AUGUST 2015

BUSINESS TECHNOLOGY OFFICE

Two ways to modernize IT systems for the digital era

Companies can use two-speed or greenfield approaches to overhaul their legacy IT systems—without weakening their enterprises. Which approach is right for you?

Juan Garcia Avedillo, Duarte Begonha, and Andrea Peyracchia

Outdated IT systems are often the biggest Achilles' heel for established companies seeking to compete successfully against upstarts.

Every executive knows the problem. Established companies try to get as much as they can from their investments in legacy systems. When they come up against the systems' limitations, they devise patches or work-arounds. While useful in the short term, over time these remedies can create incompatibilities among discrete layers of the technology stack and among applications within a layer. Companies may find that they are actually increasing their operating costs in the long run and missing opportunities to embrace more efficient and more innovative ways of working through digitization.

By contrast, newer online competitors—unburdened by legacy IT systems—benefit from agile product-development cycles and delivery systems, digital operating models, and lower operating costs. They can experiment and test software releases frequently with users to respond quickly to market shifts. They can pursue hypertargeted marketing strategies, learning as they go from the consumer data they collect. Such companies have been able to accelerate their time to market with new products and improve customers' experiences.

To realize similar advantages, established companies will need to simplify their core IT systems while still keeping the lights on. That's what one European utility did: by eliminating the operational drag from

Takeaways

When companies come up against the inevitable limitations of their legacy IT systems, they attempt to create patches or work-arounds.

Such remedies may prevent companies from optimizing their use of technology, particularly in a digital era.

Two transformation approaches, *two speed* and *greenfield,* may be particularly effective for companies seeking to modernize their IT architectures in the short term while also ensuring the sustainability of IT systems for the long term.

Each of these approaches has specific requirements that must be weighed against an organization's desired time to market, its appetite for risk, its financial resources, and the maturity of its IT systems.

its legacy IT system, it was able to shave its costs of providing customer service by 15 percent while still significantly improving customer-satisfaction scores.

Based on our work with organizations in a range of industries, we believe two approaches may be the most effective for successfully realizing improvements in the short term while also transforming the IT architecture over the long term: *two speed* and *greenfield.* Each has specific requirements that must be weighed against an organization's appetite for risk, its financial resources, and the maturity of its IT systems. In this article, we will consider both approaches, the conditions under which they make the most sense, and the essentials of governance that ensure success in either case.

Two paths to IT transformation

To obtain the same cost and performance benefits that online companies enjoy, established companies need an IT architecture that is modular, simple, customer-centric, and configurable—and they need it quickly. Both two-speed and greenfield approaches give organizations the ability to rapidly transform themselves while allowing the business to operate as usual (Exhibit 1). But they are subtly different.

Two-speed approach

Under the two-speed approach, the IT organization produces quick iterations and launches of front-end customer-facing applications while continuing to ensure the stability of slower, back-end systems that handle foundational transactions and record keeping.[1]

Companies prioritize two or three high-value customer experiences—say, opening an account for a mobile phone or returning an item. Then they carve out a dedicated team of staffers with digital skills to create a new fast-track service for that experience and bring it to market quickly. Meanwhile, the remainder of the IT architecture team, operating at a more moderate pace, carries on with its core work: planning and designing the longer-term enterprise architecture that will meet the organization's strategic and operational needs, while at the same time ensuring stability and maintenance of the current system and overseeing day-to-day service delivery.

One European bank, for example, used this approach to improve its account-opening process. While using existing technology where it could, it created a new team that used concurrent-design techniques (in which multiple development tasks are completed in parallel) to create a prototype of an account-registration process. The team tested this process with real customers in a live environment, constantly refining it until the team had succeeded in cutting the original 15-step process down to just 5 steps. Customers can now open an account using a mobile device in five minutes or less instead of waiting in a bank branch and filling out paperwork.

The two-speed model allows management to phase in capital investments, which can mitigate the risk of IT transformation projects and make for a smoother migration. But the two-speed approach is no silver bullet. It can be complicated to maintain a

Exhibit 1   Executives can consider two IT transformation models.

Key organizational factors	2-speed model	Greenfield approach
Functional needs	Focused changes that will affect only a few IT domains	Broad changes that will require rework in most core IT domains
Business backing	Support is limited to a restricted part of the organization	Senior management is willing to lead entire change project
Time	Need to implement specific functionalities quickly	Time to deploy specific functionalities can be managed
Risk aversion	Company does not want to incur big operational risks in replacing all legacy IT	Benefits of change outweigh operational risks in replacing all legacy IT
Economics	Company can afford to implement only critical functionality changes	There are no significant budget constraints
Integration flexibility	Current interfaces are fine; there is no need for major changes in integration logic	A new, flexible but standardized architecture is needed to integrate applications
Tolerance for IT complexity	IT architecture is adequate; system complexity is manageable	Current "spaghetti" IT architecture is hindering business growth

hybrid architecture in which transactional platforms, managed for scalability and resilience, run alongside other systems optimized for customer experience. When one retailer adapted its legacy systems to support multichannel delivery, for instance, fast-track software teams bumped up against outdated IT systems built in programming languages their young developers had never used.

