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OPPORTUNITY ON DEMAND

THE RISE OF THE COMPOSABLE ENTERPRISE

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EXECUTIVE SUMMARY

Today's successful organization needs to be able to turn on a dime, changing its product or service direction as fast as its customers' needs require. The successful business of the 21st century crosses all boundaries; can quickly meet and adapt to competition, whether it comes from another part of the world, another industry or a startup; or it can use its core competencies to extend itself in new ways. Welcome to the *Composable Enterprise*. This kind of company—powered by cloud, open APIs, data analytics, mobile and social, and connected to the Internet of Things—is redefining markets and raising consumer expectations. The composable enterprise casts away the hierarchical and hardwired systems and processes that defined its predecessors, and represents a radical rethinking of how technology can serve innovation and how innovation can serve customers.

DEFINITION: COMPOSABLE ENTERPRISE

A highly connected organization with business processes supported by on-demand services that are acquired and leveraged from the cloud and APIs, furnished by outside providers or through internal data centers. The services, which tend to be small and lightweight, are themselves complete systems, and are connected to the composable enterprise through APIs, in the manner of building blocks.

Any organization, regardless of what kind of business it's in, how many legacy systems it might have or how clunky its current processes are, can begin today to make the transition to a composable enterprise. It won't be an overnight transformation, but as changes happen, the positive effects of digital transformation will take hold. What is needed to begin this journey is an in-depth knowledge and understanding of the new systems and processes that are driving new businesses, how they interact and what they are capable of delivering. This transformation will deliver more than efficiency and lower-cost processing—it means heightened competitiveness through digital engagement and analytic decision making.

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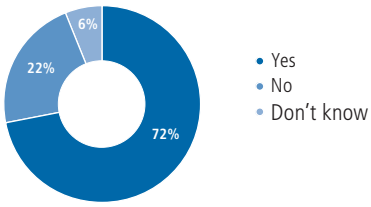
THE SHIFTING ENTERPRISE LANDSCAPE

A recent survey published by MuleSoft confirms there are a growing number of companies transforming into composable enterprises—and it's not just startups in Silicon Valley. Established businesses are responding to this new digital environment by structuring themselves as composable enterprises, built out of connected software services, applications and devices. In addition, most are seeking to adopt the Internet of Things (IoT) and microservices technologies, further digitizing important aspects of their operations. These organizations are able to expose core competencies as digital assets that can be leveraged by others, thus extending the bounds of their enterprises. For example, Amazon has exposed its competency not only as an online retailer, but as an IT solutions provider through Amazon Web Services. Amazon repurposed its own hosting infrastructure as a sellable service in its own right, and now AWS is a billion-dollar business.

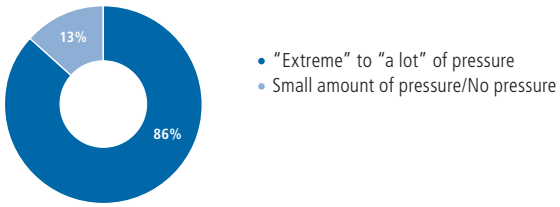
The movement toward the composable enterprise is driven by heightened competition and increasing consumer expectations. The MuleSoft survey finds that 86% of IT executives say they're under pressure to deliver services faster than last year. A majority, 72%, have an API strategy going forward, which is driven by the need to integrate new software with existing infrastructure, give business teams the ability to offer self-service IT, get more value from existing software and enable mobile applications. In addition, this new digital reality incorporates the emerging Internet of Things—approximately 75% of IT executives ranked IoT as important to their business plans over the next 12 months. This includes plans to integrate wearables, which are further empowering consumers to expect greater engagement and connectivity with companies.

DOES YOUR COMPANY HAVE AN API STRATEGY?



MuleSoft Connectivity Benchmark Report: The Enterprise's Connected Future: APIs on the Rise, July 2015. n=300

HOW MUCH PRESSURE ARE YOU UNDER CURRENTLY TO DELIVER IT SERVICES FASTER THAN LAST YEAR?



MuleSoft Connectivity Benchmark Report: The Enterprise's Connected Future: APIs on the Rise, July 2015. n=300

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Accordingly, within the last few years, the role of IT itself has been shifting dramatically—emerging from the confines of back offices and server rooms to that of high-level business strategists and even digital provocateurs, shepherding their businesses through the disruptions that are now turning entire industries upside down.

