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a Fujitsu company

# The Next Business Platform:

**Understanding the New Digital Supply Chain**

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# Introduction

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## **Decades ago, “containerization” transformed the shipping industry and introduced globalization to physical supply chains. Could history repeat itself with digital and social supply chains?**

Today’s businesses implicitly operate across a combination of three different value chains: the physical value chain of components and products, the digital value chain of information and processes, and the social value chain of community and insight. During the 1960s, 1970s and 1980s, the physical value chain underwent seismic upheavals due to the introduction of standardized steel containers within logistics processes (a development known as “containerization”). This transformation reduced the costs of supplier integration and drove the emergence of global supply chains. We believe that the continued evolution of the Web as a communications platform – coupled with the realignment and commoditization of the IT industry via cloud computing – means that the digital and social value chains are now on the verge of second and third-wave transformations that will be every bit as disruptive.

## **Containerization as a platform for physical supply chains**

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When an ungainly converted oil tanker that had been rechristened the “Ideal X” drifted into Port of Houston in 1958 carrying just 58 containers, few of the invited dignitaries and curious workers who stopped to watch its arrival would have guessed that they were witnessing the start of a new global order. But over the next 30 years, the process of containerization started by that maiden voyage would go on to decimate traditional shipping industries, fundamentally change the way in which businesses created and distributed goods and reconfigure the global economy.

To understand how this happened, we must first consider the difficulties associated with the shipping of goods prior to containerization. There was little or no standardization and goods were packaged in boxes, bags or loose depending on the preferences of each supplier. On the supply side, each mode of transport had its own methods and cost structures for moving this huge variety, and each mode relied heavily on manual labor at the many hand-over points at which goods were unloaded and reloaded in different ways. Consequently, moving goods was incredibly complex, costly and uncertain.

These obstacles prohibited the establishment of extended supply chains – especially on a global scale. The high costs, risks and unreliability of shipping the components required for integration encouraged companies to co-locate as much of their production as possible. Businesses operated large factories near their customers and used their overall organizational mass (i.e. scale across a wide breadth of capabilities) as a competitive barrier.

The genius of container pioneers, like Malcolm Maclean, was not in inventing a new kind of box, but rather in understanding one fundamental idea: Customers just wanted to reliably move goods from one place to another; they didn’t care about the internals of the process or about protecting the multitude of traditional industries involved.

Although simple in hindsight, this idea was revolutionary. It presupposed the design of a new and fully integrated end-to-end system. Goods needed to be packed into standardized containers to remove variation and allow wholesale automation across the complete process. Ships, trucks, trains and ports all had to be re-designed.

This re-focusing on outcomes unleashed waves of innovation as the process of shipping was integrated, streamlined and automated from start to finish, thus generating immense economies of scale. The cost, reliability and timeliness of what emerged totally destroyed the legacy shipping industry with all of its inefficiencies, disconnects and unreliability. In its place, containerization delivered a new “business integration platform,” if you will, for physical supply chains.

As the costs of integrating global suppliers and customers fell, so did the value of existing business models built around aggregation and co-location. Land and labor costs became the dominant factors instead of shipping costs. Countries like Japan, and later China, leveraged these changes to become global economic superpowers. Most importantly, however, the ability to integrate physical value chains reliably and cheaply drove specialization, making supply chains ever longer, more complex and more globalized. In this way, the new business platform that containerization provided drove the formation of new kinds of business ecosystems. In this new economic environment, specialization, component integration and supply-chain coordination replaced vertical integration and co-location to become the new critical competencies for the physical value chain.

Containerization can, therefore, be considered the first wave of globalization. It changed the basis of competition within the physical value chain. It turned carefully crafted advantages of organizational mass, physical proximity to customers and vertical integration into disadvantages that dragged many organizations into oblivion.

## Cloud as a platform for digital supply chains

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Fast-forward to the present day, and most people looking at cloud platforms and services would see something akin to the “Ideal X” – familiar technologies delivered with some new characteristics. Once again, people stand on the threshold of a new global order and see only a jerry-rigged ship rather than the transformational direction of travel it embodies.

Today’s IT industry has much in common with the shipping industry at the dawn of containerization. There is little or no standardization in the way that businesses design, build and operate their systems, and each company has an IT organization that largely sets its own standards. On the supply side, the companies that provide technology and services (e.g. hardware, middleware, applications and managed services) each have their own tools, methods and cost structures. Solutions are painstakingly assembled in a way that relies heavily on manual labor at the many hand-over points. Taken in sum, these realities mean that the process of developing solutions often results in single-tenant systems that are too fragile, unreliable and costly to be used beyond the tightly controlled environment of a single enterprise.

Together, these issues have left little room for building systems that can be shared across many organizations. Consequently, they have offered only limited opportunities for specialization within the digital and social value chains. The high costs, risks and unreliability of building business services for integration has largely encouraged companies to co-locate much of their business-process and knowledge work within large organizations. That leads them to operate “information factories” and to use their overall organizational mass as a competitive barrier.

