White Paper Series

3rd Platform–Enabled Digital Transformation Strategies Require Interconnection-Oriented Architecture

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IDC OPINION

- Digital transformation (DX) — the process of creating value, growth, and competitive advantage through new offerings, new business models, and new business relationships — is changing the way that business gets done.
- Traditional enterprises — "cloud immigrants" — face disruption at every turn from agile "cloud native" competitors that are changing the rules of engagement.
- In the 3rd Platform era of technology-driven business innovation, enterprises must leverage cloud, mobility, big data/analytics, and social networking to enable new ways of maintaining and extending their own business relevance. To do so, enterprises need to create and deliver business value at a faster and greater scale, uncovering new sources of business revenue growth, driving operational improvements, and engaging customers in a new, more personalized manner.
- The 3rd Platform represents the technology raw material needed to make this pivot into disruption. Enterprises increasingly operate in highly distributed business environments, involving extended ecosystems of employees, customers, partners, and suppliers across multiple locations in multiple geographies; utilizing multiple clouds, platforms, IT vendors, and networks; and generating more data.
- Digital transformation cannot be built upon a foundation of fragmented, disconnected 2nd Platform IT. As the traditional business landscape is transforming, so too is the traditional approach to IT. Business survival in the 3rd Platform era requires new thinking about IT architecture. IT delivery needs to evolve from centralized and siloed to geographically distributed and interconnected, to ensure that the technology to enable innovation at scale can bring together business ecosystems of people, locations, clouds, and big data/analytics platforms in an agile, scalable, *interconnected* manner. Interconnection will increasingly be utilized at the distributed digital edge for localized application delivery and data collection and management as well as for availability, security, and cloud services.
- Digital transformation requires 3rd Platform IT *and* interconnection-oriented architectures. Equinix, the global leader in enabling the interconnected enterprise with 145+ datacenters in 40 metropolitan business/financial centers worldwide, offers the type of platform underpinning the flexible environments for innovation, integration, co-development, aggregation, and distribution needed to best leverage 3rd Platform technologies and succeed in the digital economy.

SITUATION OVERVIEW

Business and IT Transformation in the 3rd Platform Era

Business disruption is the predominant feature of modern capitalism. Companies across all industries face the imminent threat of being Amazon-ed, Uber-ed, or Airbnb-ed into irrelevance (or out of existence). These digitalized born-in-the-cloud companies are transforming long-standing ways of doing business in retail commerce, local transportation, and hospitality with scale, speed, and operational flexibility.

IDC defines digital transformation as the process of creating value, growth, and competitive advantage through new digital offerings, new digital business models, and new digital business relationships. Business and IT leaders in traditional or "cloud immigrant" companies are feeling the heat from external and internal stakeholders to generate new revenue streams, improve operational efficiency, drive business productivity, and industrialize innovation. IDC's 2015 benchmark of DX maturity revealed that 64% of enterprises are still in the early stages of transforming their businesses by using digital technologies to drive operations, process, and business model changes. Only 22% of organizations have arrived at the more advanced stages of DX evolution where they are leaders in digital product/service/experience delivery and actively remaking markets in ways that sustain and accelerate their own competitive advantage through a constant process of disruptive digital innovation. By 2020, 50% of the Global 2000 (G2000) will see the majority of their business depend on their ability to create digitally enhanced products, services, and experiences. This transformation will be driven by an explosion of value creation made possible by new *interconnection-first* IT architectures and frameworks that accelerate business innovation, velocity, and agility — what IDC calls the 3rd Platform, the new paradigm for business-enabling IT.

