Inventory Planning & Demand Forecasting using Software Based Modelling:

Practical Business Applications

JustEnough Presentation

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Presentation agenda

- Inventory Optimization
  - What is it?
  - What is the problem?
  - What causes the problem?
  - Potential Solutions
- Questions

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Introduction

- What is inventory?

- Why do we have it?
  - Customer requires it.

- So what is inventory optimization and how does it align to my business?

What is Inventory Optimization?

- Setting and managing inventory levels that meet customer service levels with a minimum amount of inventory.
- Balancing inbound and outbound risk to the risk appetite and budget of the organization.
- Inventory optimisation is the balancing of supply chain service and cost objectives by managing product availability and inventory investment. Effective inventory optimisation drives inefficiencies out of supply chains - reducing overall costs - while raising service levels.

What is the Problem?

- The wrong stock in the wrong place at the wrong time that leads to lost sales and profits and even worse lost customers.
  - 10% of all products are out of stock at the place and time a purchase is to be made... and yet...
  - 20% of all inventories are in excess of requirements.
- That's **$1.5 trillion dollars** of excess inventory around the globe and billions of kilometres travelled, transporting the wrong things to the wrong place.

What Causes the Problem?

- Elements making the process more difficult:
  - Commoditisation of products
  - Mass customization
  - Shrinking Product Life-Cycles
  - Increased Outsourcing
  - Increased Competition
  - Variable economic conditions
  - Increased logistics costs
- Exacerbated by:
  - Bullwhip Effect
  - Lack of Collaboration

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What is the Solution?

- There are numerous philosophies and each has its own merits.
- Addressing just a few…
- And the Benefits?

Benefits

- Benefits include:
  - Up to 30% reduction in stock-holding
  - An average of 12% product availability
  - reduced inventory and overhead costs
  - improved sales, profitability and return on investment
  - high service standards & customer retention.
  - better matching of supply with demand
  - a more streamlined and responsive supply chain.

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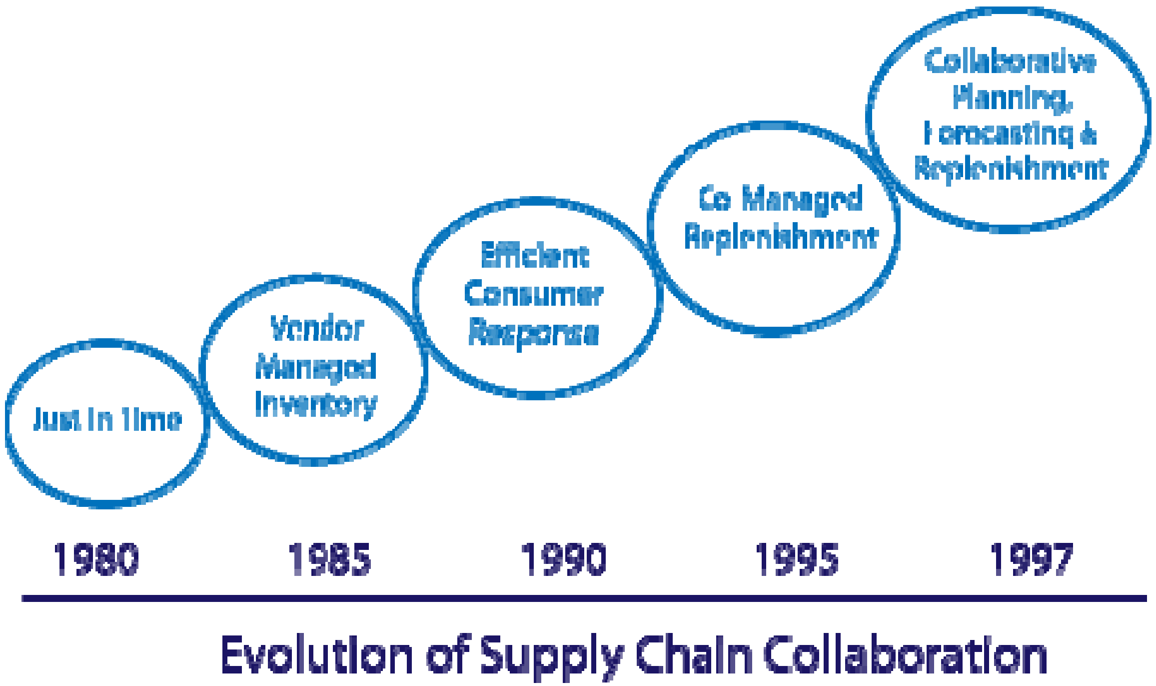
Potential Solution 1

