

## Solution Overview

# The Value Chains of Tomorrow: Are You Ready?

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### Introduction

The value chains of tomorrow will look very different from the value chains of today. Major shifts in demographics, systems, global wealth, the availability of natural resources, technological advancements and climate changes all contribute to the need for value chains to be more flexible, intuitive and efficient as demand and supply channels adapt. But many of these shifts are overly communicated today, causing them to lose meaning for many value chain professionals. They begin to lack context from a business perspective and make it difficult for the value chain executive to properly consider what's at stake and what needs to be done today to make the business successful tomorrow. This document will shed light on the upcoming major value chain changes and what companies need to do about them now.

### The Key Elements of Tomorrow's Value Chain

As value chains evolve, much of what will drive change occurs through technological advancements in terms of:

- How people buy and sell items
- How companies evaluate those buying and selling patterns so they can supply their customers with the goods and services they want
- Faster and more powerful ways of sharing information across value chains, from suppliers' suppliers to customers' customers.

And each of these areas has an effect on the next making them interrelated in terms of their evolution and adoption. The real key for organizations is how these rapidly evolving advancements are adopted, deployed, and used.

### People Empower Change

With all the talk of technology and other macro influences, the single most important catalysts to change and enablers of success are people. No system, machine, cluster, network or cloud can have a sustainable and meaningful impact on the business without the value chain professionals who configure them and interpret their recommendations and actions.

And, in tomorrow's value chain, these value chain professionals will be even more important than today. Highly educated, diligent, analytical, and creative, these professionals thrive on finding opportunities for service improvement and cost elimination within complex challenges. Familiar and confident with technology, they also continue to leverage systems and data to find new ways of doing things, new products to bring to market, new processes to model. The value chain professional is a leader and has a deep understanding of the business and the trade-offs involved with tactical and strategic decisions. These professionals are increasingly asked for input into strategic business discussions as their broad understanding of the business, access to information, and ability to problem solve and execute on strategies make them uniquely qualified to lead.

To succeed in the future, highly skilled value chain professionals are a requirement and all enterprises should seek-out and hire and mentor value chain talent.

### Continuous Improvement using Key Performance Indicators

A constant and rapid state of change will surround tomorrow's value chains. Global companies will increasingly recognize that persistent attention to business process improvement is a key to value creation. And, unlike many companies today, tomorrow's enterprises take action. Organizations begin to encourage cross-business unit, cross-system and cross-geography interactions. These interactions yield particularly valuable results when there is commonality among product groups, raw material sources, manufacturing techniques, and transportation requirements. As these commonalities create synergies, those synergies are leveraged to produce more efficient outcomes. Armed with this new method of identifying areas of improvement, organizations are now more diligent in how they measure the business and the impact of programs and initiatives on overall performance. The enterprises of tomorrow now seek continuous improvement in a more real-time manner that lead to accelerated initiatives that spawn from organic thinking (value chain professionals) that is related directly to the business. This blend of non-financial and financial key performance indicators (KPIs) pave the way for the next generation of systems, as performance indicators highlight the need for more rapid value chain product development, planning and execution.



The value chains of tomorrow will adopt and deploy advanced analytics to highlight opportunities for improvement. Advanced performance indicators will highlight gaps in existing capabilities and more nimble ways of developing, planning and executing value chain operations.

### **More Horsepower**

With analytics highlighting a growing area of need, tomorrow's value chains will increasingly leverage systems built on 'super-powered' hardware. This hardware supports systems capable of solving larger, more detailed and complex trade-offs in the value chain, more rapidly.

These trade-offs and complexities are at the root of most value chain decisions today and will continue into the future; just in a more rapid manner and a lower level of detail. Enabled by this hardware, tomorrow's value chains are able to digest and display consumer-level data more actively and frequently. The promise of "real-time" gets closer to realization. Still, these machines will be constantly chasing faster processing times to support the burgeoning challenge and opportunity that is 'Big Data'. The enormous amount of data these machines can handle delivers more precise and detailed plans for the companies using them.

These machines also give birth to new applications, as previously unsolvable problems, in terms of time to process, are now possible. These applications will enter the market to augment the existing systems and, in some cases, replace them. Using stochastic techniques, game theory and other probability-based optimization programs, these new applications will "point" the value chain professionals toward likely outcomes that produce efficiency improvements.

Tomorrow's supply chains use hardware that opens doors of innovation and efficiencies for the value chain professional and the early-adopting organizations who deploy them.

### **Big Data**

We've all heard the term big data but the implications to value chains are infrequently discussed. Value chains are nothing if not data intensive. And tomorrow's value chains will be even more so. Consumer-level, point of sale data will no longer end when the item leaves the store shelf. Once in the consumer's hands, items will continue to be tracked and traced and the virtual inventory lifecycle extended. This will create more accurate forecasts and plans as real consumption is better tracked. This data will be fed back into existing and new value chain applications that are constantly updating information for the value chain professionals to evaluate and act upon. This data-rich environment only operates effectively on high-powered hardware but for those embracing the capture and interpretation of "Big Data" the benefits are significant. This is best explained by way of example. Today, a tire manufacturer is quite happy if they know exactly when one of their distributors sells one or more of their tires. Tomorrow, they will know when the tire is removed from the shelf and placed on a vehicle. Further, they will also begin tracking the tread life of the tires on the vehicle itself through the use of embedded technology that transmits information back to the tire retailer and/or manufacturer. With this information they can more accurately determine when the person driving the vehicle will need a replacement and even promote replacement tires to them as that time draws near.

