Adapt or Die
Successfully Managing Today's Volatile Supply Chain

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Carol Ptak

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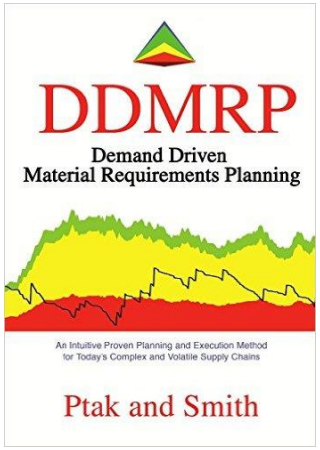

Complex and Volatile is the "New Normal"

Supply Chain Characteristics	1965	Today
Supply Chain Complexity	Low	High
Product Life Cycles	Long	Short
Customer Tolerance Times	Long	Short
Product Complexity	Low	High
Product Customization	Low	High
Product Variety	Low	High
Long Lead Time Parts	Few	Many
Forecast Accuracy	High	Low
Pressure for Leaner Inventories	Low	High
Transactional Friction	High	Low

Today's supply chains look VERY different from 1960's supply chains when conventional planning rules were formulated but…

Conventional planning rules have not appreciably changed since the 1960s. MRP still plans today the way it did 50 years ago!

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Topple Rates Increased 6X

"We investigated the longevity of more than 30,000 public firms in the United States over a 50-year span. The results are stark: Businesses are disappearing faster than ever before. Public companies have a one in three chance of being delisted in the next five years, whether because of bankruptcy, liquidation, M&A, or other causes. That's six times the delisting rate of companies 40 years ago. And the rise in mortality applies regardless of size, age, or sector. Neither scale nor experience guards against an early demise.

We believe that companies are dying younger because they are failing to adapt to the growing complexity of their environment. Many misread the environment, select the wrong approach to strategy, or fail to support a viable approach with the right behaviors and capabilities."

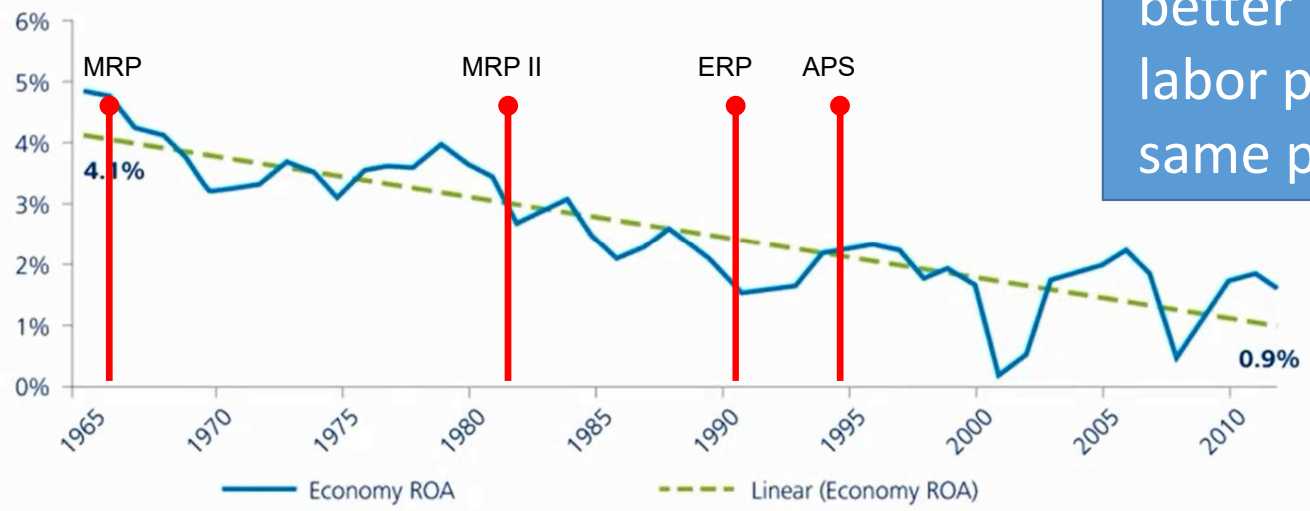
(Martin Reeves, Simon Levin, and Daichi Ueda, Harvard Business Review, January-February 2016)

"We believe that companies are dying younger because they are failing to adapt to the growing complexity of their environment."

Are We Doing the Wrong Things Faster?

Development and proliferation of planning systems has not enabled better ROA performance despite labor productivity doubling in the same period!

Figure 1. Return on assets for the US economy (1965–2012)



US firms' ROA fell to a quarter of its 1965 levels in 2012. To increase, or even maintain, asset profitability, firms must find new ways to create value from their assets.

Deloitte University Press DUPress.com

What will it take to change this?

