its approach to the market. Because many of the external pressures on business today stem from changes happening in the digital world, IT naturally becomes one of the first areas to adopt change with an aim of helping the business become an agile enterprise.

Digitalization was already on track for rapid acceleration in 2019. The global COVID-19 pandemic, however, has increased the pressure to reduce contact time and driven the demand for online services.

Chief information officers (CIOs) can view this change to business as usual as a threat, resisting it and reluctantly following where the organization leads. Or, these leaders can adopt an agile mindset and embrace the opportunity to be a guiding force for the agile enterprise. As a critical function that plays an imperative role in addressing digital transformation, agile success depends on the CIO's leadership. For many, this could be the biggest opportunity of their career. For example, a push is being made to increase CIO participation in the boardroom. To capture the opportunity an agile enterprise presents, CIOs need to partner with business leaders to successfully achieve alignment. A seat at the table helps realize this goal while educating company leaders about digital transformation.

While achieving an agile enterprise must be rooted in the business and focused on reaching corporate goals, a technology platform that supports agility with IT automation, DevOps and security best practices can

be a key lever to helping IT engage with and improve the business. Conversely, poor technology can impede business agility. Without the support of an agile IT organization, business units have been known to either fail or act for themselves (enter shadow IT) and yet still fail. Clearly, technology plays a key role in supporting an agile culture and the business's agile enterprise goals.

One such organization is a leading insurance provider that has been at the top of its industry for more than 150 years. With billions in revenue, everything appears to be going well. Yet, the CIO recognized that the firm needs to evolve to remain competitive. For example, it still relies heavily on insurance agents to quote coverage and sign contracts, a process that takes a week on average. Most consumers, however, seek immediate quotes and full policies online – without the help of a single agent interaction. With new market entrants and new digital offerings from existing competitors that take advantage of evolving customer expectations, the CIO knows that the firm needs to adapt. Evolving to become an agile enterprise will give this established company the opportunity to catch up to today's customer expectations while growing its ability to compete well into the future.

Digital transformation can contribute to the broader organizational value chain. It creates a greater cohesion between business units and technologists that results in reduced project risk and costs, increased software quality and predictability, and ultimately delivers products to market faster. Our goal in this paper is to discuss the importance of embracing an agile approach and sharing how CIOs at several organizations have successfully driven this change, including lessons learned along the way.

The tale of two digital transformations

As you'll see in the following examples, starting with business goals and aligning IT to them is foundational to success.

A healthcare organization's transformation experience

The healthcare organization had a specialized, in-house developed laboratory information system (LIS) to meet specific business needs. Although the LIS was stable, it didn't have a great user experience; it was cumbersome to use and difficult to change. As a result, the company's web development team proposed writing a new LIS to replace the old one, making a strong case to the CIO. The team started from scratch with the Microsoft .NET Framework and Docker containers on Amazon Web Services (AWS). A year later, the team moved its first product to the new LIS; it was expected to be the organization's next big innovation. Unfortunately, Medicare made drastic changes to its funding for the product, drying up the market altogether. When the organization's test product became obsolete, the LIS project was canceled and its LIS needs outsourced. Despite that outcome, the cost of development had neared \$5 million a year without a return on investment (ROI).

The silver lining for this healthcare organization is that it didn't give up on its goal to become an agile enterprise. The company can use its learnings and the infrastructure templates it created for a second LIS initiative that will focus on a test product identified by the business as one that will better help it stay competitive and address customer pressures.

Lessons learned:

- CIO oversight is important and plays a critical role in ensuring that the technology team stays connected to the business. In this case, after working with business unit (BU) leadership to scope the project, the development team went off to execute it. Had development and the BU stayed in close coordination, the BU could have helped steer the project toward a more successful test product once it was clear that Medicare funding would stall the need for the healthcare organization's product.
- Success isn't defined in terms that can be measured at intermediate milestones. The only measurement the healthcare organization used was the number of tests run on the system. Due to the changes in Medicare funding, however, the number remained small. When costs ballooned without a level of measurable business results, the organization felt it had no choice but to cancel the project.
- Even if the original product doesn't achieve its business goals, the organizational learnings and investment in reusable technology can make the project a success in the end. In this case, upskilling the team allowed the healthcare organization to capitalize on its learnings and accelerate version 2.0 of the product. And although the original project didn't completely meet its business goals, the organization did achieve a platform that's flexible enough to respond to future, unknown market forces.

