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Digital Demand Management:

Taming the Bullwhip Effect

Rich Sherman, Senior Fellow,
Supply Chain Centre of Excellence
Tata Consultancy Services

IT Services
Business Solutions
Consulting

Agenda

- The Problem: Traditional Supply Chain View is Linear and Disconnected
- Functional Silo Management Discourages Collaboration
- The Digital Revolution: Connected Commerce changes the game… and the playing field
- Companies Must Transform from Linear Thinking to Ecosystems Thinking
- Operating in the Digital Market Ecosystem Requires Reimagining a New Demand-Driven Structure, Framework, and Digital Enterprise Architecture

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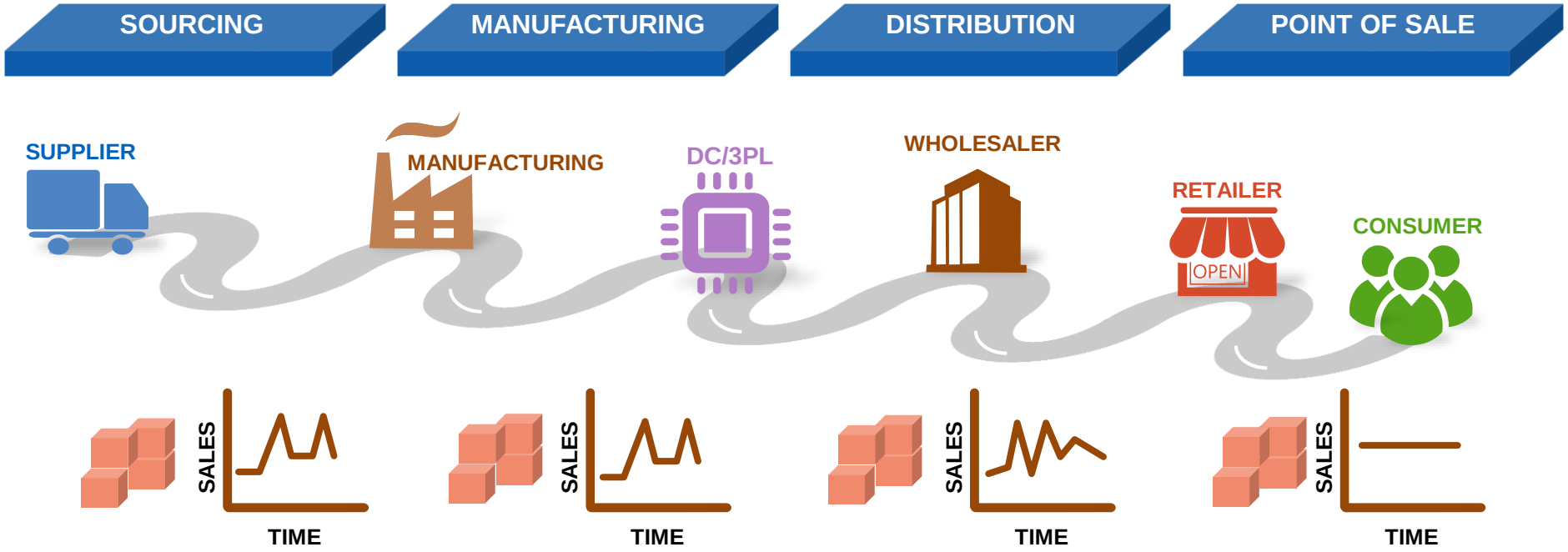
Traditional Supply Chain Thinking Creates Inefficiencies Across the Supply Chain



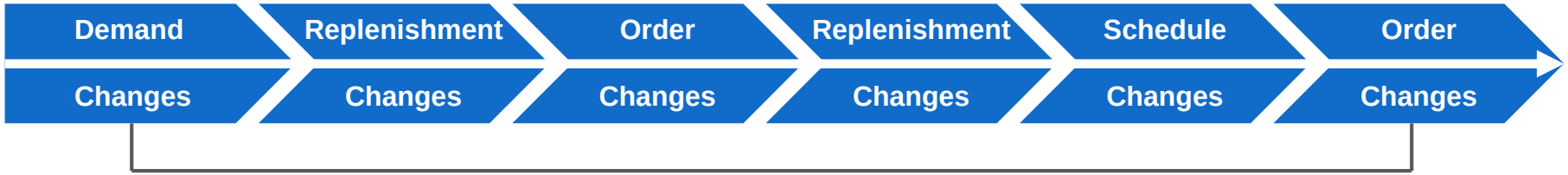
- Forecast cycles plan weekly or monthly demand at various aggregated levels
- Sales & Operations Planning processes don't address SKU by location accuracy

Planners are making daily $million decisions on raw materials, production, inventory, and deployment using custom spreadsheets

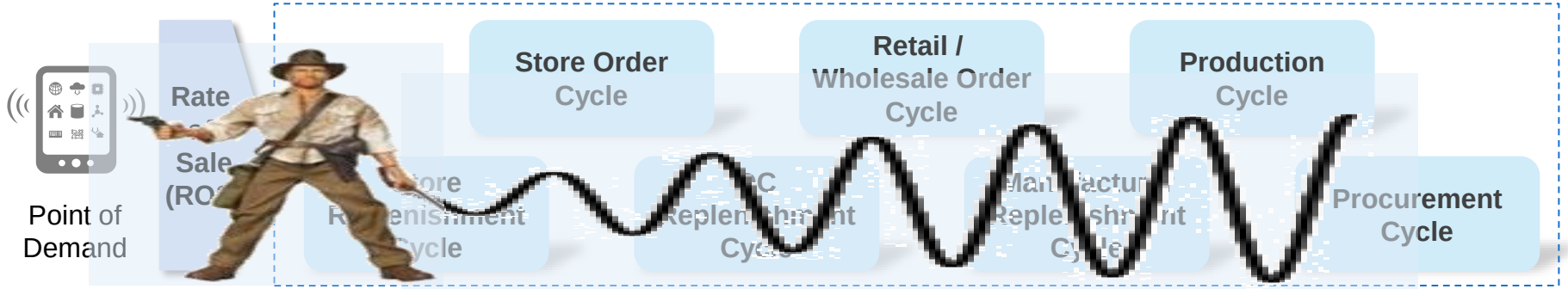
The Problem: Linear vs Ecosystems Thinking & Different Cycle Times

Linear information flows force linear decision-making adding unnecessary time and demand signal amplification to operational response...

Supply networks must be designed from the customer back



Operational Response Time



New digital sources and more abundant data enable customer based supply chain design and operations management using "science" to improve planning and execution accuracy and response!

