



One Network  
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# The Network Effect for Supply Chains



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*EVP, One Network Enterprises*





# Network Effect and Your Supply Chain

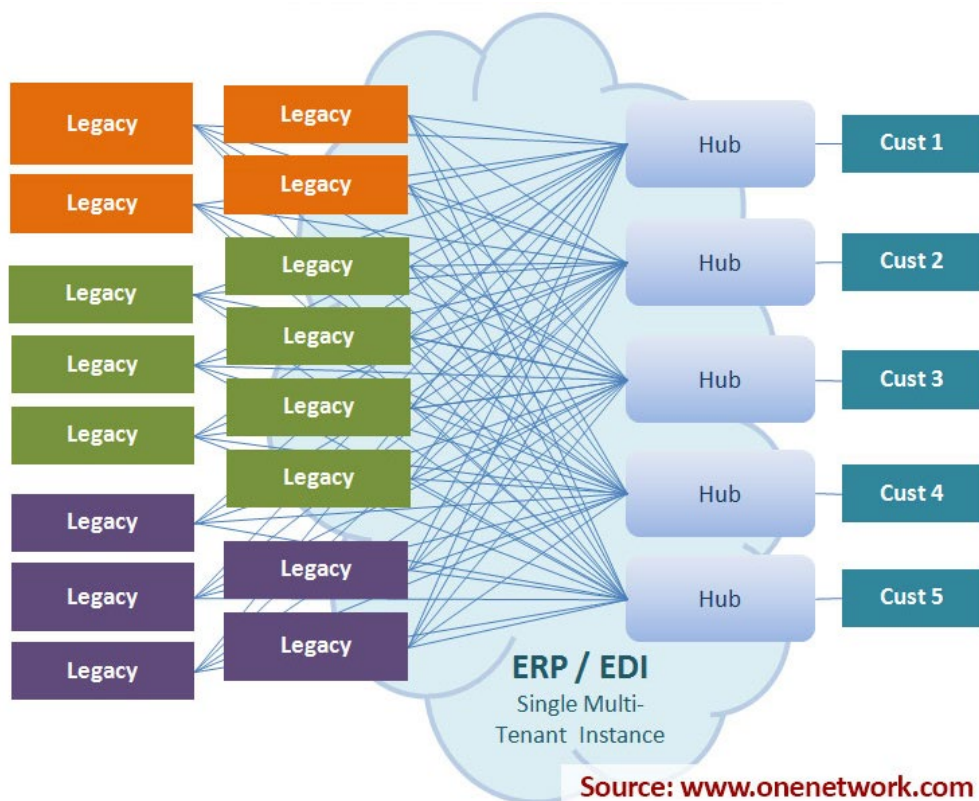
- **Network Effect**

- The “network effect” is the phenomenon of network’s value increasing, with the increase in the number of participants

- **Network Effect - Supply Chain**

- Supply chain networks are now the biggest competitive differentiation opportunity a company has in the marketplace - market share will be won or lost based on how well companies leverage network effects
- Beyond great brands and great products, you need incredibly **efficient, agile, and fast** operations. Given the shift from retail to consumer direct, these capabilities now define the primary customer service that shoppers receive in that channel.
- For major demand or brand hubs in the network, the more suppliers and carriers that are onboarded onto the network, the more value potential given the ability to source across a wider set of options and deliver across all demand variability and customer service targets in an omni channel marketplace
- Delivers on Risk, ESG, Sustainability, and Circular Supply Chain Representation

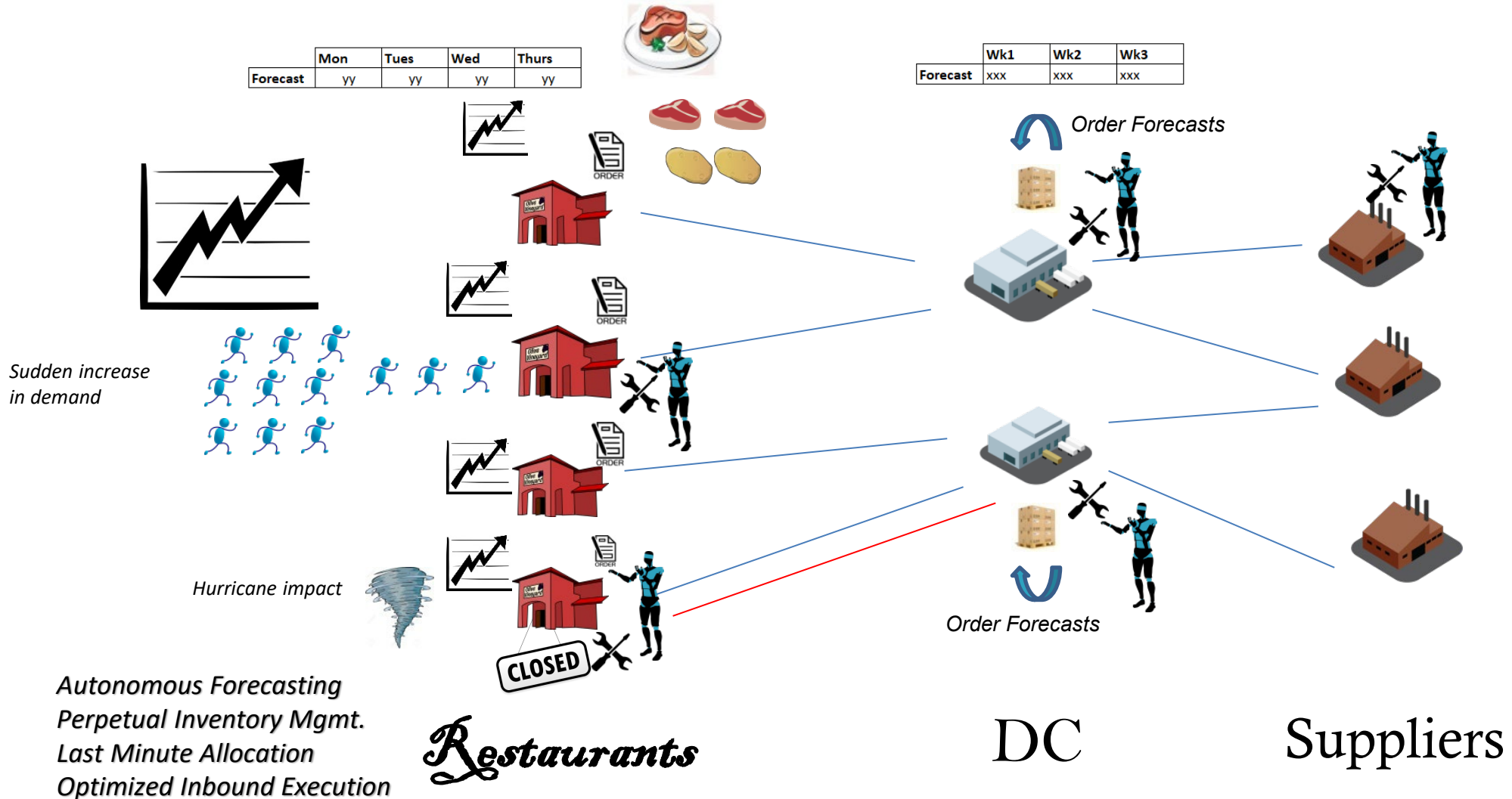
# Why Has Network Effect Been Difficult to Leverage?