Collaborate

Collaboration & Visibility

Collaboration between suppliers, distributors and retailers would remove the excess inventories and eliminate the out-of-stocks.



In fact, it's been the holy grail of supply chains for the last thirty years.

Why hasn't it worked?

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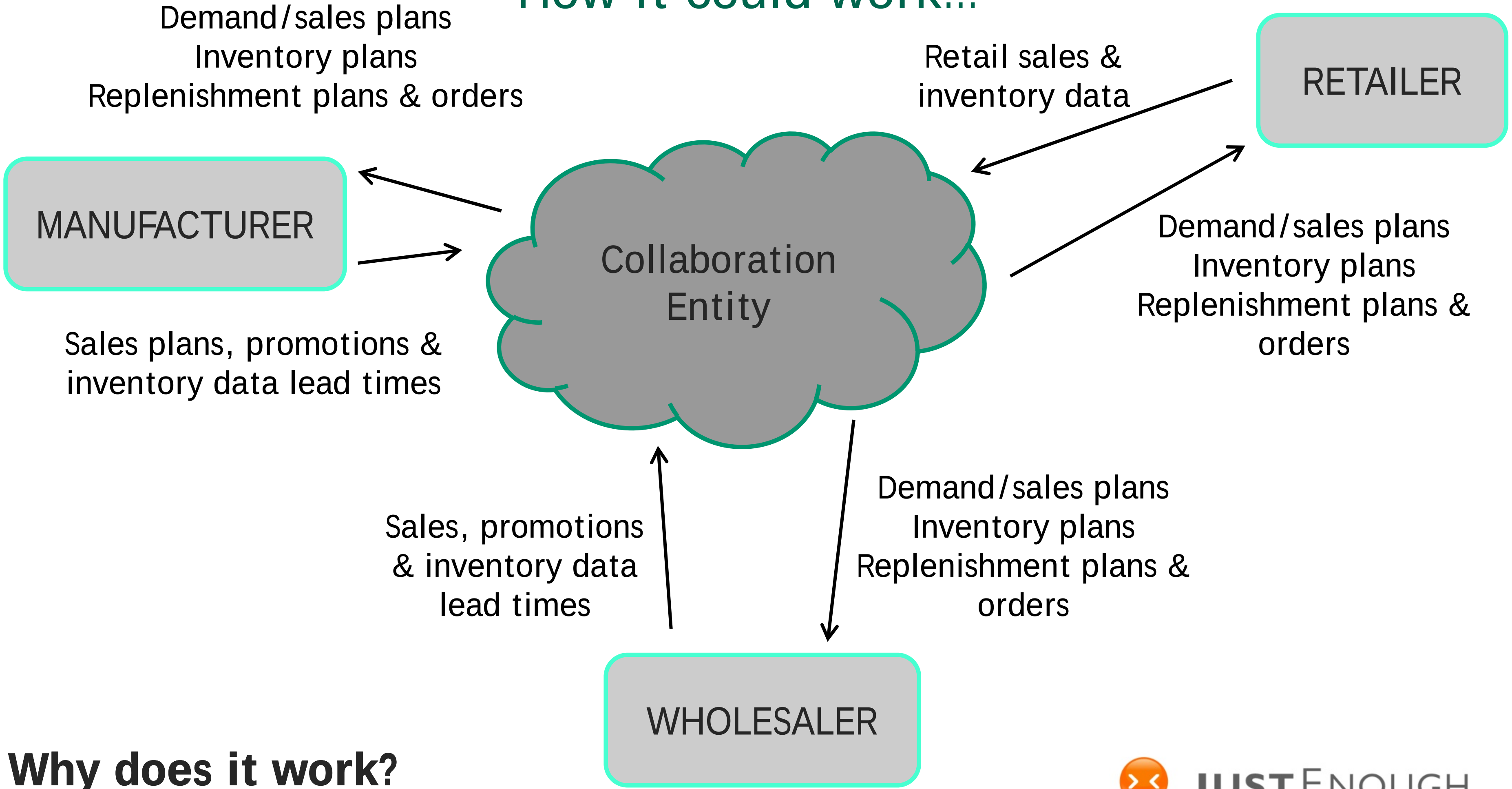
Possible Collaboration Solution