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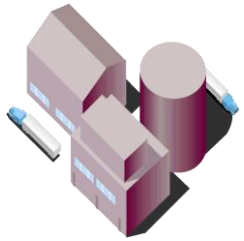
The Traditional "Who to Blame?": Functional Silos


Corporate Management


Human Resources


RM/PM Suppliers


Research & Developme


Engineering


Finance/Treasur


Accounting/ Administration


Manufacturing


Procurement/Mat'ls Mgmt


Market Research


Information Technology


Logistics/Customer Svc.

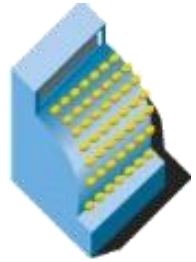

Production Scheduling


Field Sales


Product Marketing

Shareholders


Consumers


Channel Partners

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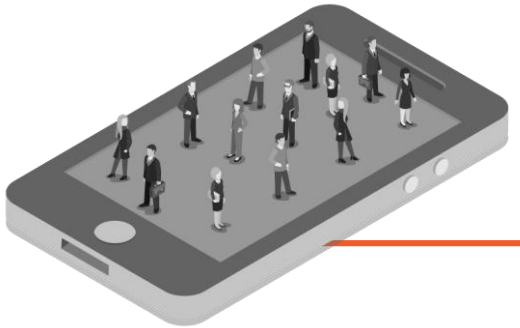
The Challenge of the Digital Supply Chain: Silo Management

"The consumer is already thinking in an omnichannel way, and it really is the corporations lagging behind," said Ye Jin, a strategist for a major retailer.

"A lot of our clients have siloed their ecommerce teams," said Ryan Urban, CEO of Bounce Exchange.

Omnichannel starts with a management commitment to eliminating silos...

In practice, eliminating silos is difficult. "There are a lot of heritage systems in place," Jin said. "In order to really deliver an omnichannel experience for a customer, whether it's B2B [business-to-business] or B2C [business-to-consumer], **you need to update the whole infrastructure."**



Source: Omnichannel Trends 2015: Mobile is the New Retail Hub, eMarketer, December, 2014

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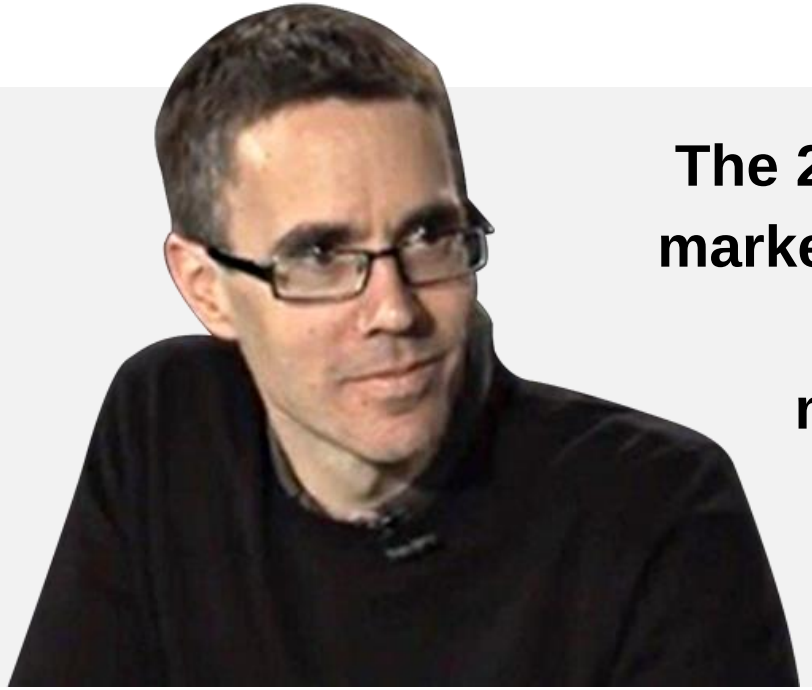
The Market is Changing from eCommerce to Connected Commerce



The 20th Century was about dozens of markets of millions of consumers. The 21st Century is about millions of markets of dozens of consumers!

- Joe Kraus, dotcom pioneer
Google Ventures

We are entering a fourth wave of change, a digital wave caused by the progress of the information age into the Connected Age!

- Rich Sherman
Supply Chain Transformation (Wiley, 2012)

Digital Revolution… Smart Digital Supply Network of the Future

Digitalized operations are designed to synchronize the flow of goods to the point of demand as part of a digital market ecosystem

The Industrial Internet (internet of everything) provides real time data, analytics, and collaboration to support new business models for omnichannel digital connected commerce!

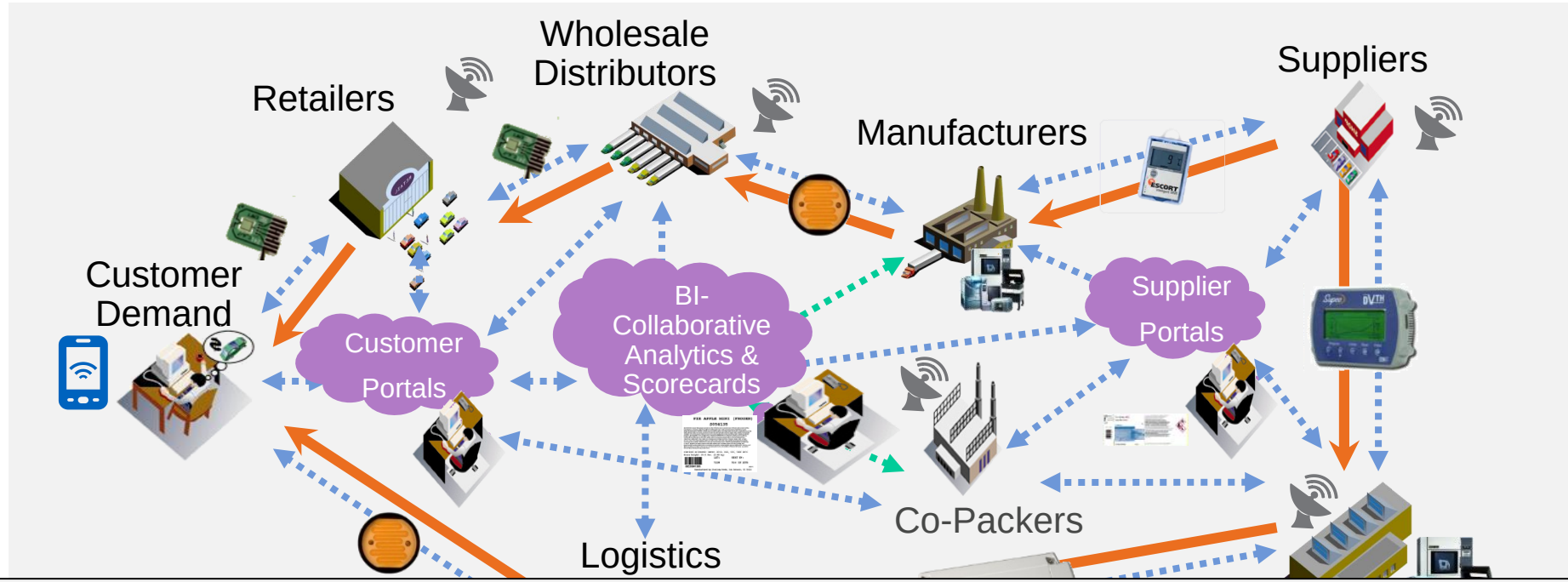
Digitalization is Adopting New Technologies to Compete