The "Big Data" phenomenon leads to opportunities for increased efficiency and more rapid market adoption and response for new products. Determining what a company will do with data and developing a strategy to capture and interpret it is a key new requirement in the future value chain world.

### **Internet of Everything (IoE)**

In our "Big Data" example we talked briefly about how an inanimate object will communicate with another to create a data transfer that will potentially lead to a more efficient outcome for the consumer and organization harnessing the data. This object-to-object communication and intelligence is referred to as the Internet-of-Things or, in even more progressive circles, the Internet-of-Everything.

In the "IoE world" massive amounts of data are exchanged between objects to create information that can lead to subsequent actions or reactions from the objects themselves, associated systems or people. This energized, intelligent, disposable, mobile device world is coming quickly and giving birth to enormous amounts of data. These 'active' items will communicate with value chain stakeholders in the form of singular data transfers that are systemically aggregated and turned into demand and supply signals as well as execution-oriented actions like order shipments and item transfers. This new communication and available information will have a profound impact on value chains. The key will be integrating these low-level data points to the right level of interpretation so actions can be taken by the value chain professional or the associated system. Many of these techniques have already started to be "road tested" as NASCAR and Indy car teams are now using IoE and Big Data concepts to track, evaluate, and make real-time decisions using their Key Performance Indicators during the race. The driver's intuitive decisions are now being



validated or challenged with real-time data transferred between an object on the car and an object in the pit crew area.

Tomorrow, value chain professionals are driving the organization to invest-in and adopt IoE technology to arrive at smarter and more efficient value chain decisions. These decisions add fuel to the growing expansion in value chain applications that apply game theory to predict likely outcomes that help improve all facets of product development, manufacturing, planning and execution.

### **Extended Chains**

Changing the boundaries of value chains, tomorrow's product engineers will develop new products and adapt existing ones using the newly available and interpretable consumer-level data created by "Big Data" and the IoE. This shift will serve as a catalyst for innovation in the design and engineering of software simulation and execution systems. These systems become the bookends of continuous and constant inflection for companies as they make recommendations for current actions and future direction using rapidly evolving stochastic modeling techniques. At its simplest level, stochastic modeling allows machines to use historical information to make their best guess on an outcome when the problem is one that cannot be answered with a true or false answer. A simplistic example is; today, logistics professionals sometimes send only partial shipments of merchandise in order to meet delivery requirements of the customer. In the future, before sending a partial shipment, logistics professionals will get efficiency indicators that quantify the likelihood of orders being made in the near future that could be combined with the current orders to optimize payloads and lower costs. The system of the future will even predict the average size of the shipment and the likely destination options. Further, tomorrow's systems will initiate workflow to facilitate the

majority of this process. Still, subsequent actions need to take place to make the final decision on how best to proceed, but the possibility of improvement is presented and the efficiency of the value chain improved.

The extension of systems to include product innovation and development and connects likely outcomes with current situations will ignite a second tier of value chain applications that create innovation and deliver results.

### **Cloud is King**

Lastly, for future value chains, cloud has fully arrived and value chains are better for it. The speed of development, need for continuous enhancements, hardware requirements and system sophistication have made cloud an increasingly preferred method of deployment. Freeing the talent in the IT department to craft and support a new innovation strategy, cloud liberates people and processes once bound by maintenance activities. Moreover, the 'super-powered' hardware that runs these adaptive systems is now housed in central server hubs where information clusters are created that fuel commerce and collaboration. These clusters allow the applications themselves to scale and be offered as cloud offerings. These virtual value chain clouds enable a network effect that normalizes information and allows the overall network to benefit and be most efficient. Unlike the early-day internet-exchanges that fell short of their promise to create real-time market efficiency, these virtual value chain clusters catapult innovation for businesses and value chains. They have complex and configurable parameters that allow specific levels of collaboration to exist while substantially minimizing security risk. The promise of open exchanges is still not realized but the platform is now available. Dominated by a few large technology companies due to infrastructure costs and scale, these super-clouds will be the next generation

applications for the enterprise. But, like today, surrounding innovation continues and elements of the overall picture are added and enhanced by newcomers as well as traditional providers.

Organizations need to embrace the cloud for the innovation and efficiencies it unleashes. Often considered a cost and time saving method by value chain professionals, the real value of cloud comes from the people it liberates and the pursuit of ideas it allows.

### **Preparing for the Future: Making Sense of it All**

So where does that leave the value chain professional today? Certainly these changes will not happen overnight but they will seem like they did if action isn't taken to prepare for them and participation in the evolution doesn't occur. To make sense of it all, a couple of small, initial steps need to be taken.

