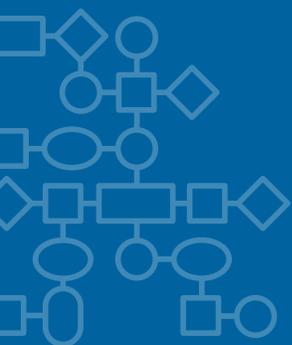




How Digital Transformation is Rewriting the Rules for Data, Applications and Infrastructure



INSIGHTS FROM PRESIDIO'S EXECUTIVE CUSTOMER BRIEFING SERIES

Before the pandemic, the talk was all about “defining and prioritizing digital transformation.” In the past year, however, companies experienced a decade worth of technology adoption and business strategy changes adapting to work-from-home and other social distancing-driven mandates. Digital transformation is happening now, changing how organizations access, resource, process and protect their assets.

DIGITAL IS CHANGING HOW WE...



...OUR ASSETS



DEFINING DIGITAL TRANSFORMATION

Digital transformation is the reimagining of business executed through technology modernization. More specifically, it's the process of using digital technologies to create new—or modify existing—business processes, culture and customer experiences to address changing business and market demands while increasing relevance and personalization for differentiation vs. competitors.

While technically it applies to nearly every aspect of running a business, the digital footprint is most evident in three categories: data, applications and infrastructure. By defining and better understanding the common challenges in these categories, companies can track their progress and success more accurately.

1. THE DATA RESIDENCY – Data is known as the lifeblood of an organization, and it exists in two primary forms, structured and unstructured. Structured data is highly organized and relational in nature. Examples of this data type include transactional databases such as SQL or columnar (C-Store) databases commonly used for enterprise data warehouses.

Unstructured data is all other data—regardless of format. Examples of this data include office files (Excel, Word, Powerpoint), text messages, mobile activity, social media

posts and IoT (Internet of Things) sensor data. Video, audio, and image data are also classified as unstructured, with far more variability than the previously mentioned data type. Research firm IDC predicts 80% of global data will be unstructured by 2025.¹ Not surprisingly, this latter category is more challenging for companies to aggregate and analyze.

Additional challenges companies face with their structured and unstructured data include:

- ◆ Visualizing/displaying
- ◆ Sourcing/storing
- ◆ Managing/cleansing
- ◆ Securing and preventing loss

2. APPLICATION WORKLOADS – The number of apps companies are using is staggering. For instance, the latest analysis from Okta² reveals that large companies (i.e., 2000+ employees) deploy an average of 175 apps and smaller companies average 73. Besides the high number of apps, the ways they're deployed differs. Traditionally, software was deployed on a local server or data center (i.e., on-premises). However, most of today's apps are not only multi-tiered but also distributed, encompassing services that are a combination of on-premises, cloud-based, and purchased via a SaaS (software as a service) subscription. The combo of on-premises and cloud adds significant complexity to the app ecosystem, especially regarding access governance and ensuring the quality of service for scalability.

Some of the most significant app challenges companies face include:

- ◆ Improving productivity
- ◆ Benchmarking/deploying
- ◆ Developing/scaling
- ◆ Preventing tampering

3. INFRASTRUCTURE – IT infrastructure comprises the layers of compute, storage, networking, and control policies to provision resources to support applications and access data. Like apps, infrastructure can reside on-premises where it's owned and managed by and within the business's facilities, or it can be in the cloud or at the edge. However, as workloads continue to be rationalized, infrastructure deployment choices are increasingly outside of on-premises data centers, with cloud and SaaS adoption ever increasing.

Cloud-based infrastructure comes in three forms (also called “flavors”):

- ◆ **Private Cloud** – Uses dedicated resources

¹ The Future of Data Revolution will be Unstructured Data, 2020

² Businesses at Work report, 2021

- ◆ **Public Cloud** – Cloud infrastructure is rented from a cloud provider like Amazon, Google or Microsoft
- ◆ **Hybrid Cloud** – Incorporates some degree of workload portability, orchestration and management across multiple clouds

Hyperconverged IT infrastructure (HCI) is another kind of infrastructure. This approach utilizes standard compute HW along with SW abstraction to create storage fabrics and virtual networking constructs that don't require proprietary HW peripherals (SAN/NAS, HBAs, etc.) to build virtual environments.