IOT & Mobile Devices

Cloud & Pervasive Computing

Big Data Analytics, AI & Robotics

Social Media



Companies Must Develop a Digital Strategy from Consumption to Source to Identify Master Data Origin and Change Points to Ensure Timely, Accurate Digital Data Collection & Communication Across the Network

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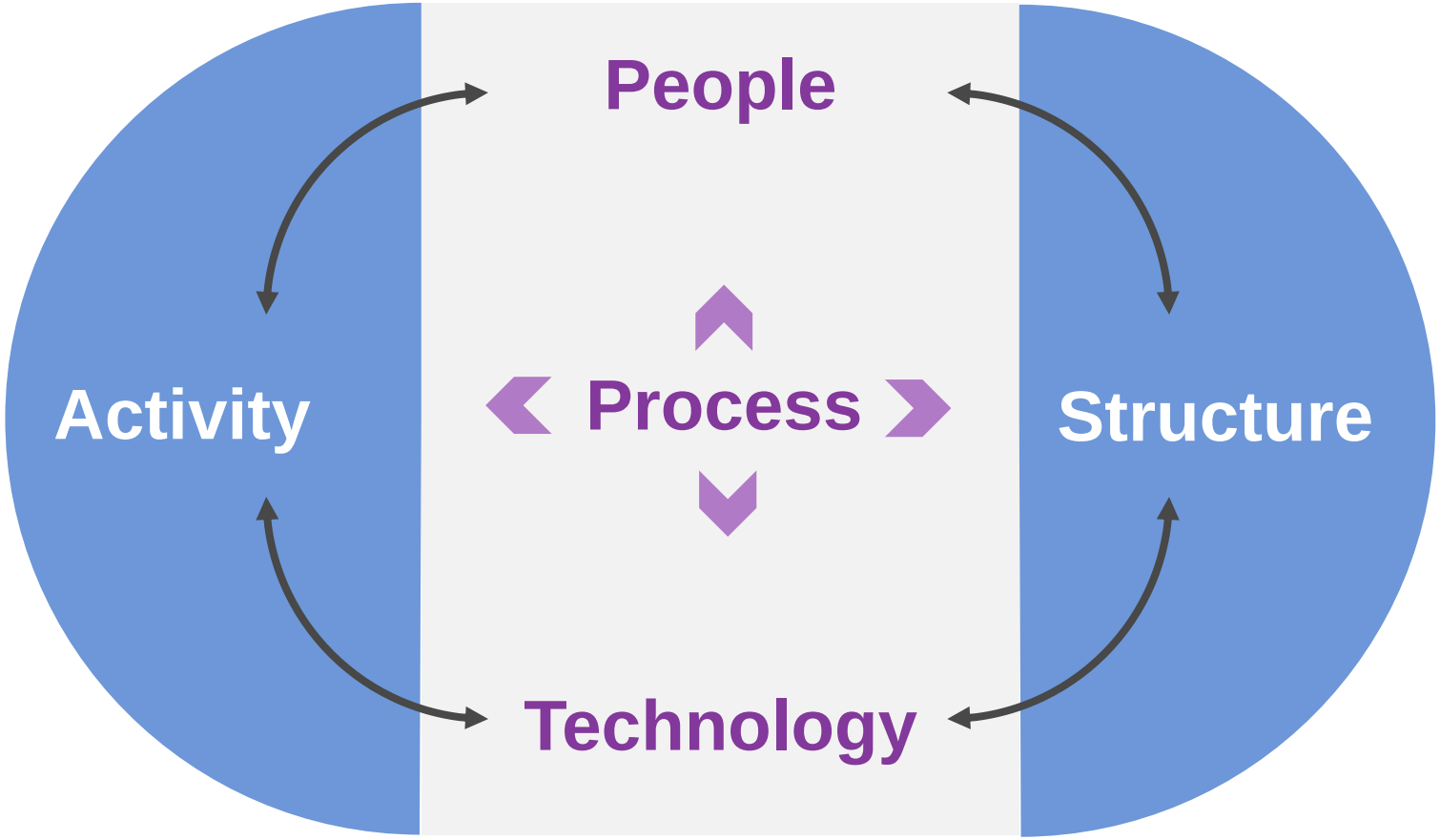
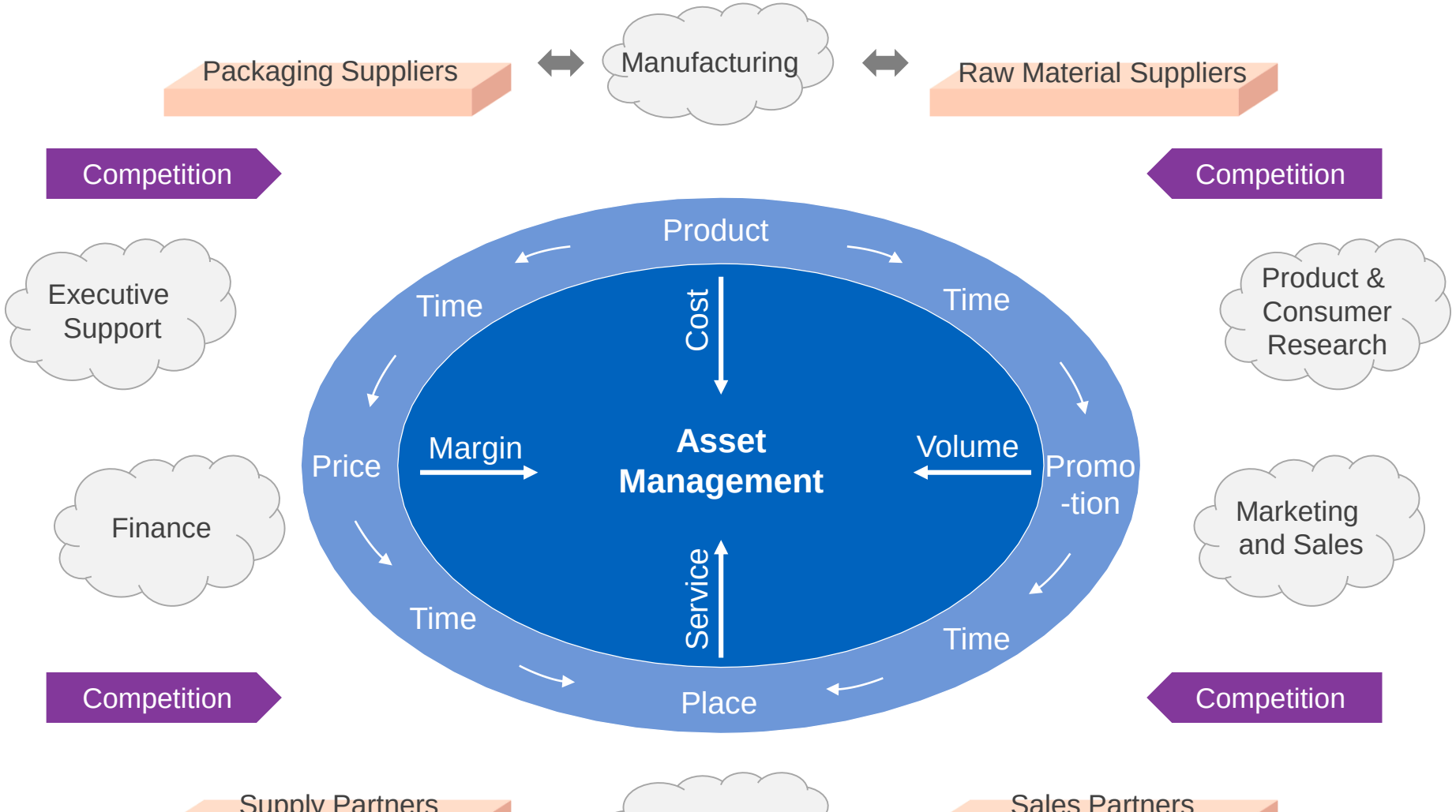
Innovation in Digital Markets Requires Transforming to Ecosystems Thinking: The Dynamics of Change



