One Network's
High Tech Industry Solution

Optimizing High Tech Multi-Party Business Networks

CHALLENGES AND TRENDS IN HIGH TECH

The High Tech industry has been a leader in optimizing supply chain performance. But several factors are driving the need for new types of solutions that span a continuum **across supply, logistics and every trading partner**:

- Changes in the types and capabilities of products
- Shorter and shorter product lifecycles
- Growing numbers of trading partners
- Highly decentralized supply chain

And there are many opportunities to improve operationally and with new business models:

- Rapid product repair and proactive repair services
- High speed same-day and next-day product delivery
- For new smart connected devices, optimization and alignment of both the supply and post sales service networks
- Satisfaction of in-field product service level commitments and monitoring of device in-field performance to drive performance tuning, predictive maintenance, software updates, part replacement, reverse logistics, service and warranty processes
- Security, blocking of counterfeit products and unsecure components from entering the supply chain, and protection of every endpoint at the production and sourcing level, especially for next-generation smart, connected products

- Improve service levels
- Enablement of rapid connections and collaboration with new trading partners

MULTI-PARTY BUSINESS NETWORK PLATFORM

One Network Enterprises (ONE) provides a cloud multi-party business network platform with applications and services tailored for the High Tech Industry. The focus is on automating the continuous alignment of supply, logistics, demand, and service networks to dramatically **lower time to value, risk, IT and operational costs** for the entire network. Key network capabilities include:

- Shared solution, shared costs, shared business benefits
- Shared business networks - supplier, customer, and carrier networks
- Rapid low risk deployment
- Highly extensible

ANALYSTS RECOGNIZE ONE NETWORK'S INNOVATIVE SOLUTION

The foremost technological advancement positively affecting supply chain performance is the sharing of applications and data on one common network. This produces "Network Effect" which is what allows the entire supply chain to be viewed, managed and optimized as one big system as opposed to many small systems. Industry analysts have

One Network Enterprises™

Sense Learn Predict Plan Execute Measure

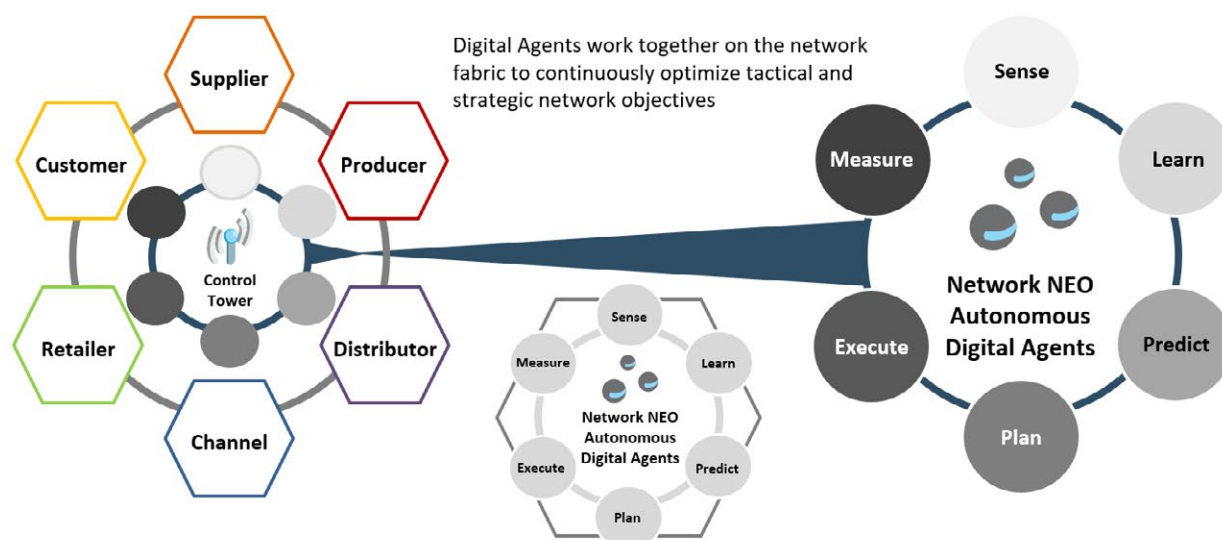Network and Enterprise NEO Agents work together to optimize the network and the enterprise

FIGURE 1: NEO-Enabled Autonomous Supply Chain Management

praised One Network's innovative vision for supply chain visibility, collaboration, and automation. In 2018, Gartner recognized One Network as a leader in its "Magic Quadrant for Multi-enterprise Supply Chain Business Networks" report. One Network also ranked highest for the fourth consecutive year in Nucleus Research's "Control Tower Value Matrix for 2019".

