

SUPPLY CHAIN COMPLEXITY: WHY IT MATTERS AND HOW TO SOLVE

Nikhil Arora

March 29, 2018



CAPD Center for Advanced Process Decision-making

SCHNEIDER IS A TRANSPORTATION AND LOGISTICS LEADER WITH A BROAD PORTFOLIO OF SERVICES



APPROXIMATELY
10,700
TRACTORS



APPROXIMATELY
56,000
TRAILERS & CONTAINERS



APPROXIMATELY
2,800
OWNER-OPERATOR
BUSINESS
RELATIONSHIPS



APPROXIMATELY
26,000
QUALIFIED
CARRIER
RELATIONSHIPS



APPROXIMATELY
19,600
ASSOCIATES
WORLDWIDE

OPERATIONS
IN U.S.
1935



OPERATIONS
IN CANADA
1989



OPERATIONS
IN MEXICO
1992



OPERATIONS
IN CHINA
2005



PROVEN FOR MILES



**SAFETY FIRST
AND ALWAYS**

THAT'S
WHY WE
HAVE:

5,383
1,271 CURRENT

DRIVERS WHO'VE DRIVEN OVER
ONE MILLION CONSECUTIVE
MILES SAFELY

EVERY DAY

MOVE OVER

9 3 0 0 0 0 0

**FREIGHT MILES
LOADED PER DAY**

(Truckload, Intermodal, Brokerage)

AND

SCHNEIDER LOADS CIRCLE THE GLOBE
APPROXIMATELY

375
TIMES PER DAY



AND

LOGISTICS MANAGES
APPROXIMATELY

\$2.1 BILLION

IN THIRD-PARTY FREIGHT PER YEAR

WHICH COULDN'T BE DONE WITHOUT

APPROXIMATELY

19,600

ASSOCIATES
WORLDWIDE

APPROXIMATELY

10,700

TRACTORS

APPROXIMATELY

38,000

COMPANY-OWNED
TRAILERS

APPROXIMATELY

18,000

COMPANY-OWNED
INTERMODAL
CONTAINERS

APPROXIMATELY

15,700

COMPANY-OWNED
CONTAINER
CHASSIS

APPROXIMATELY

26,000

QUALIFIED
CARRIER
RELATIONSHIPS

APPROXIMATELY

2,800

OWNER-OPERATOR
BUSINESS
RELATIONSHIPS

OVER

7 MILLION

SQUARE FEET
WAREHOUSE/TRANSLOAD/
CROSS-DOCK SPACE



YEARS IN
BUSINESS:

80+
est. 1935



COMPANY DRIVERS
HIRED WITH MILITARY EXPERIENCE:

22%



ANNUAL
REVENUES:

\$4.4 BILLION

TODAY'S TALK

Intent

- Introduce Schneider and Engineering @ Schneider
- Demonstrate how Schneider Engineering solves supply chain complexity – and you can too!



<https://www.swtc.edu/academics/programs/business/supply-chain-management-td>

Supply Chain

A supply chain is a network between a company and its suppliers to produce and distribute a specific product, and the supply chain represents the steps it takes to get the product or service to the customer.

<https://www.investopedia.com/terms/s/supplychain.asp#ixzz5A2qPaiV9>

A supply chain is a system of organizations, people, technologies, activities, information and resources involved in moving materials, products and services all the way through the manufacturing process, from the original supplier of materials supplier to the end customer.