For every action there is a reaction: enterprise innovation stems from *digitalizing* the process linchpins (process control data points).

Supply Chains Are Transforming to Digital Market Ecosystems and Supply Networks



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The Shift to Ecosystems Thinking Requires Digital Reimagination

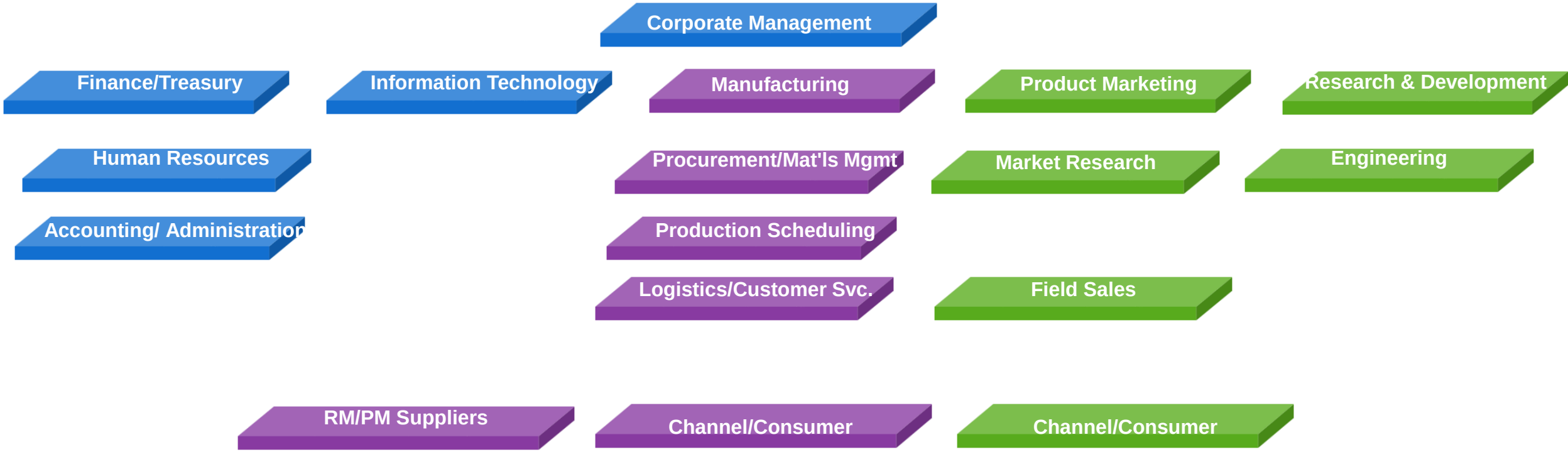
Change Results

Change Structure

Demand forecasting, planning, & operations management simply can not produce significantly better results within the context of current functional silos: digital business thinking is a new disruptive paradigm!

You Can't Break Down the Silos!

Traditional organizational structure is comprised of logical vertically managed functional nodes – accept it!