While the development and nurturing of the DX mindset requires new strategic approaches and organizational dynamics, technology is equally important, serving as the enabler of DX-driven business innovation. The four technology pillars of the 3rd Platform (the IT raw material for transformation) — cloud, mobility, big data/analytics, and social — will account for nearly 75% of enterprise IT spending in 2019, growing at two times the rate of the overall market:

- **Cloud:** Dynamic infrastructure sourcing/consumption models are displacing/augmenting internal datacenters and traditional outsourcing service delivery models as the core of enterprise IT.
- **Mobility:** The proliferation of smartphones and tablets has accelerated "anytime, anywhere" approaches to work, collaboration, entertainment, commerce, and information, creating increasingly distributed business and consumer delivery and consumption environments. In addition, wireless/mobility-enabled Internet of Things (IoT) development is fueling a massive expansion of the edge — "smart" cars, buildings, industrial, and wearables.
- **Big data/analytics:** Big data/analytics embeds the "digital universe" (rich media content, customer records, social media feeds, IoT/sensor feeds) into interdependent/interconnected business processes and includes the tools to capture, process, share, and analyze the data to make the resulting business intelligence insights actionable and monetizable.
- **Social:** Social networking/social business is becoming a foundational element of customer engagement and a key element in product/service development and emerging "sense and respond" business models.

We are moving from the initial "foundation stage" of the 3rd Platform era to the "innovation stage" characterized by rapidly expanding developer communities and business ecosystems using a new wave of "innovation accelerator" technologies (IoT, cognitive systems, pervasive robotics, 3D printing, and natural/sensory interfaces). Industry-focused developer communities on the 3rd Platform are becoming the epicenters of transformation ("innovation zones") as incumbent players and new entrants alike use the 3rd Platform to create business models and offerings with significantly different cost structures and development life cycles to drive revenue and expand value.

The 3rd Platform and the Shifting Boundaries of Enterprise IT

The changing nature and velocity of businesses, the accelerating pace of 3rd Platform–driven technology innovation, growth imperatives, and globally distributed base of customers, employees, and partners are converging to elevate the importance of agile, scalable business ecosystems, which leverage on-demand access to IT resources, analytical tools, and data to create business value at the edge. The 3rd Platform yields more efficient business operations, new products and services, new ways of engaging with customers, and improved business decision making — essential elements of business competitiveness. However, it also requires IT to redefine its edge and solve new levels of different complexity, requiring new thinking about how to interconnect increasingly dispersed pools of in-house and third party–provided IT, application, and data resources to each other and to the people and locations that need to access these resources.

Digital Transformation: Changing the Way Enterprises Do Business

Strong executive leadership — a chief digital officer, a tech-savvy CIO, and/or a market-savvy CIO — is an absolute requirement for DX. However, more often, IT is limiting business capabilities by failing to provide the required digital business platform. Establishing a dynamic real-time development, distributed innovation environment means that business and IT must remain aligned and plan and execute collaboratively for the journey to digital business transformation. In the digital economy, products, services, and business processes are modular and software based, delivering value through composite applications or mashups over secure high-speed interconnections integrating multiple partners' networks. Digital media, "sharing economy" services such as Netflix, Uber, and Airbnb, and data-intensive, transaction-based retail and financial services processes feature distributed environments in which the database, payment processing, business logic, and presentation tiers may be located in multiple private and public clouds. The services, typically personalized in some fashion based on cognitive and big data–driven insights, are dynamically assembled and "shipped" to the end user in milliseconds — the amount of data, the number of functions in the transaction flow, and the end-user experience are 100% defined by the quality of your interconnection. DX introduces dramatic changes in business workflows, requiring coordination among multiple systems, networks, geographic locations, and "communities of value," putting new emphasis on the criticality of an interconnection-first strategy.

Examples of digital transformation include the following:

- **Manufacturing:** By leveraging IoT and big data/analytics, businesses are generating new revenue streams and cross-sell/upsell opportunities from newly created digital services and "smart" products. In addition, 3rd Platform technologies are transforming manufacturing supply chains by enabling the innovation needed to accommodate dynamic customer demand profiles, rapid delivery expectations, mass customization, and more efficient distribution. This level of real-time situational analysis and response requires that the factories, warehouses, supply chains, and transportation fleet be efficiently interconnected.