- Enterprise-centric software limitations
- The Planning-to-Execution uses disconnected algorithms and optimization engines
- Requires armies of planners
- Inventory buffers cushion against conflict
- Value not realized due to sub-optimization
- Stale data across trading partners
- Over simplified decision making models
- Customer service levels protected with inventory and capacity buffers and high transportation & logistics costs

# Large Restaurant Chain

## NEO Intelligent Agents for Autonomous Forecasting

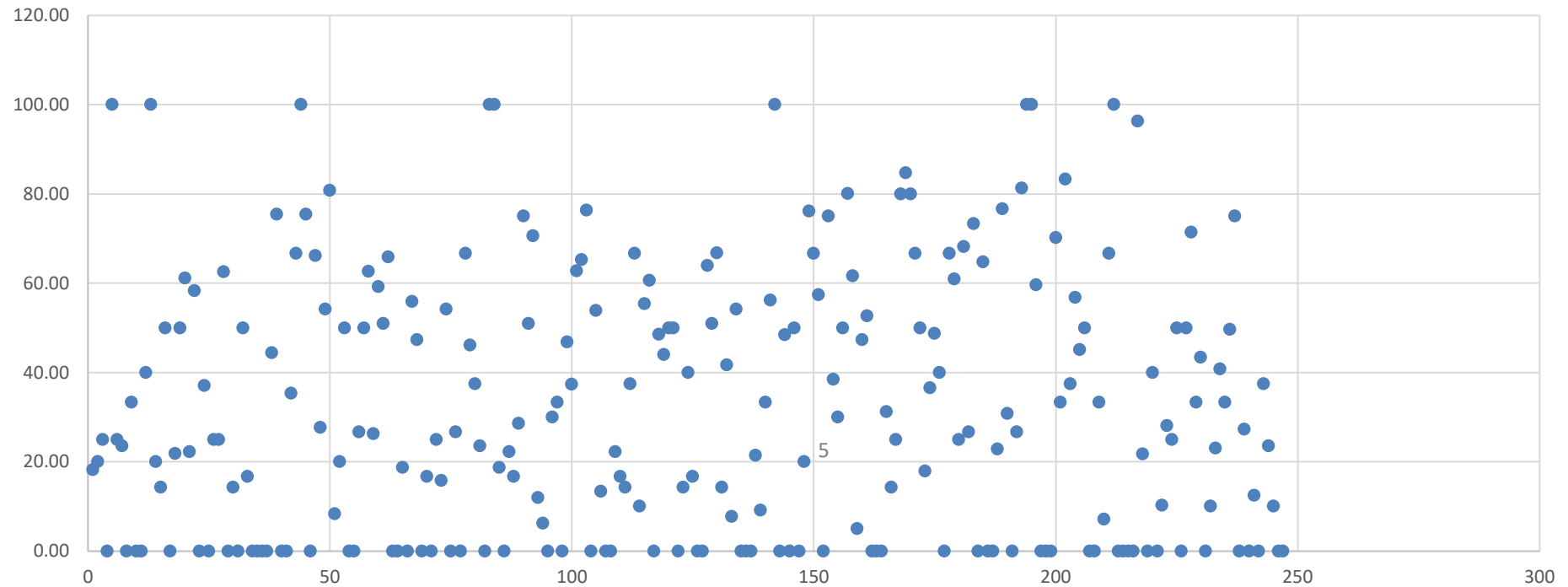


# Large Retailer

This scatter diagram is actual supplier due date performance. The average % on time delivery is 57% with a standard deviation of 29%. Due date performance is based on whether the delivery was made on the target date it was scheduled.

Large Discount Retailer DC Inbound On Time Performance

Supplier DDP



Number of Observations

# Food Manufacturer to Walmart Replenishment

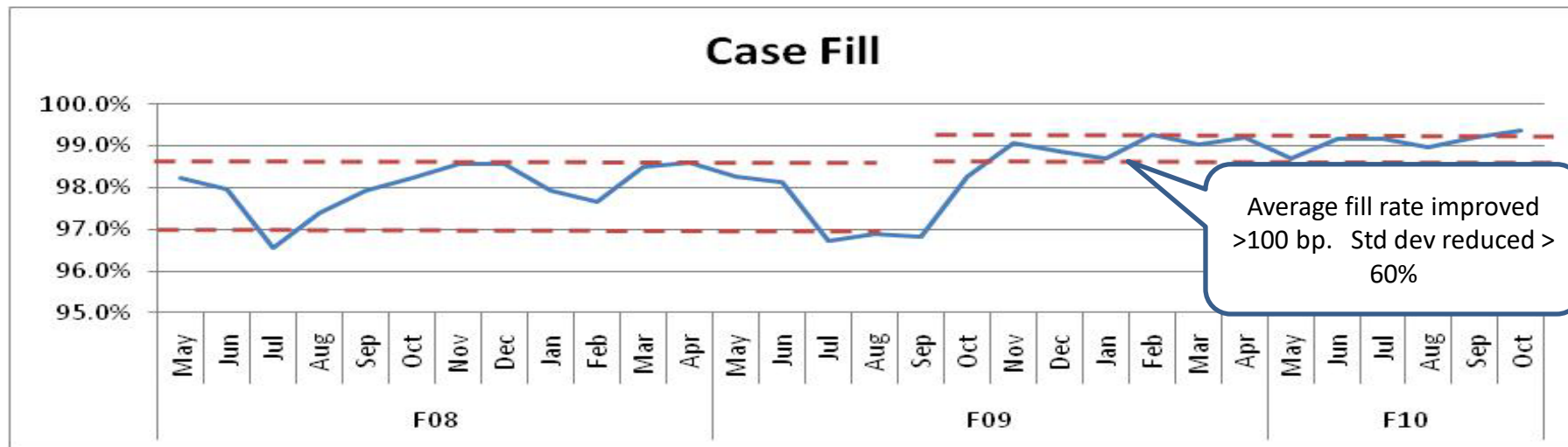
## 99.5% on shelf availability

### Before

- Inconsistent fill rates
- High Inventories
- Low forecast accuracy - Product Segment, Item and Item DC

### After

- 99%+ case fill rates
- 98% to >99% in store in stock at key customers
- Inventory reduced 50% at Walmart 27% at DM
- Forecast accuracy improved 400bp at product group level and >20% at item-DC level. Eliminated >80% of bias.
- Multiple awards from some of the largest retail customers for supply chain excellence. 8 out of top 10.
- Have reached as low as 20 days of chain wide inventory. Shelf to raw material





# Automotive/Industrial

*Command Center for TMS (Global and Domestic), OMS and Inventory Planning*

## The One Network Solution

- Generate intelligent orders with order aggregation
- Demand Management and Forecasting : Automatically captures customer data across all channels daily, creates forecast, propagates demand signals to plants and suppliers
- Global Demand/Supply Visibility: Dana has real-time view of suppliers, and customers
- Multi-tier Supplier Collaboration
- Multi-tier Inventory Management
- Multi-tier Replenishment Planning



# Automotive/Industrial

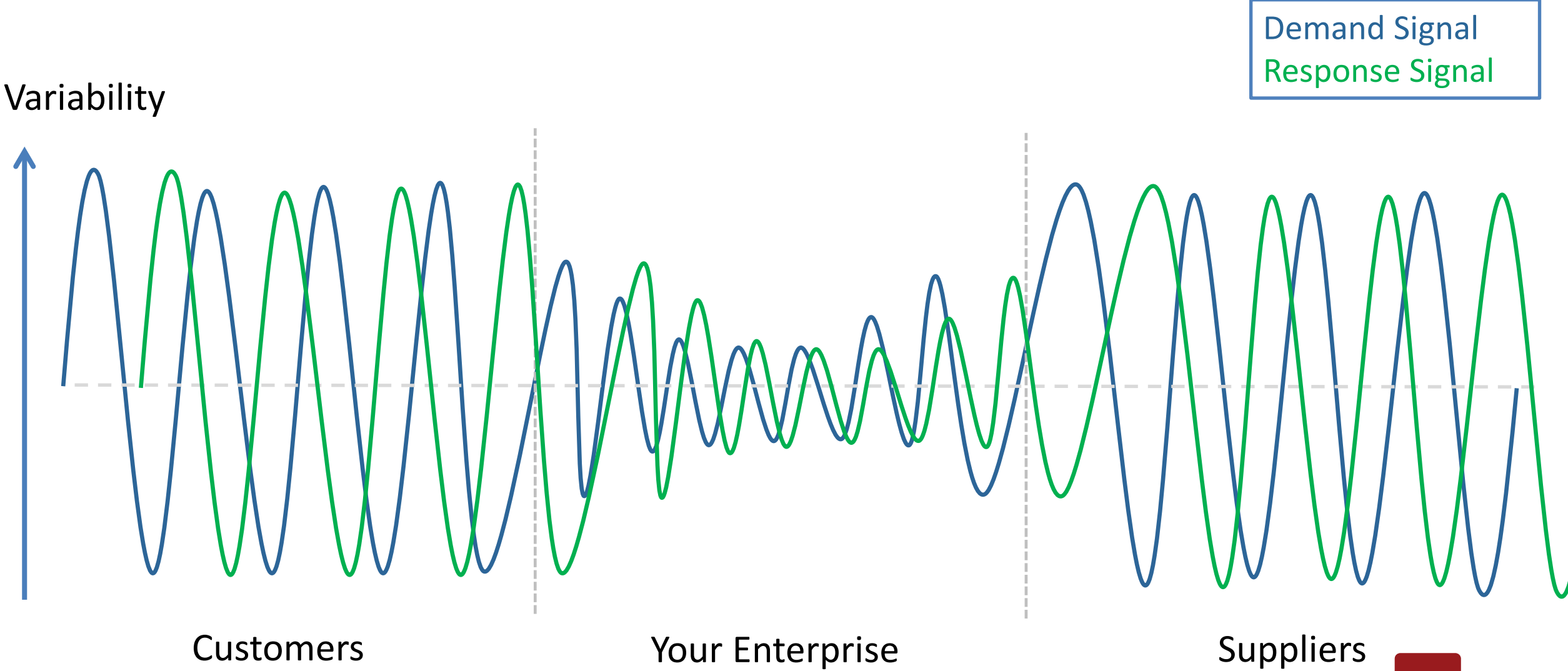
*Command Center for TMS (Global and Domestic), OMS and Inventory Planning*

