



# Using Digital Networks to Drive Business Transformation in **Automotive and Manufacturing**

How Automotive and Manufacturing Companies Can Deal with Rising Competition, Diverging Markets, Tightening Regulations and Other Challenges

Today's economies are changing dramatically, driven by developing and emerging markets, innovative products and business models, and the accelerated rise of advanced technologies, such as machine learning and artificial intelligence. Globally, the automotive and manufacturing segments have seen record-setting profits over the past decade—and also **transformative change**.

The pattern and source of revenues and profits has been shifting, which means production and supply patterns are shifting too. Regulatory pressures continue to tighten, lowering margins and increasing uncertainty. Manufacturers scramble to meet emissions targets, investing in alternative powertrain technologies while waiting to see which will gain traction in the market.

#### ONE NETWORK PLATFORM CAPABILITIES:

- Autonomous supply chain management
- Integrated business planning (S&OP)
- Control Towers for inbound, outbound, e2e
- Global multi-site supply demand/supply match
- Aftermarket parts distribution
- Composite forecasting with demand sensing
- Order-to-Cash improvement
- Multi-Echelon Inventory Optimization
- Source (Procure)-to-Pay management
- Supplier capacity management
- Integrated inbound with embedded domestic and global logistics

#### EVOLVING SUPPLY CHAIN PRESSURES—AND SOLUTIONS

Changing consumer demand and the need for flexibility are a given, but this puts enormous pressure on supply chains. The companies that win in this new economic reality will be those that align closely with suppliers to bolster local capacity and bring promising innovations to market quickly.

Fortunately, the technologies and processes that support supply chains are also rapidly evolving, taking a more horizontal approach that breaks down silos, streamlines processes, and enables efficient, **customer-driven collaboration** across the entire system.

#### UNDERSTANDING THE ROOT CAUSES OF TODAY'S CHALLENGES

Manufacturing companies today are experiencing rapid growth in revenues but are not experiencing the same degree of growth in profits. Deloitte's 2019 "[Industrial Manufacturing Industry Outlook](#)" says that "*manufacturing is firing on all cylinders: output is humming, capacity utilization is up, and many manufacturers are delivering solid performance results and shareholder returns.*" However, there is also much uncertainty related to the rapid influx of new technologies that are poised to disrupt automotive and manufacturing sectors, along with uncertainty related to how trade policies might impact supply chain performance.

KPMG's "[Global Manufacturing Outlook](#)" for 2019 found that "*nearly two-thirds of manufacturing CEOs agree that acting with agility is the new currency of business; if we're too slow, we will be bankrupt.*"

Automotive and Industrial manufacturers today, however, struggle with business agility due to their disparate IT system landscape, or a limited degree of digitization, and deeply rooted in antiquated and rigid systems or strategies that impose significant limitations on business agility and the ability to embrace new business processes, models or opportunities to collaborate with trading partners.

Furthermore, auto-industrial companies that leverage ERP platforms with add-on applications as their core IT strategy for managing global supply chains struggle to maintain and improve their business performance. Most surprisingly, the leading ERP platform providers offer solution architectures that have not evolved for over 30 years, yet companies continue to invest in the concept of a unified enterprise ERP, believing that it will deliver the expected value.

The market has shifted away from monolithic and enterprise-focused architectures and is moving towards multi-party platforms to support collaborative trading activity that embraces all supply chain participants. These new multi-party architectures offer broad supply chain capabilities and development tool kits that enable the business agility to compete in the new digital world.

In November 2018, Gartner published its inaugural [Magic Quadrant](#) for Multi-enterprise Supply Chain Business



Networks. Gartner defines multi-enterprise supply chain business networks as a platform that “supports a community of trading partners — of any tier and type within a network — that needs to coordinate and execute supply chain processes across multiple enterprises.” One Network Enterprises is ranked as industry leader and pioneered multi-enterprise networks and has perfected this vision over 15 years. In doing so, it has identified some of the key challenges legacy enterprise solutions present to manufacturers today:

### KEY OPERATIONAL BENEFITS OF THE ONE NETWORK PLATFORM:

- Meet fluctuating supply needs and reduce transportation costs
- Automatically reallocate materials around the clock
- Improve service levels and revenues while reducing inventories
- Predict and sense demand automatically
- Bring greater insight and alignment to business planning
- Delight customers with unified order fulfillment
- Orchestrate inbound supply and outbound goods and avoid disruptions
- Collaborate with logistics providers in real time