<http://smallbusiness.chron.com/apics-basics-supply-chain-management-41462.html>

SCHNEIDER ENGINEERING DELIVERS *CUSTOM, INNOVATIVE, IMPLEMENTABLE* OPTIMIZATION SOLUTIONS

Our Team

Over 30 Engineers
Proven Methodology



Industry Experience & Process

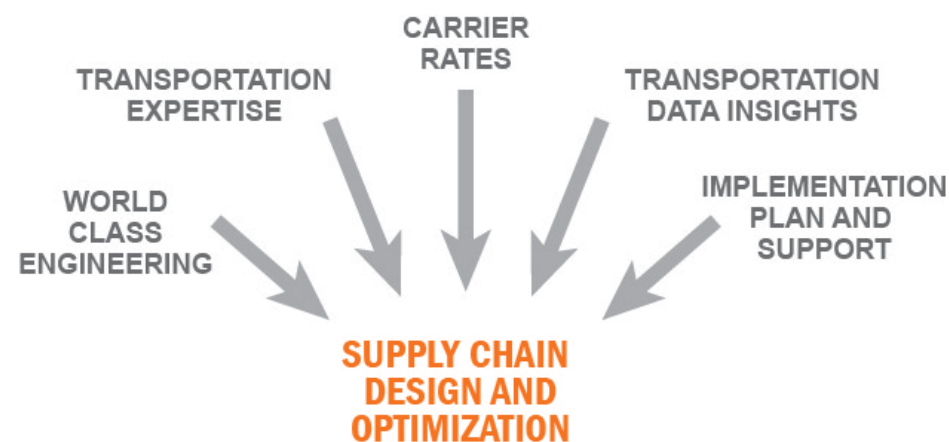
Over 100 Network Designs
2006 INFORMS Winner
20+ Modeling & Simulation Tools