## Business Benefits

- Reduced expedited freight costs with automated ground/expedited shipments
- Streamlined management of cross-border documentation and taxes
- Visibility across thousands of products, dozens of plants, hundreds of suppliers and hundreds of planners
- Reduced manual overhead in inventory planning with automated inventory planning
- Reduced inventories, initially by 31%, inventory planning reducing a further 5-10%
- Smoother, more predictable supply with reduced supply and demand variability
- Lower costs with improved service levels
- Synchronizes Dana's multiple ERP systems



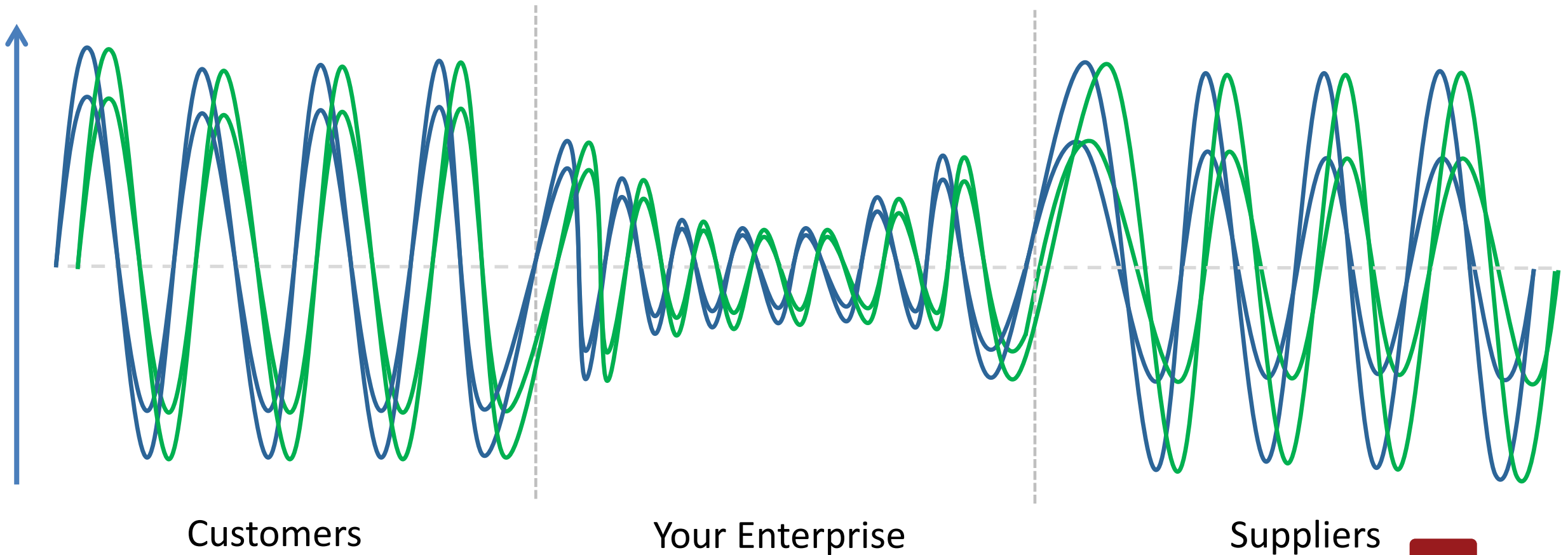
# Network Time Compression



# Network Variability Reduction

Demand Signal  
Response Signal

Variability



Customers

Your Enterprise

Suppliers



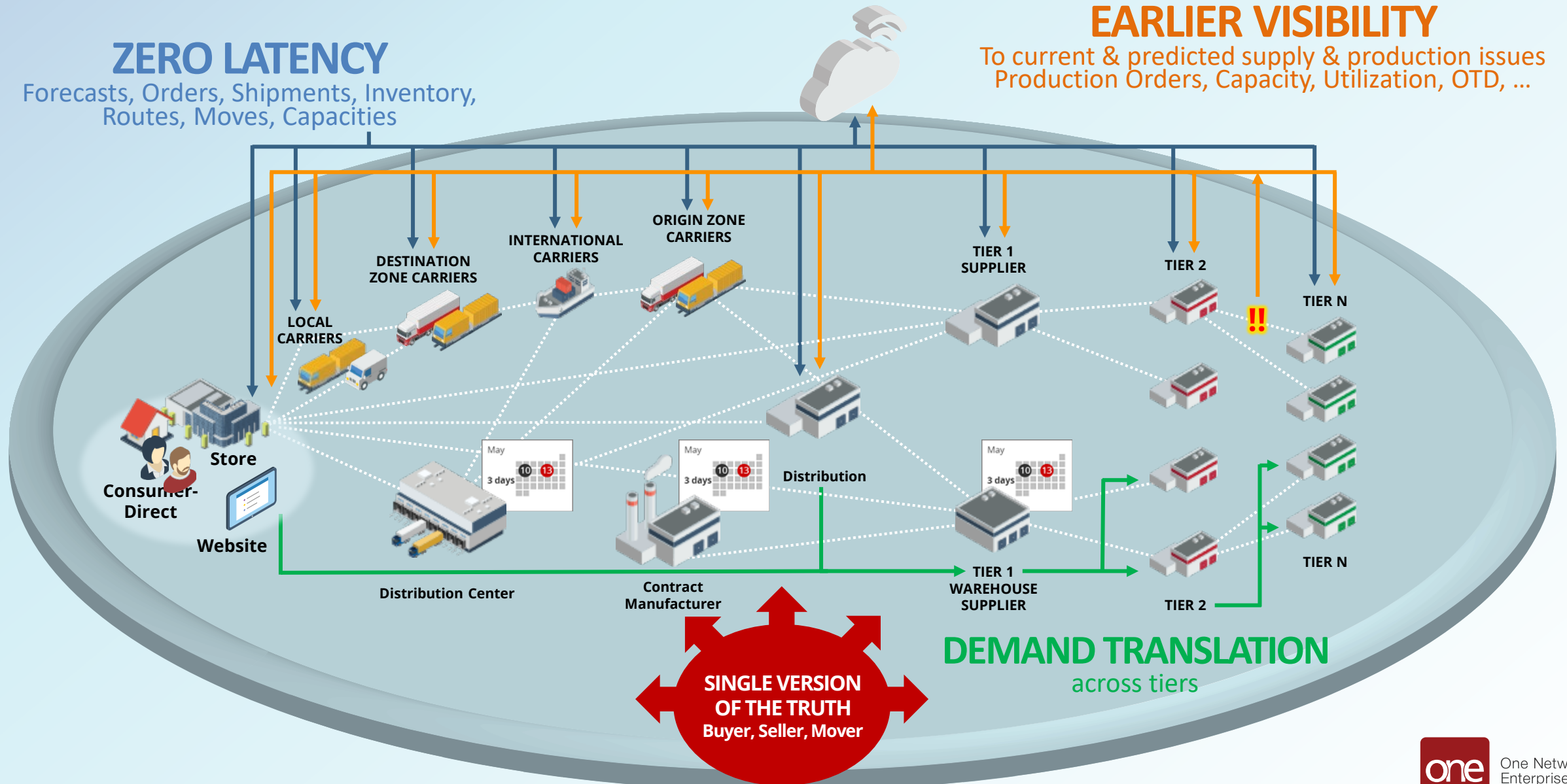
# Real Time Demand & Supply Visibility

## ZERO LATENCY

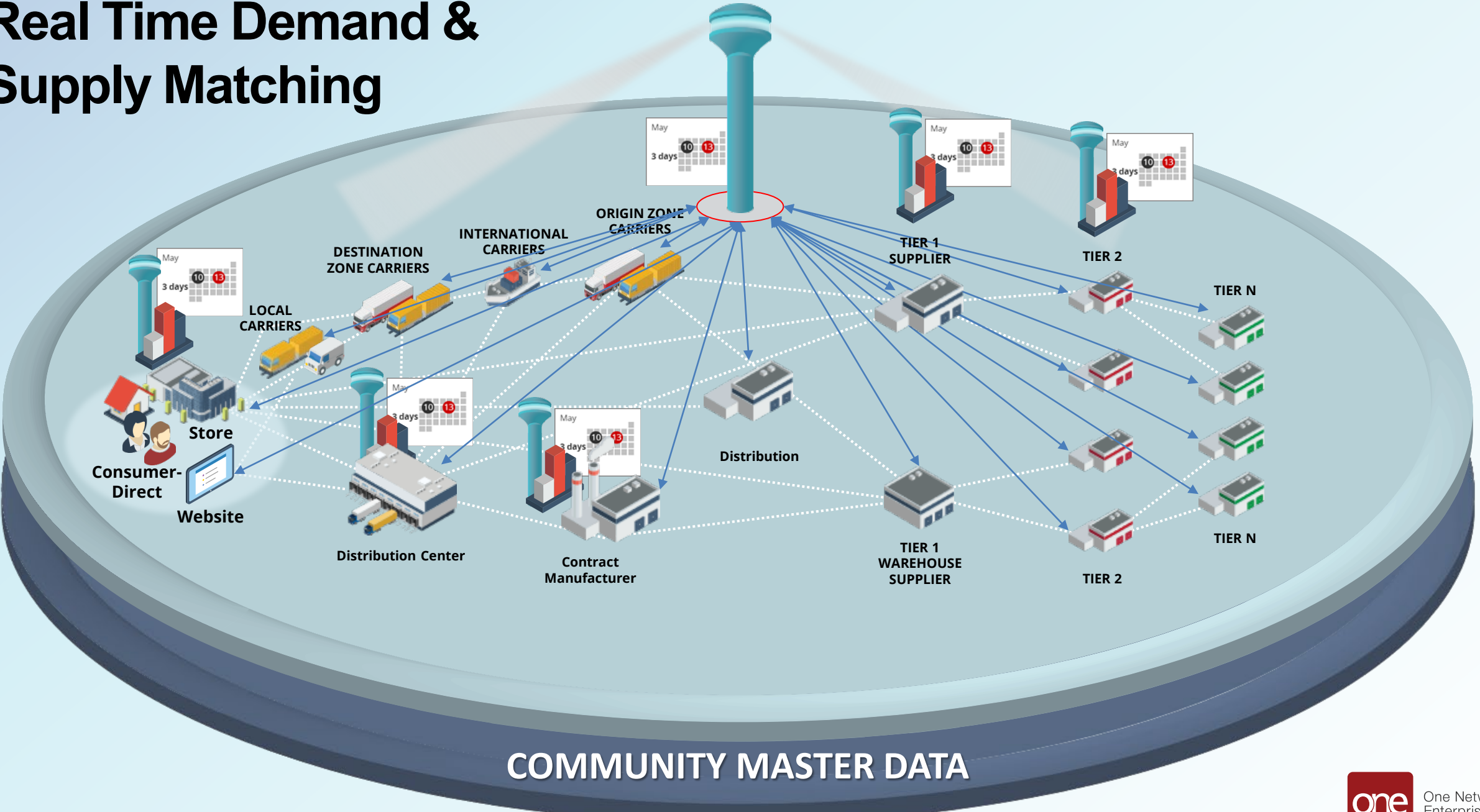
Forecasts, Orders, Shipments, Inventory, Routes, Moves, Capacities

## EARLIER VISIBILITY

To current & predicted supply & production issues  
Production Orders, Capacity, Utilization, OTD, ...