### KEY FINANCIAL BENEFITS:

- Reduce inventory network-wide by 10 to 40%
- Improve service levels to over 95%
- Improve capacity throughput by 10%
- Reduce expedited freight cost by 30 to 50%
- Improve logistics utilization by 5%
- Improve resource efficiencies by 50%

- There are too many business applications to manage
- Existing enterprise architecture lacks the flexibility to adapt to changing business conditions and new technology advancements
- Legacy enterprise solutions take years to implement, and upgrades are cost prohibitive
- Enterprise planning and execution is isolated across physical sites, business functions and external trading partners
- There is limited ability to reconcile master data across a multitude of facilities and trading partners

As a result of these foundational limitations, manufacturers experience significant challenges with:

- Supplier collaboration and the ability to secure reliable supply commitments
- Lengthy batch planning processes
- Predicting and meeting in-field product service level commitments to maintain vehicle and machinery uptime
- Unexpected and rapid changes in the extended supply chain network
- High logistics and premium freight costs due to distributed manufacturing and inventory sites and sources of data
- Limited ability to predict and plan for new product introductions (NPI's) as the market evolves
- Recall management and the elimination of counterfeit parts
- Limited ability to adopt new technologies such as artificial intelligence and machine learning.

Multi-party networks are changing the way manufacturers do business and how they can be used to enable the business agility and flexibility required to take advantage of new technologies and supply chain solutions.

## THE NETWORK EFFECT

The most important technological innovation affecting supply chain performance is the sharing of applications and data on one common network. This produces “Network Effect,” where each additional company on the network adds value to the whole, and which allows the entire supply chain to be viewed, managed and optimized as one big system as opposed to many small systems.

The Network Effect is particularly acute in the automotive and manufacturing industries because of the massive numbers of parties involved in the collective group of OEMs, Tier-1s, Tier-2s, logistics providers, and contract providers. The total number of automotive parties in a network can be thousands. Having all members on one “backbone” lets information flow throughout the network seamlessly and quickly. Thus, a problem anywhere in the network is quickly “sensed” and can be addressed in a fraction of the time of the traditional model. The “bull whip” effect, where a small disruption in the supply chain gets amplified across the supply chain, is virtually eliminated. The longer the time for the original disruption to be felt elsewhere in the network, the greater is

*“The full benefits of digital transformation are unlikely to materialize unless the strategy encompasses the entire organization.” – KPMG*

the amplification when the ripple arrives. Resolving minor issues before they become large problems requires early warning and a quick response, which is one of the many benefits the Network Effect delivers.

## NEO AUTONOMOUS AGENTS

Augmenting the benefits of the Network Effect are NEO Autonomous Agents, One Network’s proprietary machine learning and intelligent agent technology, that continuously monitors the automotive supply-chain network, and take quick proactive action when disruptive events occur anywhere in the network. Being able to take nearly instantaneous action based on early problem detection is the most effective way to dampen supply chain problems such as the bull whip effect. This reduces major automotive supply chain costs such as expediting, unplanned overtime, setups, and teardowns. NEO autonomous agents refine their actions with experience and become increasingly effective over time.

## HOW MULTI-PARTY PLATFORM ARCHITECTURE COMPARES TO LEGACY ERP

### A Hoard of Business Applications

Companies have accumulated a broad range of applications to manage their supply chains over the years. Each is designed to deliver specific capabilities and in general the strategy has been successful. However, they come with a number of trade-offs:

- Limiting the speed needed to react to changes like those needed for production and/or unexpected disruptions
- Poor collaboration capabilities with trading partners (suppliers, carriers, brokers, 3PL’s, contract manufacturers, etc.)
- Agility and flexibility needed to incorporate new plants, new merger/acquisition assets, closing plants and facilities, new trading partners
- Higher IT costs to support multiple applications, integrations and databases
- Increased difficulty in creating and maintaining accurate business plans

One Network’s multi-party digital business network for Automotive and Manufacturing offers a revolutionary

alternative to traditional supply chain management. Rather than requiring trading partners to integrate multiple times with multiple platforms, **One Network’s Real Time Value Network™** powered by NEO turns each partner into a node (or a hub in a unique hub-to-hub architecture) on a much greater network.