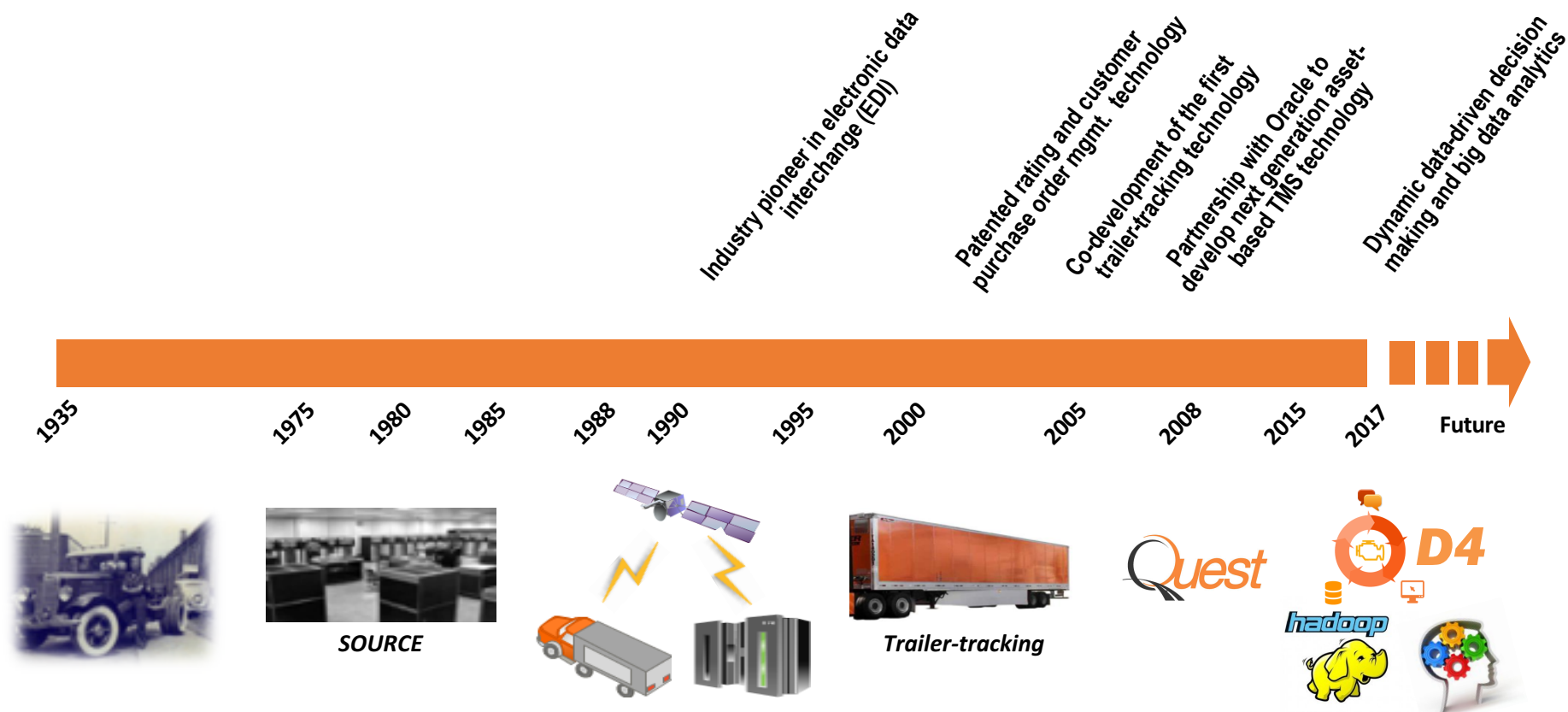
Proven Results

Over \$100M in Savings
Improved Service Levels

DEEP TRANSPORTATION KNOWLEDGE WITH ACCESS TO ROBUST MARKET RATES



WE HAVE A RICH HISTORY OF DECISION ENGINEERING AT SCHNEIDER



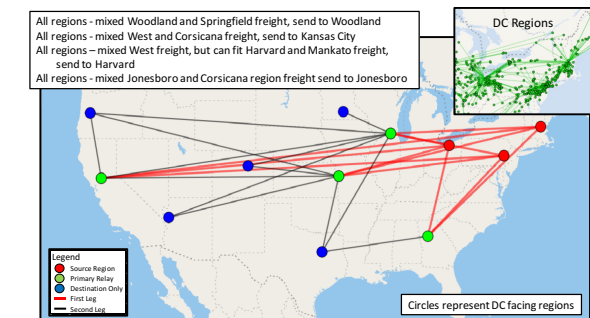
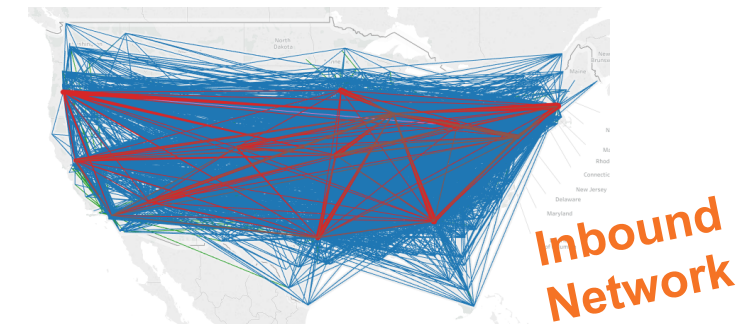
SUPPLY CHAIN COMPLEXITY COSTS YOU MONEY

- AT Kearney (2007) estimates 3-5% point or \$32B EBIT impact due to supply chain complexity
- Gartner has identified supply chain complexity as top concern of CEOs and CSCO
 - 63% supply chain leaders (2016) report increasing supply chain complexity as highest risk to business continuity
 - SC Network complexity is # 4 in list of obstacles to achieving SC goals (2016)
 - Complexity is the top threat identified by high tech company CSCO's (2016)
 - Operational efficiency identified as top 3 priority in 2015 survey

WHAT CAUSES SUPPLY CHAIN COMPLEXITY?

- Growth in new countries, regions, markets
 - Cross-border shipments, long lead time, storage & distribution
- Focus on customer needs and service
 - Single Channel → Multi Channel → Omni Channel retail; white glove delivery
 - Legacy systems competing with Amazon.com
- SKU proliferation: 20% SKUs cost 80% to manage
 - Smaller orders, higher inventory, reduced productivity
- Rapid growth: M&A, new product launches, etc.