How it could work...



Why does it work?

Potential Solution 2

Increase Supply Chain Visibility

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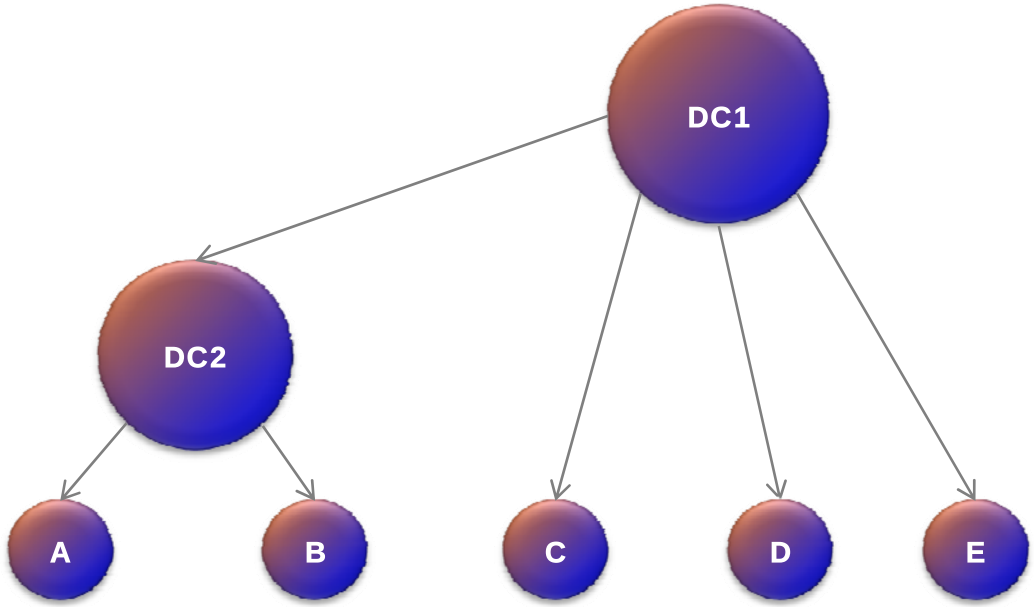
Supply Chain Visibility



"Supply chain velocity and demand visibility are key elements of successful execution of channel driven strategies .."

The Handbook for Becoming Demand Driven. L. Cecere et al. AMR Research. July 2005

“The inability to see independent demand, what customers order, and so on leads to poor management choices. As a result, inventory is badly allocated and procurement plans are suboptimal because of the inability to understand fine-grained demand. Without this type of visibility, companies will maintain push orientated delivery schemes. Push-based companies miss the opportunity to reduce cash-to-cash cycles by up to 35%”

(Source: Prepare for Demand, AMR Research)

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Potential Solution 3

Sustainable Analytical Process to Drive Inventory Optimisation

Step 1: Quantify the Inbound Risk

- Define:
  - The lead time at a granular (item-site) level
  - The variance of supply at that level
    - Supplier Performance Metrics