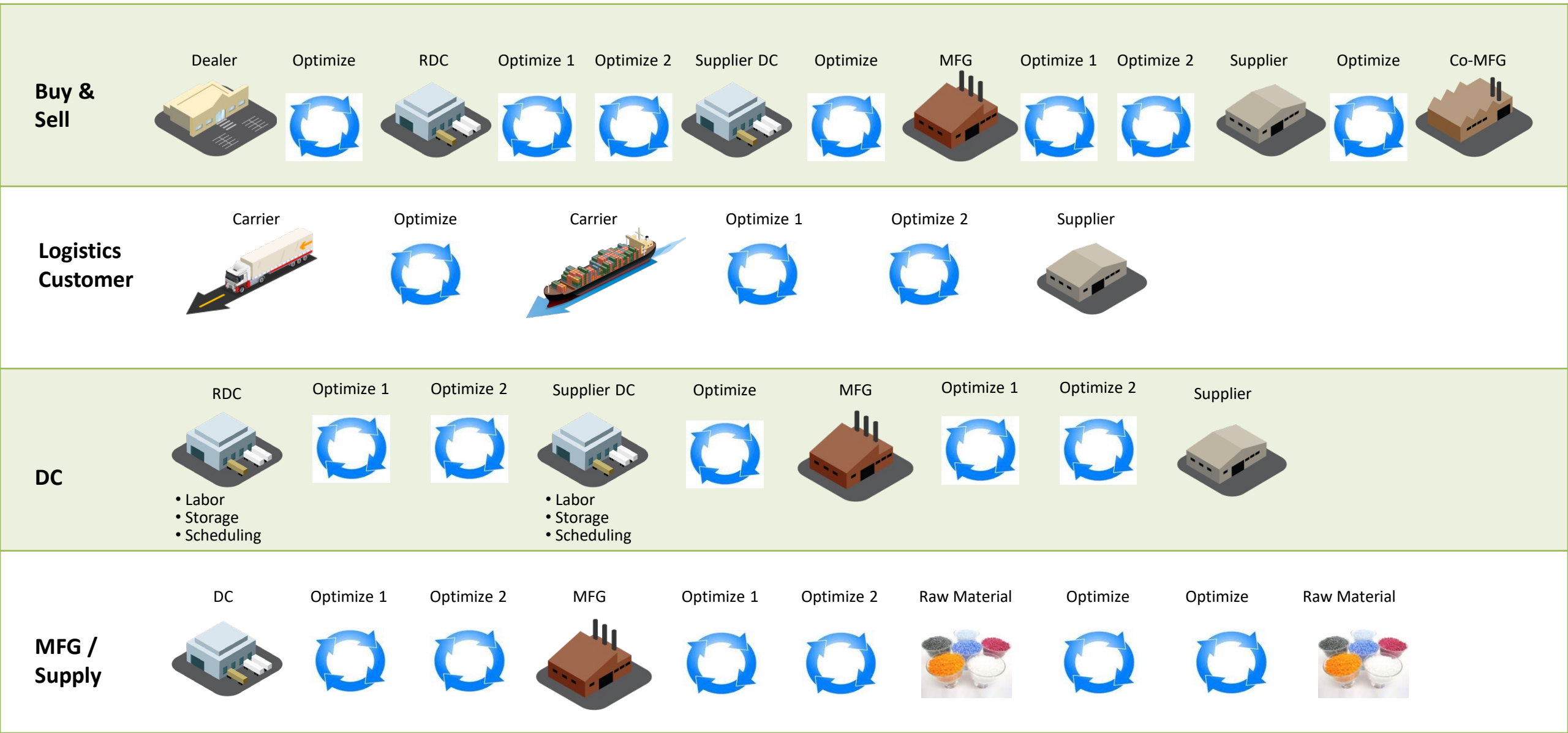
# Real Time Demand & Supply Matching



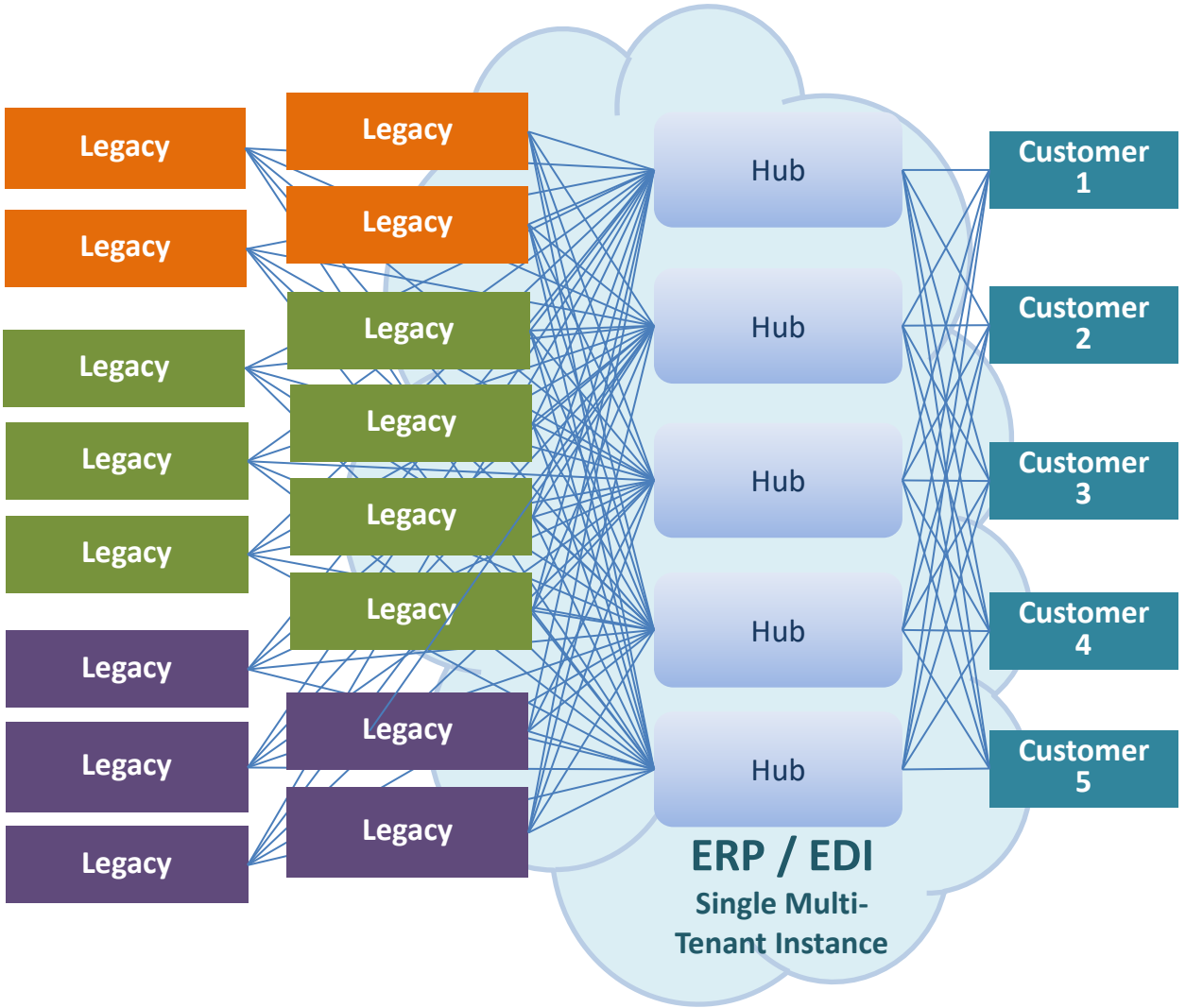
**COMMUNITY MASTER DATA**