Visualizing Complexity

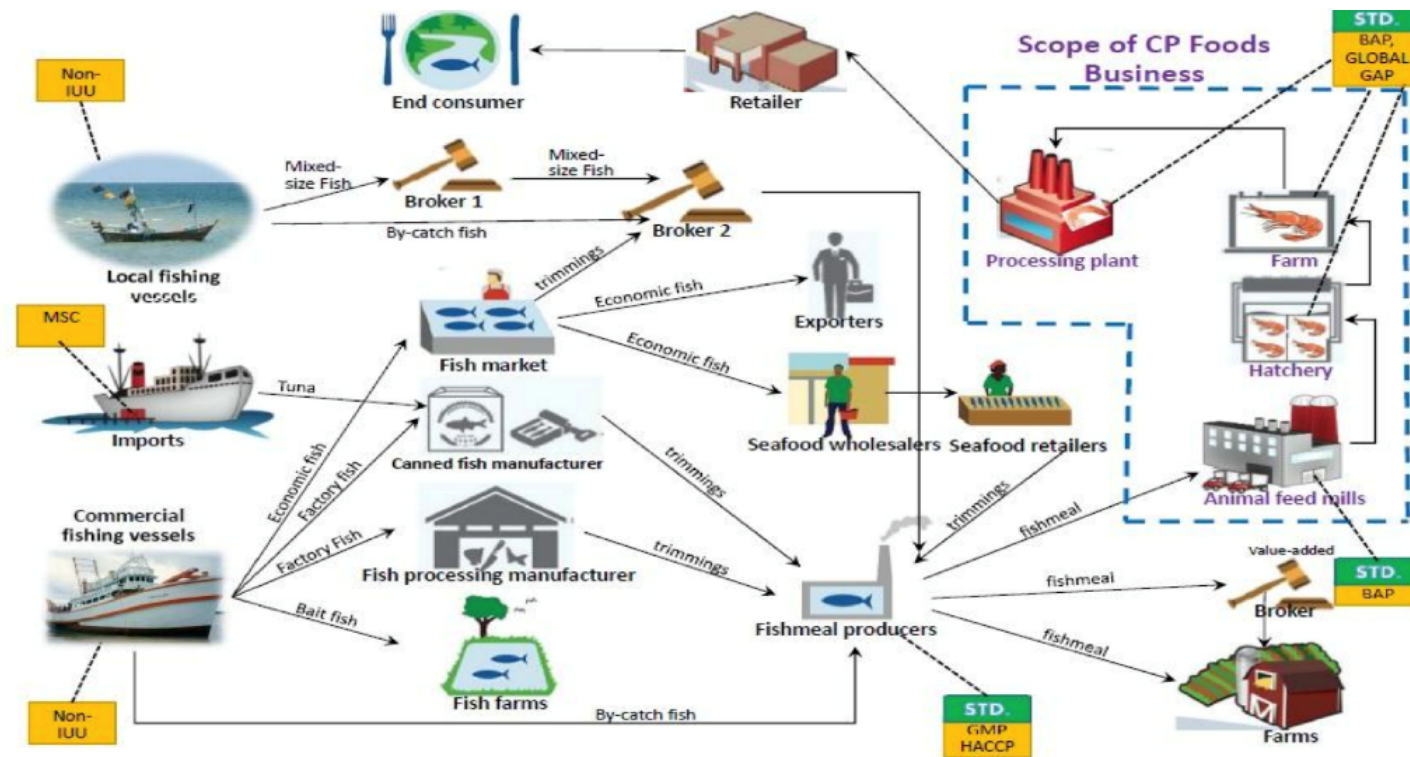


WHAT DO COMPLEX SUPPLY CHAINS LOOK LIKE?



Ecommerce Foundation, https://www.ecommercewiki.org/Slide:20151019-Supply_Chain_omni_channel

