PERSPECTIVE

Reimagining the Supply Chain in a Digital World

Abstract

Successful supply chains of the future would exhibit highly coordinated, digitized operations with greater visibility across the supply chain value network, proactive customer experience management, and data-based decision making. However, several companies lack a holistic supply chain transformation strategy. This point of view captures the essential aspects of a holistic supply chain transformation strategy based on global trends.

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The transformation of traditional supply chains

The last decade, with its rapid pace of globalization and evolution of digital technology, has presented unprecedented challenges as well as opportunities for supply chain organizations. The scale of globalization with the resultant complexities and competitive pressures from unexpected corners has made it necessary to transform the supply chain to achieve efficiency, visibility, customer satisfaction, and cost optimization. The evolution of digital technologies has brought about a disintermediation of the supply chain network, making it less complex and more transparent to consumers. They have been empowered to expect and demand a great customer experience and this has consequently made brands more responsive. Traditional supply chains characterized by isolated operations, a push-based strategy, and gut-based decision making are ill-suited to simultaneously deal with the pressures of cost optimization as well as the demands of providing a great customer experience. As a result, traditional supply chains are expected to undergo radical transformation in the next five to ten years.

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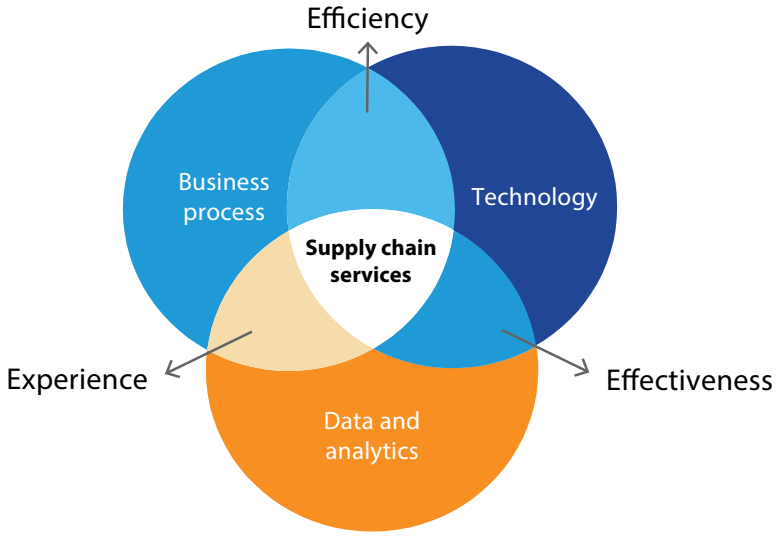
Key supply chain trends

Working with clients in the manufacturing, retail and consumer product goods, and high-tech industries, we have witnessed that organizations are riding on the following key global trends in order to transform supply chain efficiency, effectiveness, and experience:

- **Integrated, customer-centric, and agile supply chain business process delivery** through a consolidated global business shared service, often referred to as supply chain control tower or operations tower
- **Increasing adoption of digital technologies** to create an interconnected digital supply chain powered by emerging technologies such as the Internet of Things (IoT), blockchain, artificial intelligence (AI), and machine learning
- **Leveraging of data and analytics** to improve supply chain planning, execution, visibility to drive overall performance, and reduce supply chain risks

In simple terms, the key levers of change for the next-generation supply chain are integrated supply chain processes, digital and cognitive technologies, and advanced supply chain analytics. Organizations are carefully orchestrating transformation using these levers to create supply chains that are efficient, effective, and provide personalized customer experience.



Integrated supply chain business processes

Supply chain processes are becoming more integrated through embedding the common thread of customer centricity in each area of operations. They are already strategically shifting towards centralization of operations by leveraging the hub-spoke-edge model of business process operations delivery.

Customer-centric process model

Enterprises are increasingly looking to innovate their supply chain business processes to make them more customer-centric and integrated. A customer-centric methodology such as Design Thinking, focuses on key personas from various functional groups, and a sample customer group interaction can be conducted to empathize with customers and develop customer-centric processes.

The innovations identified can be broken down into tangible change initiatives and driven using agile methodology.

The following table provides examples of possible measures to build customer-centric processes in certain supply chain functions such as sales and operations planning, order management, logistics management, and performance management.