The company learned the hard way that if it is not simultaneously focused on connecting individual improvements to a new, more sustainable underlying architecture, the whole process may grind to a halt (Exhibit 2). Indeed, many businesses that opt for this approach become so focused on the fast part of the two-speed model they forget to consider the changing
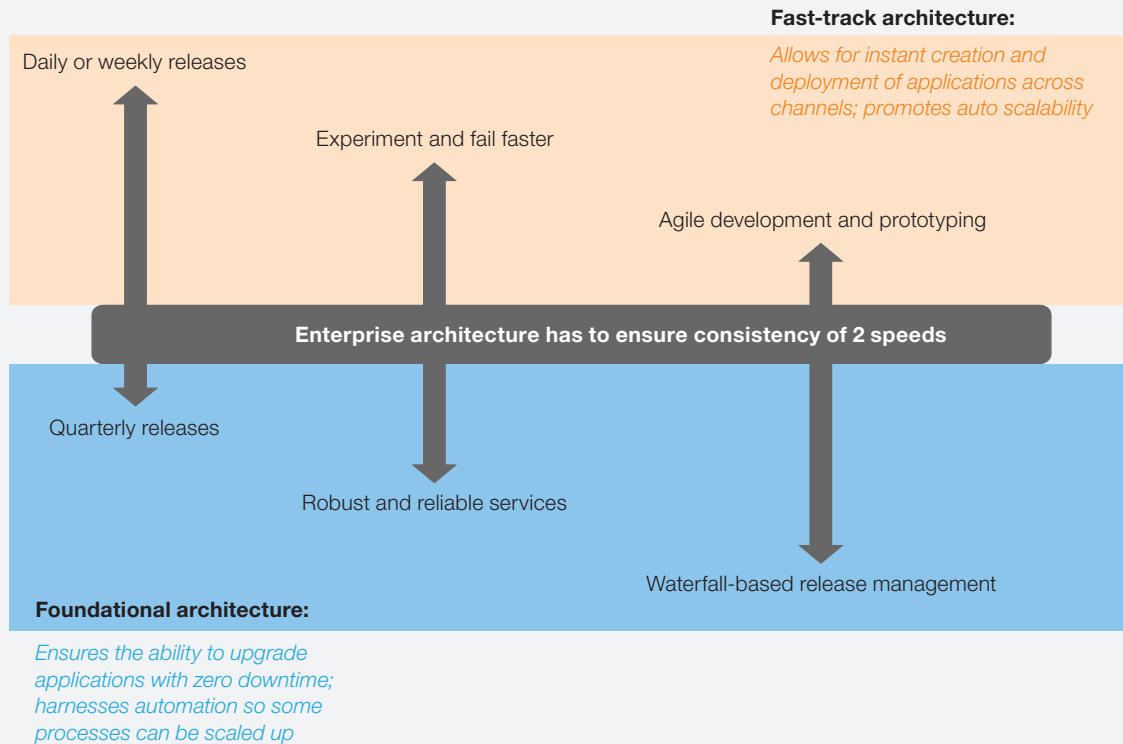
demands of the foundational systems—and that oversight can undermine the success of the project.

It is also critical for companies to set clear milestones for the transformation; without a comprehensive plan and investment strategy, companies can get caught up in a change cycle that has no end. Additionally, they must agree not to take on too much change too fast. The two-speed path involves making implicit trade-offs. Taking on too many fast-track initiatives leads to chaos. Finally, success requires focus and support from the business side.

Greenfield approach
As the name suggests, a greenfield approach is a replacement of core legacy IT systems. This

Exhibit 2   **Businesses with two-speed models need to keep an eye on how the fast track connects to foundational systems.**

Fast-track architecture:

Allows for instant creation and deployment of applications across channels; promotes auto scalability

Daily or weekly releases

Experiment and fail faster

Agile development and prototyping

Enterprise architecture has to ensure consistency of 2 speeds

Quarterly releases

Robust and reliable services

Waterfall-based release management

Foundational architecture:

Ensures the ability to upgrade applications with zero downtime; harnesses automation so some processes can be scaled up

approach works best when businesses require a total transformation that the existing legacy system simply cannot support—such as when a completely new set of functionalities is needed. Implementing this approach successfully also requires a bit more lead time; if there is crushing pressure to deliver results quickly, the two-speed approach may be the better option.