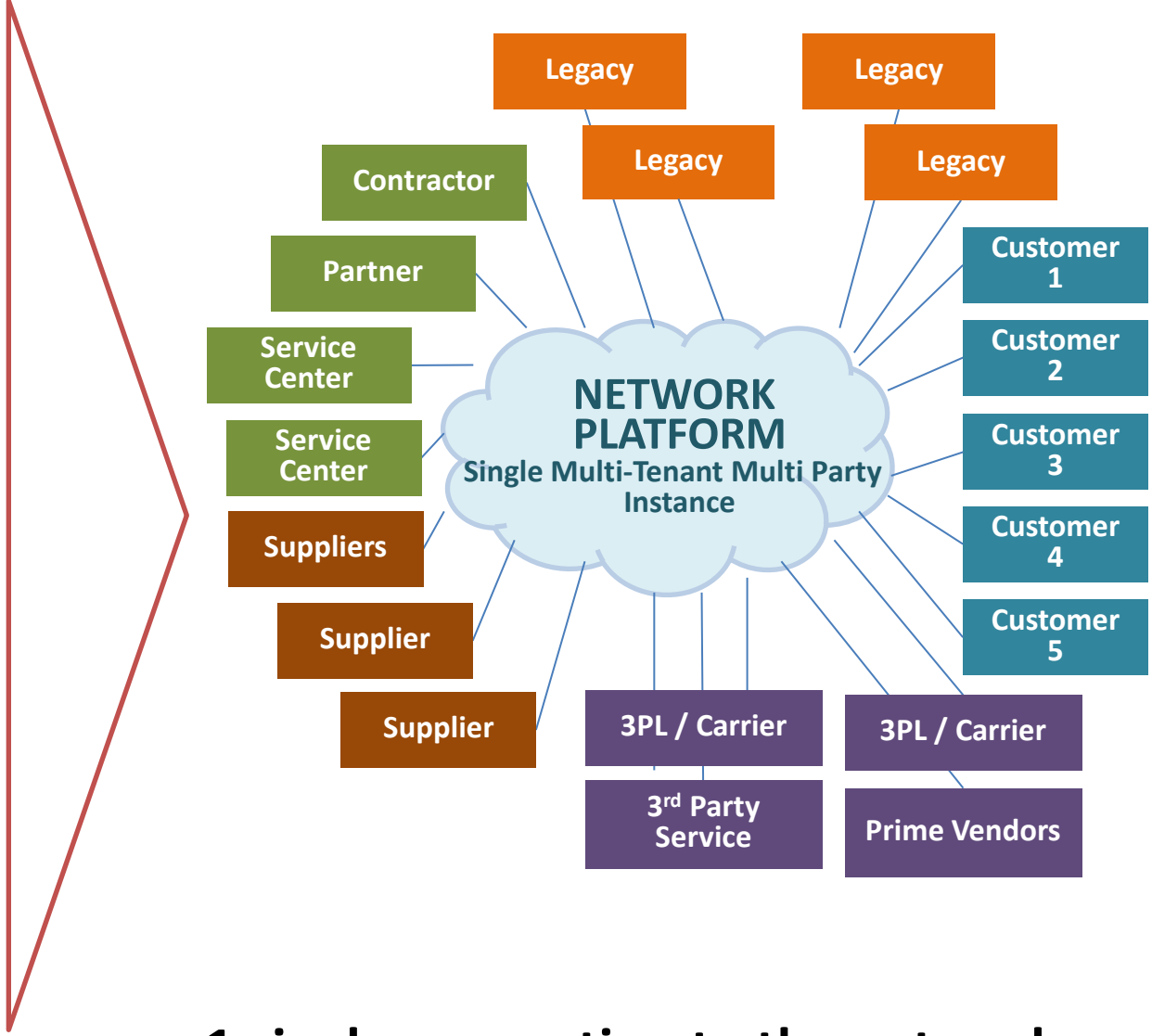
# Current Legacy Process – Local Optimization = Conflicting Priorities. 21 different tools minimum – Huge Variability and Bullwhip issues