Supply chain functions	Measures to build customer-centric processes
Sales and operations planning	Build a 360-degree view of customer demands by examining myriad data sources such as point of sale (POS) records, web and mobile platforms, and social media
Order management	Provide omnichannel options for order placement, order fulfillment, and order tracking and payment
Logistics management	Optimize inventory to improve product availability and reduce unmet customer demand
Supply chain performance management	Improve end-to-end processes based on customer feedback through surveys, customer experience journeys, and best-in-class benchmark comparison

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Centralized supply chain operations

Traditionally, supply chain operations have been conducted in silos with little or no cross-functional integration. This lack of integration manifests itself as lack of end-to-end visibility and greater costs of tracking the movement of items across the supply chain. However, our experience working with companies in the retail and consumer products goods industry indicates that these organizations are moving towards deploying centralized operation towers focused on supply chain functions such as planning, logistics, and order to cash. These towers share a common underlying technology platform and are monitored by a single governance entity. We believe that the centralization of globally standardized and harmonized processes into shared service operations can facilitate greater integration and end-to-end visibility. The key drivers of centralization are technology, process, workforce, and process delivery location as indicated in the figure below. The centralized operation towers can be leveraged as a platform for innovation and equipped with centralized reporting of all supply chain operations for end-to-end visibility and cross-functional alignment.

Key centralization drivers

Technology

- Globally consistent processes with a high degree of automation
- Single, globally accessible IT platform
- Scalable and service-based architecture

Processes

- End-to-end processes
- Outcome / value-based processes
- Optimized operations
- Standardized and harmonized processes

Delivery location

- Virtual presence
- Self-service
- Location-agnostic processes
- Hybrid model combining captive centers and outsourced centers

Workforce

- Shift from transactional thinking
- Motivate and incentivize to deliver great customer service
- Standardize roles and responsibilities
- Knowledge management
- Experience and skill

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Digital and cognitive technologies

The supply chain technology landscape has traditionally been complex, disconnected, and unintelligent. Organizations can undertake the following optimization measures leveraging current and emerging trends.

Current trends

A combination of legacy applications, increasing complexities of the technology landscape due to mergers and acquisitions, and the evolution of new business models due to multichannel commerce are forcing enterprises to modernize their legacy applications and rationalize their technology landscape. Our experience suggests that enterprises are reluctant to simply discard / retire their legacy applications. They still view them as assets with ongoing value, and prefer to reuse them by plugging them into a supply chain platform. Both legacy and recent applications, serving a specific function, can be plugged into the platform to achieve end-to-end supply chain visibility. In addition to the modernization of legacy applications, we have witnessed the migration of in-house data centers into managed data centers hosted on cloud.

Emerging trends

Organizations are looking to enhance their current technology landscape with real-time platforms, which can sense demand and supply in real time. They are willing to adopt these AI and machine-learning solutions for complex, multivariate decision making.

- Our experience suggests that several transactional supply chain processes that are repeatable, rule-based, mature (predictable inputs, processing steps, and output), and volume-intensive are high-potential use cases for robotics process automation (RPA). It is important to use existing automation tools before introducing RPA for optimal return on investment (ROI) and streamlining of in-house tools. The automation use cases should be identified by reviewing the end-to-end process encompassing upstream and downstream processes. Enterprises can augment RPA with cognitive capabilities such as ontology models, deterministic algorithms, probabilistic algorithms, natural language processing, and intelligent feedback loops to enable cognitive automation (AI).
- As transactional processes get automated, organizations are considering ways to further manage their costs by outsourcing upstream core processes, such as planning, to service providers. This makes it imperative for the outsourcing partners to develop capabilities to become a knowledge-based strategic business partner rather than just a transactional service provider.
- The convergence of operational technologies, such as IoT, and emerging database technologies, such as blockchain, has the potential to enable organizations to achieve supply chain visibility through the elimination of information silos, cost optimization, disintermediation and automation through RPA, and margin optimization through real-time pricing. While IoT has been around for a while, blockchain is a relatively recent innovation. It is important to understand the drivers of blockchain implementation, preparedness of the participating parties, size of the blockchain network, and transaction performance requirements in order to justify its business case. Organizations need to conduct a careful analysis of the required network size and cost-sharing model among parties. Further, the technology infrastructure of each party needs to be capable of executing blockchain transactions at the desired performance levels. Organizations can manage the cost of monitoring blockchain infrastructure by moving the monitoring activities to an outsourcing partner.

Analytics

Due to drastic reduction in the marginal cost of storage per unit of data and increase in computing power available today, organizations are developing platforms that enable automatic generation of actionable insights based on data from a variety of internal and external sources. Some of the critical supply chain functions such as demand planning, capacity planning, route optimization, and inventory management are suitable test cases for analytics.