Many organizations face the need to compete in a global economy and serve new, emerging customer channels. "We were challenged by the inability of traditional IT to quickly respond to ever-changing business demands," relates an enterprise architect at one of the largest manufacturers of roofing materials in the United States. This includes being able to integrate the systems as well as leverage the big data now coming from all parts of the company's operations. The company has several strategic initiatives—all steeped in digital technologies—to meet these new demands, the enterprise architect says. "We've increased our speed to market. We have to be innovative. When we launch a new product line, we have to be nimble enough to take care of it."

In this new economy, "success depends on connecting the unconnected," says Ross Mason, founder and VP of product strategy of MuleSoft. "To compete in today's environment, organizations need to connect applications, data and devices."

Digital transformation is forcing organizations to reconsider how to leverage their core competencies, and in some cases, even reevaluate their core competencies. Companies can now build ecosystems that extend their organizational boundaries by allowing others to incorporate those core competencies into their own products—such as the Amazon fulfillment model for third-party vendors.

At a more radical level, digital transformation enables reframing and redefining an organization's core competencies. An example is New Zealand Post; in light of declining postal revenue from stamps, NZ Post reframed its core competency from the physical delivery of postal mail to the provision of delivery information services such as address lookup, postal tracking calculators and tracking information, all delivered and monetized via APIs. The postal service established an internal team of digital "intrapreneurs" to explore and establish new channels to reach customers. "We were searching for new business models in what everyone sort of recognizes as a declining postal business model worldwide," says Joseph Brophy, solutions development manager for New Zealand Post Digital. "Our goal was to accelerate growth in e-commerce and parcels and logistics." Ultimately, Brophy adds, the goal of the initiative is to leverage digital approaches to enhance the customer experience and introduce design thinking to the nation's postal service.

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—JOSEPH BROPHY
Solutions Development Manager,
New Zealand Post Digital

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WHAT IS A COMPOSABLE ENTERPRISE?

This composable enterprise is a lightweight entity, capable of quickly mapping technology solutions to ever-changing business requirements. The business is built on services that are acquired and leveraged from APIs provided by outside providers, or through a company's internal data centers. The services are connected through APIs, in the manner of building blocks. "The web is the playbook for the composable enterprise," Mason points out. "It taught us that you can decouple very complex systems with simple interfaces called APIs; as long as you make them usable, and you think about the consumer of those interfaces, they can drive enormous value. APIs have shown us that every business, no matter how different and complicated it is perceived to be, has technology components that can be broken down into smaller, composable pieces that can be consumed by the business."

The composable enterprise has the following characteristics:

- Business processes are assembled by APIs
- Organizational processes and data are opened up to partners and customers via APIs
- Business users can create front-end applications and access data, on demand
- The architecture and infrastructure is highly scalable, capable of accommodating new workloads and requirements on demand
- Technology solutions emerge not only from top-down vision, but from bottom-up capability
- Security is baked throughout the entire infrastructure, in every composable building block

This new breed of company moves quickly to adapt to changing customer realities and requirements, and is not dependent on any single type of technology. Therefore, the IT architecture behind composable enterprises is distributed and highly collaborative; central IT acknowledges and actively encourages a distributed architecture to encourage innovation, while still embedding governance and controls. In the past, IT was reactive: ordering and building systems to meet requirements, preparing and delivering reports, and troubleshooting systems issues. The new IT role is proactive, encouraging innovation and even acting as an agent of disruption for the business.

It's possible to build and deploy applications and data at a much more rapid rate than within traditional settings.

The rise of digital services—built on a foundation of APIs, virtualization and cloud—is changing the way organizations view applications and the way they handle enterprise IT. Organizations now can assemble their required functions from a range of both internal and external APIs—and quickly create new ones—that are capable of being integrated and retired on demand as needed by ever-shifting business requirements.

The services that form the composable enterprise cover a wide range of applications and functions—from sophisticated business and technical applications, to technology-level services such as storage and security, to mobile apps.

The development of composable enterprises will be enabled from the top down, but will be enriched by the activity and engagement of developers and business users at all levels of an organization. Within a composable enterprise, larger, more monolithic business processes are broken down and made available as more granular functions. As a result, it's possible to build and deploy applications and data at a much more rapid rate than within traditional settings, as many services and features can be pre-built, pre-tested and readily available to be pieced together, building-block style.