One Network's platform and solutions are transforming industries and using the vast amount of network data across different industries to train AI-based intelligent NEO agents. These agents make and execute automated decisions and coordinate multiple parties to make possible autonomous supply chain management on a single version of the truth (SVoT) and on private scalable **multi-party ledgers**.

CONTROL TOWER FOR MULTIPLE-ENTERPRISE VISIBILITY AND ISSUE RESOLUTION

The One Network Control Tower provides end-to-end visibility and control across the network, from planning to tracking, alerting and KPI visualization, for all network participants (suppliers, carriers, channel partners, and end customers). The solution is helping **global companies to improve KPIs for the entire network**, including:

- Increase on-time in-full (OTIF) performance to 90%+
- Improve in-store/channel, in-stock performance
- Improve forecast accuracy at all levels and sites (internal and external) in the network by 5% to 12%
- Reduce DC and consumer electronics store inventory levels by over 50%
- Reduce excess inventory and obsolescence
- Reduce global and domestic transportation costs and improve pickup and delivery reliability
- Improve productivity – 100% autonomous – no manual effort required by retailer, manufacturer, or supplier

The solution also enables critical initiatives such as:

- High speed same-day and next-day delivery on dynamic logistics networks
- "Product as a service" performance optimization
- Supply reliability and resiliency
- Security initiatives to block risk components from entering the supply chain, such as counterfeits
- In-field product service optimization and sustenance

Any combination of local and global Control Towers can be configured on the network providing each party with the right level of **visibility, control and exceptions management** across any combination of sites, regions, and countries. The supply chain aspects include:
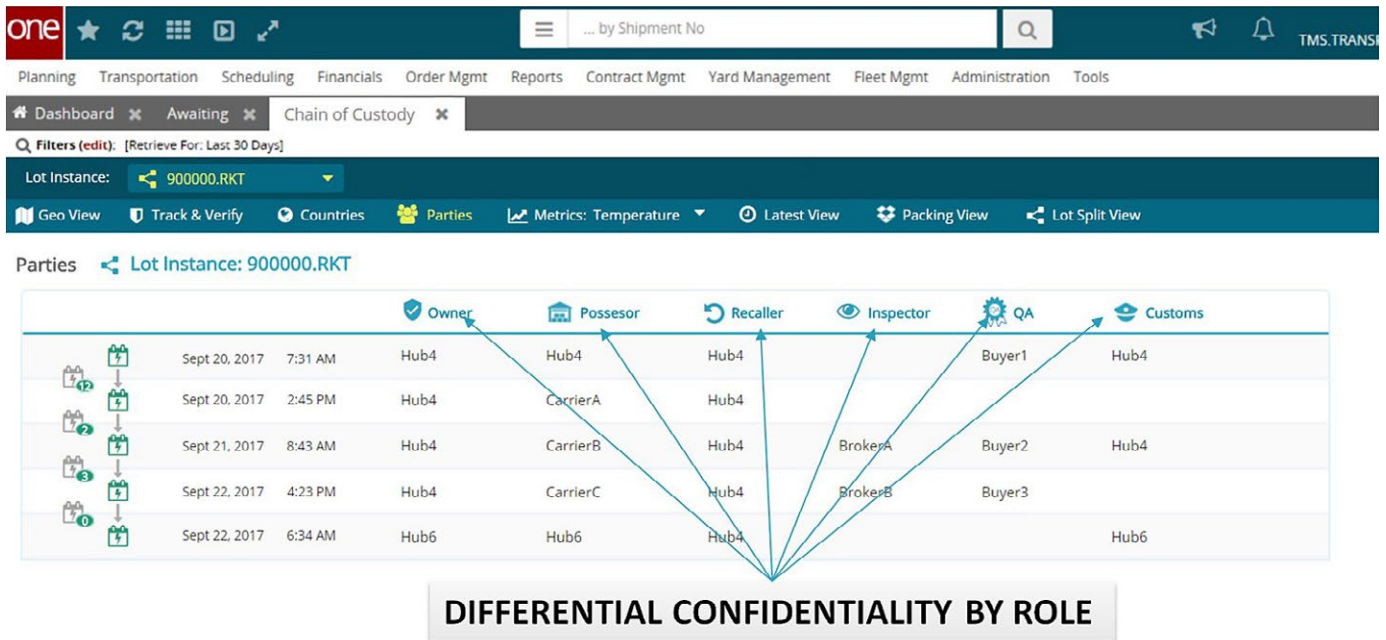
FIGURE 2: Multi-Party Permissions allows control of precisely who can see what. For example to allow customers to see their predicted order delivery dates and predicted late deliveries or for OEMs to see demand across the network for just their products and services.