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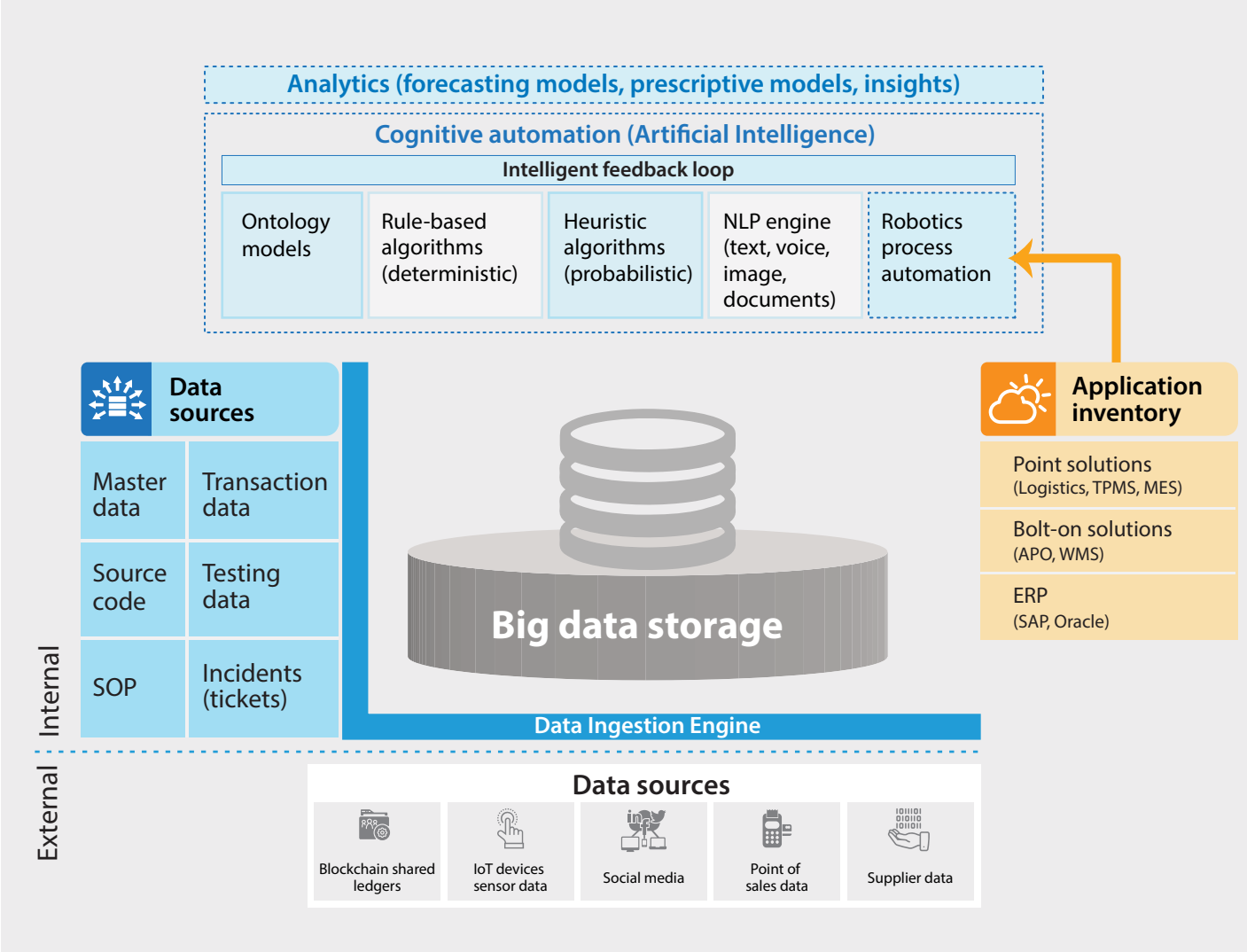
Futuristic high-level enterprise technology architecture

The figure below provides a futuristic high-level architecture of the supply chain enterprise technology landscape, leveraging the trends in digital and cognitive technologies, and analytics as described above. The data from internal and external sources is captured by an ingestion engine and kept in big data storage. The data is cleansed, interpreted, and transformed into knowledge in the form of an ontology model. The RPA solution is built on top of the existing applications, enabling integration and data flow.