# Each party connects once to a network



Many 1-to-1 point connections



1 single connection to the network



# Single Version of the Truth in Real Time

**Projected Inventory View**

Contract Mgmt Order Mgmt Transportation Warehouse Mgmt Inventory Replenishment Inventory Planning Demand Planning Production

Buyer SCA Dashboard PIV\_Item1@Site1

Filters (edit): [Site: isCmpASite1][Item: isCmpAltem1 - isCmpAltem1-Desc][Timeline: MIXED, 01/24/18 12:00 AM CST]

Jan 22 - Jan 28					Jan 29 - Feb 04					Feb 05 - Feb 11					Feb 12 - Feb 18				Feb 19 - Feb 25				Feb 26 - Mar 04				Mar 05 - Mar 11																															
Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun																			

**Order View from Buyer**

Contract Mgmt Order Mgmt Transportation Warehouse Mgmt Inventory Replenishment Inventory Planning Demand Planning Production

Buyer SCA Dashboard Update Order

Order #: 85825

State: In Fulfillment

Buying Org: isCompanyA Vendor: V1000 - isVendorA

Ship To: My Site isCmpASite1 Ship From: Vendor's Site isVenAFwdDC1

Ship To Address: 4055 Valley View, Suite# 400, Dallas, TX 75244, US

Request Delivery Date: 01/25/18 9:00 PM EST

Line No	Line Type	State	Item	Item Desc	Promise Item	Request Quantity	Promise Quantity
001	Product	In Fulfillment	isCmpAltem1 - isCmpAltem1-Desc	isCmpAltem1 - isCmpAltem1-Desc	isCmpAltem1 - isCmpAltem1-Desc	180	180
002	Product	In Fulfillment	isCmpAltem2 - isCmpAltem2-Desc	isCmpAltem2 - isCmpAltem2-Desc	isCmpAltem2 - isCmpAltem2-Desc	120	120

**Order View from Supplier**

Contract Mgmt Order Mgmt Transportation Warehouse Mgmt Inventory Replenishment Inventory Planning Demand Planning Production

Vendor SCA Dashboard Update Order

Order #: 85825

State: In Fulfillment

Buying Org: isCompanyA Vendor: V1000 - isVendorA

Ship To: Buyer's Site isCmpASite1 Ship From: My Site isVenAFwdDC1

Ship To Address: 4055 Valley View, Suite# 400, Dallas, TX 75244, US

Request Delivery Date: 01/25/18 9:00 PM EST

Line No	Line Type	State	Item	Item Desc	Promise Item	Request Quantity	Promise Quantity	Request Unit Price	Promise Unit Price	Agreed Unit Price
001	Product	In Fulfillment	isCmpAltem1 - isCmpAltem1-Desc	isCmpAltem1 - isCmpAltem1-Desc	isCmpAltem1 - isCmpAltem1-Desc	180	180	7.701	7.701	7.701
002	Product	In Fulfillment	isCmpAltem2 - isCmpAltem2-Desc	isCmpAltem2 - isCmpAltem2-Desc	isCmpAltem2 - isCmpAltem2-Desc	120	120	7.801	7.801	7.801

**Shipment View from Transportation Manager**

Dashboard Shipment - ONES-1340

Header Content Codes Other Info Schedule Carrier Tracking Documents

Weight: 906 Pound Compute Volume: 30.45 Cuft

Tariff Weight: Scale Weight: Over Weight: Shipped Qty1: 300 Each Compute No of Packages: Shipped Qty2: 2 Pallet Compute Packing List No:

Line No	Order No	Content	Shipped Qty	Requested Qty
1	85825/001/1/1	isCmpAltem1	180 Each/1 Pallet	180 Each/1 Pallet
2	85825/002/1/1	isCmpAltem2	120 Each/1 Pallet	120 Each/1 Pallet
Totals			300 Each/2 Pallet	300 Each/2 Pallet



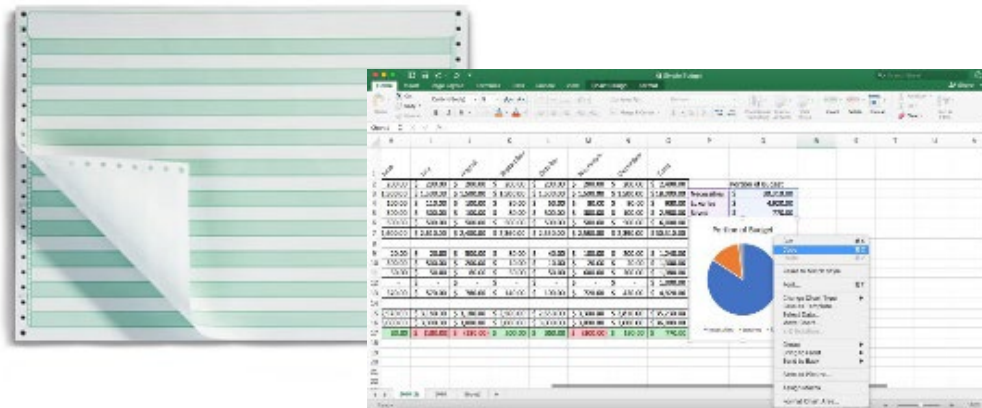
# Old Decision Support Planning

## “Low IQ” Planning & Decision Support Systems

- Batch planning →
- Stale data →
- Fake lead-times →
- Daily or weekly →
- Decision support →
- No Prescriptive Analytics →

# NEO Multiparty Real Time Planning/ Execution

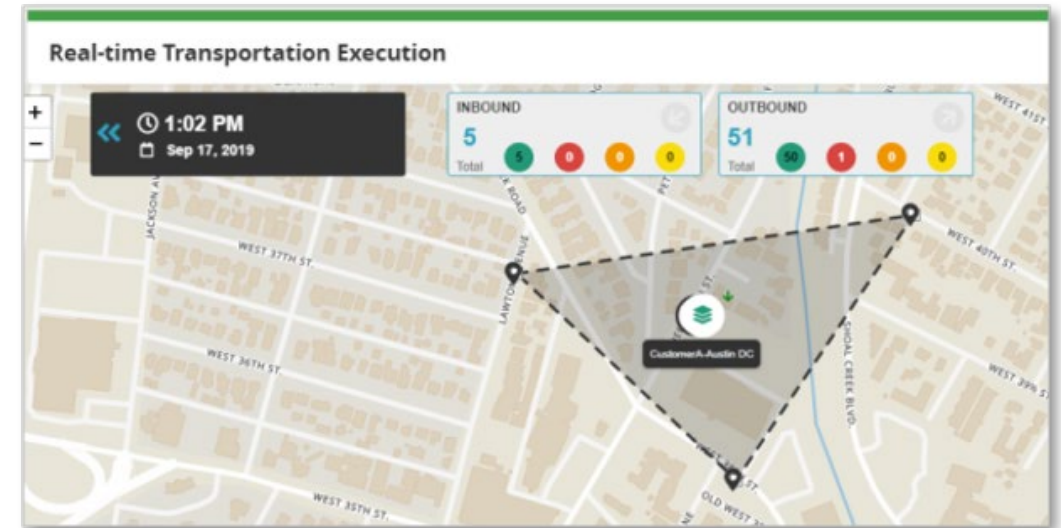
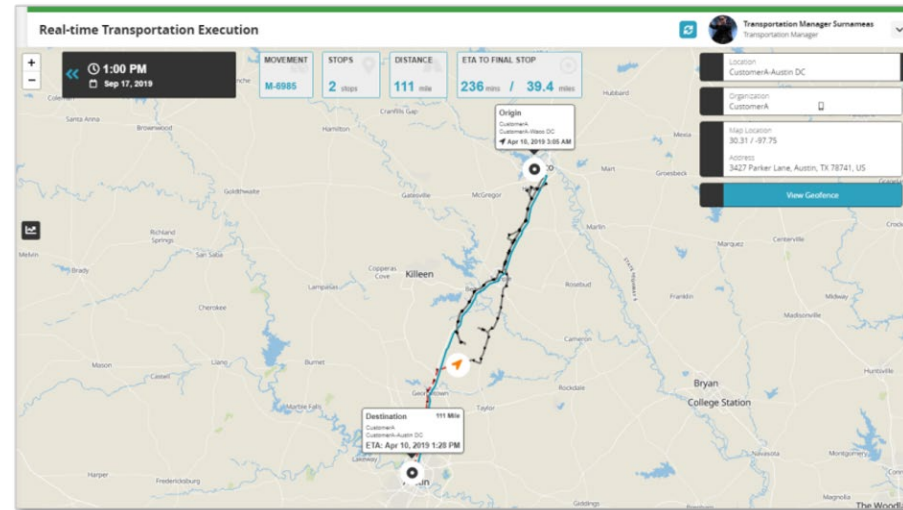
- Continuous planning with learning
- Live execution data including IOT
- Transactional lead-times
- Incremental and continuous
- Decision-making with execution
  - Machine learning
  - Artificial intelligence
  - Network-wide planning
  - Prescriptive analytics with execution
  - User interactive algorithms



