



MODERNSYSTEMS

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WHITEPAPER

MORE THAN MEETS THE EYE

ANALYZING THE CHALLENGE AND IMPACT OF LEGACY SYSTEMS ON
DIGITAL TRANSFORMATION



Introduction

Digital transformation is happening in varying degrees across every industry, shifting primary focus from profitability and cost reduction, to differentiation and value through customer experience. Customers embrace digital technologies as a normal and persistent part of their lives, and expectations around how digital experiences present value and inspire purchasing decisions is evolving continuously. This digital disruption is so rapid, that many companies are struggling to understand how to respond. The transformation to digital business requires more than just a mobile app and a website to compete for the modern customer's attention. In fact, the leaders of the pack have completely retooled their organizational structures, operating models, business processes, technology, skills, and cultures.

Not surprisingly, younger, tech-centric firms often out-pace their larger, established counterparts in the digital transformation arena. Many century-old banks are struggling to pump out mobile apps and features as fast as they can to compete with cloud and mobile-first disruptors like Square and Stripe, whose business models are almost entirely digital. Without applying digital thinking across everything they do, established firms will continue to fall short of their newer, more agile counterparts, and their biggest road block is legacy systems.

Digital Vortex, Center for Digital Business Transformation, 2015:

A Tarnished Legacy

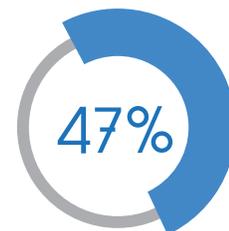
The shift to digital business began with companies eliminating data centers and moving core applications to SaaS and IaaS such as AWS and Microsoft Azure. In addition, core services' migration to the cloud has empowered development platforms and mobile integrations, driving adoption even further. While historically, legacy systems such as mainframes could be augmented to some extent to meet modern expectations, digital transformation is driving a wedge between legacy systems and the functionality that customers require to maintain competitive advantage. In fact, the reasons large firms are falling behind small tech startups in many cases- lack of scalability, difficult integration, cumbersome collaboration, and costly changes, are the same reasons legacy systems are holding them back.

This whitepaper investigates the drivers of digital transformation, the challenges businesses face in transition, and the integral role legacy modernization plays in digital business success.



Key Success Factors of Digital Business Strategy, Forrester

47% of companies haven't started to embark on a digital transformation



Are Businesses Really Digitally Transforming or Living in Digital Denial, Progress, 2016



Defining Digital Transformation

Truly going digital is often a profound transformation. It involves all aspects of a business from customer engagement to fulfillment, and everything in between. It encompasses paradigm shifts in systems and process integration and deeply influences strategic decision-making at its core. So what is it and where should you begin?

Accelerating Change

In the past, information-centric firms such as banks and insurance companies existed in an environment where the external pace of change was relatively slow, therefore the elements that make up the company—people, processes, applications, and culture were not required to respond to change quickly. Today, the environment is much different. With the immersion of everyday life in internet connectivity, customers typically interact with a company through multiple channels and often make buying decisions based on the perception of simple, seamless usability of channel interaction. If this interaction becomes painful, the customer will often move on to other companies that offer a better experience. In many instances, the better customer experience influences buying decisions more strongly than the actual product or service being purchased.

For example, the consumption of music has changed dramatically in the past few decades. In the late 1990s, there was a significant push for audio quality, as technological advances made laser discs and CDs a reality for the everyday consumer. The majority of buying decisions were influenced by sound quality. Fast-forward a few decades, and sound quality is rarely considered by most consumers of music. In fact, today when a customer uses a music download or streaming service, he expects to search for, and listen to the song of their choice within a few seconds. If the song is not available or the experience between the customer and the digital representation of the company is cumbersome, the customer will find another streaming provider that offers a better user experience.

Since customer experience channels are now mostly virtual, the ability of a company to evolve quickly with changing customer expectations becomes a necessity for survival.

From the customer perspective, demanding a positive and competitive interactive experience seems simple. For companies, particularly large entities with long histories in very different consumer ecosystems, the transformation to meet this demand can be incredibly challenging.

Connecting the Dots

Digital transformation begins by focusing on beginning-to-end processes that customers experience in getting the product or service they need, across whichever channel they choose. Further, the entire ecosystem of interacting elements in each of these processes should be accounted for. Using a phased approach, it is important to choose customer experience processes that have the greatest impact on the business first, such as high-volume channels or those with high impact.