- **Healthcare:** Providers are using mobility and IoT technologies to improve patient engagement capabilities and provide remote health monitoring and cognitive solutions to identify optimized and personalized treatment options and cloud to establish industry communities for joint research and development. These communities are enabled by a network of secure interconnections where interested parties exchange and share large amounts of sensitive personal information and valuable research data.
- **Financial services:** Industry players are leveraging 3rd Platform technologies to improve the efficiency of increasingly broad ecosystems by using massive data feeds and cognitive analytics to reduce fraud, waste, abuse, and overall business friction, resulting in both cost savings and new revenue generation. Decreasing margins are forcing an industrialization of non-business differentiating functions and processes that is transforming financial services into a series of securely interconnected transactions across specialty partners and networks.
- **Government, retail, hospitality, and other service industries:** Enterprises in service industries are using mobile, big data, cognitive, cloud, and social to automate "next best action" decisions; own the customer experience and thereby improve and enhance it; and optimize sourcing, fulfillment, and other business workflows. These customer interactions are becoming highly interactive and, therefore, dependent on the quality of secure, low-latency interconnections.

The need for ever-greater business agility demands organizational structures and IT environments that support innovation, differentiation, interconnection, and creative disruption. In a world where business disruption is the rule (not the exception), enterprises need to execute their transformation strategies on platforms that are optimized for change and designed to yield "return on opportunity" by enabling iterative continuous development of business models, products/services, operations, and customer engagement approaches. Digital business is about digital information flows between increasing numbers of varying ecosystems, which requires a foundation in interconnection and integration. Flexibility gives you the freedom to both "fail fast" and the scale to "succeed fast."

New Ways of Doing Business Require New Ways of Doing IT

Commitment to digital business transformation requires a new approach to enterprise IT. The 3rd Platform and new methods of business value creation expose the limitations of traditional enterprise IT, blurring the borders of internal and external IT. The "edge" has been redefined, and the movement of IT beyond (or rather, across) the traditional boundaries of enterprise datacenters, IT departments, individual companies, and individual clouds will be the most dramatic aspect of the 3rd Platform's innovation stage.

The 3rd Platform is both a technology and a business innovation platform for iterative value creation, which must integrate heterogeneous IT environments (infrastructure, platform, and software resources) that — while brokered and orchestrated by IT — may be deployed onsite and/or offsite (for a private and public edge) and managed by a mix of internal IT staff and external service providers. 3rd Platform IT for digital transformation must also accommodate new organizational boundaries that extend far beyond traditional corporate perimeters to encompass ever-growing (and shifting) business communities.

IT must be sufficiently scalable and flexible to support the mobility requirements of business ecosystem participants (people), the always-on needs of growing and changing global business operations (locations), the connectivity requirements of IT multisourcing providers (clouds) and ecosystem partners, and the high-speed transport and processing requirements needed to extract value from systems of engagement in real time (data).

The 3rd Platform pillars are interconnected and interdependent — no company or business process is an island in the DX era.

The Journey Toward 3rd Platform IT

True digital transformation requires more than simply using 3rd Platform technologies to innovate in one or two areas of the business or moving a handful of workloads to the cloud. Transformation will involve not only new IT architectures but also new ways of thinking about IT sourcing, workload placement, distributed business systems, IT resiliency, integration, data, and network security and compliance.

Yet there is an important undercurrent, a new emerging technology sector that will determine how successful the resulting DX will be. What binds together the various constituencies and multiple moving parts of the 3rd Platform–enabled borderless IT-enabled enterprise? How can these be stitched together to facilitate collaboration and leverage innovation within enterprises and across industries? Connectivity has long been an afterthought — often the last consideration in the enterprise IT planning process. In the past, IT organizations muddled through, reacting to digital disruption pressures by attempting to expand the reach and capacity of traditional hub and spoke wide area networks (WANs) by throwing bandwidth at the problem or implementing various WAN optimization techniques. However, 3rd Platform–driven digital transformation, increasingly competitive business environments, and the evolution of interdependent "extended enterprise" ecosystems mean that old school IT architectures and isolated technology silos no longer serve the requirements of dispersed operations and processes or the employees, customers, partners, suppliers (and machines) that need access to them. Old school connectivity is no longer sufficient either.