G6 Hospitality's digital transformation

Our second example is the experience of G6 Hospitality. Its mission: to build on the iconic heritage of its brands — Motel 6 and Studio 6 — and become the universally recognized leader in economy lodging. Striving to compete effectively in a quickly changing market, continuously reinvent the economy lodging category by creating new business capabilities, and remain 100% committed to delivering a great experience to its guests, team members, franchisees and partners, G6 Hospitality challenged itself to a major transformation, led by its technology platforms.

A futuristic, abstract digital landscape. The scene is composed of various floating rectangular blocks and panels, some of which display circular patterns and data-like elements. The color palette is dominated by warm tones like orange, red, and yellow, with cooler blues and greys in the background. In the foreground, a person in a dark suit is seen from behind, standing at a workstation with two monitors and a keyboard. The overall atmosphere is one of advanced technology and digital transformation.

While the company traditionally took a conservative approach to technology in support of a simple brand promise, in 2016 it responded to competitive industry pressures with IT 2.0. Spurred by a business review that determined the company's strategic goals, IT 2.0 defined core technology tenets and target states that would help G6 Hospitality create new business capabilities. These included a cloud-based booking platform that increased its online travel agency reservation synchronization abilities, resulting in more online bookings and fewer call center calls, and saving the time equivalent of one full-time call center employee.

The CIO, in conjunction with the business, determined that legacy systems wouldn't meet the company's future needs — an increase in option value (the concept of moving from an older, inflexible platform that may have technology and architectural limits to a newer, more advanced platform with merits like flexibility) driven through innovation and best practices. As a result, G6 Hospitality took a layered approach that included business alignment, partnerships, methodology, the environment and its team. With this focus, the company targeted core systems and architecture for migration, starting with its HotelKey PMS (production), Above Property DRS (active migration) and Foundation Services (design and build).

Program IT 2.0 had several specific goals:

- Create a cloud-first approach to increase speed, flexibility and scalability
- Undergo strategic technology transformation in support of business goals
- Increase the option value of G6 Hospitality platforms

By the end of 2018, G6 Hospitality was live on its microservices architecture and had its API gateway, Couchbase and containers up and running on Red Hat OpenShift. It also had a fully established AWS Landing Zone as a secure, scalable foundation for moving to AWS and a continuous integration/continuous deployment (CI/CD) service that ensured easy infrastructure and configuration modification. The company is achieving specific business goals, including a new property management system (HotelKey PMS) that gives hotel owners and operators near-real-time business intelligence that facilitates swift, time-sensitive decisions on their hotel operations from anywhere in the world. With future plans to expand its cloud to include human capital management, finance, messaging, storage, quality assurance and more, G6 Hospitality exemplifies DevOps transformation-driven business outcomes.

Lessons learned:

- Start with a clearly defined business objective. Success defined in business terms and aligned with business owners for clear ROI is more likely to achieve important milestones.
- Measure results and iterate.
- Shape the team by identifying talent and investing in them.
- Outline the target state and, from that point position, increase ownership of competitive advantage.
- Embrace the journey by partnering with executive peers; be ready to learn from others with experience and be ambitious and operate with discipline.

Building an agile enterprise

Forrester predicted that by the end of 2019, 40% of enterprises would have automation centers and frameworks in place.¹ To play a leadership role in building an agile enterprise, CIOs must clearly begin by building an agile IT organization and a platform for IT automation to effectively support the company's business goals.

Much has been written about the agile enterprise, in particular by McKinsey, which through research has unveiled a five-point set of disciplines that agile enterprises share in common.³ Defined by their practices more than anything else, these agile organizations need an agile culture and agile technology automation to effectively support their initiatives to balance stability and security with ever-evolving customer needs, technologies and overall market conditions.

Agile culture

Surprisingly, when DevOps initiatives fail to meet expectations, it's usually not due to the technology. According to McKinsey, "The greatest enablers of — or barriers to — a successful agile transformation are leadership and culture." Of the executives it surveyed, 76% agreed that transforming the culture and ways of working was their number one challenge during an agile transformation.²

CIOs should grow visibility through project transparency and flexibility that ensures tight alignment with the organization's changing needs. Helping deliver project and team visibility are two best practices, and include the use of daily stand-ups, sprints for execution and a visible backlog that, along with other elements, is measured and reported on. Embrace data-driven discussions in place of those that focus on how things have always been done, for example.