Some of the most common infrastructure challenges include:

- ◆ Authorizing/governing
- ◆ Refreshing/distributing
- ◆ Optimizing/automating
- ◆ Preserving availability

DIGITAL TRANSFORMATION DRIVERS

Companies have different reasons for undergoing digital initiatives, but one or more of the following three factors are the primary drivers:

1. Develop a more intimate relationship with users (internal and external) to enable a more personalized customer service experience
2. Improve operational efficiency through automation and digitization to enable a data-driven approach to choose areas for strategic investment
3. Create new revenue channels and adjacent competencies to enable growth and long-term viability of the business

Technology plays an essential role in enabling the goals above—and so does the IT team. IT personnel must work closely with key stakeholders to move projects forward and transform the business. The relationship between IT and stakeholders resembles the modern application development process at a software company. Unlike when software developers came out with significant releases once or twice a year, today's environments demand an agile approach featuring regular iterative updates.

The primary competitive advantage today's companies seek is speed and functionality rather than perfection. This strategy is most clearly seen in IT infrastructure. For example, building IT infrastructure used to entail massive assessments and deployments designed to last three years. Today's infrastructure projects, on the other hand, may change within two months. For instance, a client may implement a new automation language and then switch to another one a few months later based on multi-cloud workload requirements.

ROADBLOCKS TO CHANGE

While most companies realize the importance of making a digital transformation, there are a few obstacles that must be overcome, such as:

1. THE IT TALENT GAP – A recent article in Forbes³ notes that “In the last few years, there has been a sharp increase in demand for software engineers who provide solutions to different software problems as more and more organizations undergo digital transformation.” Additionally, most senior executives admit the shortage of software developers remains an area of great concern. Sixty percent of CIOs reported that a lack of skills made it hard for their companies to keep up with their competitors.

2. FORGETTING THE CUSTOMER – Although digital transformation has a lot to do with technology, the tech investments must align with customers, partners, and employees' needs and expectations, or it will fail. A case in point is Under Armour's purchase of MyFitnessPal and Endomondo in 2015, for \$475 million and \$85 million, respectively⁴. Although it was nice having the “world's largest digital health and fitness community,” the company eventually realized the apps catered to casual exercisers and dieters rather than its core buyers, who are professional and semi-professional athletes and serious fitness enthusiasts. As a result, the company sold off both apps at the end of 2020 for \$215 million less than it originally paid to refocus on its core mission.

3. MULTIPLE PARTNERS WITH NO COHESION – Sometimes companies try to tackle their data, app and infrastructure goals by working with different specialists in each category. Unfortunately, this approach entails managing different business approaches, methodologies and conflicts, making it challenging to avoid data, app and infrastructure silos with redundancies, overlapping features and inefficiencies. Instead, there needs to be an “IT General Contractor” that oversees and ensures the end goal is in sight for on-time and on-budget completion.

MODERNIZING INITIATIVES FOR IT ASSETS

	 Access	 Resource	 Process	 Protect
 Data	Visualize Display	Source Store	Manage Cleanse	Prevent Loss
 Apps	Improve Productivity	Benchmark Deploy	Develop Scale	Prevent Tamper
 Infra.	Authorize Govern	Refresh Distribute	Optimize Automate	Preserve Availability

³ Analyzing The Software Engineering Shortage, 2021

⁴ Why Under Armour is Selling MyFitnessPal at a Loss after Buying it 5 Years ago for \$475 Million, 2020

TRANSFORM, MODERNIZE, OPTIMIZE & PROTECT

Considering the three legs of the digital transformation stool—data, apps and infrastructure—taking a holistic rational approach makes the most sense. Here are some key considerations to keep top of mind to ensure the best IT investment choices and outcomes:

TRANSFORM THE WORKFORCE

1. AUTOMATE DATA – Labor reduction strategies such as business process optimization (BPO) and robotic process automation (RPA) use optimized workflows and software robots (i.e., bots) to complete basic tasks usually handled by end-users. In banking, for example, providers can integrate RPA within their existing BPO model to provide uninterrupted customer service. Also, they can automate tasks internally among employees, boosting immediacy in addressing only the most critical customer-oriented queries. Consistency is yet another benefit since even the most well-trained staff make mistakes.

2. EMBRACE THE NEW WAY TO WORK – In the past, the terms “office” and “workplace” were interchangeable. However, in today’s work-from-anywhere world, the workplace has become more dynamic, requiring new tools and strategies to keep team members connected and productive. Enter the digital workplace, a virtual workplace where employees accomplish office tasks on portable devices using cloud-based apps and services via the internet. Digital workplaces can make it easier to track meeting results and decisions, enable better data visualization and analysis, speed product design cycles and more.

3. DESIGN WITH SECURITY IN MIND – Implement security controls at the microservices layer to make it part of the infrastructure. Also, ensure coverage for OWASP (open web application security project) top vulnerabilities, encryption at rest over every service call. Finally, on completing all major sprints, perform penetration testing to cover all the web and mobile application layers.