Such a new approach to technology calls for rethinking the way assets are deployed and made available. "We call this approach API-led connectivity," says Mason. "It is a different way to think about how to organize the assets that you own, the way you expose them and who you expose them to."

For technology leaders, the rise of digital, composable enterprises doesn't mean the deep-down technical tasks are going away—it means that along with providing traditional technical capabilities, IT departments also need to take a leadership role within the business, guiding their organizations through the fast-growing digital economy. It's no longer just about keeping the lights on, making sure the network runs and making sure one has the right software on the desktop—it means playing an active role in business strategy across all parts of the enterprise, from human resources to finance to production.

The composable enterprise isn't limited to tech-savvy startups that can put everything they do in the cloud. Many established businesses, with legacy technology assets, are also evolving into composable enterprises. Organizations with legacy heritages as diverse as Amtrak, Unilever, News Corporation and New Zealand Post are reinventing themselves as composable enterprises, with CIOs and technology leaders paving the way.

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Founder and VP of Product Strategy, MuleSoft

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THE PEOPLE, PROCESS AND TECHNOLOGY BEHIND COMPOSABLE ENTERPRISES

The composable enterprise is not just about technology, but rather is built and functions on three essential elements—people, process and technology. The technology fabric that binds this all together is essential for competing in a global economy and providing the information that decision makers need.

IT leaders and their departments have pivotal roles to play in this process—enabling the business to expose capabilities in new and innovative ways, such as designing and releasing digital products, and experimenting with new approaches. This process is about people and processes as much as it is about technology, Mason adds. It's up to "central IT to become both a partner and platform to the business, working to expose more of the value of the business."

Such a transformation has been taking place at New Zealand Post over the past five years, says Brophy. The move to API-based infrastructure has introduced "rationalization and simplification to our organization structure," he says. "From a technology standpoint, the pace has changed. Everything is getting faster and faster. A few years ago, some of what we were doing in technology would have been seen to be sufficient for the environment we were operating in. Now, it's not. That's why we have a digital team, with a focus on innovation. We know that we have to do things differently."

Make no mistake, the composable enterprise, from a technology perspective, is a demanding environment. Reliance on the legacy technology solutions that may have worked a decade ago—or even as little as five years ago—needs to be rethought. Many of the IT systems in existence today weren't originally designed to support composable enterprises built around APIs. Rather, they were built for an outdated vision of the future, according to the assumption that the business processes they support would also need to exist for years at a time, with occasional adjustments or upgrades along the way.

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>
> —JOSEPH BROPHY
> Solutions Development Manager,
> New Zealand Post Digital

Building solutions to change is the key to the composable enterprise. All components—from services to applications to underlying processes—need to be flexible and agile, able to be changed or reconfigured on a moment's notice as business demands change.

The architecture of a composable enterprise must reflect this great adaptability. Such an architecture requires the following:

- **Scalability on demand:** Capable of calling services and functions as needed by the business.
- **Adaptable to all devices and clients:** Services and applications will run on any device the client is using at the time.
- **Service-oriented architecture:** Essential applications and functions are abstracted as scalable, reusable, loosely coupled services. Microservices ensure the granularity needed to adapt to key business functions.
- **Automation:** Manual processes or scripting need to be taken out of all aspects of the architecture so that on-demand services called by the business are readily available.
- **Self-service:** Business decision makers can access key components of applications and data without waiting for their IT departments.
- **Accessible enterprise data layer:** Key information needs to be made available to decision makers when they need it, from any source. Data sources, as they are identified, should be easily and quickly integrated into the enterprise data flow in a standardized and repeatable way.

Ultimately, it means bringing IT operations and business operations onto the same page—a challenge that enterprises have been working to address since the dawn of the computer age. The composable enterprise is, in many ways, future proof—it enables change and reconfiguration—even getting into entirely new lines of business. The right technology will always be available at the right time as organizations move into the future, and seek to compete in a hyper-competitive global economy. Having streamlined functional components that can be assembled, reassembled and disassembled on a moment's notice, as the business needs them, will go a long way in enhancing success in this new environment.