- Production of internal manufacturing sites and contract manufacturing sites
- Material supply from Tier-1 to Tier-N
- Transportation from first mile to last mile
- Warehouse, DC and channel operations
- Store and online store operations
- Chain of Custody and Track and Trace

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ONE's services and modules are built on industry tuned cores that are designed to embrace high tech industry specific nuances across workflows, algorithms, machine learning, planning, transaction flows, data models, alerting, KPIs, and reports. One Network provides a full aPaaS platform with multi-party enabled development tools and over 950 public APIs that allow IT and third parties to tailor existing, or build new sophisticated, network applications.

FAST VIRTUAL BUSINESS ECOSYSTEM FORMULATION

One Network provides a unique multi-party network platform that allows companies to make instant virtual connections on the network. Companies join the network and manage one company node instance regardless of the number or types of partner connections. Once on the network companies can search, invite and connect to other companies on the network virtually, using the One Network permissions model to control the partner relationships in terms of **shared visibility, collaboration, execution and collaborative planning**. Master data is mapped and cross-referenced automatically when connections are made between parties. In addition, parties can create communities between multiple companies to optimize network dimensions that involve those parties. Network hub instances can choose to share application capabilities and data with their partners.

MULTI-PARTY PERMISSIONS CONTROL ALL DIMENSIONS OF THE PLATFORM

The ONE platform and network functions are all controlled with patented multi-party permissions algorithms. These algorithms control everything from the development tools on
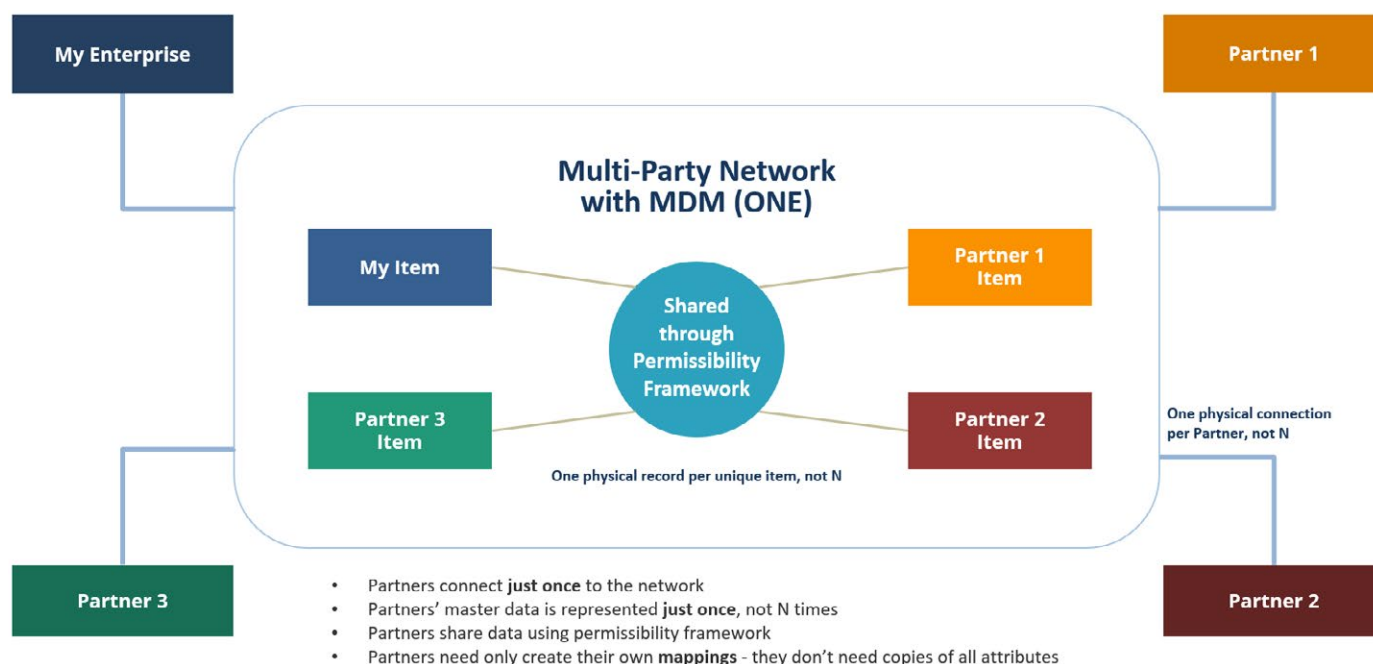
FIGURE 3: Multi-Party Network MDM. One connection per partner. N-way instant master data sharing and exponential reduction in mapping combination.