# Shipments are Tracked in Real Time with Telematics

## ONE Network Telematics

- Telematics provides Updated ETA's on Inbound Shipments In Real Time.
- Platform is Integrated with ELD devices on vehicles or containers.
- Alerts on late deliveries trigger automatic appointment rescheduling.
- Visibility of international or domestic shipments is provided.



**Early Shipment Delay Identification Enables Remedial Action**

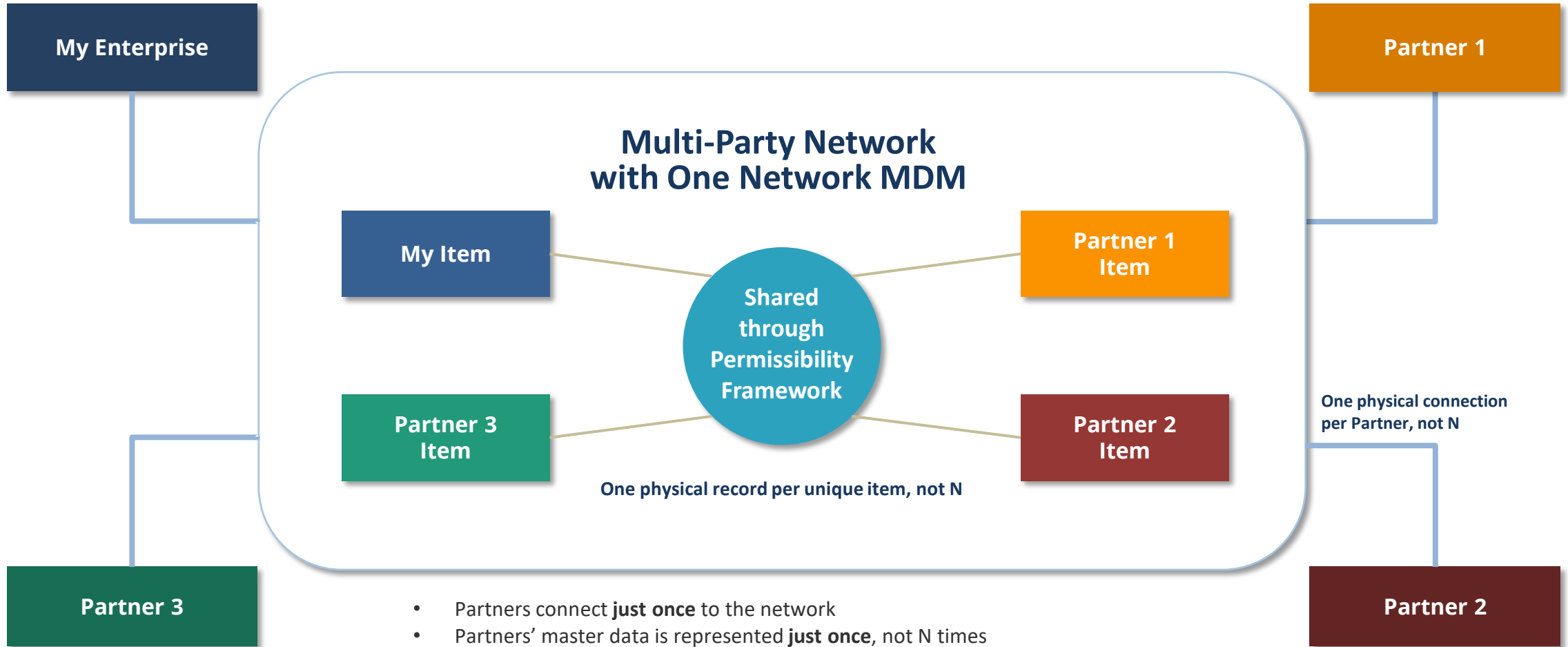


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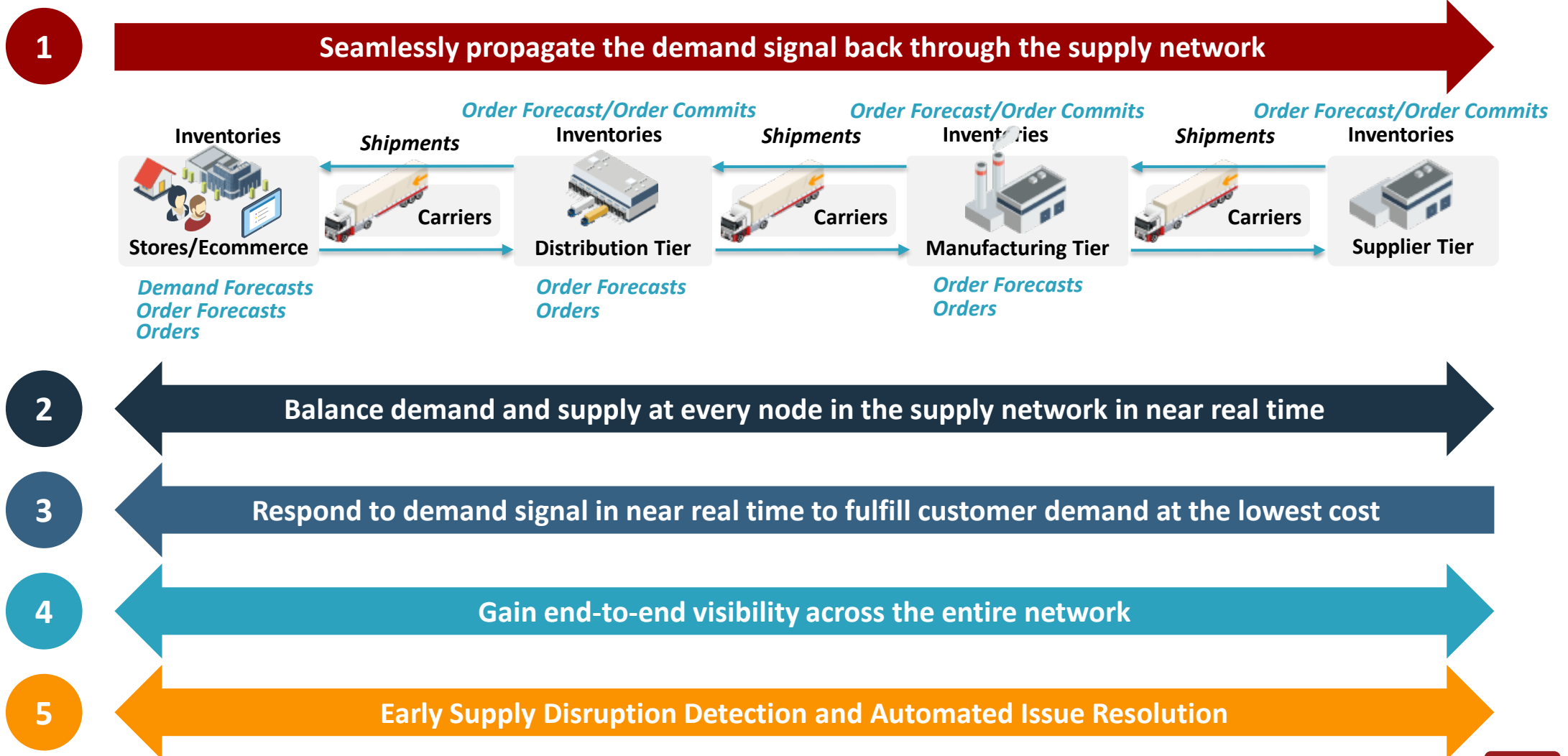
# Multi-Party Master Data Management

