In today’s digital economy, business success increasingly depends on IT-enabled capabilities, like process optimization and business intelligence. MIT CISR research has found that excelling at these IT-enabled capabilities starts, not with developing expertise in six sigma processes or business analytics, but rather with building a digitized platform. This platform, which we define as a coherent set of standardized business processes along with supporting infrastructure, applications and data, intended to ensure the quality and predictability of core transactions, provides the foundation for doing business in a digital economy.

Enterprise architecture provides the blueprint for the digitized platform. It captures both business and IT requirements and depends on a set of evolving management practices. IT leaders have long recognized the importance of enterprise architecture. But the importance of digitized platforms makes architecture a critical business capability. In this briefing we provide new evidence that helps explain how architecture maturity—and the digitized platforms it generates—has become essential to business success.

Enterprise Architecture Revisited

Enterprise architecture articulates a firm’s core transaction processes and defines how data from those transactions are shared with employees, customers, and partners. Unlike the architecture of a building, enterprise architecture evolves, reflecting organizational learning about optimal business process design, organizational structure, and governance of decision rights.

Earlier MIT CISR research described that architectural evolution in terms of four maturity stages. We can summarize the four stages as follows:

1. Business silos: in their early years, firms build point solutions and localized business systems to respond to immediate business opportunities. The result is a complex, expensive, and risky technology and business process environment.

2. Standardized technology: firms pursue operational excellence within IT, specifically low unit cost and high reliability. They develop disciplined processes around IT investment prioritization, project methodology, IT service delivery, and standards management.

3. Optimized core: firms invest in digitized data and process platforms (packaged or customized integrated core transaction processing systems). Digitization no longer focuses on solutions to local or functional priorities; management defines and funds enterprise priorities.

4. Business modularity: firms define strategic initiatives that leverage the capabilities of the firm’s digitized platform. Operational level decision makers base decisions on clear business rules and reliable data. Strategic decision makers rely on data analytics to consistently improve business rules. Occasional off-platform experiments address the risks of disruptive technologies and business trends.

While these stages have been in evidence for some time, the distinctions among these stages and the need for firms to progress through them in sequence has been confirmed repeatedly in our research. Recent data show a large increase from 2007 to 2010 in firms that are building and leveraging digitized platforms (stages 3 and 4; see figure 1).

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2. 2007 data in this briefing is from a joint MIT CISR/Gartner survey of 1508 CIOs; 2010 data is from a joint MIT CISR/CIO Magazine survey of 206 CIOs.
The journey across the four stages is transformational. One indicator of that transformation is the shift in IT spending patterns. As reflected in figure 1 shows, firms in stage 2 make cutting IT costs a priority. In contrast, firms in stage 4 spend heavily on IT. But the scope of the IT unit’s responsibility in stage 4 more often encompasses business operations, manufacturing floor control systems, digital product development, or shared services.

Changing organizational mindsets are also visible in the allocation of IT spending between Run and Build. In stage 2, IT leaders work to shift funds from run to build to gauge success in eliminating inefficiencies. By stage 4, IT leaders are attempting to minimize capital expenses, taking advantage of the opportunities of business process outsourcing and software as a service. As one CIO described it, once the IT unit had learned to manage services and unit costs, “we stopped thinking of IT run as bad, and started thinking of it as what keeps the business running.” In short, firms in later stages tend to be much more focused on the value realized than the cost incurred from IT.

Why a Digitized Platform Matters

Earlier MIT CISR research found that architecture maturity was associated with firm profitability.³ In the 2010 survey, CIO assessments of firm performance relative to competitors on dimensions like process efficiency, process innovativeness, and driving value from IT are highly correlated with architecture maturity (see figure 2). Case studies of mature firms reinforce these findings. For example, PepsiAmericas, a stage 4 company, used customer transaction data as input into predictive models to suggest customer orders. This effort, which reduced out of stocks in customer stores from 14% to 3.7%, was possible only because PepsiAmericas had built a foundation of standardized processes and systems and enriched it with a powerful information backbone.⁴

Our data also indicate that mature firms are better positioned for generating benefits from digital capabilities, such as business process optimization, business analytics, master data management, strategic experiments, and digital product design. (See figure 3.) While some of these capabilities can develop within pockets of expertise in siloed firms (e.g. business intelligence and design of digital products), a mature firm’s enterprise mindset and discipline compounds the impact of these capabilities enterprise-wide. Mature firms can sophisticated of these digital capabilities is significantly correlated with architecture maturity.

Again, case study data supports the statistics. For example, we have observed that master data management efforts are often frustrated by an inability to preserve the integrity of the data. In contrast, PepsiAmericas improved data collection when it built its platform. This data was good enough to support decision makers but decision makers still found problems. These problems motivated participation in governance practices that further enhanced the data—and further improved decision making.

What we have observed about mature firms is continuous improvement in their digital capabilities at an increasingly fast pace. For example, USAA, the financial services company serving the U.S. military, needed a few years to build an integrated platform across its three businesses (property and casualty, banking, and financial services like investments and life insurance).⁵ With the platform, USAA’s time to market for new systems in 2009 was 178 days, as compared to an industry benchmark of 235 days. Those systems leverage USAA’s platform by enabling rapid innovation of new customer services on new technologies.

Architecture Maturity Changes Everything

John Kreul, who was Vice President of Applications and Customer Service at PepsiAmericas from its stage 1 days in the late 1990s through its journey to a stage 4 firm prior to its acquisition in 2010, noted that life in an architecturally mature firm is totally different from life in earlier stage firms. For example, he said his work-life balance improved because he—and all of IT—got more done in fewer hours. From a company perspective, he noted that PepsiAmericas transformed from a company with high IT costs and regular IT failures to one in which IT issues were rare and readily resolved, project failures were nearly non-existent, and deployments consistently added measurable business value. Kreul’s comments suggest that life in an architecturally mature firm is as idyllic as architects advertise. To get there, firms must learn to do business on a digitized platform.


Figure 1:
The Stages of Architecture Maturity

Figure 2:
Competitive Comparisons of Business Capabilities Relative to Architecture Stage

Figure 3:
Firms’ Digital Capabilities Relative to Architecture Stage
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MIT CISR, founded in 1974, has a strong track record of delivering practical, empirical research findings on how firms generate business value from IT. MIT CISR disseminates this research via electronic research briefings, working papers, research workshops and executive education. Our research portfolio includes but is not limited to the following topics:

- IT Governance
- Enterprise Architecture
- IT-Related Risk Management
- IT Portfolios and IT Savvy
- IT Leadership
- IT Management Oversight
- IT Unit Design
- IT-Enabled Business Agility
- IT Innovation
- Business Transformation and Change Management

In July of 2008, Jeanne W. Ross succeeded Peter Weill as the director of CISR. Peter Weill became chairman of CISR, with a focus on globalizing MIT CISR research and delivery. Drs. Anne Quaadgras, Peter Reynolds, George Westerman and Stephanie L. Woerner are full time CISR research scientists. MIT CISR is co-located with MIT Sloan’s Center for Digital Business and Center for Collective Intelligence to facilitate collaboration between researchers and faculty.

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