Don't Just Digitize, Modularize

While digitization of customer experiences and their underpinning processes is important, in digital transformation, the key is to enable business services in such a way that they can be modularized and used in multiple places. For example, if a customer purchases insurance, one step may require the customer to digitally sign their acceptance. If such a business service is modularized, it can be reused in multiple places across many different customer engagement experiences. As digital transformation accelerates, the library of such reusable business services will continue to grow. As the environment changes, business services will be updated to meet the new requirements of the ecosystem. If at some point e-signatures are replaced by palm scans, updating the single business service to meet that need ensures automatic propagation across all places that service is used. This adaptability enables fast and efficient change.





Defining Digital Transformation

Zooming Out

Ideally the modularity that the organization applies to business services should be extended into the applications and infrastructure that supports them. Although integration between these systems is key, isolating technology in terms of the business services they provide makes it possible to swap certain modules of technology gradually instead of completely revamping the infrastructure. As a result, virtualization and infrastructure-as-a-service have become the rule, rather than the exception. Making changes and adjustments in these environments is simple, inexpensive, and immediate.

Transformation Permeates the Business

Taking into account people, processes, technologies, data, and other business entities and their interrelationships, organizations can develop architectural models to represent key parts of the business. Changes to components within key parts of the business can then be represented as changes to the architectural models. With these models in place planning, budgeting, talent management, change management, and mechanisms for continuous adaptation can be applied across the firm.