3rd Platform IT raises the bar even higher and requires not just connectivity but *interconnectivity*. Interconnection-oriented business IT architectures provide secure "meet me" points or metro hubs for business ecosystem participants to innovate, collaborate, and deliver powerful value creation environments that yield sustainable competitive advantage. In these locations, digital business happens through API-enabled integration and cross-connects that physically tie together the systems running the various DX-driven applications and business processes.

Composite applications such as ecommerce and "sharing economy" services such as Uber and Airbnb typically feature distributed environments in which the database, payment processing, business logic, and presentation tier may be located in multiple private clouds (both onsite and offsite) and/or multiple public clouds. Private cloud connectivity links these resources together with deterministic routing, yielding improved availability and performance, secure transmission, and compliant handling of sensitive data. Private connectivity to the cloud (and interconnection through the cloud) is also more efficient and less expensive than traditional MPLS or Internet alternatives for the network and cloud providers that are increasingly important participants in enterprises' digital business ecosystems.

THE INTERCONNECTED 3RD PLATFORM ENTERPRISE IN 2020

IDC believes that during the next three to five years, enterprises will commit to massive investments in digital transformation and the 3rd Platform, all in a bid to stake out leadership positions in what is being called the DX economy.

In IDC's *Worldwide Industry 2016 Predictions,* we note that two-thirds of Global 2000 enterprises' CEOs will have digital transformation at the center of their corporate strategy within the next two years.

Within three to five years, the percentage of enterprises with advanced digital transformation strategies and implementations will more than double. This scale up of digital business strategies will drive everything that matters in enterprises' IT investments.

The 3rd Platform will also see tremendous investments. By 2019, 3rd Platform technologies and services will drive nearly 75% of IT spending, growing at twice the rate of the total IT market. Mastery of 3rd Platform technologies will be essential to the success of DX business initiatives.

Indeed, digital transformation on 3rd Platform technologies cannot happen within a 2nd Platform IT delivery framework, especially on a 2nd Platform network. The network must adapt to a number of changes that digital transformation and the 3rd Platform have brought about.

One major change is a redefinition of the network edge driven by mobility and the Internet of Things. IDC estimates worldwide IoT revenue from hardware, software, and services to expand from $812.4 billion in 2016 to $1,458.5 billion by 2020, at a CAGR of 16.1% for the 2015–2020 period.. Enterprises lacking an IoT strategy and next-generation infrastructure will be at a significant disadvantage. At the same time, the relevance and timeliness of business data will be enhanced. IDC predicts that 75% of developer teams will include cognitive/AI functionality in one or more applications by 2018. Delivering real-time cognitive insights will be a standard part of many solutions, driving tens of billions of dollars of productivity gains.

The data deluge will intensify on other fronts too. By 2018, enterprises with DX strategies will expand external data sources by at least 3- to 5-fold and delivery of data to the market by 100-fold or more. In the DX economy, innovation = code + data. Without large volumes of quality data "fueling" innovation, the process stalls.

As a result, enterprises must prioritize the supply of data to their developers and digital innovators. The enterprise's ability to compete in the DX economy will depend greatly on its ability to build robust "data pipelines" into and out of its organization. In 2017, and during the next several years, enterprises need to focus on two types of "data pipelines": external data sources that can enhance understanding of their marketplaces and internal data sources that can be delivered to the marketplace. High-end DX performers will increase their "data out" by 500-fold or more. The growing dependence of enterprises on external data sources to fuel their digital innovation, as well as the need to maximize the value of their own growing data stores, will have a major impact on IT and business executives.

Not surprisingly, cloud computing will also grow in importance. By 2020, about 67% of all spending on enterprise IT infrastructure and software will be for cloud-based offerings. Pursuing DX initiatives without a cloud IT foundation will be practically impossible.

Industry cloud platforms — strategic hubs for massively scaling digital supply chains and distribution networks within, and across, industries — will also proliferate. By 2018, the number of industry collaborative clouds will triple to reach more than 450. More than 50% of large enterprises will plug in, and industry leaders will use these platforms to scale supply and distribution networks by 100- to 1,000- fold. Without these digitally scalable community connections, enterprises will be isolated from a growing portion of their markets.