One connection per partner. N-way master data sharing and an exponential reduction in mapping combinations



- Partners connect **just once** to the network
- Partners' master data is represented **just once**, not N times
- Partners share data using permissibility framework
- Partners need only create their own **mappings** - they don't need copies of all attributes

# 5 Advantages of a Multi-Party Multi-Tier Network



# Problem Summary

Problems	High	Medium	Low
PTA.ProjectedCapacityShortage	9	0	4
PTA.ProjectedMaxInvViolation	0	13	0
PTA.ProjectedMinInvViolation	0	0	9
PTA.ProjectedStockout	6	3	4
PTA.TestProblem	0	13	0

# Problem List

The screenshot displays a list of 'Projected Stockout' problems. Each item includes a location map, a calendar view for the month of May, and a 'New Order' button. The first item is for 'isCmpASite3' in Washington, the second for 'isCmpASite3' in Washington, and the third for 'isCmpASite4' in Amarillo. Each item also shows 'Lost Sales' with WTD, MTD, and YTD percentages.

# Smart Prescriptions

# Workbench

The 'Workbench' provides a detailed view of a 'Projected Stockout' problem (ID: 371237). It includes an 'Inventory Forecast' chart showing demand over time. Below the chart, there are 'NEO Resolutions' such as 'Change Mode' and 'Break And Ship'. At the bottom, there are tables for 'Orders' and 'Shipments'.

Order Schedule ID	State	Quantity	Ship Date	Delivery Date
OS-1	Awaiting Buyer Approval	100	01/29/20	02/01/20
OS-2	New	700	01/29/20	01/31/20
OS-3	Open	1600	01/27/20	01/30/20

Shipment ID	State	Quantity	Ship Date	Delivery Date	Carrier
SL-1	Confirmed	800	01/27/20	01/30/20	Johnson Carrier
SL-2	In Transit	800	01/28/20	01/29/20	Johnson Carrier



# Intelligent Workflow Integration



**Computes ETA**

Carrier: M-974793  
 Carrier Name: J&B Trucking, Inc.  
 Ship Number: 2384  
 Location: 10:53 AM EST  
 30° 11' 1.96" N  
 97° 17' 51.66" W  
 Contact: Contact Driver: JOHN WILLIAMSON  
 Contact Supplier: Tom Knight

Planned Stops: Start → Step 2 → Step 4 → Step 5 → Step 6 → Step 7 → End

Current Location: 30° 11' 1.96" N, 97° 17' 51.66" W  
 Planned Time: +18 Minutes  
 Distance Remaining: 154 Miles

Vehicular Accident: Giddings, Texas USA  
 Reported: October 03, 2019 @ 09:10 AM  
 Location: 30° 11' 1.96" N, 97° 17' 51.66" W  
 Reported Time: +5 Minutes  
 Distance Remaining: 217 Miles

**Allocate More Door Capacity**

Distribution Site 3

Cost: ↑ \$1,000  
 Gain: ↑ \$3,000

NEO It!



**Reschedule Appointment**

Use options to resolve the issue

Help NEO out...

**Insufficient Door Capacity**

**Late Arrival**

**Assigns Low-cost carrier and Auto-schedules appt.**

**No Carrier Assigned and no Appt**

**Expedite Delivery Date Request**

Shipment Line: SL-2

Cost: ↑ \$500  
 Gain: ↑ \$3,500

Help NEO Out...

**Proposed Carrier**

CarrierA 80USD

NEO It!

**Change Mode**

1 Order To LTL

↑ \$1,000 ↑ \$3,000

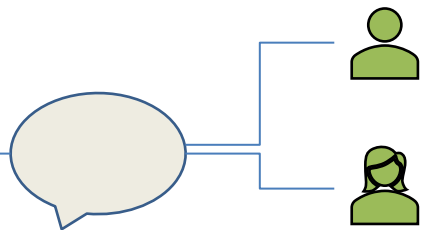
NEO It!



**"Normal" UI**

**Projected Out-of-Stock inside Order Lead Time**

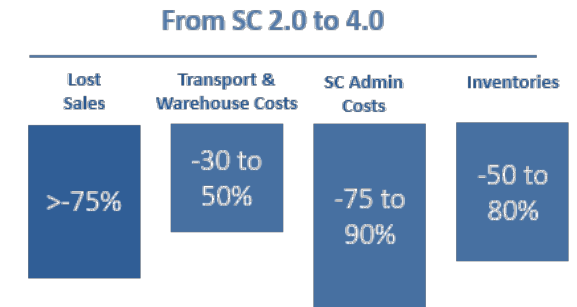
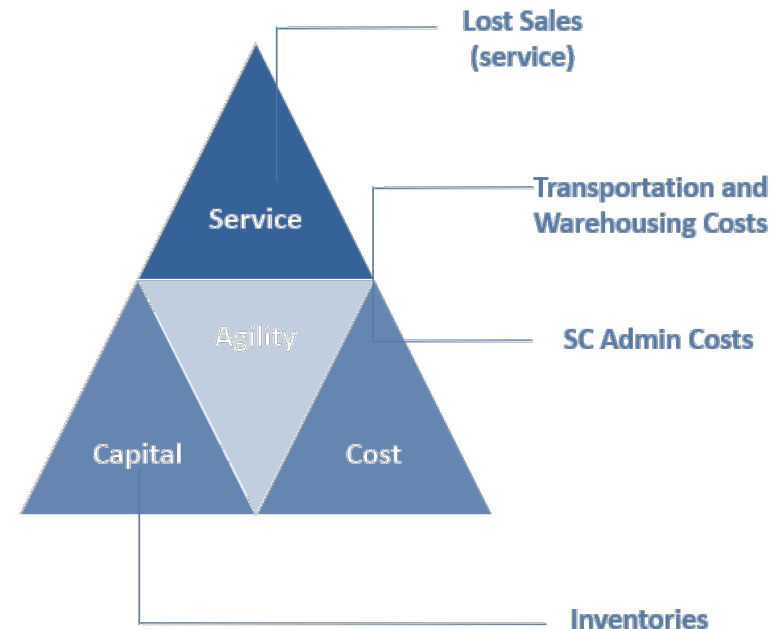
## Intelligent Dynamic Guided Workflows



# What is the Value of Solving the Problem?

## Supply Chain 4.0/AI/ML: Moving from basic 3.0 to advanced 4.0 results in:

- Up to **75%** reduction in lost sales
- Up to **30%** reduction in transportation and warehousing costs
- Up to **80%** reduction in supply chain admin costs
- Up to **75%** reduction in inventories



McKinsey  
& Company

# Partner Network Services

# Supplier Network Services

- General Services
- Master Data Management
- Forecast & Order Collaboration
- DC Demand & Inventory Visibility
- Supplier Scorecard & Performance Analytics
- Appointment Scheduling
- Real-Time Tracking + Optimized Rescheduling
- Contract Manufacturing
- Store Sales and Forecast
- Store Inventory Health



# Partner Network Services

## Carrier Network Services

- Contract, Tender & Spot Rate Collaboration
- Freight Invoice Processing
- Transportation Track & Trace
- Mobile App
- Appointment Scheduling
- On-Time Delivery & Compliance Scorecard
- Market Maker Participation

# Key Digital Supply Chain Network Capabilities

- **Full end-to-end visibility** of all projected supply supply demand match at all nodes globally
- **Full actionability** across all projected problems with enough time to address them
- Needs to be able to **process learning and execution in scale** – Millions of SKU  
Buffers optimized autonomously
- Exception based but with full **prescriptive resolutions** executed with a touch of a button
- **Dynamic day-in-the-life**
- **Self-adjusting supply chain** – Compute actual lead times and improve variability and adjust policies and safety stocks
- Must provide **value to all enterprises**
- Must be able to **embrace or replace** existing solutions





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