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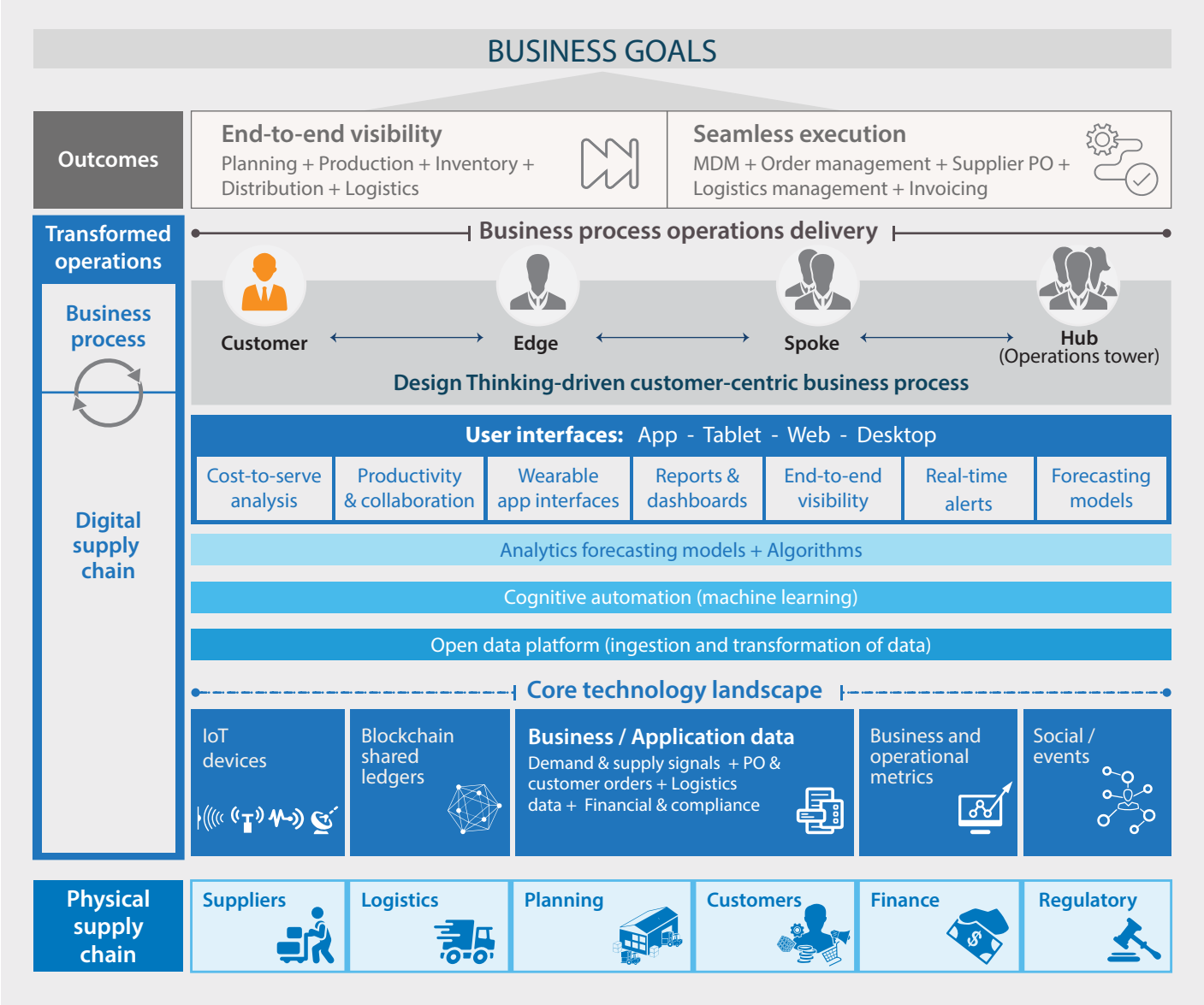
A model for next-generation supply chain services

The figure below presents our model view of the next-generation supply chain services that are built based on all the trends described in the previous sections. The interaction between the physical supply chain and the digital supply chain should be continuously optimized to provide personalized customer experience and generate valuable data that is meaningfully sanitized to drive cognitive automation and end-to-end supply chain visibility.



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Conclusion

The operating model transformation necessary to build supply chain excellence requires a holistic approach that blends industry domain, business process, and technology expertise. Our experience working with some of the Fortune 500 organizations in building capabilities for the next-generation supply chain reveals that it is a concerted journey that should be aligned with strategic objectives, supported by strong leadership, and tempered by realistic expectations. Given the scale and speed of changes happening in the times we live in, it would be remiss of organizations not to embark on such a journey.

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Anshuman is an accomplished business and process transformation leader with 20 years of experience in driving operational efficiencies, process effectiveness, and end-user experience in the core business processes for global corporations. He has a strong track record of developing and delivering realizable value through operations and IT transformation programs, process re-engineering, operational improvements, supply chain optimization, and strategy development in the key markets of North America, Europe, and Asia Pacific across multiple industries.

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