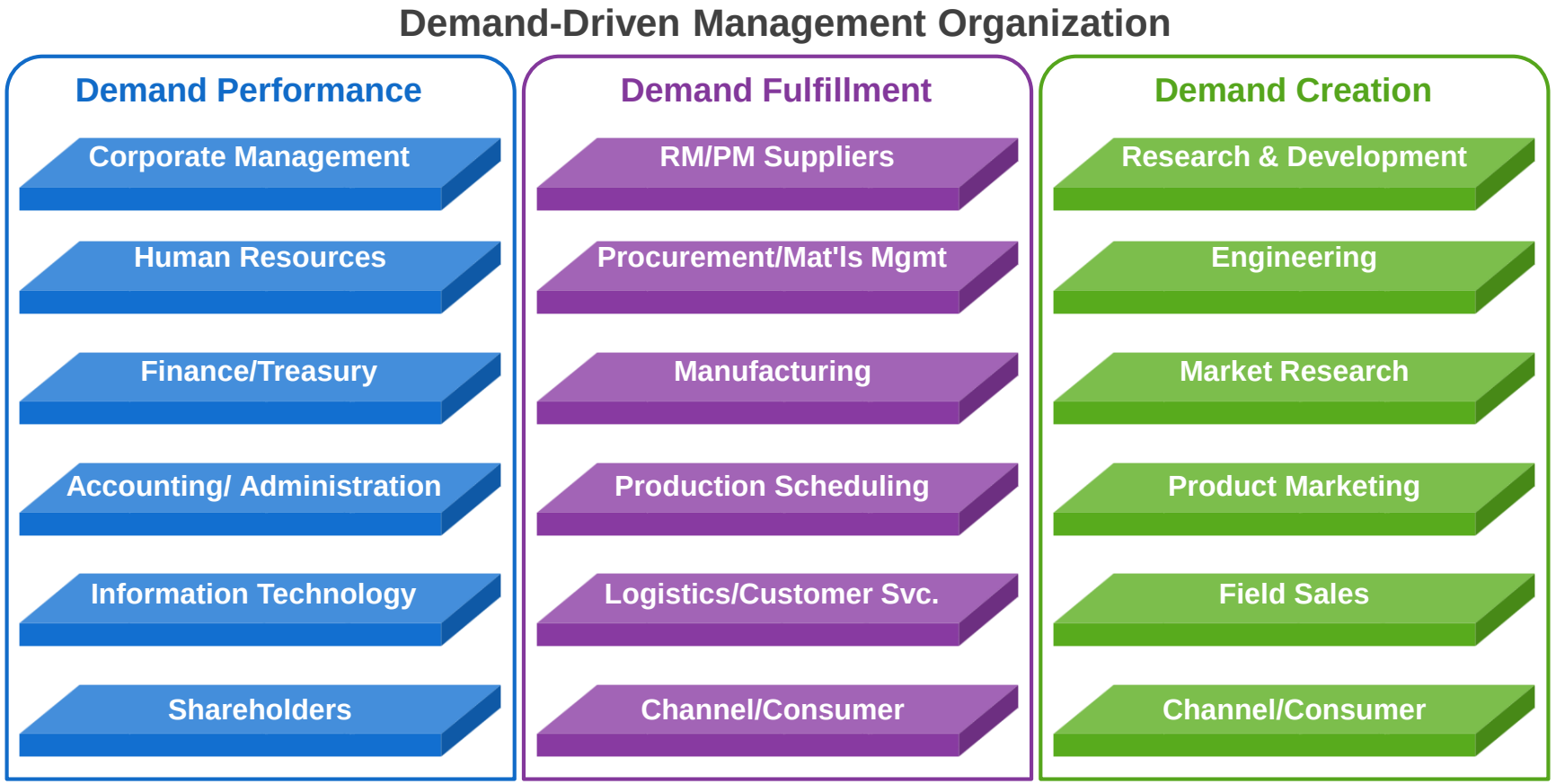


Source: Sherman, Supply Chain Transformation (Wiley, 2012)

The Activities Required to Execute Enterprise Processes are Functionally Managed Vertically

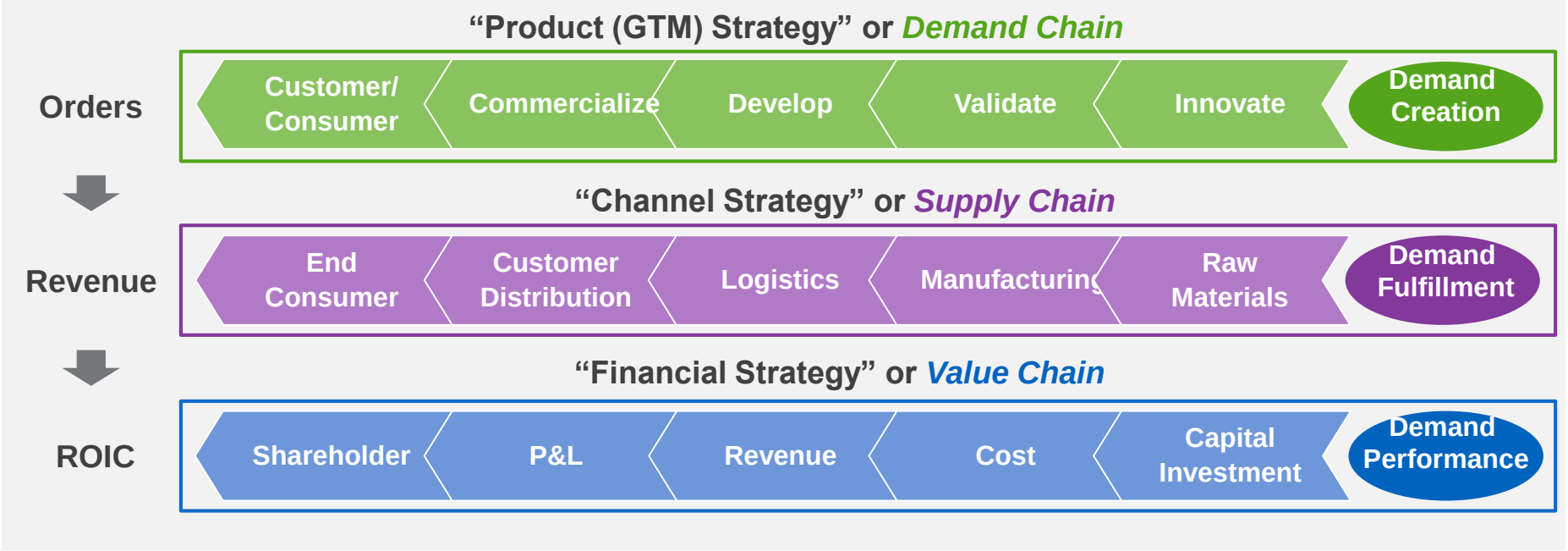
But, You Can Connect the Silos with a Digitalized Structure!

A demand-driven management organization structure (enterprise network) provides a process framework to plan across the functional silos and leverage data driven collaboration



Source: Sherman, Supply Chain Transformation (Wiley, 2012)

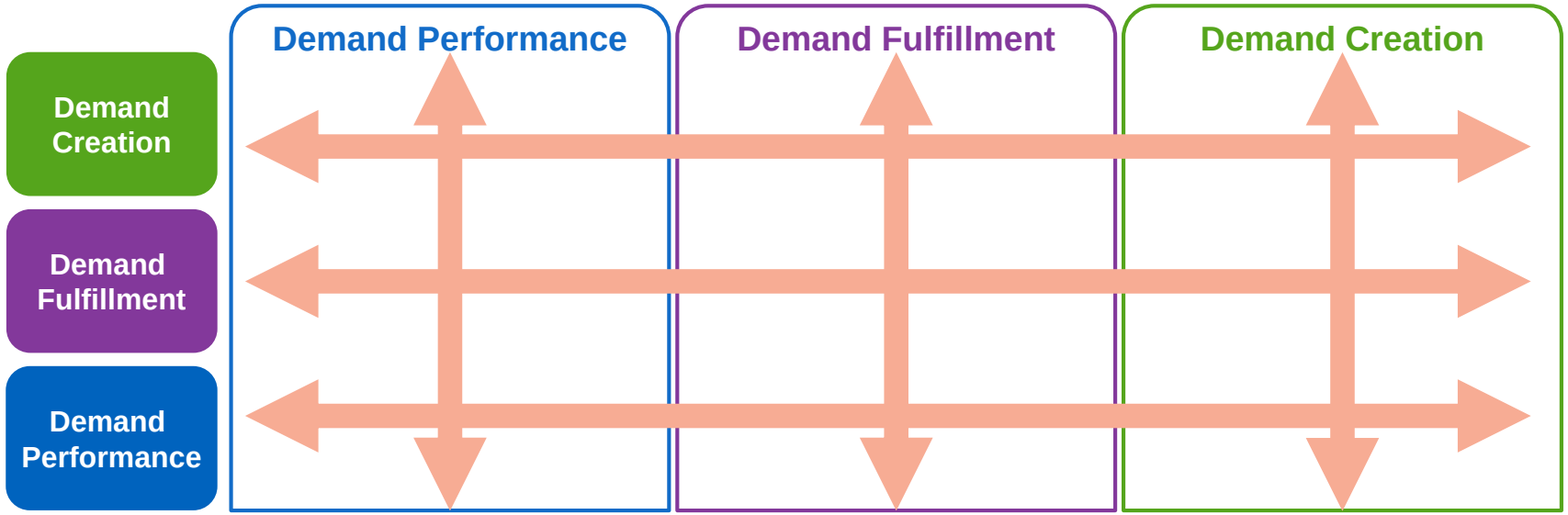
Demand Management Processes Can Be Planned Horizontally Across Functions



