



5 CRUCIAL DEVOPS STRATEGIES FOR CLOUD AND MAINFRAMES

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INTRODUCTION

DISRUPTION, IN ITS MANY FORMS, is catalyzing rapid shifts in business, leading companies to reprioritize spending and investments to weather challenging economic times. Companies must position themselves for change, resilience and growth due to what may be wide variances in local, regional and global market recovery.

A critical area of focus for companies is accelerating digital transformation projects. Acceleration is accomplished by reexamining customer behaviors, adjusting to shifts in customer expectations, and creating new or modified modes of services and product delivery. Consumer-facing businesses are making rapid shifts to support contactless customer experiences, setting business-reopening guidelines, implementing local social distancing requirements, and scaling to accommodate rapid increases in online interactions with customers. Many are grappling with questions about whether the changes in business operations and customer experiences they've been forced to adopt because of the COVID-19 pandemic are, in fact, temporary, or whether those will become permanent.

Digital transformation is often associated with software development practices and methodologies like DevOps, Agile, cloud-native and cloud-based service offerings. DevOps and Agile improve collaboration and break down organizational and role-specific silos once considered impermeable while enabling rapid, incremental software delivery.

DevOps extends this collaborative approach by automating software creation, delivery and operations pipelines. Cloud-native software architectures, utilizing containers, microservices, service mesh, and serverless technologies make software more modular and componentized. Smaller software elements can be delivered and changed more quickly and more frequently.

Most experts would agree that these are essential elements needed to survive and thrive in this shifting, fast-moving, and ever-changing digital economy. And while many startups and even some progressive-minded industry incumbents leveraged an Agile, DevOps and cloud-native ideology from the start, many established, legacy enterprises have been slow to adopt these practices and the cultural transformations that accompany the methodologies. This has perpetuated a harmful myth: that if a company is big, it can't go fast. Does that mean DevOps is reserved for smaller, nimble disruptors?

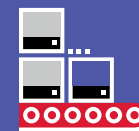
HOW TO ACCELERATE DIGITAL TRANSFORMATION PROJECTS:



REEXAMINE
customer behaviors



ADJUST
to shifts in customer
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CREATE
new or modified
modes of services
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THE MYTH OF DEVOPS

THE ASSUMPTION that large, established enterprises — from insurance companies to government agencies — can't adopt Agile processes or DevOps is based on the falsehood that legacy technology stacks won't allow for it; that existing traditional mainframe applications or legacy applications that large enterprises are built on are incapable of adapting to these approaches. This belief is highly flawed for two fundamental reasons.

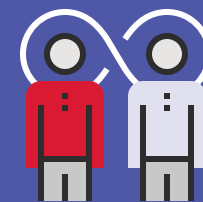
First, DevOps, and Agile, for that matter, are people-centric, not technology-centric. In other words, they apply to how people collaborate and work, and how the work of creating software gets done. DevOps is, first and foremost, a cultural shift that introduces new methods of work and can thrive in any technology environment, including mainframe. DevOps very much follows the model of people, process and technology, in that order. DevOps is not limited to one specific technology or technology stack, such as cloud-native.

Second, DevOps is fundamentally about rapid and reliable software delivery through highly collaborative teams and the automation of software development and delivery processes. Again, collaboration, automation and changes to software development and delivery are not exclusive to “modern” applications or systems built in the 21st century.

Despite the myths claiming otherwise, DevOps is applicable to many types of applications and works with a variety of technologies. The DevOps approach is used to create, innovate and extend applications across mainframe, mobile, online SaaS and web, and other systems that support products and services for government, commercial companies, non-profit organizations and internal organizational business processes.

Whether the techniques used are containers or CICS, MongoDB or Db2, Puppet or JCL, Linux or z/OS, the principles of DevOps can and are being adopted. DevOps is about how we create software, not the software technologies we create with. Mainframe applications are included.

TWO TRUTHS OF DEVOPS



DevOps and Agile are
PEOPLE-CENTRIC
not technology-centric



DevOps is about **HUMAN**
COLLABORATION
and **SOFTWARE**
development and delivery
AUTOMATION

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THE LEGACY IMPERATIVE

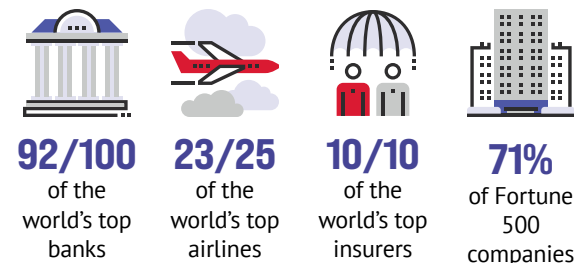
INCREASINGLY, DEVOPS IS BEING USED to create, evolve, and maintain applications running on mainframe environments and technologies. Whether those mainframe applications were created one or more decades ago, or within the last ten years, as long as they continue delivering business value, they remain relevant. Many mainframe technologies created in the '70s, 80's, '90s and 2000s are still the underpinning of many businesses' operations today, even as they've been improved upon and have become more advanced in the intervening years.