The scale and intimacy of customer contact will also feature prominently. IDC believes that 80% of B2C and 60% of B2B enterprises will overhaul their customer engagement systems ("digital front doors") to support 1,000 to 10,000 times more customers and customer touch points.

Taken together, the people, locations, cloud resources, and business data enlisted in the process of digital transformation must be interconnected to enable:

- Improved business agility and flexibility, which become increasingly important in a DX economy predicated on the 3rd Platform, as winners quickly gain competitive advantage from those that lag behind
- Dynamic workflows across internal and external business ecosystems, which, as we have noted, will become indispensable to business digital transformation on the 3rd Platform
- Real-time communications and collaboration across the extended enterprise, which will only grow in relevance as enterprise mobility proliferates
- Efficient data capture, collection, analysis, and distribution optimized for operational excellence
- Low-latency transaction processing, data transfers, and application/service delivery and access, which become increasingly important as external and internal data pipelines are leveraged for business agility and competitive advantage across industries
- Rapid expansion of business scale, growth, and reach, which will be enabled and accelerated by digital transformation on the 3rd Platform
- Omni-channel customer engagement, which will also grow with mobility, cloud, and burgeoning data analytics

The interconnected enterprise is one in which the "network edge" has been defined as an architecture that federates highly dispersed and shifting groups of internal and external users (employees, customers, partners, and suppliers) to dispersed (and multisourced) IT systems, applications, and data stores to run business processes, deliver content and business information (systems of record, engagement, insight, and action), and improve customer engagement, employee productivity, and overall business efficiency.

CHALLENGES/OPPORTUNITIES

The interconnected enterprise offers businesses a foundation for "crossing the chasm" to exploit the promise of 3rd Platform–driven digital transformation. Agile development, rapid delivery, cross-industry collaboration, and data-driven innovation are standard features of the digital economy. Opportunity is abundant for enterprises that implement IT frameworks that support the flexibility, extensibility, scalability, and interconnectivity needed to run the business and generate new revenue streams in the digital economy. The interconnected enterprise enables:

- **Reconstructed secure business workflows.** To industrialize innovation, the IT raw materials — applications, databases, content repositories, and data stores — must be integrated and accessible to multiple business stakeholders across and beyond the enterprise for dynamic and iterative development of new cost saving and revenue-generating ways of doing business. To play (and succeed) in the digital economy, you need an IT architecture that focuses on dedicated secure interconnection (first) in order to support scalable, dynamic digital workflows and distributed business intelligence.
- **Enhanced digital "innovation capacity."** The digital economy runs on code and speed. Enterprises' ability to grow and compete will depend increasingly on the size and talent of their coder teams and their ability to leverage others' innovation into their own internal supply chains (to fast forward time to market), as well as the availability of an extensible IT architecture that supports flexible service creation and service delivery for developers, engineering, operations, product management, sales, marketing, and customer service.

- **Increased business agility.** Disconnected islands of IT/application resources, developer talent, business process, and distribution channels add up to operational inefficiency, slow response to digital business changes, and lost business opportunity and/or market share. Interconnected enterprises can leverage integrated, yet adaptable IT-driven business architectures to facilitate real-time decision making, rapid iterative innovation, digital ecosystem development, and new sales engagement and distribution models.

However, change (much less transformation) is never easy. Despite the overwhelming need to revamp traditional enterprise IT architectures, obstacles remain, including:

- **Residual enterprise resistance to offsite IT.** IT buyers continue to express concern about losing control of their IT systems, applications, and data when IT sourcing and operations shifts from the internal IT department to an external service provider. However, an all in-house IT cannot provide the scale, speed, performance, and proximity needed to support complex composite application development and operations featuring millions of end points, enormous volumes of data, and highly distributed access/transport requirements. As organizations leverage 3rd Platform technologies for innovation-driven digital transformation, enterprise IT takes on the new role of an enterprise IT orchestrator or a broker. In this role, the internal IT staff is more aligned to business objectives, coordinating the functioning and ensuring the adaptability of the business-enabling IT architecture.
- **Encouraging a "culture of consumption."** In the pre–3rd Platform era, developers and tech-savvy line-of-business people had to wait for the IT organizations to procure and configure the IT resources needed for internal- or external-facing business functions. When cloud-based solutions became available, IT then had to confront the governance and security issues related to shadow/rogue IT usage. In the 3rd Platform era, the challenge becomes one of socializing the idea of consuming abstracted versions of IT building blocks in an "as a service" form as part of a unified business-enabling IT platform. IT departments have a role to play here as systems integrators and service brokers that stoke the digital transformation engine with composable, easily consumable, yet secure, IT and application resources.