To implement the approach, companies have several choices. They can build from scratch, choose best-of-breed hardware and software products and integrate them themselves, or go with a bundled, preintegrated suite. Whatever the choice, it is critical for companies to understand the full capabilities of the tools and packages they are acquiring. And rather than simply adapt to the software packages they acquire,

they must commit to redesigning their software development and delivery processes from end to end, relying on industry best practices and common IT standards to ensure sustainable, intuitive ways of addressing business and customer needs.

There are several factors companies should weigh at the outset. They must have substantial capital and liquidity, since initial investments can range between $50 million and $300 million depending on the scale and scope of the IT organization. They must have support from top leadership to sustain the strategic and financial commitments over a period of years. They must also have enough understanding of the potential for positive business outcomes to ensure that the effort isn't considered simply a

side project being led by IT. Additionally, leaders must carefully think through their capabilities—for instance, does the company have enough skilled talent and other resources on hand to pursue digital delivery of software? If the answer is "no," the company may want to emphasize new training and coaching opportunities for employees or look outside the usual sources for IT professionals with the desired digital skills.

Two companies, two different approaches

Which approach a company takes depends on a number of factors, including the market pressures it is facing, its appetite for risk, the state of its existing IT systems, and its financial situation. As the following examples suggest, that's true even for businesses competing within the same industry.

Two-speed approach

At one European telecommunications company, sales representatives often had to navigate 15 different systems to qualify leads, access client information, and prepare proposals. One of these, the customer-relationship-management system, could sort data only by product. Systems issues slowed response times so that even simple customer queries, such as a billing question, required a two- or three-minute wait on average. The company knew it needed to dramatically improve its IT capabilities. But with revenue stalling, it also needed some quick fixes to address urgent needs in product life-cycle management, multichannel sales, self-service, and customer operations—processes that in many cases had to be radically simplified.

While the larger IT systems transformation was being scoped, management pulled together a fast-track team composed of a senior marketing director, a data scientist specializing in customer analytics, a handful of IT developers experienced in agile software-development techniques, and a veteran IT programmer who was deeply familiar with the current software and hardware environment.

Working in test-and-release cycles—where prototypes were vetted, refined, and rereleased in weekly, sometimes daily rotations—the fast-track team introduced a new software overlay. It also developed a data-mining algorithm that aggregated customer data from the clunky customer-relationship-management system and pooled it into an easy-to-use template that marketers could use to sort customer information in a variety of ways.

Those changes forced the marketing end users to get used to a different working style, one that was more unstructured and sparked resistance at first. Initial releases lacked the elegance of traditional software programs, but as marketers field-tested the improvements, they grew more comfortable. Those fast-track improvements allowed the telecom company to address critical market needs in less than three months and gave the legacy-transformation team time to develop a longer-term target IT model.

Greenfield approach

In another example, a telecommunications operator active in South America was facing heavy regulation, rising inflation, and negative exposure to the dollar. Those cost pressures were compounded by a bloated service portfolio in which just one-third of the company's products accounted for more than 90 percent of its revenues. The company's IT architecture was strained from years of M&A activity. Average costs for business-support systems were nearly double those of industry peers, and average response times in customer operations were about 40 percent higher. Management weighed retrofitting in waves to address the most glaring problems but determined that many core processes were so complex and broken that it would be faster and cheaper to redesign from scratch.

The decision to embrace a greenfield design was driven in large part by the company's CEO, who saw the project as one piece of a larger turnaround strategy with implications beyond the IT organization.

He set aside one day each week to meet with the project team. That team, composed of senior business and IT staffers, reviewed every major decision—from trimming the product catalog to firming up the details of the IT stack. The CEO and the team hashed out the customer and operational capabilities they wanted and then, using a best-of-breed approach, shopped around for vendors that would partner directly with them instead of working through a system integrator. The team wanted to have a clear line of sight into the management of the project.