our aPaaS layer to how data is stored to workflow branching to the GUI and cloud to cloud, cloud to mobile and cloud to internal IT network data transfers, data mapping. Geo-permissions also apply to physical models such as Network Bills of Material (BOM) and physical supply chain entities (sites, lanes, etc.). This allows **multiple parties to maintain the segments of master data that represent the real world** such as Network BOMs, supply and logistics models, catalogs, capacities, stores, store areas, warehouse sites, warehouse bays, production sites, production lines, and more.

A MULTI-PARTY MASTER DATA MODEL IS FOUNDATIONAL TO A NETWORK

The permissions model applies to both the community master data and connectivity and cross referencing across model dimensions. Companies **map their master data once** into the One Network data model (with incremental bidirectional synchronization as needed). When partnerships are created or activities between parties are in motion One Network dynamically maps the master data between each party's models to enable each party to see the world through their master data perspective. Compare this with the legacy point-to-point, costly and error-prone, mapping required for legacy B2B solutions.

This capability is invaluable for efficiently enabling large fast-changing business networks. For example, if you have thousands of customers, channels and third party retail and online sales outlets and you desire forecast and sales visibility, or some form of shared planning and execution capability, it is not practical to cross reference, pair by pair, each parties' master part, catalog, packaging data into your company's model. Instead One Network uses a standard on boarding process that each party goes through, which includes tools for each party to map and load their models to the One Network canonical model. Once this is done the **cross referencing and mapping is performed automatically and continuously** based on the types of partnerships are established between the parties.

SIMULTANEOUS OPTIMIZATION OF SUPPLY, LOGISTICS AND SERVICE BUSINESS NETWORKS

ONE is designed to optimize processes that span companies and supply, logistics and service (product-as-a-service) networks, unlocking tremendous value. The solutions are focused on bringing continuity, alignment and optimization between traditionally siloed (one company at a time) solutions and processes. Planning and intelligent NEO
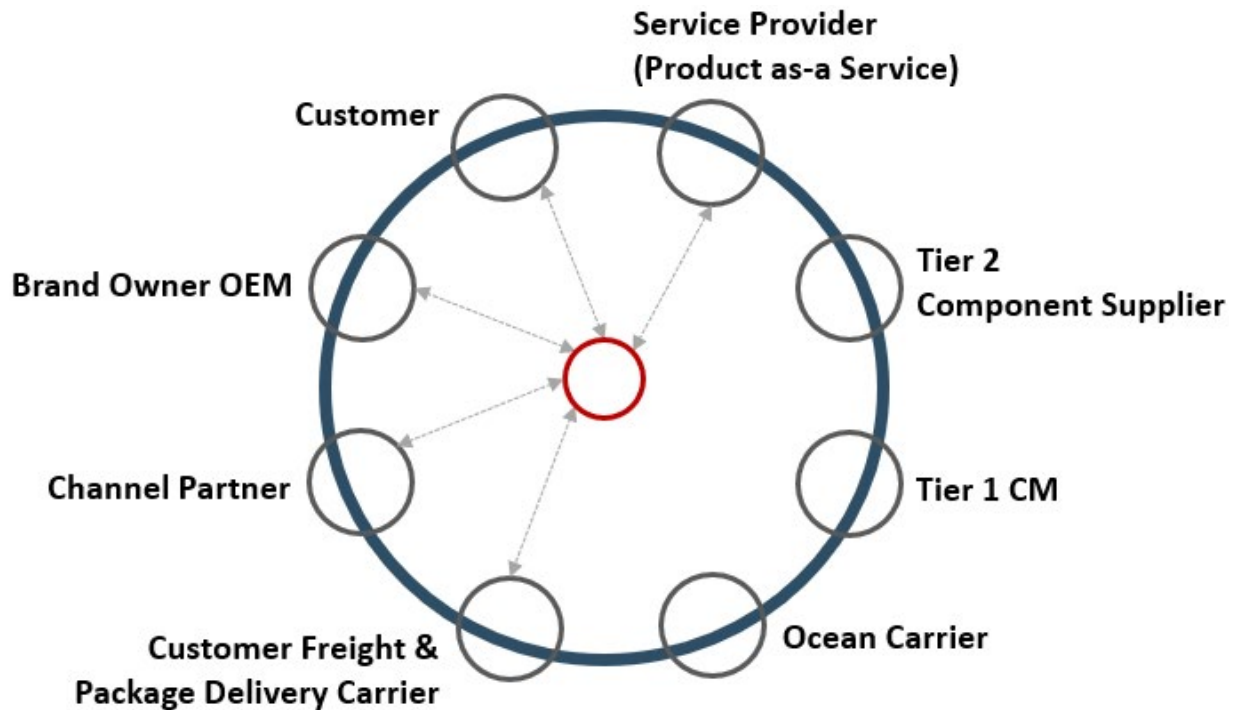
FIGURE 4: Forecasting + Fulfillment + Replenishment + Delivery Network