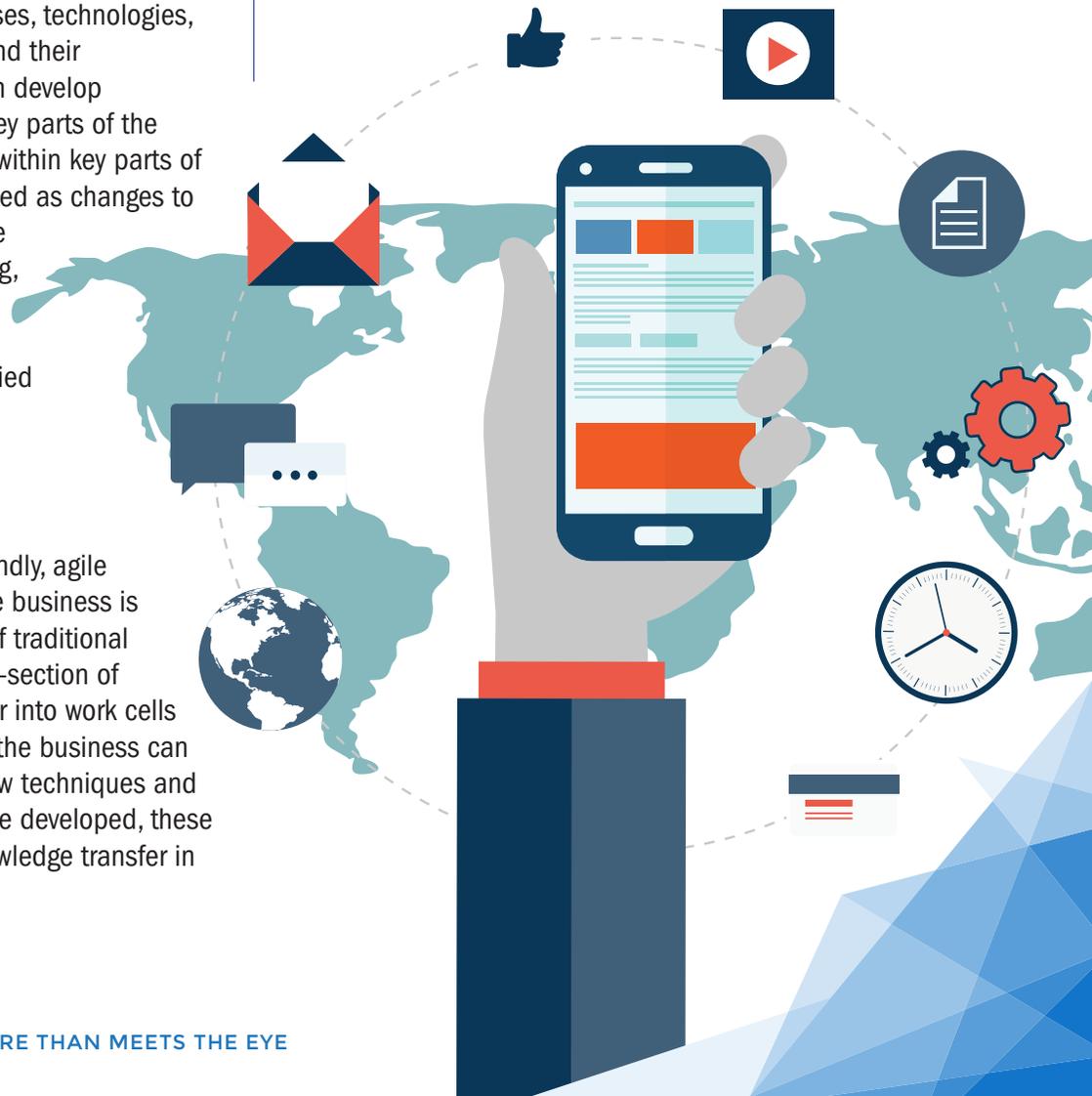
Breaking Down Silos

The evolution to transformation-friendly, agile architectural models throughout the business is complemented by the dissolution of traditional functional silos. By bringing a cross-section of people from different areas together into work cells to collaborate, the digital needs of the business can be absorbed into the culture. As new techniques and approaches become available or are developed, these work cells enable collaborative knowledge transfer in far more efficient ways.

To Infinity & Beyond

The cycle of transformation never ends. As customer needs, market needs, and the needs of the business change, they can effectively translate into changes to the architectural models that influence the underlying building blocks that have been transformed to maximize the efficiency and effectiveness of rapid change.

As the transformation continues, metrics and key indicators that used to be relevant in the organization may not be relevant any more. Most of the time, new metrics must be developed and monitored to provide an accurate picture of the rapidly changing business in a way that executive leadership can make smart decisions and fine-tune the organization.





Legacy Systems & Digital Transformation

Legacy systems play an enormous role in business today, particularly within larger corporations who are finding it increasingly difficult to meet the rapidly changing needs of their customers. Many find it astounding that 80% of the world's corporate data resides in or originates from mainframes running technology that is more than half of a century old. To some, it is difficult to understand why businesses continue to use such old technology for their critical applications, especially in the era of digital transformation. The reason is quite simple. The legacy systems are stable and robust. They perform satisfactorily and continue to meet the functional requirements around which they were originally built. However, these systems have passed through many hands over many years, often without proper documentation of features or functional relationships, and as the technology, infrastructure, and architecture of the business around them changes, the burden of retaining them will continue to grow.

The Black Box

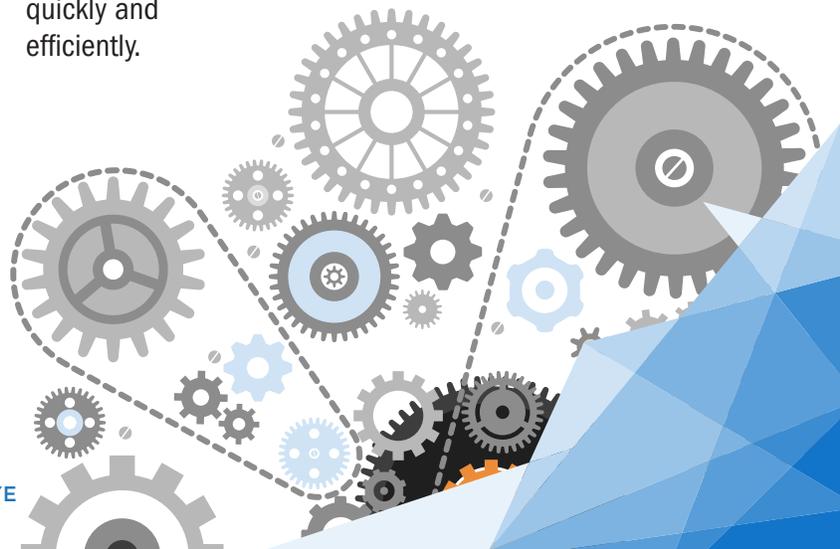
The need to understand legacy systems, while seemingly obvious, has traditionally been more reactive than proactive. When developers face a maintenance change, they generally develop the level of understanding needed to introduce the change and sort out the rest in testing. Academic research shows that as much as 25% of maintenance costs result from high levels of program and system complexity. To make matters worse, for many organizations the legacy system is a "black box" - a vast entanglement of code written by developers who retired or left the firm long ago, with little documentation of any kind. These unknowns make planning a digital transformation effort or even maintaining the existing system extremely difficult. With products such as our Enterprise Application Viewer (eav®), establishing an understanding of business processes locked within the mainframe is simple and straightforward. Business functions and processes can even be isolated and extracted for modernization and modularization as part of digital transformation efforts.