Digital demand management transcends functional metrics to focus on overall demand planning accuracy fostering collaborative execution from the *customer backward*

The Functional Nodes Must Systemically Interact with Each Other at the Intersections (Control Points) of Planning & Execution

The demand management organization enables the business to be simultaneously planned horizontally and managed (execution) vertically



A Demand Management Context Framework Leverages Data at the Process Intersections to Connect the Functional Silos and Enable Digital Collaboration and the foundation of a Digital Enterprise Architecture

Using the Demand-Driven Management Organization Framework to Develop A Data Driven Digital Enterprise Architecture

Demand-Driven Management Digital Enterprise Architecture

Demand Performance

HRIS; Payroll; Back Office; IT Mgm't Systems/ Infrastructure

Executive Information/KPIs System/Dashboards

Finance

Accounts payables
Activity Based Cost mgm't system
Fixed assets/CSR/Risk Management
Financial control & budgeting system
General ledger
Financial forecasting & planning system
Promotion Funds management system
Invoicing
Accounts receivable
Cash Flow forecasting & management system
Customer EFT(Electronic Commerce)

Third Party Transportation Mgm't Systems

Third Party Logistics Mgm't Systems

Partnership Logistics Suppliers

Demand Fulfillment

Suppliers

Supplier Relationship Management

Supplier Managed inventory/EDI/CPFR
Procurement System MRPII

Materials Management

Manufacturing

Process control systems
Packaging systems
Quality management systems
Plant management systems
Continuous flow manufacturing
Finished goods palletizing

Network Information Management System

Logistics

Finished goods inventory systems
Inbound/Outbound Logistics planning system
Forecasting/DRP
Network modeling
Warehouse management systems
Transportation management systems
CRP/VMI/automatic replenishment
Order management system

Customer Service Systems/CRM

Customer & Partner EDI/CPFR

Customers (Trade Channels)

End Consumers

Demand Creation

Master Data Warehouse

Corporate Global BI Systems

R & D / Engineering

Product, Production, Packaging design; CAD; LIMS
PDM; Change & Configuration control; other systems

Marketing

Marketing decision research, support & Modeling, Social media, eMarketing
Promotion planning, forecasting, analysis
Consumer/competitive intelligence
Category Management Systems

Sales

Sales decision support system
Broker management system
Sales budget/compensation mgm't
Sales planning, forecasting, management
eCommerce/Omnichannel
Salesforce automation system/CRM

Customer/Supplier Sales/Shipment Data

Sales/Channel Partner Systems

Data Fuels Advanced Analytics

Integrated Channel Wide Data Collection is Foundational to Smart Digital Supply Network Management

Master Data Management is Now a Business Discussion

Regulatory Compliance Necessitates Digitalization

Data Driven Analytics Maturity

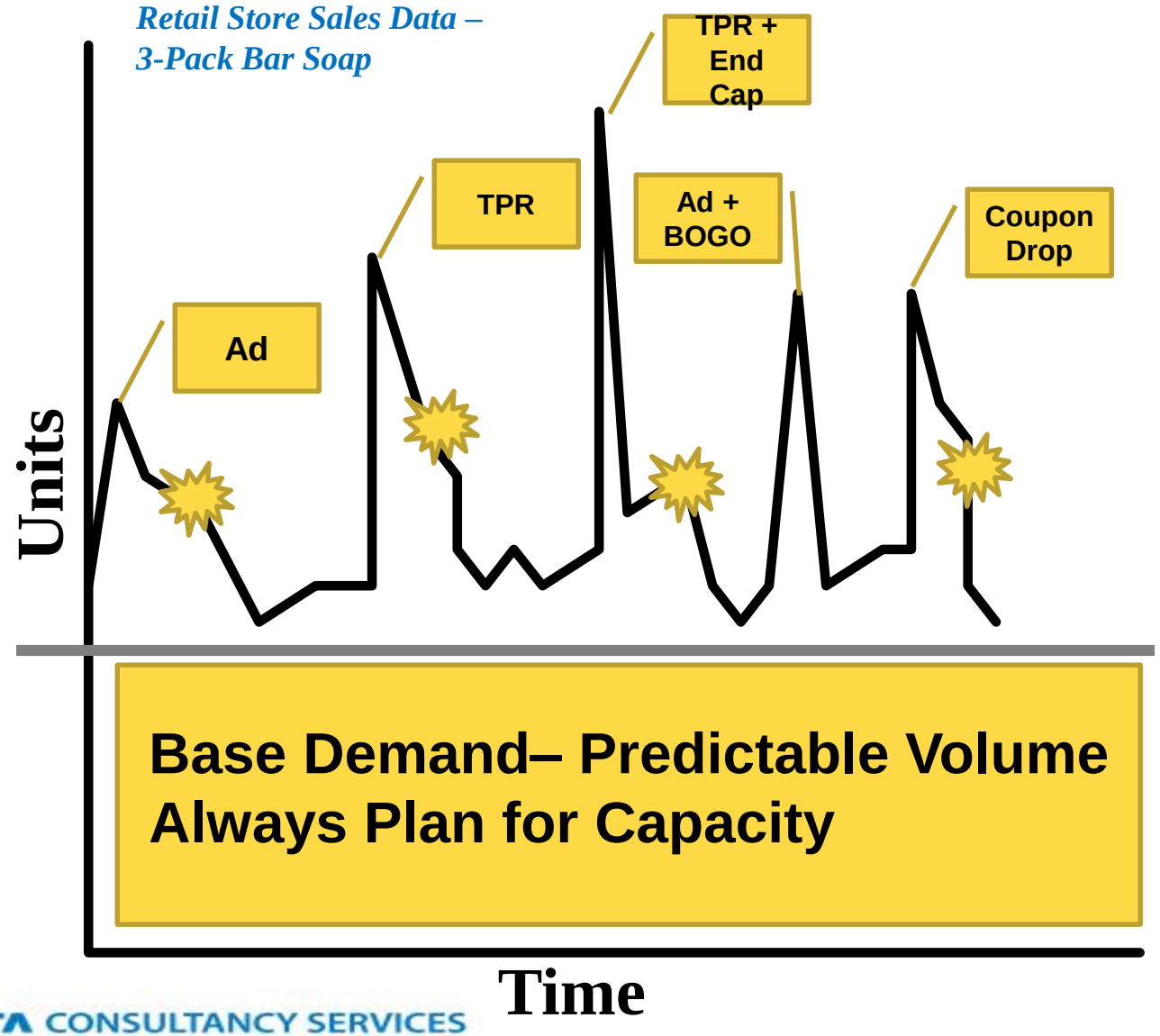
- **Descriptive Analytics** – defines all of the characteristics of product and supply network attributes
- **Monitoring Analytics** - sensors, monitors, and other connected (IoT) devices read and write data about the condition/environment/ownership of physical material as it flows and transforms through the network
- **Diagnostic Analytics** – logic is applied to the data to assess performance and deviation from plan
- **Predictive Analytics** – Business intelligence is applied to determine likely performance outcomes
- **Prescriptive Analytics** – historical resolution actions and advanced process control algorithms are developed to advise corrective action