Agile IT platform

When it comes to building an IT platform to support the agile enterprise, the CIO must be involved from a strategic, budgetary and cultural tone-setting perspective because IT automation is critical to supporting such an enterprise. By removing through automation countless hours of mundane tactical work and firefighting, teams will be able to increase the time spent on strategic work that brings value to customers. CIOs should be sure to incorporate five key areas of automation — provisioning, scaling, failover, upgrades and compliance — as they provide the biggest dividends when it comes to driving agility, enhancing IT productivity and ultimately delivering business outcomes.

Automated provisioning speeds innovation by allowing developers to self-serve their IT needs. Specifically, a service catalog or other connected platform allows developers to provision the assets they need with a click of a button — rather than waiting in line for IT to provision resources for them. It enhances scalability, as enterprises need only add infrastructure (not headcount) to manage additional workloads, and automation, which reduces the potential for human error, increases the time spent on business innovation rather than troubleshooting and creates value for the business.



Automated scaling reduces the bottlenecks that get in the way of value creation. Cloud resources coupled with services like Amazon Elastic Compute Cloud (EC2) allow organizations to autoscale to meet customer demand when needed and conserve resources when they aren't. This automated agility not only enables CIOs to better manage budget, paying for only those resources used, but also speeds time to market by allowing developers to test at scale.

Automated failover helps assure system availability for customers by automatically switching systems to a standby in case of emergency. Cloud computing availability zones automatically failover to a backup system without a hiccup, ensuring that CIOs and their teams consistently bring value to customers while protecting against data loss.

Automated upgrades allow teams to create an upgrade pattern, where upgrades are automatically completed for clusters of new servers. This frees the team to focus on more strategic work. Automated upgrades ensure systems have the latest patches, helping the CIO ensure business systems are continuously protected against security vulnerabilities and other known issues.

Automated compliance is a cornerstone to achieving continuous compliance. For example, with compliance built into the configurations of systems that are automatically provisioned, teams can build guardrails that ensure system compliance. Working tightly with security and governance teams, IT can build from the start automation that embraces security and regulatory controls. Rules can be configured to alert appropriate parties if a system moves out of a known, compliant state, triggering actions to return it to compliance. In this way, the CIO can partner with chief audit executives to effectively manage business risk.

Cloud automation, containers, CI/CD and configuration management enable these five core areas. With the use of automation in the form of configuration solutions like Chef, Puppet or Ansible, organizations can quickly and efficiently deploy and manage their environment in a repeatable manner. By automating the process of building, managing and provisioning through code, service teams speed the process, eliminate human error and establish repeatability. Together, these five areas greatly improve IT's ability to address business needs, ultimately helping the team drive better business outcomes.

In an example of this, we worked with Verifone to ensure its development team was able to deliver high-quality, secure solutions against tight deadlines. AWS was combined with Docker to create, from the ground up, a new cloud-based, streamlined infrastructure designed to address high availability, portability across multiple environments, and a high degree of automation to increase agility and security. The CIO's appointed experts worked with consultants from Flux7, an NTT DATA Services company, to deliver CI/CD, which Verifone achieved with pipeline orchestration and simplified scaling and automation. In less than one year, the company's engineers oversaw the unprecedented launch of a brand-new line of business — a Commerce Portal that allows merchants to customize their point of sale for rich, contextual in-store experiences. The new business-to-business app marketplace and developer platform help Verifone maintain its leadership position in a quickly changing market.

Enterprise DevOps Framework

Automation comes in many flavors and it can be difficult to know where to start, what to adopt and in what order. To help CIOs transform this mystery into a solvable puzzle, the NTT DATA DevOps team created the Enterprise DevOps Framework (EDF). The EDF converts traditional IT operations into a concept that we call the landing zone, where services deploy and, as a result, focus on catching service-agnostic components as they're delivered via pipelines. (Pipelines are processes designed specifically to automate the delivery of services into the landing zone.) Within the EDF, automation of workflows and security is important. It increases agility, removes the potential for human error, and grows consistency across both process and output.