ESSENTIAL GUIDANCE

In this 3rd Platform era of digital transformation, mission-critical business processes, applications, and supply chains are moving to the edge. As part of this evolution, business models are also becoming increasingly interdependent. Doing business in the digital economy at the edge requires secure interconnection among dispersed ecosystems of employees, partners, and suppliers (not to mention internal back-end IT systems). The digital economy makes it easier for enterprises to pursue multi-regional or global market opportunities. Therefore, the IT architecture underpinning 3rd Platform–based business initiatives must be distributed and interconnected in order to serve more customers in more places and to support "just in time" communities of business value.

Now that enterprises' usage of 3rd Platform technologies is starting to move beyond the experimentation phase, there is a greater need to integrate various IT components across and between companies into unified innovation-enabling platforms that ensure workload/application, service delivery and availability, scale, speed, choice, and security. Next-generation IT architectures must be as dynamic and responsive as the real-time business needs they are designed to serve.

3rd Platform IT is not just about servers, storage, datacenter networks, software-defined infrastructure, middleware, and applications: they all need to be tied together — interconnected — into an adaptable technology-enabled business fabric that operates securely and efficiently and can adapt on-demand

as dictated by business and market requirements. No company or business process is an island in the interdependent 3rd Platform era. Enterprises just starting out on the digital transformation journey should adopt an "interconnection first" approach to ensure that the people, locations, clouds, and data can extend out to the edge where the customers and device endpoints are and, when necessary, back to the distributed datacenter cores ("the cloud") where the big IT processing, storage, and integration hubs are.

Digital transformation requires 3rd Platform IT *and* interconnection-oriented architectures. Enterprises could take a DIY approach to building the optimized environments that support 3rd Platform–driven innovation, multi-organizational business flows and value creation, and new business models. However, there is a better approach — one that provides a platform for digital economy aggregation and organization through critical mass ecosystems of partners, suppliers, and customers interconnected in colocated datacenter facilities. The physical and virtual proximity of multiple networks, clouds, technology service providers, digital business exchanges, data stores, and other business-enabling capabilities allows the "interconnected enterprise" to offer secure and direct points of integration with the participants in its digital business supply chain. This approach brings optimized performance via low-latency physical connectivity as well as the flexibility to construct and reconstruct business workflows as needed to improve operational efficiency, target new opportunities, and improve the customer experience. Equinix, the global leader in enabling the interconnected enterprise with 145 datacenters in 40 metropolitan business/financial centers worldwide, offers the type of platform underpinning the flexible environments for innovation, integration, co-development, aggregation, and distribution needed to best leverage 3rd Platform technologies and succeed in the digital economy.

See the other white papers in this series to learn more about how:

- Enterprises must focus on developing a data-driven datacenter strategy that accommodates expanded and faster access to external data sources that enhance understanding of marketplaces and internal data sources that deliver value to those marketplaces (see *Rethinking Datacenter and Traditional Edge with Interconnection to Meet the Data-Driven Business Challenges of the 3rd Platform Era,* IDC white paper #US41146716, January 2017)
- DX starts with a new interconnection-first platform for digital business that integrates strategically located datacenters; ecosystems of networks, clouds, and business partners; and enterprises' own IT and business process stacks (see *Interconnection First: Building Your Digital Transformation Strategy on Platform Equinix,* IDC white paper #US41659616, January 2017)
- Successful enterprises will redefine the boundaries of the datacenter to encompass increasingly valuable cloud services, external networks, customers, partners, and employees (see *Redefining Datacenter Boundaries for the 3rd Platform,* IDC white paper #US41761516, January 2017)

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