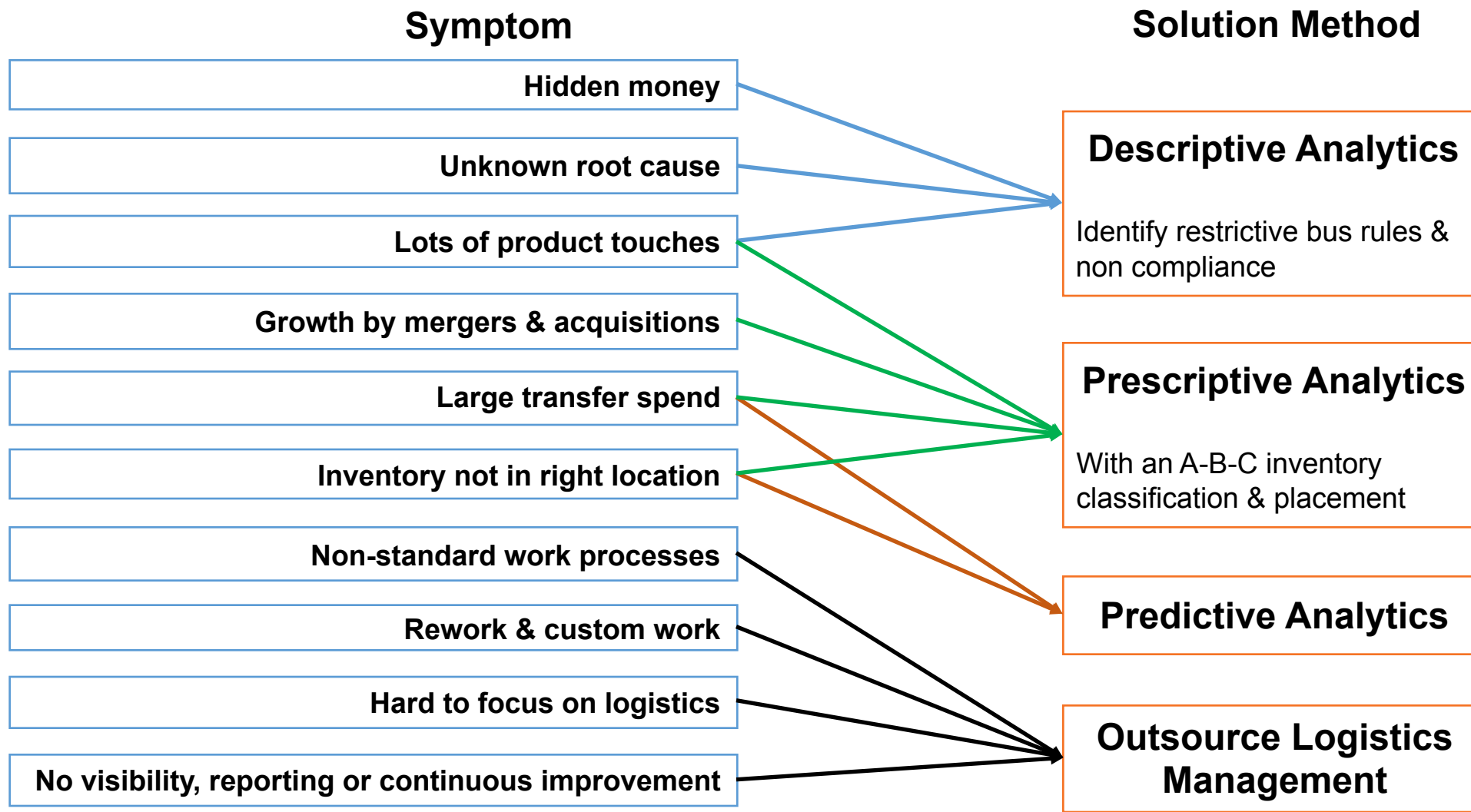
WHAT DO COMPLEX SUPPLY CHAINS LOOK LIKE?



Source: Sal Forest Report submitted to Oxfam (March 2014); CPF study

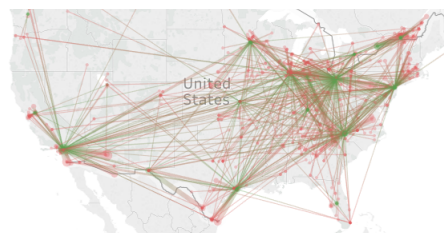
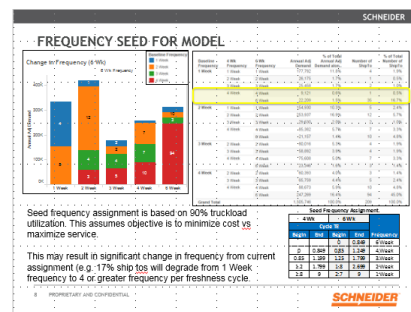
<https://www.undercurrentnews.com/2014/09/25/cp-foods-plans-to-expand-iff-certified-tuna-meal-model-with-kingfisher-to-other-plants/>