Starting with its mobile-phone division, where the CEO and senior management felt the company had the greatest exposure, the project team introduced new systems one business domain at a time, using live tests with anywhere from 20,000 to 100,000 customers to track performance. Once the mobile business was stable and running on a new platform, the company turned its attention to its fixed-line business units. The company is on track to reduce IT costs by roughly 20 percent within 18 months and shorten time to market by as much as 50 percent (Exhibit 3).
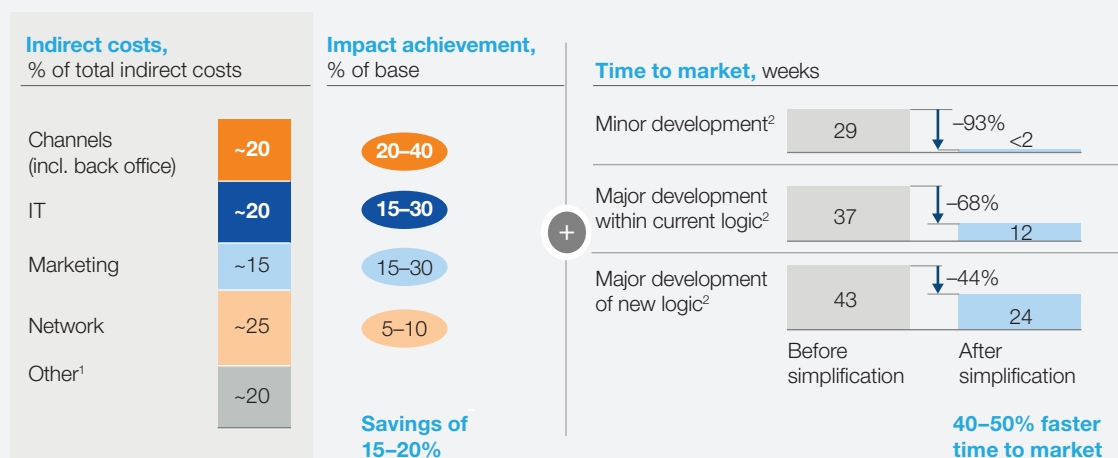
Ensuring strong governance

Regardless of which approach an organization follows, companies should adhere to certain governance principles.

Ensure that the business plays an active leadership role. The IT transformation should be managed as a company-wide initiative. Business leaders and senior management must be committed to and engaged in the change process, outlining the conditions for success and gaining agreement with the IT organization about how the transformation will be managed.

Have a clear long-term vision and plan. The target IT architecture must be capable of supporting the organization's long-term strategy. If a conglomerate plans to divest itself of a certain product line within five years or expand into Asia, for example, those decisions will affect the underlying IT. Management must commit to articulating its strategy with IT, and IT leaders must ensure that the resulting architecture can meet the evolving needs of the business. Top-performing organizations predict as much as possible while maintaining some level of flexibility to adjust.

Exhibit 3   **Simplification can materially change IT costs and time to market.**

Indirect costs,
% of total indirect costs

Channels (incl. back office)	~20
IT	~20
Marketing	~15
Network	~25
Other[1]	~20

Impact achievement,
% of base

20–40
15–30
15–30
5–10

Savings of 15–20%

Time to market, weeks

	Before simplification		After simplification
Minor development[2]	29	−93%	<2
Major development within current logic[2]	37	−68%	12
Major development of new logic[2]	43	−44%	24

40–50% faster time to market

[1] The impact achievement for support functions such as facilities, HR, and finance was not available.
[2] Examples: minor development would be a new unit or new tariff; major development within current logic would be adding a new third party; major development of new logic would be a new type of bundle.

Simplify products, processes, and IT at the same time. Business and IT should manage all the elements related to a given customer experience (its processes, applications, system requirements, and so on) in tandem rather than in separate, sequential work streams. Although it is "messier," this method forces the type of end-to-end planning that can accelerate development and ensure improvements are more likely to meet business and customer needs.

Maintain good housekeeping. Implement industry-leading IT standards to establish a common language with vendors. Freeze legacy investments to free up resources and prevent shadow IT offerings from being introduced. Such project discipline can keep the company's focus on the IT transformation and can help senior leadership avoid costly changes that are not in line with the broader transformation strategy.

Make clear and frequent communication a priority. Create a reporting dashboard that makes it easier for senior management to oversee the IT transformation and stay engaged. Give senior managers a short list of metrics that will allow them to see, at a glance, the impact the change is having on the organization. Hold weekly (even daily) check-ins with the business–IT working team to maintain momentum, troubleshoot issues, and manage work volumes so resources are deployed optimally.

Dedicate the best internal resources to the transformation project. Some organizations fall into the trap of staffing transformation projects with people who may be available but who may not have the required business, IT, or project-management skills. Project teams must be staffed with experienced IT professionals with the relevant skill sets, and they must be allowed to clear time on their schedules to devote their effort to the transformation.

Choose vendors that prioritize your account. It's important to select a partner that sees your account as a high-priority contract. The provider's commitment to your project and understanding of your goals (and relevant experience in meeting them) can be a make-or-break issue. While price will be an important consideration, having trust in a vendor is just as critical when making the decision.

■ ■ ■

Large incumbent organizations must address the barriers to digitization imposed by their legacy IT environments. Two-speed or greenfield models can serve as effective paths to transformation. With less hardware and software baggage and a more modern IT architecture, established companies can simplify their processes and IT environment and sharply improve their performance. ■

---

[1] Oliver Bossert, Chris Ip, and Jürgen Laartz, "A two-speed IT architecture for the digital enterprise," December 2014, mckinsey.com.

Juan Garcia Avedillo is an associate principal in McKinsey's Madrid office, **Duarte Begonha** is a principal in the Lisbon office, and **Andrea Peyracchia** is an associate principal in the Milan office.