By automating the flow of services through the system, the EDF gives CIOs an IT platform that enables DevOps at scale, facilitates the agile enterprise and ultimately helps deliver greater business value by:

- Speeding time to market
- Growing security, compliance and governance with built-in policies that protect customer data and business IP
- Reducing the need for IT specialists, growing the available team to address a host of business objectives
- Powering digital marketing and customer experiences
- Establishing a platform for greenfield opportunities, such as advanced data analytics or creating a new global offering

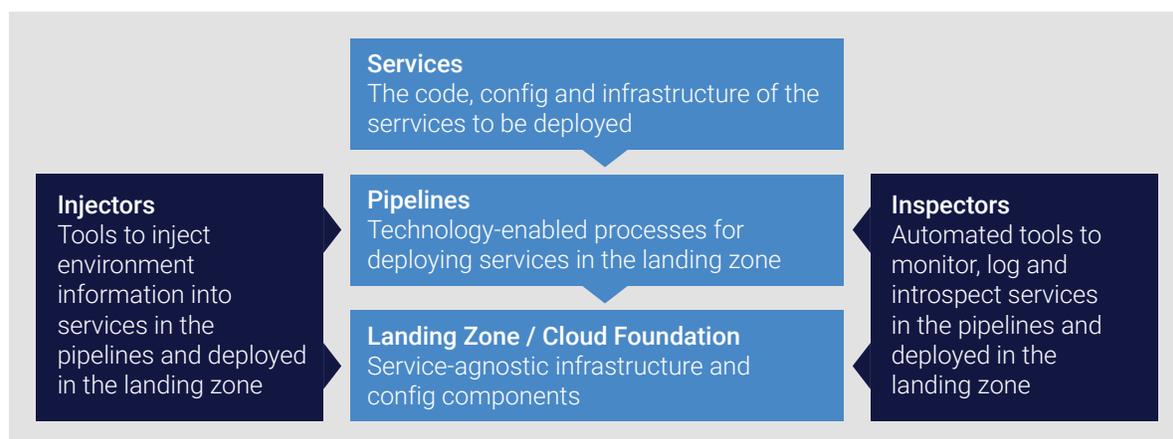


Figure 1: Enterprise DevOps Framework

Agile security

Security teams often joke that their true measure is when nothing bad happens. Although this is a good thing, we recommend that enterprises employ several tangible positive measures to determine how effective their balance is between security and agility. Specifically, consider tracking and regularly measuring:

- Landing zone fares against the Center for Internet Security (CIS) benchmarks for AWS. Identify and prioritize areas for improvement.
- Mean time to server patching. This measure of how long servers are in a known vulnerable state should be measured, according to CIS, in hours, not days.
- Breaches at the application level.
- Things flagged in the Amazon Machine Image (AMI) pipeline, how long it takes the organization to address them and how much time it takes to roll out critical updates.
- Overall average time to roll out.
- Resilience load testing — conducting it and measuring how much of a DDoS-type traffic load the organization can tolerate. Relevant results can then be used as additional measures for continuous improvement.

Over the years, we've learned two important things. The first is that making security easy actually improves security. The reason is that people are more likely to work within security parameters if it's easy to do so. Unfortunately, when security presents too many barriers, we've seen people bypass it all together, effectively negating the intended security coverage. The second is that security is both a prerequisite to DevOps success and a byproduct of it. As organizations modernize their computing systems through DevOps-based cloud approaches, a new way to govern systems is needed. Traditional tools and methods don't always translate into this new landscape, where the perimeter has a new definition and security policies aren't applied but automated.

New opportunities also exist in which environments can be audited continuously rather than periodically. Focusing on building security with agility will allow organizations to build secure environments without slowing down the engineering teams' work, allowing security, development and operations to simultaneously deliver on their key goals for the business.

Conclusion

Becoming an agile enterprise can help CIOs navigate in a market when their firms have fallen behind and help competitive firms actively navigate changes happening in the market today. It also puts in place a platform that can adapt to compete effectively with market forces not yet in motion. As the pace of the market continues to accelerate, led by digitalization, CIOs can drive responsiveness through an agile IT culture and a flexible, secure IT platform. CIOs will play a critical role in ensuring a thriving and rapidly evolving business capability today and well into the future.

Sources

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- ² Aaron De Smet, Michael Lurie and Andrew St George. "Leading agile transformation: The new capabilities leaders need to build 21st-century organizations." McKinsey & Company. October 2018. <https://www.mckinsey.com/business-functions/organization/our-insights/leading-agile-transformation-the-new-capabilities-leaders-need-to-build-21st-century-organizations>

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