SYMPTOMS OF SUPPLY CHAIN COMPLEXITY AND HOW TO SOLVE

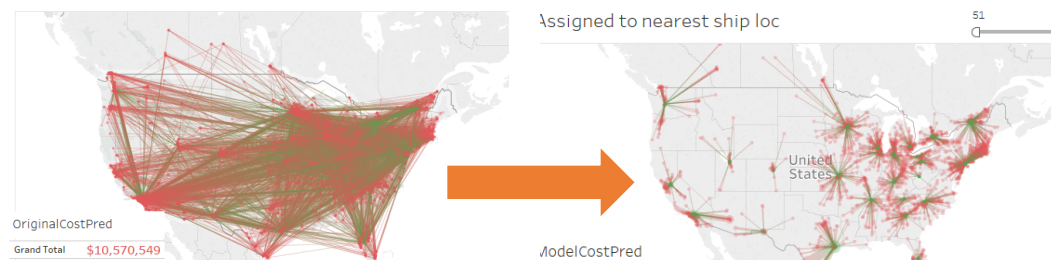


SOLUTION CUSTOMIZED FOR EACH CUSTOMER

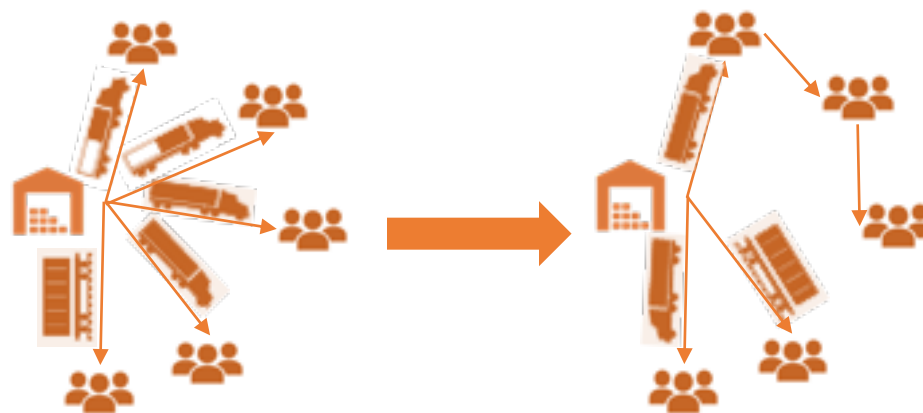
Descriptive Analytics



Prescriptive Analytics

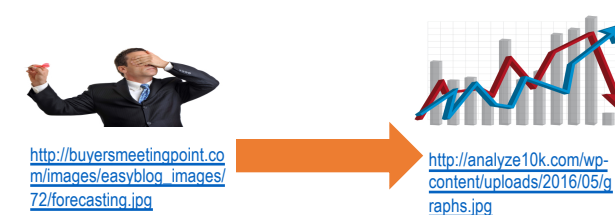


Strategic supply chain design: 60-80% of supply chain cost impacted!

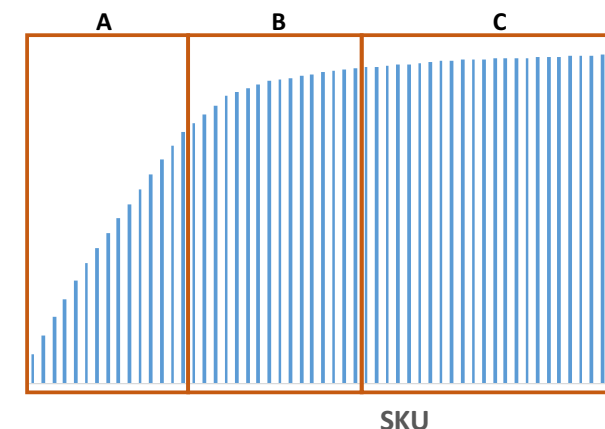


Tactical transportation design: 10-20% of supply chain cost impacted!