The NEO platform addresses these issues with a single environment designed to deliver full supply chain services and to support all the needs of all internal operating groups, plus all trading partners like 3PL’s, carriers, contract manufacturers, and suppliers. This single instance provides a real time single version of the truth (SVOT) for all participants. The concept is known in the marketplace as a “Network”. All parties can now leverage the Network to collaborate on meeting demand in an optimal, cost effective way. The benefits of this new approach are dramatic. One example is the Network reduces the time it takes to communicate supply chain changes from weeks or days to hours or minutes for all parties.

**The obvious benefit of this is not just the low risk, high reward of the project, but the ability for the enterprise to adapt to changing market conditions quickly and easily with little to no risks.** Let’s look at some of the business challenges addressed by a network-based approach:

### Business Challenge: Inflexible Architecture

The modular architecture offered by multi-party Network platforms versus rigid monolithic architectures allows for the rapid deployment of the desired Network platform services using an agile implementation methodology. In addition, the business is constantly changing and a new level of flexibility is needed to allow the business to quickly add and remove supply chain services. The modularity of the Network platform supports this. The combination of rapid deployment using industry specific templates and the flexibility to activate new services and capabilities post deployment, with “never legacy, always current support, provides a low risk, high ROI, with fast time to value and lower, long term cost of ownership.

**Business Challenge: No Support for Emerging Technologies**

The NEO platform supports new technologies and offers the flexibility to incorporate new capabilities versus having to build, support and sometimes sunset and replace custom applications needed to address business changes. With ONE's Software Developer Kit, Studio and the Module Store that are available on the platform, savvy users and technical teams can build their own modules and share those modules with other customers. In this way, the community is working together to create new, innovative capabilities on the common network backbone. Now companies have the flexibility they need to create functionality that meets new business challenges and not be subject to the high cost of custom development and long-term cost of support for legacy applications.

**Business Challenge: Trading Party Collaboration**

Today minimal automation has been deployed that supports Supplier and Carrier collaboration, and specifically joint planning and execution. Deploying a single point of collaboration to all trading partners offers a "single version of the truth" and real-time propagation of demand and supply

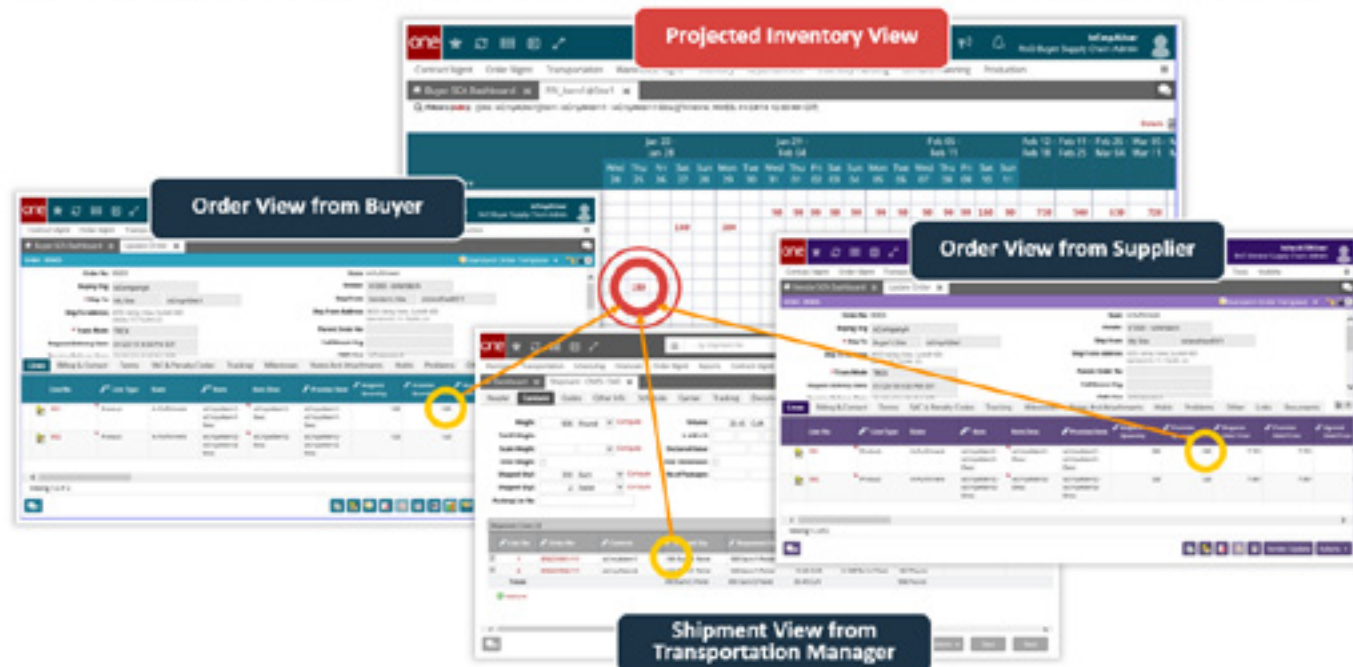
information. The result is a dramatic reduction in lead times and variability. The platform's ability to provide a single, robust, permissions-based way of interacting with suppliers and carriers is game changing. This network connection allows joint execution, called collaboration, but also allows for joint optimization versus the antiquated approach of locally optimizing to the detriment of your partners which hurts all enterprises eventually. The ability to effectively manage all capacities and improve throughput to actual demand dramatically improves return on assets (ROA) for all parties which is an output of revenue improvements, and improved capacity utilization and reduction in costs.