A prime example of this relevance occurred in the early days of the COVID-19 pandemic, when hiring managers searched high and low for talent with mainframe and client server application skills to address the overwhelming number of jobless claims received by U.S. states that still use mainframes to run their unemployment systems. At the same time, cloud applications required immediate changes to add contactless options and many other companies' technology offerings had to be revised and updated to accommodate new ways of doing business in the restaurant, retail goods, ride sharing, manufacturing, supply chain and package delivery services industries.

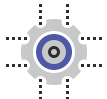
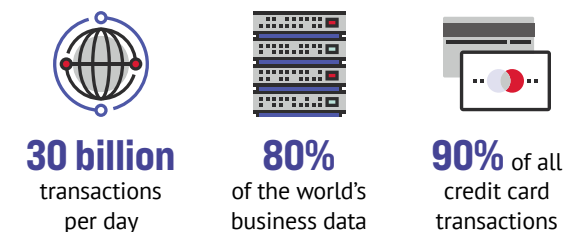
SHARE, a still vibrant mainframe user group formed in 1955, shows how vital mainframe applications remain to companies' viability and vitality today.

It's clear that these "legacy" applications aren't relics of the past, but rather are technologies essential to the longevity and success of many businesses today. The Legacy Imperative is to move and evolve these applications into modern methods of creating software—that of DevOps and Agile.

MAINFRAMES HOST CRITICAL CORE IT FOR:




MAINFRAMES HANDLE:



Mainframes host **more transactions daily than Google** (1.3 million/second on CICS vs. 68,542/second on Google), including **55% of all enterprise transactions.**

Source: SHARE



Mainframes consume only **6.2 percent of worldwide IT spend.** Yet, they **run 68 percent of production workloads** and an estimated 220Bn lines of code, with the highest levels of security and reliability.

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5 Strategies Necessary for DevOps Success - Strategy One

THE STRATEGIC IMPERATIVE — CLARITY ABOUT “WHY”

MOST IMPORTANTLY, organizations must have clarity about the “why”; the tangible drivers behind bringing DevOps to the organization. The “whys” may be unique to the organization, or common among many adopting DevOps, or a combination of the two.

Strategic drivers of DevOps adoption are often tied to business and digital transformation strategies. Common business drivers include a necessary, strategic shift to reliance on digital technologies, responding to competitive pressure and market conditions, and increasing the business’s agility to better make offensive and defensive business decisions.

Organizational imperatives are often more localized, or focused on unique operations within the business. These may be driven by the desire for faster and more reliable software delivery, operational efficiencies, attraction and retention of software talent, and improving complex, interdependent software delivery pipelines across platforms necessary to deliver critically needed business capabilities.

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5 Strategies Necessary for DevOps Success - Strategy Two

CULTURAL SHIFT

DEVOPS REQUIRES breaking down organizational silos to establish cross-functional, multi-disciplinary teams. This is necessary to achieve greater collaboration across departments and better enable functions including development, testing, operations, cybersecurity, data, product management and even bolster the effectiveness of senior executives.

Collaboration, transparency and automation often disrupt existing job definitions and responsibilities, requiring the organization to rethink when and where work is done. It's not about eliminating staff, but instead elevating them to roles that can benefit from their experience and insights. DevOps also brings greater transparency to decision-making by exposing information and data about work streams, pipelines and collaborative work. Information hoarding, 'turf wars' and 'empire-building' behaviors rarely survive as organizations make the successful cultural shift to DevOps.

Establishing a desired culture is hard. Intentionally changing an existing culture is a huge challenge, requiring tenacity, perseverance and a fundamental belief in the "why" behind such an important, strategic initiative. It's not for the faint of heart, and takes a great deal of commitment. In addition, many organizations can benefit from an adoption plan when making these kinds of culture changes.



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5 Strategies Necessary for DevOps Success - Strategy Three

ADOPTION PLAN

DEVOPS ADOPTION often begins when organizations kick off new application development using cloud-native (containers, microservices, etc.) software architectures. Mainframe software teams can benefit from other teams' existing DevOps experiences. Mainframe application leaders and teams could begin sketching out a DevOps adoption plan by seeking out and initiating meaningful communication with DevOps leaders, teams and practitioners in the organization.