MODERNIZE FASTER

1. HARNESS UNSTRUCTURED DATA – In addition to using data warehouses, companies can often benefit from data lakes, which were born out of the need to harness big data and benefit from the raw, granular structured and unstructured data for machine learning. Unlike traditional business intelligence, which is serial in nature (e.g., ETL processes), these modern data processing techniques

utilize distributed data service meshes and parallelized workstreams, allowing faster data access. Healthcare, education and transportation are three industries benefiting from data lakes’ ability to deliver insights quickly from high volumes of unstructured data.

2. EMPOWER IT WITH AI – Traditional IT tools lack the intelligence and automation needed to handle the dramatic increase in new services, remote users, IoT devices, cloud technologies and data. AIOps (artificial intelligence for IT operations) platforms combine data analysis with machine learning to automatically help identify issues, determine root causes and deliver optimization guidance in real-time.

3. FIGHT THE WAR ON INFRASTRUCTURE ISSUES – Before implementing a technology refresh, consider using a tool such as the AWS Well-Architected Framework (WAR) to identify best practice gaps that need remediation. A WAR review analyzes AWS setups across five pillars: cost, security, performance, reliability and operations and it can be an invaluable resource for uncovering foundational cloud architectural and infrastructure issues.

OPTIMIZE—GET CLOUD RIGHT

1. BRIDGE THE COMMUNICATION GAP – The rising popularity of microservices and container orchestration (e.g., Docker and Kubernetes) creates a new challenge for service-to-service communication. These microservices comprise potentially hundreds of loosely coupled dynamic, transient, and distributed services, making the network between them critical to the application service. Implementing a service mesh can help bridge that communication gap, providing service discovery, client-side load balancing, timeouts, retries, and circuit breaking, all of which work regardless of their application service framework or language.

2. ELIMINATE SILOED SOFTWARE ENGINEERING – In the past, software development was a complex, manual process associated with a high employee burnout rate and unsustainable release cycles. In today’s fast-moving and ever-changing digital world, DevOps has become the new standard. DevOps is a way of working where development (i.e., “Dev”), IT operations (i.e., “Ops”) and security teams partner together to build, test and provide regular feedback throughout the entire software development lifecycle. Using automation and collaboration, teams develop shared context, expertise and roles to ship more secure and resilient products via an integrated workflow, known as continuous integration and continuous delivery (CI/CD).

3. MANAGE CLOUD CONSUMPTION COSTS – As with most things in technology, the best standards are only as good as how well they're followed, and the longer one waits to establish best practices, the harder it becomes. Therefore, before deploying any cloud resources, it's a good idea to use automation tools (e.g., Terraform) and a cloud deployment manager to establish guardrails.

PROTECT—SECURE EVERYTHING

1. MAINTAINING DATA CONFIDENTIALITY – The number one way data is compromised is by employees, whether it's accidentally or on purpose. However, companies can mitigate inevitable leaks with a data loss prevention (DLP) solution. DLP is a combination of a methodology and a technology platform that automatically identifies, monitors and protects private and sensitive data when “in transit” (e.g., email) or “at rest” (e.g., a folder on a workstation, laptop or in the cloud).

2. STRIVE FOR ZERO TRUST – It's well-known that passwords are the Achilles' heel of security. The best way to combat this vulnerability is by adopting a Zero Trust strategy that encourages organizations not to trust any entity outside or inside their perimeters. In addition, a zero-trust network adheres to the principle of least-privilege access: giving users only as much access as they need and minimizing their exposure to sensitive network resources.

3. PROTECT THE NEW NETWORK EDGE – The data center is no longer at the center of connectivity requirements as companies shift to a dynamic access model, making traditional endpoint security tools less effective. Today's digital workplaces need secure access service edge (SASE), which consolidates networking and security-as-a-service capabilities into a cloud-deliver service. SASE offerings provide policy-based software-defined secure access from an infinitely tailorable network fabric. Security professionals can precisely specify every network session's performance, reliability, security, and cost based on identity and context.

CLOSING THOUGHTS

Digital business transformation is the ultimate challenge in change management. It impacts industry structures and strategic positioning—and every task, activity and process within the organization. As a result, business leaders must constantly challenge their organizations to ensure this change can unlock productivity gains and significant competitive advantages while focusing on delivering an exceptional customer experience.

For a smoother, more effective digital transformation, work with a partner with broad expertise and let your IT give your company the digital advantage it deserves.

Looking for help with your company's digital transformation? [Click here](#) to reach out and learn more about Presidio's executive briefing program.