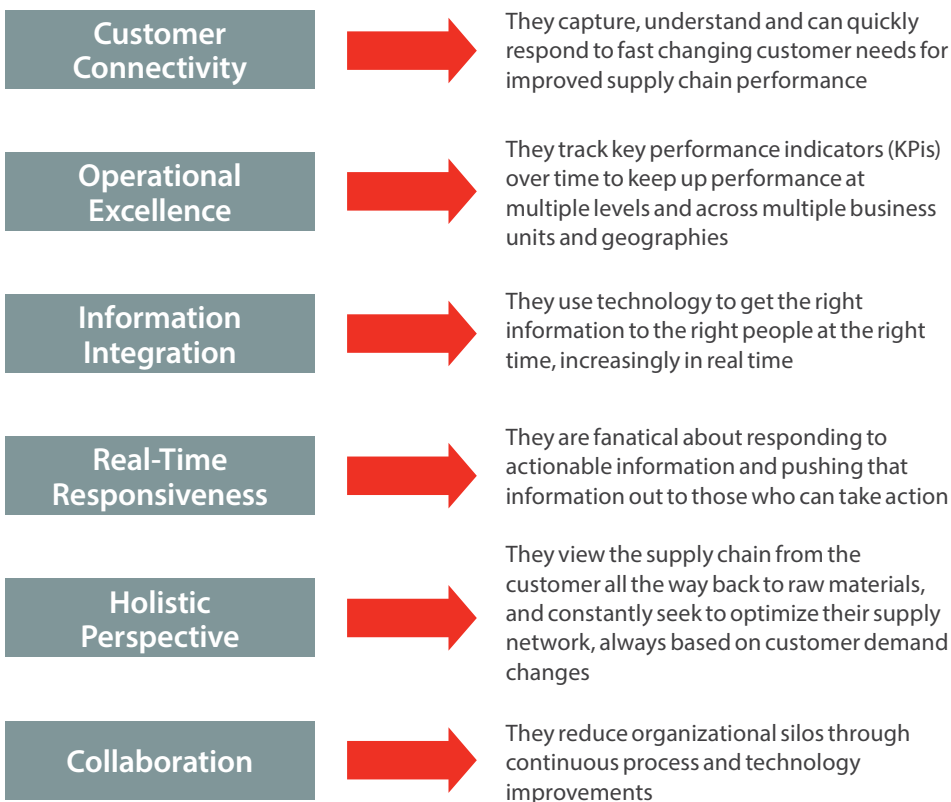
First, come to grips with the fact that indeed, tomorrow's value chains will be very different. It is easy to believe that the pace of change has slowed and that business isn't that different from the way it was twenty years ago. Our strong guidance is to push back on that thinking and become an agent of change in your organization. Yes, the advent of the Internet was a major event; but Big Data, the Cloud and the IoE will produce even more remarkable change; and most value chain executives will need to think differently to be successful.

Think about twenty years ago...investigating and finding areas of efficiency, quality or service improvement in value chain was unscientific and manual. Sending and receiving faxes, digging through paper files, sorting and organizing invoices, calling suppliers and partners to request copies of contracts with rates and prices, and then loading all that information into an early form of a spreadsheet tool, took days. Today, for most companies, all that information is in

a central global system that houses what was paid and when, and even what the future payments will be. And what-if analyses using optimization tools to combine different scenarios to create likely value chain situations are now more routinely used. But that is the beginning of a trend that is accelerating. Yes, monumental changes have taken place and it's only reasonable, expected even, that more monumental changes are coming. Don't be complacent. At a very fundamental level, change is happening and significant shifts in structure are on the horizon. Take action today, embrace new ideas and encourage your organization to change.

Which leads us to point number two; now is the time to take action. The need to act today is paramount for future success in all areas of professional life and, for value chains, it has equal importance. In the value chain race, once behind, catch-up is very difficult and extremely expensive. The value chain of tomorrow will evolve and create value throughout the business. But it needs the early learnings and developments to deliver the future benefits. It's a journey of discovery of sorts and without the initial failures and successes to demonstrate what does and what does not work; the later successes cannot be fully realized. The projects undertaken along the way all add up to a larger net-sum of knowledge and expertise. For example, 'Big Data' is practically impossible to manage if the basics of Master Data Management processes and technology have not been tackled. Acting today on Data Management will promote success tomorrow with Big Data.

With the belief that change is happening and the knowledge that acting today is paramount to success, most successful companies that are motivated to improve value chain performance and remain at the forefront of these changes work hard to master the following concepts:



These core concepts set the stage for larger leaps in terms of where the organization eventually ends up. And getting started in achieving success in these concepts often calls for an independent or self-assessment of the organization's maturity in each area. Developing a roadmap of initiatives needed to achieve the desired levels of performance and the development of a business case to support investment are items every business leader must make a priority.

### Conclusion

The value chain with all its complexities and opportunities is going through an amazing metamorphosis. The value chain professionals of today will all be participants in that process and lead the successful organizations into the future. The truly diligent enterprises, those embracing change, will flourish while those with less enthusiasm will find margins eroding and sales diminishing. As a value chain professional, you need to consider how prepared your organization is for the future. There are exciting times ahead for everyone in the value chain profession and we wish you all the best of luck as we make the journey together.

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