Predictive Analytics

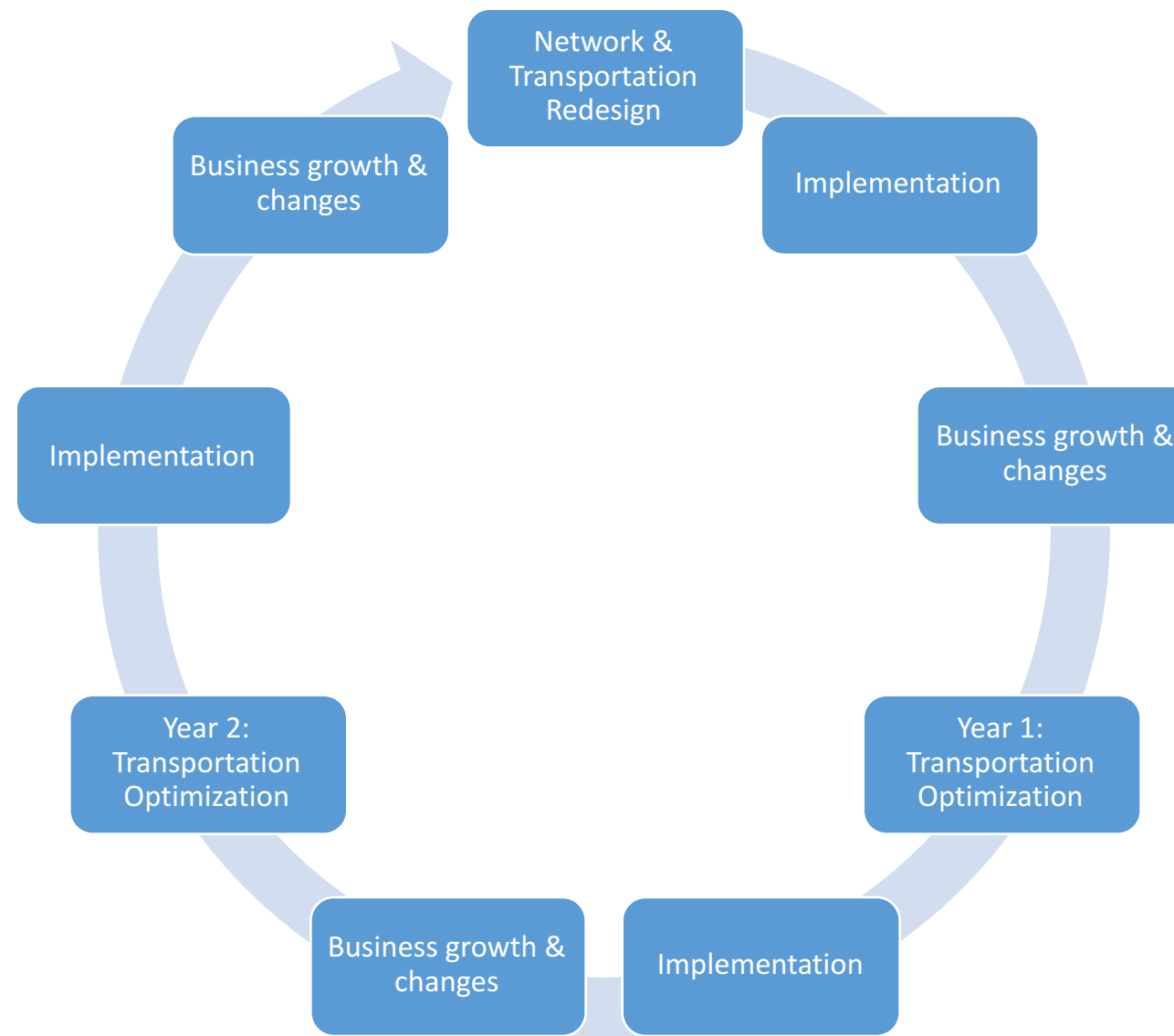


Forecasting



SKU Rationalization

- Insights & good practices
- Business case
- Optimization opportunities



SUPPLY CHAIN BASELINE TO DISCOVER HOW TO SIMPLIFY A COMPLEX SUPPLY CHAIN

Background

- Complex inbound transportation network that had grown inefficient over time
- 1000s of SKUs, multiple cross docking, long transit times, inefficient use of fleet, and operational silos