For News Corporation Australia, CIO Tom Quinn notes that the ability to leverage the architecture of the composable enterprise provides a way to acquire capabilities, on demand, without ripping and replacing existing investments. "We run a two-speed technology stack," says Quinn. "We have larger systems at the back end that are our systems of record, and give us the functions like CRM, HRIS and the financial system. At the front end, we have over 80 SaaS providers providing different pieces of the pie for digital delivery, covering ad serving, content augmentation and image enhancement."

The advantage of these SaaS-based applications is that they can be swapped on demand, Quinn says. "They're replaced often by a better mousetrap, and if we have a number of these systems that we can easily integrate together, we can take out the poor-performing player and replace it with something that works better for us."

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News Corporation Australia

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LEADING THE COMPOSABLE ENTERPRISE

It takes innovation-minded, forward-thinking business leadership to transform from a staid, traditional enterprise to a composable enterprise, built by the business, for the business. "In order for us to be more agile and provide better visibility to our products, we have to engage our business," says the roofing company's enterprise architect. The path to the composable enterprise starts within the organization, engaging developers and employees at all levels—not just in the C-suite or in the data center. Often, the catalyst that first drives the movement to the composable enterprise begins with workarounds to IT departments, which may be not responsive enough to business requirements. The rise of cloud applications—commissioned by business users and developers outside of formal IT budgets—has become commonplace.

Organizations that leverage technology in innovative ways are disrupting their industries and gaining market share.

CIOs need to step up as chief innovation officers and provide guidance and vision to help lead the composable enterprise. Increasingly, organizations that leverage technology in innovative ways are disrupting their industries and gaining market share. CIOs and their staffs will drive this evolution to composable enterprises, providing solutions—embodied as APIs.

The reliance on APIs for direct revenues, as well as enterprise-wide capabilities through integration—as indicated above—puts CIOs in business leadership positions. Strong leadership from the CIO is paving the way for New Zealand Post's transformation into the digital economy, Brophy observes. "Our digital work and objectives are highly visible at the executive leadership and board levels," he says. "Our API efforts have had very strong sponsorship from our senior leaders and our CIO."

Here are the key attributes of emerging composable enterprises, and the new roles CIOs—as chief innovation officers—will play in helping to lead them:

IT needs to be a strategic partner to the business. All too often in organizations, IT has been the department of "no," or the place where project requests go to languish. In a composable enterprise, IT delivers capabilities, not projects. It serves as a full partner to the business, but at the same time, may even be invisible. Services rendered through the cloud, APIs and mobile are part of a structure that enables decision makers to quickly access the applications and information they need.

Understand and empower your IT consumers. Change how the business works with IT. CIOs and IT leaders need to be proactive in engaging the business in understanding their requirements. Forward-looking CIOs know that their role needs to involve more than responding to technology implementation requests from year to year. "It's not that marketing needs Salesforce, or human resources needs Workday," says Mason. "Enterprises need a strategy where they can bring these applications into the landscape and consume them rapidly. That requires a technology strategy, a process strategy of how those things hook into existing processes, or what new processes get created. If you don't fully understand what the business is asking for, you don't really understand what it needs."

The 'I' in IT means "Innovation" and "Integration." You now compete on how well you connect your assets to your audiences. The ability to connect requires the ability to rapidly add or provision services available from either within or outside the enterprise. "It's not just about connecting applications together, it's also about exposing information through things like APIs that enable people to be able to grab information easily, in a self-service way, without having to go through central IT for everything," says Mason. "This bolsters the reputation of IT of becoming a partner to the business."

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CONCLUSION

Those enterprises that hang on to the old perception of information technology—as a data processing center somewhere in the back of the organization spitting out reports and providing system updates—are missing the opportunity of the century. "The challenge is changing your technology team's mindset from the old days when everything was good," says Quinn. "Before, you could walk into a data center and touch your piece of hardware. Now, you can't. You don't know where pieces of software are running; they could be running anywhere in the world. The challenge is then trying to hook those different locations together for the end-to-end workflow of your business."

With the ability to rapidly build, publish and consume APIs, enterprises have a powerful tool at their disposal to move into the new digital business environment that will soon dominate the world's markets. The ability to leverage APIs and cloud services—versus buying or building software and hardware technology—provides enterprises with enormously flexible architectures. Those organizations that do not begin the journey to becoming a composable enterprise risk becoming rudderless, bogged down in inflexible, legacy technology systems and processes, and will be unable to rapidly respond to changes and challenges in their markets.

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