DevOps is all about people and how they work; the technology stack is secondary. When you're choosing a starting point, it's helpful to identify groups and/or individuals already interested in adopting DevOps. Continuous Integration/Continuous Delivery (CI/CD) and test automation also are frequent starting points to build up your DevOps pipeline processes and add to your toolchain. However, remember that delivering software more quickly and reliably isn't just about tools. It requires determining how software can be created and processes can be performed interactively, delivering software in smaller chunks where possible with mainframe applications as well as with greater frequency.

Collaboration goes beyond just one software or application team. As DevOps expands beyond an initial pilot team or application, lay the groundwork to build a community where teams can share learnings, develop common processes, build common tools, and share scripts and automation strategies. Match the community's style and culture to that of your larger organization. You can always apply more structure to tool selections, process adoption, etc., or allow for more informal, organic growth and flexibility at a team level, depending on what works best for your organization. For example, some large organizations use DevOps "dojos" as immersive learning centers where entire multi-disciplinary teams learn and experience the DevOps processes together.

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5 Strategies Necessary for DevOps Success - Strategy Four

MEASURE WHAT MATTERS

THE QUICKEST WAY to understand an organization is to understand what it measures. The most important aspect of assessing measurements is determining how well the organization's goals and measures align with outcomes that matter most to the business.

Create software delivery goals and measurements with line-of-sight to the most relevant business goals and KPIs. For example, if increased business agility is critical, create measures that incentivize rapid response, automation and experimentation. Resilience in the business may mean software teams must create higher quality, less brittle software and require failing fast when the underlying business conditions are uncertain or changing rapidly.

Increasing the number of software deployments per hour for the sake of delivering more software faster may sound important, but not if the business can't operationalize changes in software feature delivery quickly and frequently.



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5 Strategies Necessary for DevOps Success - Strategy Five

CONTINUOUS IMPROVEMENT

MANY OF THE CONCEPTS in DevOps are rooted in manufacturing, quality management and continuous improvement. Continuous improvement is an important principle of DevOps; it builds on DevOps' highly iterative nature, its emphasis on measuring what's important and continuing to apply learnings, processes and tools that improve the effectiveness of DevOps and software delivery.

You don't have to apply something as formal and rigorous as Six Sigma or Total Quality Management, but many of the elements from these methodologies can be adapted to build up a culture of continuous improvement.



THE DEVOPS IMPERATIVE

FOR THOSE who are not a part of the mainframe community, it's easy to see mainframe technologies and applications as artifacts; unchanged software to be put on the shelf and left there to gather dust. Again, this couldn't be farther from the truth. Relatively few new applications can fully achieve their objectives without tying into, or coordinating with, mainframe applications and their large corporate data stores.

SHARE's statistics inform us that the adoption of DevOps methodologies and new technology approaches are investments essential to current and future digital and transformation strategies. Mainframe development environments are expanding to include IDEs, such as Eclipse and VS Code; containerized z/OS applications deployed on RedHat OpenShift; open source Zowe for API integration and GitHub Open Mainframe project for source code repository; and mainframe to cloud orchestration tools. Finally, application modernization methodologies and programs assist organizations in evolving portions of mainframe applications to leverage concepts and technologies from the cloud-native ecosystem.

For enterprises around the globe, the adoption of DevOps, automation, cloud-native and open source represents a necessary, even critical, ingredient leading to successful digital and business transformation strategies. While not all mainframes or cloud-native applications are as vital to digital transformation projects, it does more harm than good to dismiss these elements out-of-hand; organizations would be better served by considering each element and potential strategy on a case-by-case basis if digital transformation is to succeed.

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ABOUT THE AUTHOR



MITCHELL ASHLEY is a renowned strategist, speaker, advisor and technology executive. Mitch has led successful IT, SaaS and cybersecurity transformations. He's led multiple teams in developing and bringing to

market successful online services, cybersecurity, software and networking products and services.

Mitch serves as principal at Techstrong Research where he is part of a team of preeminent experts in digital transformation, DevOps, cloud-native and cybersecurity. In this role, he works with companies to align digital transformation and technology strategies to achieve disruptive goals and high-impact results. Mitch is in demand as a speaker and is widely followed online on his podcasts, *Analyst Corner* commentary, and *interviews* on the highly popular *Techstrong TV* streaming video program where he engages with the top digital and tech leaders from across the industry.

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ABOUT THIS REPORT

This report is based upon a Techstrong Research survey and analysis of the impact of COVID-19, its global and regional economic impact and the acceleration of digital transformation initiatives and the roll of mainframes in business strategies.

ABOUT ACCELERATED STRATEGIES GROUP

TECHSTONG RESEARCH is out to democratize access to industry expertise and knowledge. Our expert analysts leverage their experience-based knowledge to deliver insightful, intelligent, and actionable information about digital transformation, DevOps, cloud-native and cybersecurity to IT and product organizations. Like open source software, we widely share our work products for free because we believe **Knowledge Wants To Be Free**.

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