**Business Challenge: Unsynchronized Master Data**

One Network's master data management (MDM) solution provides the capability for organizations to keep their master data harmonized both internally and externally. Data cleaning services are made available to rationalize not only all internal master data but also community master data. After trading partners have been on-boarded to the network, the master data is automatically provided by the network to



## SINGLE VERSION OF THE TRUTH IN REAL TIME ACROSS ALL PARTIES



The figure above not only shows how the buyer, supplier, shipper and inventory control users are presented with the exact same data in real-time, but also shows all associated real-time data, i.e. orders to shipments and the overall effect on available inventory. This allows all parties to collaborate with the information either through structured workflows or in an unstructured manner, e.g., via ONE's Social Apps, which include Blipper (a micro-blogging app).

One Network's technology allows an enterprise to provide its partners with a single interface point. This means that a trading partner only has to be on-boarded once, enabling a whole array of services such as collaboration, contract management, auto invoice generation and payment approval, single version of truth on all trading partner analytics, etc. The network provides collaboration and joint planning with all customers, suppliers (n-tier), distributors, freight forwarders, agents, and logistics service providers.

the enterprise with the simple checking of a box. A "request assistance" capability allows organizations to manage requests to modify key master data attributes like part number or new vendor through an administrative service. This service provides workflows for approval and other associated requirements. The system manages and monitors the transfer of master data between internal and external systems and data consumers. The network alerts users to any issues that require resolution.

### Business Challenge: Conflicting Data in Siloed Business Systems

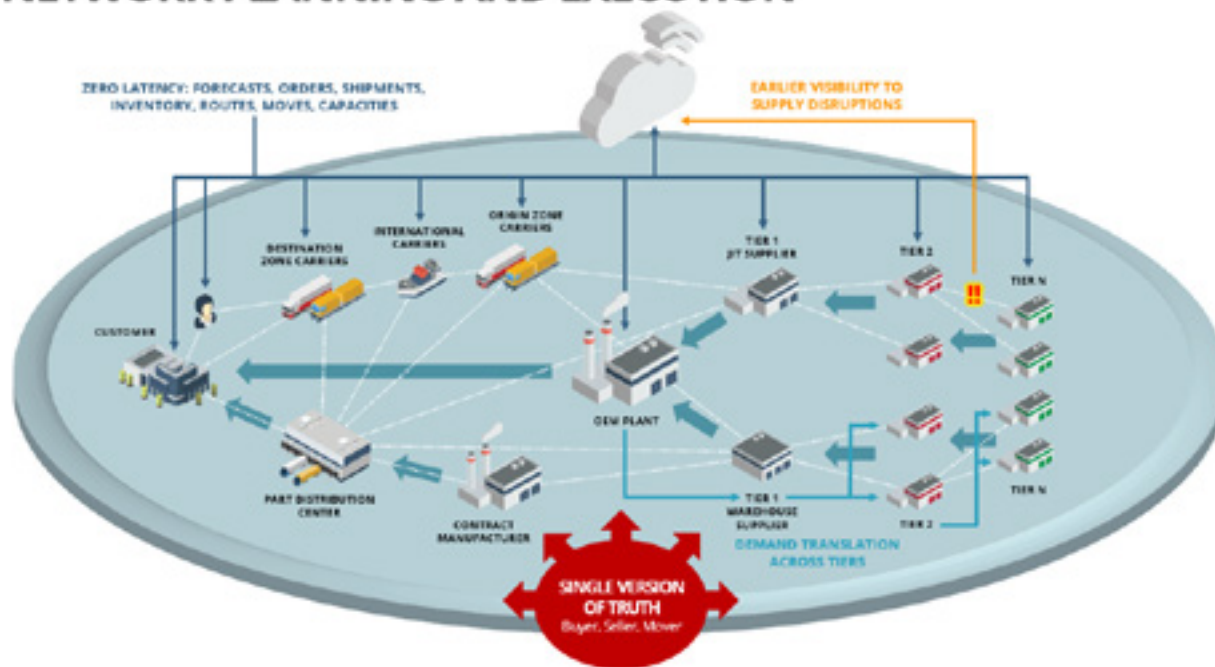
Most companies have solutions within the four-walls of a department, business unit or a facility, and it only provides visibility within silos. When the decisions require data spanning silo boundaries, companies lack global view or end-