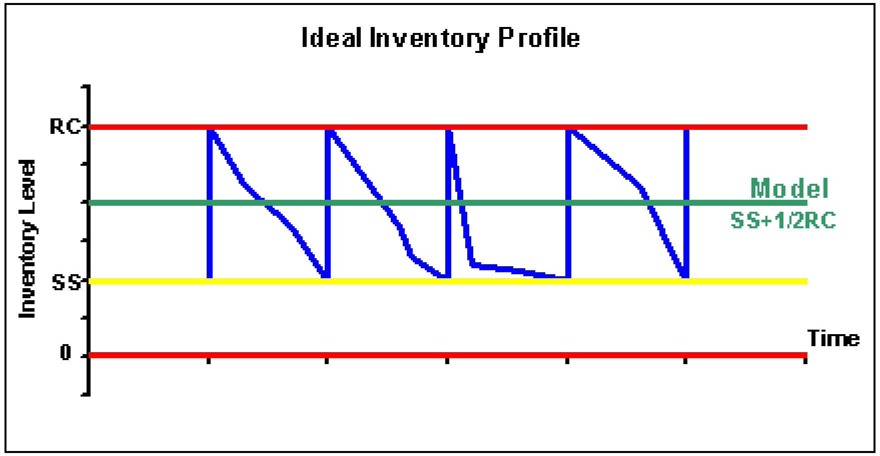
Step 2: Look forward not backwards

- Utilising what you already know in terms of:
  - Sales History
  - Promotional Activity
- Incorporating a representation of:
  - Lost Sales
- Derive (statistically) the projection of demand.

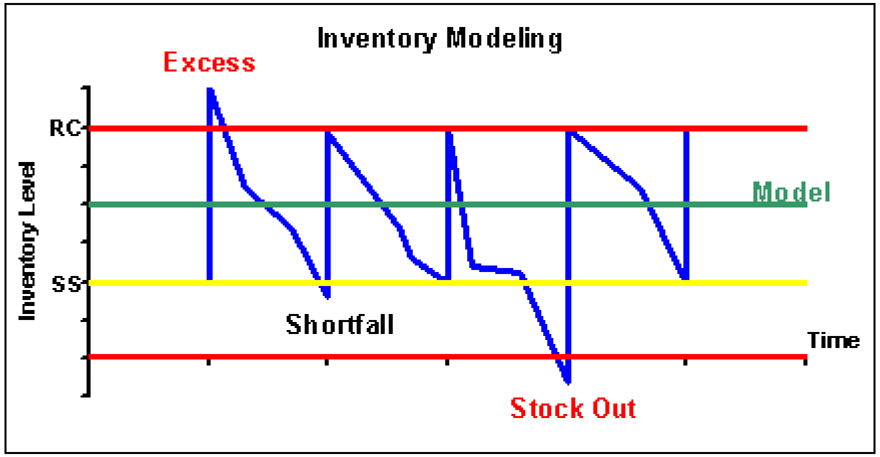
Step 3: Model the Ideal Scenario

- Balance the inbound and outbound risk.
- Start with a simple representation of safety stock in terms of a number of days.
- Parameterise the stock modelling parameters to be dynamic.