Liberate Legacy Data

A broad view of organizational data is vital for management reporting, business intelligence, analytics, and decision support. This is particularly true in adjusting the business during cycles of digital transformation. But what happens when critical data from important lines of business is locked up in a legacy system, technically incompatible with modern data management solutions?

Legacy non-relational databases are usually at least 15 years old, have changed hands several times and done so with minimal documentation. This contributes to a general lack of understanding of how the work flows and business rules are built into these non-relational systems. Second, they are difficult to integrate with newer systems in a modern platform because of non-extensibility, incompatibility, and less openness of the underlying hardware and software of these legacy systems. Third, faster application development, an essential component of effective digital transformation, in a non-relational environment is hard to obtain because the old systems operate at a lower level of abstraction and require extensive record-at-a-time programming.

By working with Modern Systems to unlock this data through conversion to modern relational models, or through replication into relational equivalents (Mainframe DataShare co-exists with the legacy production system with virtually no mainframe footprint and automatically replaces legacy to relational continuously), organizations can free up business critical information for processing and decision making quickly and efficiently.





Legacy Systems & Digital Transformation

It May Be Time To Upgrade

Automated Conversion preserves the benefits of the legacy environment while empowering organizations to harness the digital transformation lifestyle and even move critical systems to public and private cloud. Modern Systems' automated conversion technology guarantees 100% like-for-like functionality and generates fully maintainable Java or C# code. This means once the legacy application and database is converted, developers can extend application functionality directly without having to navigate ancient procedural code to do it. Precious business logic from the legacy system is preserved, while enabling deeper integration and customization to meet business requirements. Our process makes it easy to isolate specific applications or business processes for modular deployment in transformation-friendly architectures. Many code transformation solutions create structurally similar programs in the new language, but then need an additional re-engineering effort to yield desired results. Our solution is completely automated, removing the risk associated with the tweaking that goes into other solutions that produce "spaghetti code" in a line-for-line format that is difficult to maintain and resource heavy.

Consider Sending Your Beloved Old Code To A Retirement Community

Replatforming (sometimes referred to as "rehosting") provides an environment that runs on distributed platforms which emulates the legacy operating environment. This emulation capability minimizes the amount of change that occurs when migrating legacy applications or business processes to a modern environment for integration with modular, digital transformation friendly architectures. Replatforming solutions provide a relatively low-cost and low-risk way to reduce operating costs and maintain the business value existing business rules provide. The key benefit of replatforming for digital transformation is that organizations can continue to leverage their legacy developers since the underlying application code is the same, while simultaneously taking advantage of the cost savings, scalability, and integration ease that modern infrastructure offers.

Conclusion

Continuous cycles of digital transformation are here to stay. One of many reasons younger, tech-centric firms often outpace their larger, established counterparts in the digital transformation arena is because legacy systems stand in the way for many established firms. While aligning the business for digital transformation may seem daunting and far-reaching, preparing legacy systems and the processes within them for the shift can be simplified greatly through modernization services delivered by trusted professionals.

About Modern Systems

Modern Systems, Inc. is the leading provider of legacy language and database modernization. Leveraging over 35 years of best-practice domain expertise, Modern Systems works closely with its customers to minimize risk and provide a clear path from legacy platforms like COBOL, Natural, Adabas, VSAM, IMS, IDMS, CA Gen, and others to modern solutions like SQL Server, DB2, Oracle, Java, C# and more. Modern Systems was chosen by Walmart to modernize the world's largest order system. We've also modernized the world's largest trading platform. Modern Systems has offices in the USA, UK, Italy, Romania, and Israel.

Visit <http://modernsystems.com> to learn more