to-end visibility to make such decisions. Single Version of the Truth (SVOT) is the elimination of the redundant data storage and processing caused by siloed systems. All partners on the Network view the exact same data from different perspectives in real-time. The data is not replicated in multiple systems, thus reducing latencies and complexity associated with data being transferred between systems. Partners avoid costly errors associated with inconsistencies in data duplicated across enterprises. This SVOT on a single network enables real-time, end-to-end visibility and actionability - the ability to act and execute on the same system.

### Business Challenge: Inability to Plan an Organization's Entire Supply Chain

In the One Network system, planning algorithms and intelligent agents do the heavy lifting. The system propagates

## NETWORK PLANNING AND EXECUTION



The above technical innovations have allowed One Network to develop unique automotive workflows that provides solutions that have been needed for years but were not technically feasible. Three examples are highlighted below.

and translates the demand from the demand source to the component factories and suppliers. This approach coordinates all parties in the chain while respecting service level and capacity limitations across the tiers. The intelligent agents resolve supply-demand mismatches and plan required transportation and any required increases in capacities, leveling or allocation decisions. The planner can see across factories up and down the chain. The diagram above describes this process.

One Network's ability to have intelligent agents plan a portion of the network allows the system to incrementally re-plan and execute throughout the day. Other planning solvers require that everything be processed in a single solver run and does not allow incremental planning. Nor does the solver run on actual execution data; therefore, a planner must be involved, which detracts from the value of having decision-making agents. Traditional batch planning tools takes hours to run, and after they complete, the solutions are already out of date due to stale data. One Network's solver can decompose the problem into many parts (called subnets), and not just create a plan but adjust it incrementally as execution issues happen. This incremental plan/execute service runs all day and quickly resolves issues and re-plans on its own.

### Partner Network Capacity Management

The system significantly improves an organization's visibility into medium- and long-term capacity issues. The system accomplishes this by automatically propagating the actual scheduled demand through the supply chain and matching that demand to the capacities. In an automotive environment, it is best to drive this capability with the sequenced production line schedule. This allows the system to know the load on all the production lines within an organization's manufacturing environment as well as the loads on key partners based on actual sequence requirements not just the forecast. The load can be shown for vendors or internal manufacturing facilities.

With the visibility of the future demand and available capacity, the planner can now negotiate with the vendor for additional capacity or look for an alternative supplier when there is capacity shortage. If it is determined that this is real constraint that cannot be fixed the constraining amount can be propagated back up stream so that other facilities do not over build their components.

This process greatly reduces the time and energy required by organizations to develop realistic and executable supply



demand matches with all tiers of the supply chain. It also helps the vendors better understand the requirements and the load that the customer is putting on them. This capability is enabled by the network and its multi-party visibility created by with ONE's permission infrastructure.

#### **Global Multi-Site Supply-Demand Match with Integrated Logistics**

With an integrated view of supply, demand, production capacity and transportation across both internal manufacturing operations and suppliers, the Control Tower solution can automatically aggregate demand across all facilities, and source materials to virtual lanes that will then optimize material and transportation concurrently. This approach drives better supply management and reduces transportation costs by improving utilization and eliminating premium freight and expediting costs.

