

## ▶▶▶ EXECUTIVE BRIEF

# Industry 4.0 Supply Chain Networks: 3 Core Strategies Every Executive Must Deploy to Remain Competitive in the “Next Normal”

By Joe Bellini, COO One Network Enterprises

In a recent McKinsey industry sector survey, 100% of respondents had experienced production and distribution problems, 91% had problems with suppliers and a whopping 85% of respondents struggled with inefficient digital technologies in their supply chains. McKinsey went on to state “We believe that leaders should take this moment not just to fix their supply chains temporarily, but to transform them. Reimagining supply chains to avoid past traps and meet future needs will require a more comprehensive approach.”



## THE PLATFORM FOR DIGITAL CHAMPIONS

Being a digital champion requires that you deploy a network platform that delivers the highest customer service levels at the least landed cost. Data is your currency and the network leverages that real time data to create asset leverage among trading partners. This data should only exist once, in real time, in a federated MDM format - rather than duplicated in multiple stove-pipe based hub-and-spoke formats where it becomes stale and latent whether you use a data lake/warehouse or not. Core to the architecture is a representation at the each's/item/unit level and rolling that fidelity into overall network planning and execution optimization through agent-based prescriptive analytics. Coupling this capability with multi-party collaboration, planning and transaction execution in real time across the network is how we bring clients into Industry 4.0 and the “next normal.”

## STRATEGY 1 - REAL TIME NETWORK-BASED ARCHITECTURE

We've already seen a network-based customer service and asset leverage model play out in adjacent industries. Uber, Facebook, Airbnb, and Alibaba have all deployed network-based architectures which provide multi-party capabilities across a network.

There isn't a Michael Porter level of market strategy to consider here. It's just common sense. Trade happens across trading partners in a network. Given the network nature of product sourcing and delivery, this trade must plan and execute across multiple parties in real time to provide maximum asset leverage, least landed cost, and highest levels of customer service.

A network platform that enables these capabilities along with providing control tower level visibility, collaboration, analytics, planning and execution is core to future competitiveness. Even the simplest of transactions involves multiple parties, such as a customer, brand manager, co-packer, supplier, carrier, 3PL, and distributor. Does it really benefit anyone to not involve the parties involved in a transaction if there are real time shifts in demand, supply, or capacity?

Today's enterprise-centric technology deployments are designed as hub-and-spoke, meaning they are designed as the center of the universe for that node in the network and treat their processes and data as such. This hub technology is designed to gather data in a point-to-point/spoke-to-hub fashion, decide what to do about changes in demand, capacity, or supply based on the hub variables in isolation, and then share some of the stale or latent data, post processing, with some of their spokes, both inbound and outbound. In a typical trade network, this can create over 20 store and forward type processing actions across trading partners, upstream and downstream, wasting time, manpower, assets and worst of all affecting customer service levels given it leads to working at cross purposes rather than as a network serving the end consumer.

## STRATEGY 2 - FEDERATED MASTER DATA MANAGEMENT

Imagine for a moment that rather than having a Federal Reserve in the US, each state had its own currency. What kind of trade nightmare would that create in terms of currency and interest rate fluctuations from a trade perspective? (This is why the EU moved to a common currency.)

Data is your currency. Your multiple ERP instances are similar to a federation of entities. Your data/currency is currently trapped in your ERP stove-pipe instances and shared in a hub-and-spoke fashion in one-to-one trade relationships with network partners. Does this make any sense at all? And even those who export data to a data warehouse or data lake are creating latency and staleness in the data which devalues this currency in terms of decision making across network partners.

Better to have a strategy where network trading partners opt into/onboard onto the network and share both their master and operating data with other trading partners based on a secure permissions framework across the network. This data exists only once and is federated to trading partners based on the permissions framework. Given that the data is not copied or duplicated between echelons, tiers, or nodes across the network, it is by definition real time.

In this fashion, your federated master data management strategy has enabled your real time value network with your most valuable asset - your data - and put that currency to work to optimize asset leverage, customer service, and least landed cost. You also increase the leverage on your data given that item cross referencing is built in as part of the architecture.



### STRATEGY 3 - ACTIONABLE AND AUTONOMOUS PRESCRIPTIVE ANALYTICS

Given the multiparty nature of network-based trade relationships, you will need to model the entire end-to-end supply chain network in order to correctly analyze and take action on problem resolution and opportunity creation. That is the only way you can potentially benefit or at least limit the pain across all parties. Since the problems or opportunities exposed by the analytics could manifest in strategic, tactical, or operational timeframes, the foundation should be seamless, offering services, algorithms, and analysis that run across the network representation in real time, whether we are solving problems predicted to happen in 6 months or during a delivery scheduled for later this afternoon. If you have deployed Strategies 1 and 2, this foundation is already in place.