agents run in parallel directly on transaction streams across corporate boundaries enabling fast response to unexpected conditions and automating everyday decisions that drive continuous improvements. This allows different types of agents to make or recommend decisions and, in near real-time, create or modify transactions and objects across any combination of parties tied into the network.

DEMAND-DRIVEN DISTRIBUTION & SALES

Demand is sensed and predicted in real time at the point of-sale and translated instantly back to all levels of the value chain. Each party has a single version of the true consumer demand. There is no second guessing, no excess inventory build-up, and near-zero delays. This continuously updated demand signal drives other types of digital agents on the network – keeping inventory low and service levels at optimal levels.

Key capabilities include:

- **Autonomous forecasting** agents for store, channel and multi-tier DC forecasting with continuous POS sensing

- **Autonomous ordering** for store, channel and multi-tier DC replenishment with retailer approved ordering and with last minute allocation (DC to store or DC to DC) for short supply scenarios
- **Multi Echelon Inventory Optimization** (MEIO) to continuously optimize cycle and safety stock levels and inventory planning and replenishment policies
- **ONE Retail Data Vault** with Network NEO to provide a multi-party permissions-controlled retail data repository
- **Virtual WMS** to provides complete shop floor WMS capabilities or connects to existing silo WMS systems to ease integration and operations with the network
- **Integrated distribution and transport planning** with industry-leading execution capabilities
- **Aftermarket Parts Planning** with predictive maintenance, warranty management, device usage and performance monitoring, service scheduling (labor, tools and supplies), and maintenance, repair, operations (MRO) workflows

DEMAND DRIVEN SUPPLY & PRODUCTION NETWORKS

Customer demand is continuously translated across each tier and site in the network. Demand propagation across the supply network considers the current demand forecast, inventory, production schedules, in transit supply, supply commitments, BOMs, NPI, carrier pickup and delivery schedules, and the transportation network between sites.

This provides each site (across N-Tiers) with accurate real time demand visibility, as permitted by the network relationships each party has agreed to, at each site, upstream and downstream to the end customer.

Key capabilities include:

- **Constrained Multi Echelon Supply and Production Planning** with execution and collaboration across N-tiers
- **Integrated distribution and transport planning** with industry-leading execution capabilities
- **Integrated Business Planning – S&OP** with continuous autonomous demand supply match across each site in the network
- **Manufacturing planning, scheduling, and sequencing**

Continuous multi-tier tactical planning and automated execution NEO agents automatically create and adjust procurement and production orders, transportation orders, shipping and loading instructions, and pickup and delivery carrier appointments. Planning NEO agents continuously monitor execution streams in real time to adjust plans and respond to changing conditions including predicted weather impacts on site capacity and transport lanes, missed shipments, delayed production, cancelled orders, and unexpected demand fluctuations.

Here are some examples of the types of automated decisions agents can make or recommend for approval before execution:

- When, how much, and where to procure or make product
- Predictive detection and proactive mitigation of stock outs, late supply, supply delays, plan-to-actual deviations, cost overruns, and revenue shortfall
- Cancel, change and create transport, replenishment, procurement, production orders directly with partners on the network, to execute agent decisions immediately
- Decide how (transport lane, mode) and when to move product from site to site
- Schedule movement of products from site to site directly with carriers
- Pickup and delivery-aware last-minute allocation of supply to site or store orders in cases of supply shortage
- Automated cancellation of transport orders to carriers to align transport with order commitments and inventory positioning
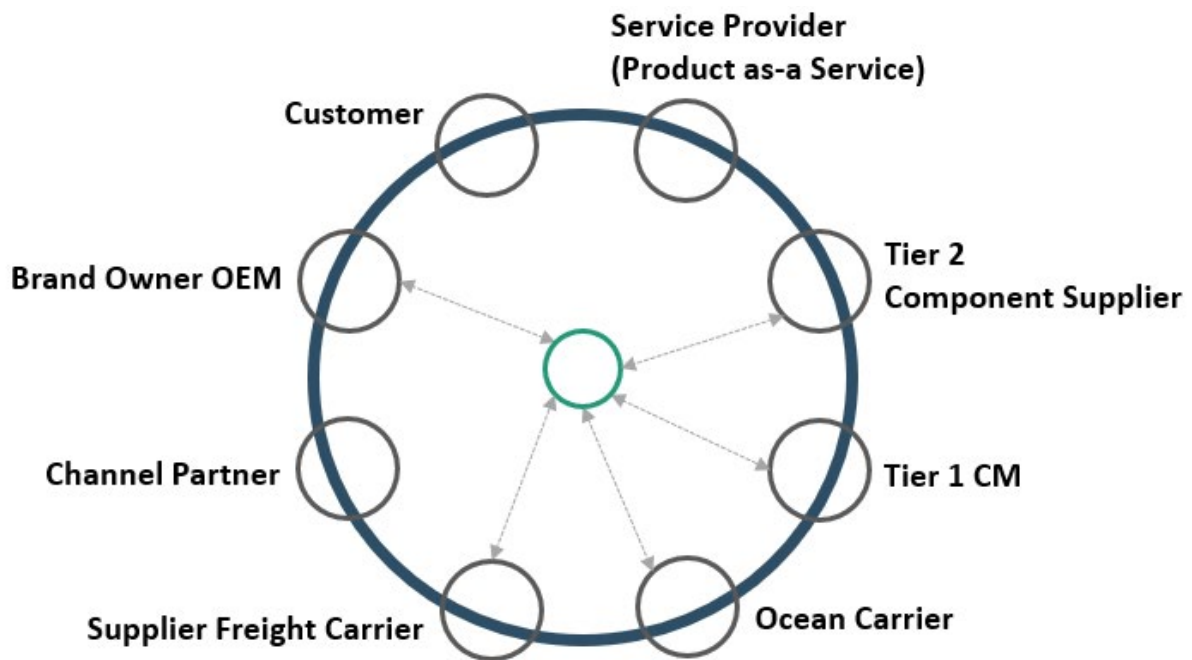
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FIGURE 5: Supply Planning + Production + Procurement + Transportation Network. Demand propogates in real time across the supply network to enable agile and responsive supply planning.

- Proactive detection of environmental impact (weather, traffic) on supply, demand and transport
- Proactive response to environmental impacts via reshaping supply movement, allocation, stocking and distribution.
- Automated order expediting, aggregation, consolidation
- In-field product performance monitoring with device service scheduling, part procurement and delivery and service coordination.

PERSPECTIVES FOR PARTNERS

Contract manufacturers (CM) and electronic manufacturing service (EMS) providers are enabled with real time visibility into site capacity and material constrained translation of customer or consumer demand (forecast and orders) for each site. They also have visibility to upstream component inbound supply with accurate ETAs to each factory. Brand owners have clear visibility into production status, production capacities, production schedules, Tier 2 component inventory, Tier 3 materials, projected inventory, and inbound supply.

Brand, CM and EMS planners can deploy intelligent NEO agents to automate processes such as supply allocation,

factory forecast commits, factory order promising, order prioritization, inventory optimization, and carrier pickup appointment scheduling to orchestrate factory to port or factory to warehouse movements. One Network also provides embedded network services for factory lot tracking, optimized factory master planning and scheduling, and detailed sequencing and scheduling. CMs and EMS providers gain visibility into their performance KPIs, improvement trajectories, and network performance KPIs.

NETWORK SERVICES

All parties on the network can leverage ONE's powerful network services, including:

- **Multi-Party Master Data Management and BOM Management** which enables each party to maintain their own part of the network and share as needed
- **Value-add network services** with 3rd parties embedded in the network provide specialized on demand services
- **Dev Net** with third-party development platform and tools and module store
- **Dashboards and Real Time KPI Visualization**

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 of 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.

One Network's High Tech industry solution enables the entire business network to drive business outcomes and provides a competitive advantage for all members of the supply chain network.

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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.

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