This solution works across all tiers of supply and all legs of transportation movement whether prepaid or collect, and supports international freight, cross-border and all domestic logistics. The logistics partners are represented on the network thus eliminating the need to integrate to their logistics solutions. As a result, real-time tracking is enabled with all 3PLs and all carriers on the network.

As an actionable Control Tower platform, One Network's solution comes equipped with full visibility of all shipments, all orders and a real-time view of not just inventory but a projected inventory view and estimated time of arrivals (ETA). This robust resolution workbench not only provides visibility into supplier delays, transportation delays and shifts in demand, but also suggests and executes resolutions around

the clock. For example, as the materials are in transition and the demand across each facility changes, the materials can automatically be re-allocated to satisfy any changes upon arrival, reducing the risk of out-of-stocks or overstocking.

#### **Aftermarket Parts Including "Repairables"**

The key requirements of aftermarket parts are to: 1. provide parts inventory in the right quantities in the right mix at the right location and the right time; 2. satisfy customer service levels in order to minimize downtime and delays for customers; and 3. minimize shipping cost required to satisfy orders and replenishment needs.

However, there are many hurdles:

- Intermittent and/or high variability demand patterns
- Large number of parts with different criticality assignments
- Tradeoff between inventory levels and fast responsive time requirements needed to satisfy customer demands
- Stock obsolescence, and write-offs
- Introducing new parts and phasing out old efficiently
- Syncing orders and deliveries with work orders and project plans

The One Network aftermarket parts solution includes parts catalogs and workflows for OEM, aftermarket, refurbished, rebuilt, and spare parts. The Control Tower aggregates demand from network of dealers and customers and optimally sources parts. The system concurrently optimizes material and transportation with:

- Forecasting, autonomous forecasting, order, replenishment, inventory optimization, and returns management to ensure network-wide visibility for all part issues and supply-demand match





- Integral transportation suite (including parcel management) to ensure rapid execution
- Transactional API's to connect to required dealer/customer sales order management systems to enable a collaborative ordering process
- Cost based resolutions of disruptions that use Autonomous Agent (NEO) workflows to resolve issues

## THE PATH FORWARD WITH A DUAL PLATFORM STRATEGY

One Network's platform is a unique "Tunable System of Control" for business planning and execution across multiple parties and systems, leveraging new network technology while empowering legacy systems, to deliver optimal results fast. This enables your team to assign system-of-record responsibility to each state and action in the Network process — either to the ONE business network platform or a legacy application. It's your choice, and the ONE platform enables you to manage end-to-end processes, even as designated steps are still processed by your legacy systems.

**We call this a "Dual Platform Strategy", where your business network platform actually becomes the primary platform for planning and operations, and the old ERP monoliths become bolt-ons to the Network for financial processing.**

With One Network, the financially related inputs and outputs of trading transactions easily flow from the cloud to the financial modules of your legacy ERP systems. Whether you are working to eliminate technology silos or collaborate more closely with suppliers, the Dual Platform approach ensures that your daily, weekly, and monthly effort is focused on your organization's most important execution objectives, and is done in the most efficient way. Thus, the Dual Platform approach solves 4 major problems:

- How to eliminate the tremendous costs of maintaining and migrating the current ERP monoliths
- How to achieve advanced business network performance across multiple enterprise-centric ERP silos
- How to gain the flexibility required to take advantage of new market opportunities
- How to gain competitive advantage in today's marketplace

This "tunable" environment will also run across multiple blockchains, so if certain trading partners are using Ethereum or Hyperledger, the ONE Blockchain can provide cross-chain connectivity as it runs on top of both as a multi-party ledger. In summary, a dual platform strategy enables you to leverage legacy systems without wasting prior investments — while dramatically advancing your capabilities and decision-making with a business network platform.

## MULTI-PARTY NETWORKS: THE ROUTE TO RAPID TRANSFORMATION, VALUE AND AGILITY

In summary, the One Network platform can provide significant competitive advantage to an organization, as well as significant cost reductions and revenue increases. Visionary companies are already adopting this type of network architecture to drive breakthrough results.

Companies normally begin their journey by on-boarding onto the network and deploying an overlay Control Tower solution first. The Control Tower will provide greater visibility into the organization and can serve as a road map for the rest of the journey.

**Transform and Lead the Your Industry with One Network.**



## 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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