Your end-to-end real-time supply network platform enables the ability to test out new supply chain policies, network resiliency, the feasibility of strategic or tactical plans, activate alternate parts or suppliers, modify modes of transportation, or even add additional shifts at a plant. Hot zones are going to materialize across the network, indicating there is an actual or potential problem in meeting targets related to demand, supply, logistics or fulfillment in general. That means your business will require an effective way to find optimal solutions.

In a network there are many ways to solve problems related to demand, supply, logistics, and fulfillment. The analytics workbenches must have real time access to every material variable in the network. Traditional systems typically only give you one way to solve a problem, due to static lead times and stale data. For example, they might recommend you spend more on inventory, capacity, suppliers, or even partial ship and backorder. In advanced AI/ML agent-based networks, your strategies, policies, tactics, customer service levels, revenue objectives, margin objectives etc. are all taken into account when determining the best ways to take advantage of network opportunities or solve problems. Your analytics workbench is a prescriptive environment where you will be presented with the top three or four solutions that best meet your targets. You are then free to choose the best one that meets your needs at that time, fully understanding the effect your choice will have across all customers and trading partners in the network.

These AI-based workbenches are available today across demand, supply, logistics, and fulfillment, providing a control tower view across the network, and can be run interactively or autonomously based on target metrics and outcomes.



Within each workbench, you can evaluate a number of prescriptive options. For example, in the logistics workbench you could analyze whether a less expensive mode of transportation would also require building inventory in order to maintain targeted service levels. You could look at whether more frequent deliveries would lead to higher transportation costs but be offset by having to maintain less inventory. You could also analyze the network itself in terms of whether adding or subtracting a cross dock node would lower the total landed costs. These types of nodal shifts really display the power of the network, given they provide leverage and can benefit multiple trading partners across the network.

And keeping with our common-sense strategic approach, let's remove the mystery of adding Machine Learning (ML) to our mix of algorithms. Machine learning is just a better way to predict outcomes, which, of course, is extremely valuable when recommending prescriptive actions. Machine learning improves its predictions over time as you provide more data. A good analogy is putting on a golf green. The low percentage result is to try and analyze the green, the grain of the grass, the slope of the green, the changes in elevation, the influence of nearby lakes/mountains etc. The high percentage outcome is to have someone with the exact same putt hit the ball into the cup while you watch. This is actual data and is what machine learning uses to predict outcomes rather than trying to guess at the right mix of differential equations - like we used to do with optimization.

## IN SUMMARY

As business continues its march toward digitization, companies must deploy strategies that provide the right foundation to compete on this basis. The three strategies outlined in this brief will provide the platform and architecture to enable this foundation and provide the capabilities to compete moving forward.

In the McKinsey report referenced above, they go on to state, "Boosting the supply chain's end-to-end digital capabilities requires a coordinated view across nodes so that companies can connect the dots with the latest digital tools and capabilities. Autonomous planning systems with machine-learning capabilities can base their forecasts on many more factors and learn the "next normal" much faster than traditional approaches for building business continuity, preserving cash, and strengthening supply-chain resilience."

In terms of these capabilities, the software platform of the future must be able to deliver on the ability to manage cost, quality, and customer service, along with providing a superior capability to provide continuity, resiliency, operational readiness, and the ability to manage demand/supply disruptions in real time.

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### About the Author

Joe Bellini is Chief Operating Officer at One Network Enterprises. Joe's experience extends across some of today's leading technology companies, including General Electric, HP/EDS, Brooks Automation, IRI, R1 and Oracle. Joe was granted patents in Supply Chain Planning and is the co-author of the business strategy book, "The Real-Time Enterprise." Joe holds degrees in Mechanical Engineering, Applied Mathematics and Statistics, is an alumnus of Harvard Business School, and is certified in Artificial Intelligence and Machine Learning from the MIT Sloan School.

## ABOUT ONE NETWORK

One Network is the intelligent business platform for autonomous supply chain management. Powered by NEO, One Network's machine learning and intelligent agent technology, this multi-party digital platform delivers rapid results at a fraction of the cost of legacy solutions. The platform includes modular, adaptable industry solutions for multi-party business that help companies lower costs, improve service levels and run more efficiently, with less waste. This SaaS and aPaaS platform enables leading global organizations to achieve dramatic supply chain network benefits and efficiencies across their ecosystem of business partners. One Network offers developer tools that allow organizations to design, build and run multi-party applications. Leading global organizations have joined One Network, helping to transform industries like Retail, Food Service, Consumer Goods, Automotive, Healthcare, Public Sector, Defense and Logistics. To date, more than 75,000 companies have joined One Network's Real Time Value Network™ (RTVN™). Headquartered in Dallas, One Network also has offices in Japan, Europe, and India. For more information, please visit [www.onenetwork.com](http://www.onenetwork.com).



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