Effective Demand-Driven Management Requires a New Planning Model

- Create a Demand Management program office led by A “C” level executive to eliminate politics and conflicting metrics – focus only on improving horizontal cross functional demand planning accuracy and collaboration
- Develop demand planning services that span the enterprise outside functional boundaries – staffed with “career” experts: analysts & planners with data science skillsets
- Focus to resolve differing cross functional demand process requirements and objectives that consider current causal/external factors to improve accuracy
- Leverage enterprise business analytics & access to functional forecasts, plans, schedules, & actual demand
- Transformation to a new Demand Management organization may not be adequate resulting in “as a service” solutions emerging in the market to address skills,

Digital demand management requires causal and external factor analysis and a process control approach to smart digital supply network management

Demand Variability Must Be Captured & Explained for Future Calculations



Competitive Promo/Factor

Causal Factor

- Easier to predict patterns
- Baseline variance over time usually explained by seasonality/predictable events
- Long term plan to baseline improves utilization and inventory management
- Incremental variance explained by causal factors

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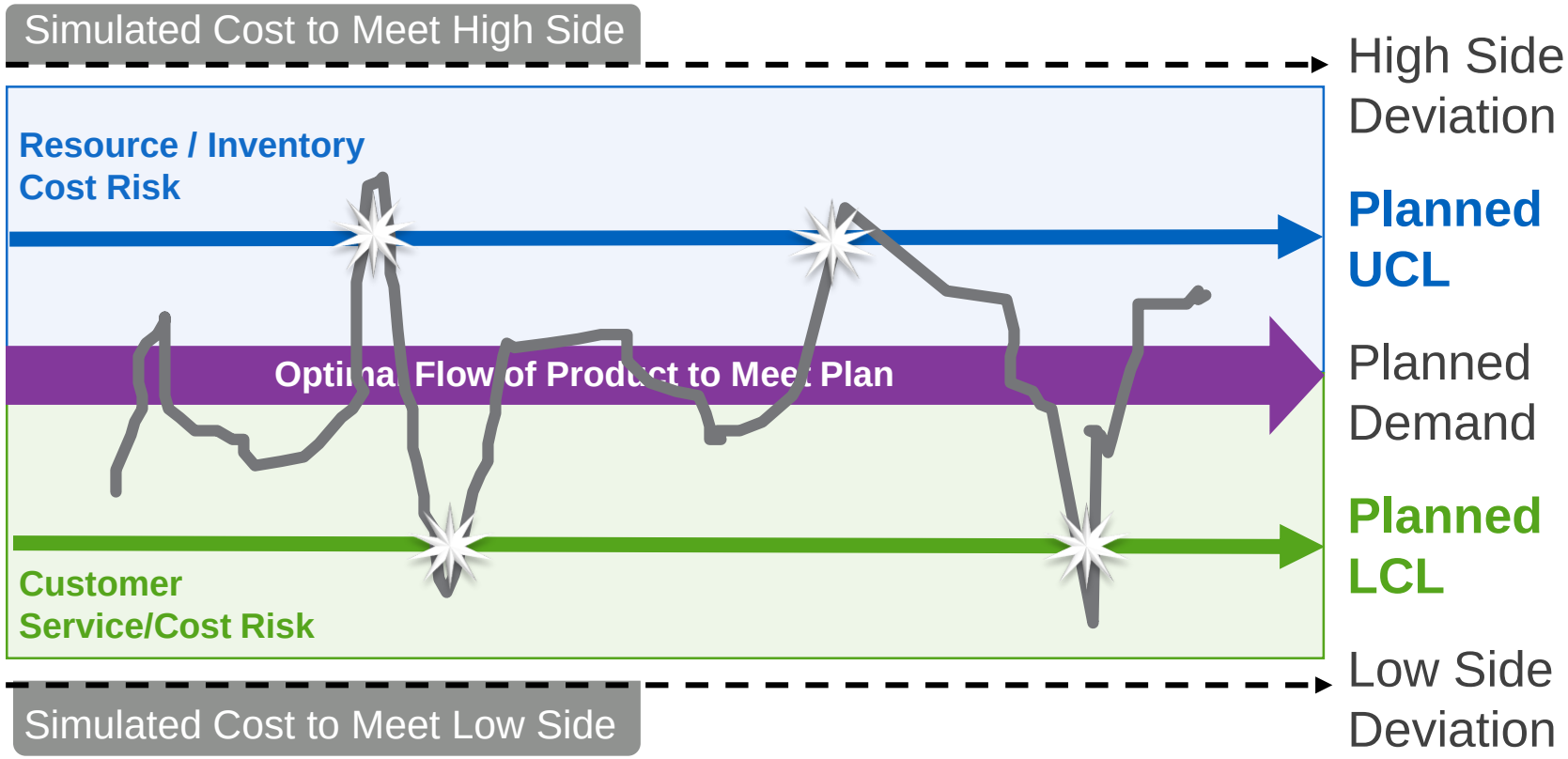
Source: Sherman, *Supply Chain Transformation (Wiley, 2012)*