Inventory Modeling – Fixed Period Ordering

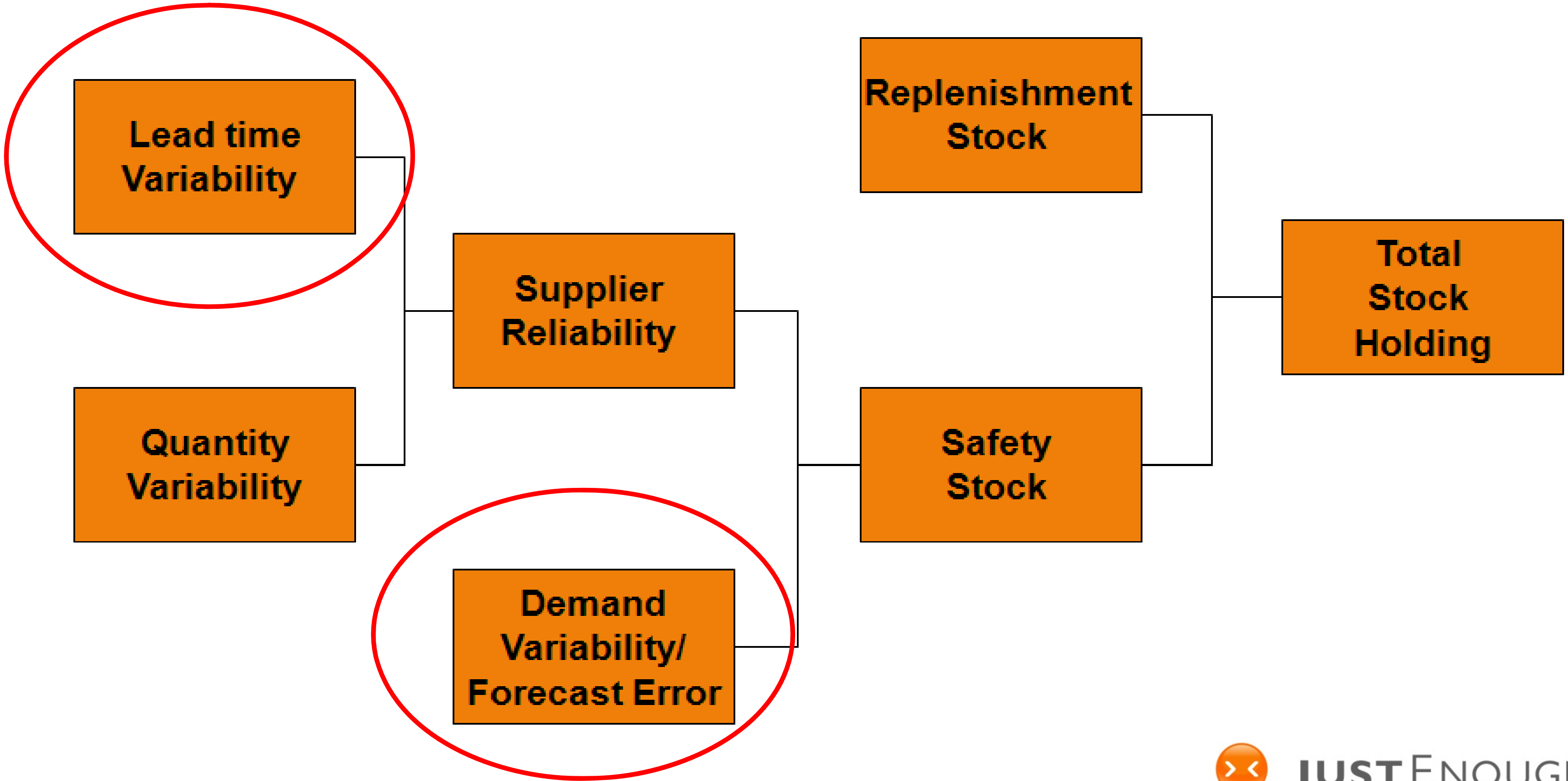


- Ideal



- Real

Inventory Modeling – Drivers – Safety Stock



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Step 4: Constrain the Replenishment

- Incorporate factors like:
  - Capacity Constraint (warehouse)
  - Container/Shipment optimization
  - Budgetary Constrains
  - Supplier Ordering Constraints

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Step 5: Manage By Exception

- Pareto Principle

Best Practice

- Use of Demand Driven Supply Chains

“the most advanced demand-sensing companies have 15% less inventory, a 17% better perfect order performance, and a 35% short cash-to-cash cycle time. We have also found that demand driven supply networks have 10% higher revenue and 5% to 7% better profit margins that their competitors”

The Handbook for Becoming Demand Driven. L. Cecere et al. AMR Research.

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Thank You.

Any Questions?

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Possible Additional Discussion Points

- Postponement Strategy
- Attribute Based Forecasting
- Push vs. Pull