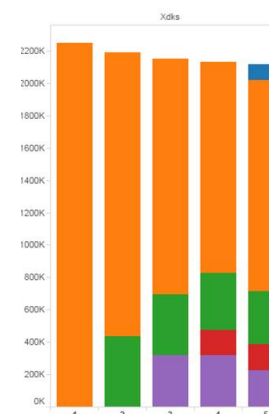
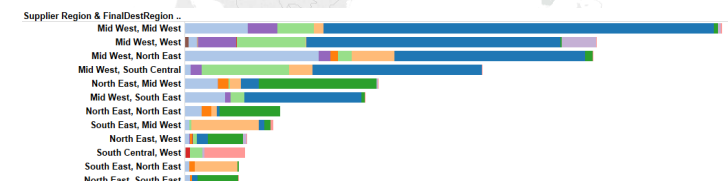
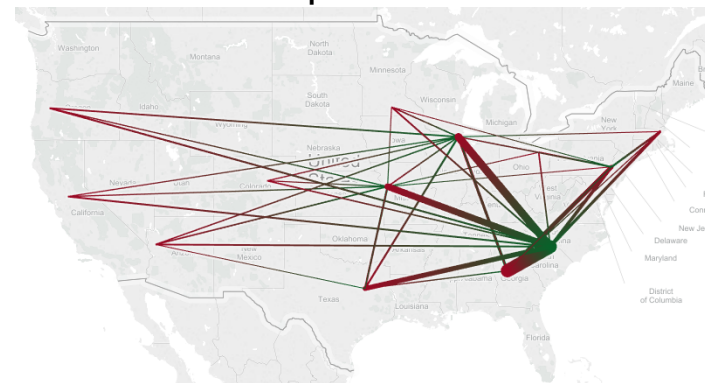
Solution

- “As-is” view of network to identify quick win opportunities
- Recommended how to reduce double and triple handling of products by optimizing cross dock usage and supplier assignment
- Identified opportunities to improve supplier compliance

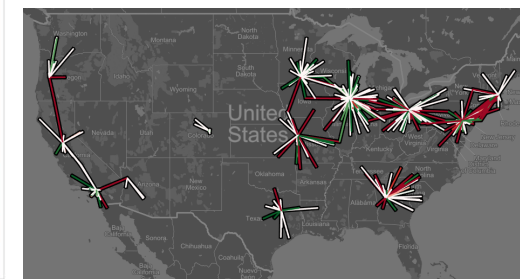
Value

- Over \$1M reduction in transportation cost
- Customer well positioned for growth

Network example



Flow Optimization & Improved Fleet Deployment



CREATE REPLENISHMENT SCHEDULES AND ROUTES TO *LEVEL LOAD DISTRIBUTION AND POSITION CUSTOMER FOR GROWTH*

Background

- Brewing company changed region footprint by mergers and organic growth
- Uneven shipment volumes across week
- 60% of wholesalers shipped less than 75% truckloads in freshness cycle
- Peak months responsible for 45% of annual volume

Solution

- Create outbound shipping strategy to balance weekly volume and maximize consolidation opportunity
- Improve utilization by recommending holding freight to minimum of full truck utilization or met freshness cycle

Value

- 4-7% reduction in transportation cost and 10% increase in truck utilization
- Operational efficiencies by better week over week balance

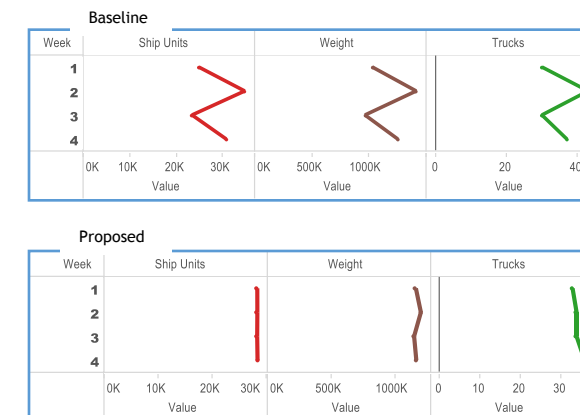


Figure 1: Week over week shipping balance improvement

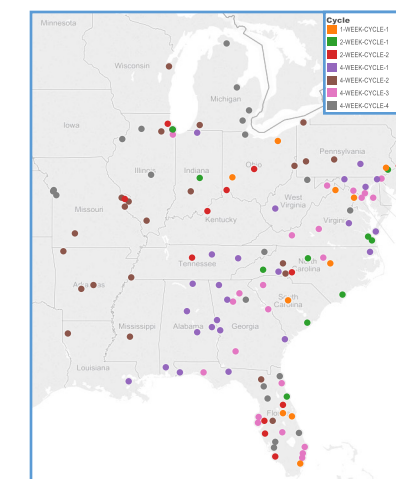


Figure 2: Distribution network shipping configuration

NEW NORMAL: WE ARE EXPERIENCING IT ALREADY.