Demand Management Process Control for the Supply Chain

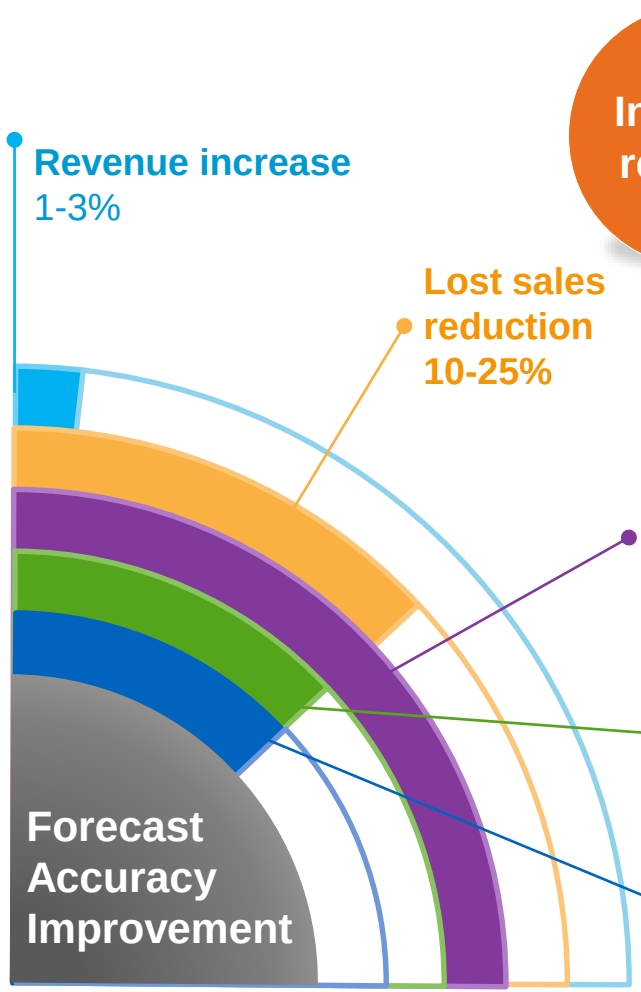
Minimizing the impact of variability & forecast error through supply chain optimization and simulation



Participants agree to planned ranges of performance, commitment horizons, and exception conditions based on calculated and shared risk...

Digital Demand Management Improves Financial Performance

The benefits of digital demand management are quantifiable and compelling



Increase revenue

Improve service levels

Improve free cash flow

Reduce costs

Improve ROIC

Reduce working capital

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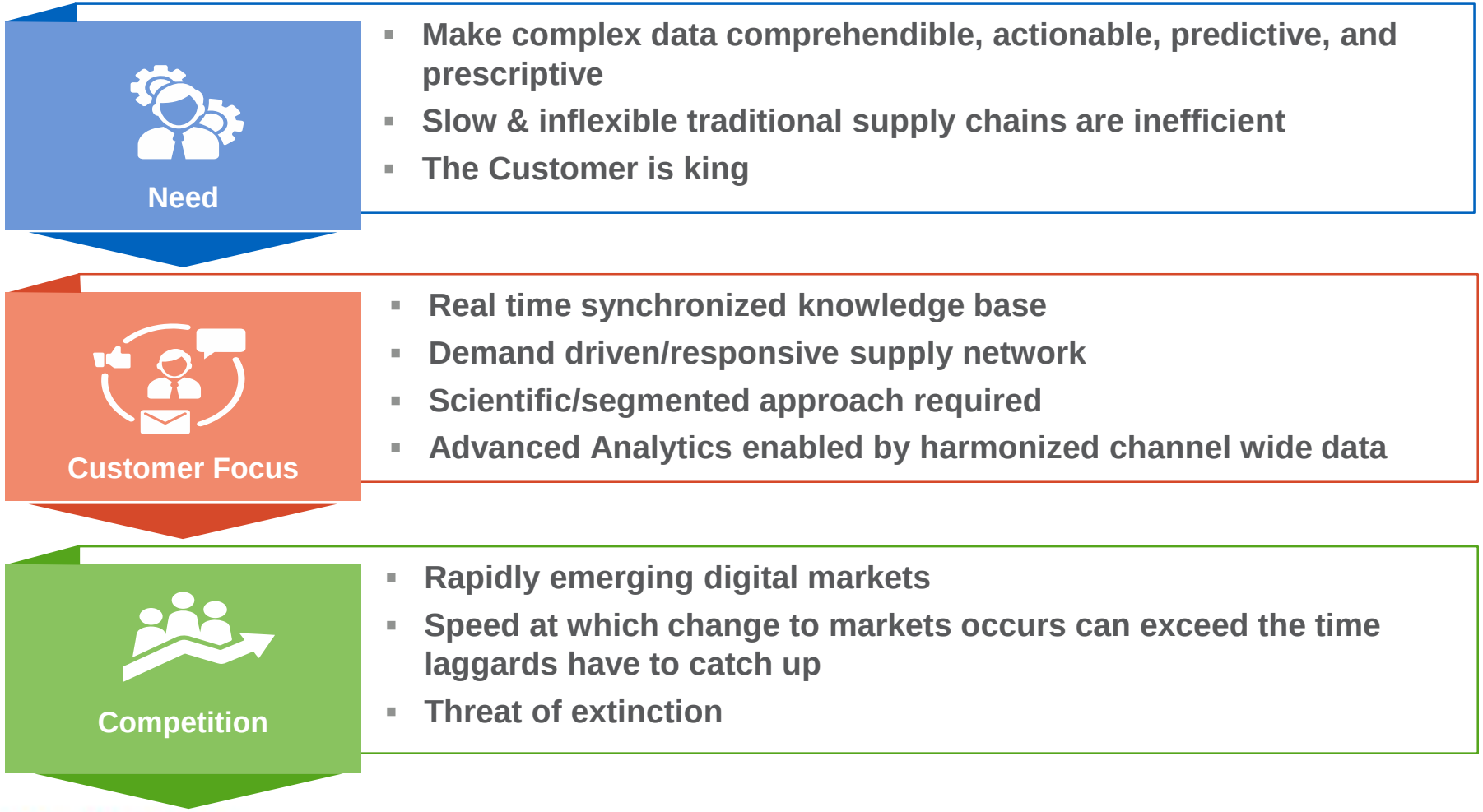
The Bottom Line

Transformation to a Smart Digital Supply Network is an inevitable competitive mandate.



Will You Embrace Change or Resist It?

If you don't like change, then you are going to hate extinction!

- Charlie Feld, Author and Thought Leader
Feld Group Institute

Change is Inevitable; Growth is Optional!

- Rich Sherman
Supply Chain Transformation (Wiley, 2012)

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Thank You!
Questions?

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