As with Malcolm Maclean’s reframing of the value boundary for shipping, however, cloud computing is beginning to reframe the IT industry around outcomes. In simple terms, many early general-purpose services – such as Salesforce and Netsuite – have demonstrated the viability of delivering multi-tenant services globally and at scale for use within limited forms of digital supply chain. At the same time, large-scale social and collaborative services – such as Facebook and Wikipedia – have demonstrated the potential of social supply chains by enabling highly distributed communities to work together in new ways.

Current examples like these are very much early outliers – but they demonstrate the potential of digital and social supply chains in much the same way that the containers stacked upon the “Ideal X” demonstrated the potential of containerization for transforming physical supply chains. To really scale digital and social supply chains, we need to build the new end-to-end platforms that will standardize, automate and streamline the realization of businesses’ intended outcomes – i.e. the creation, monetization and distribution of their valuable business IP. And this has already begun to happen.

While still at a very low level of abstraction, emerging cloud infrastructure platforms – such as those offered by Fujitsu and Amazon – are early demonstrations of the viability of realigning a broad range of previously fragmented technologies (including hardware, middleware, management and services) into an integrated and streamlined platform service that allows organizations to focus wholly on their intended solution rather than on the enabling technology. In the same way

that containerization ultimately became a platform for integrating business processes within the physical supply chain – by jointly optimizing all of the required technologies and processes around outcomes – we believe that these emerging cloud platforms will ultimately expand in scope to become a platform for the end-to-end realization and monetization of a range of complex business service types (e.g. infrastructures, applications, business processes and full business services).

The next generation of digital platforms has the potential to optimize all of the technologies and processes required to enable the end-to-end creation, operation, monetization and sharing of scalable and multi-tenant digital and social services. Along the way, they will hide all of this complexity behind high-productivity modeling and development environments that focus on outcomes.

## Prepare for digital disruption

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As with containerization and its dramatic impact on the structure of companies operating physical supply chains, we believe that the long-term effects of cloud-platform emergence will be profound – particularly for information and knowledge-intensive industries. Even those companies operating physical value chains will not escape these 2nd and 3rd-wave disruptions, however, as physical assets increasingly become connected, digitized and available as a service.

One of the most profound effects of the digitization and socialization of individual business capabilities will be a need to rethink the purpose of the firm across two different dimensions. One dimension concerns the shifts in business model required as external digital and social services become available for integration and remixing. The other concerns the more fundamental impacts of digitization as such digital and social services become the de facto external expression of an organization's capabilities.

Firstly, the ability to access specialized physical, digital and social services consistently via the global network will mean that the purpose of the firm will no longer be to minimize the transaction costs of doing business by gaining scale and executing efficient in-house processes. Instead, in accordance with our experiences within the physical value chain, we believe that the successful company of the future will be as small as possible and will focus on building world-class digital and social value webs. They will do this by specializing, integrating external capabilities and employing cloud platforms to achieve core digital transformation (i.e. the digital encoding of their own specialized business capabilities as applications, processes and services for sharing with others). Again, as with physical value chains, we believe that integrating and orchestrating specialized providers within extended supply chains will radically improve outcomes to an extent that no individual organization could hope to achieve alone.

Secondly, such a "core digital transformation" changes the relationship between business and technology. In the past, organizations used IT as one of several non-core tools for increasing the scale and efficiency with which they executed traditional in-house processes. IT was effectively one of the "implementation technologies" underpinning the creation and execution of business capabilities. However, the shift to cloud has a profound impact here, too.

As business capabilities of all kinds are increasingly becoming digitized and socialized, these digital services come to encode and encapsulate a company's core IP. This change requires businesses to reframe the way that they think about IT: The emergence of cloud is not simply a different way of purchasing IT but rather a paradigm shift allowing technology to align more closely to the needs of the business. That transformation then enables them to share and monetize their valuable core IP within new digital and social supply chains.

The implications of these two shifts will be profound.

## The advantage goes to the agile

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The digital platforms of the future will allow the accelerated delivery and low-cost scaling of a company's specialization without requiring the firm to scale the size of the organization and its available resources. Being big will, therefore, slowly cease to be a competitive weapon. Smaller companies will take advantage of greater agility, world-class specialized services, and the web's natural cost transparency to become hyper-competitive. If the pattern of change brought by the shipping container repeats itself with digital platforms, we might speculate that huge opportunities lie in wait for those companies that can adapt to and exploit them. The container brought with it the potential for any manufacturing

company, regardless of its location, to be competitive on the global stage. It is likely that digital and social supply chains will have a similar effect, unleashing new value for those that are willing to embrace it.

## For further thought

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- What lessons can your company learn from the fate of the firms that were on the losing end of the first wave of changes to the value chain?
- Is your company positioned to take advantage of the standardization, automation and streamlining of IT?
- How can you prepare your company for the agility that this digital transformation will be bringing to your industry?
- What does your company have to do to achieve the core digital transformation required to remain competitive in the emerging environment?