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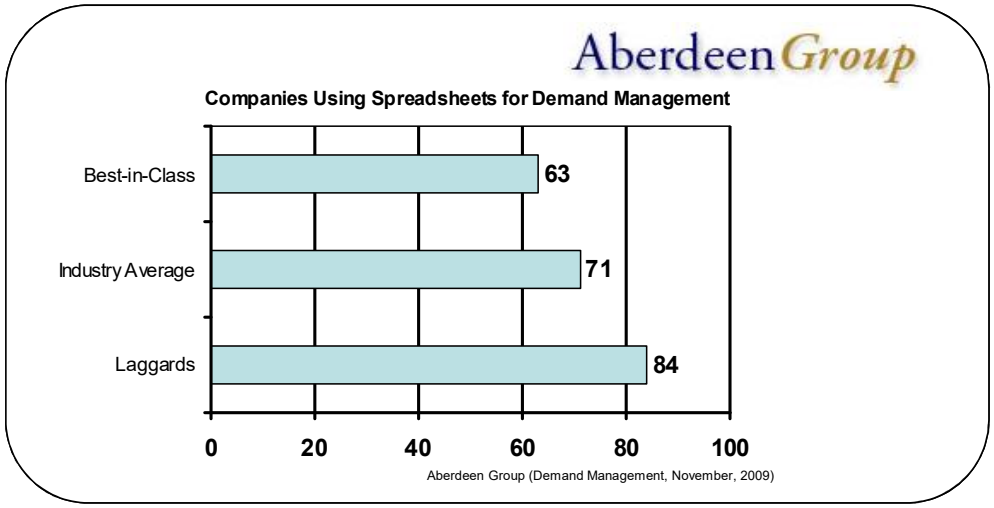
But Something is Terribly Wrong



Most Planner and Buyers mistrust their planning tools.

Spreadsheet use is rampant and often unmonitored.

These spreadsheets have limited capability, scalability and transferability.

They also are error prone.

Close to 90% of spreadsheet documents contain errors, a 2008 analysis of multiple studies suggests. “Spreadsheets, even after careful development, contain errors in 1% or more of all formula cells,” writes Ray Panko, a professor of IT management at the University of Hawaii and an authority on bad spreadsheet practices. “In large spreadsheets with thousands of formulas, there will be dozens of undetected errors.”

Wall Street Journal’s MarketWatch, April 20, 2013,
Jeremy Olshan

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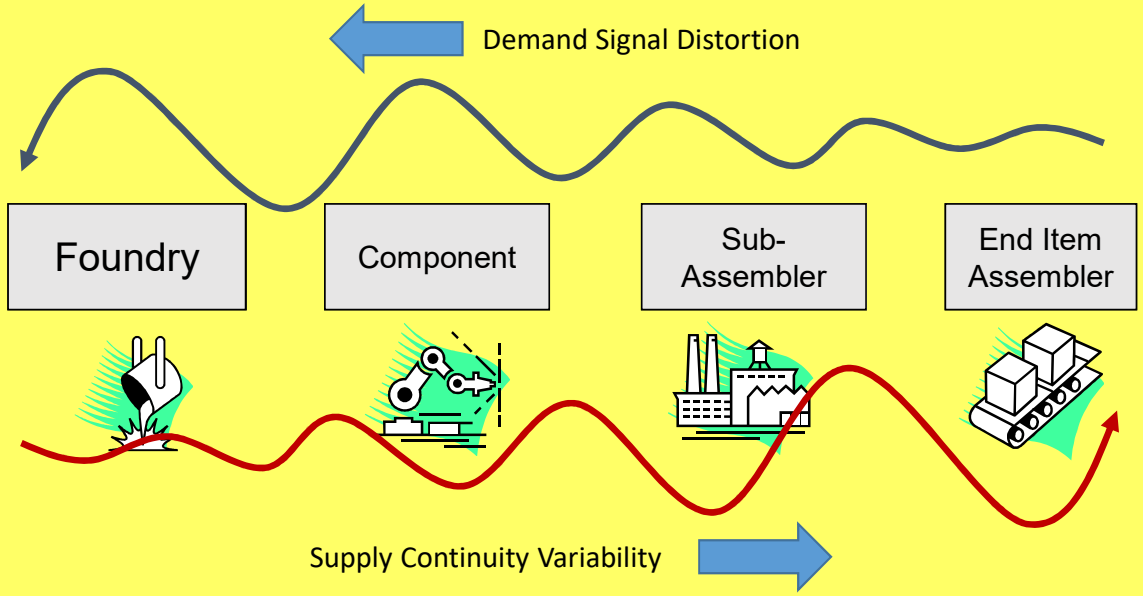
The Collective SCM Problem

Bull-Whip Effect: “An extreme change in the supply position upstream in a supply chain generated by a small change in demand downstream in the supply chain. Inventory can quickly move from being backordered to being excess. This is caused by the serial nature of communicating orders up the chain with the inherent transportation delays of moving product down the chain.” (APICS Dictionary, 14th Edition)



Transference AND amplification of variability in BOTH directions.

The more parts to the supply chain – the worse the effect!

A true solution must deal with demand AND supply distortion together.

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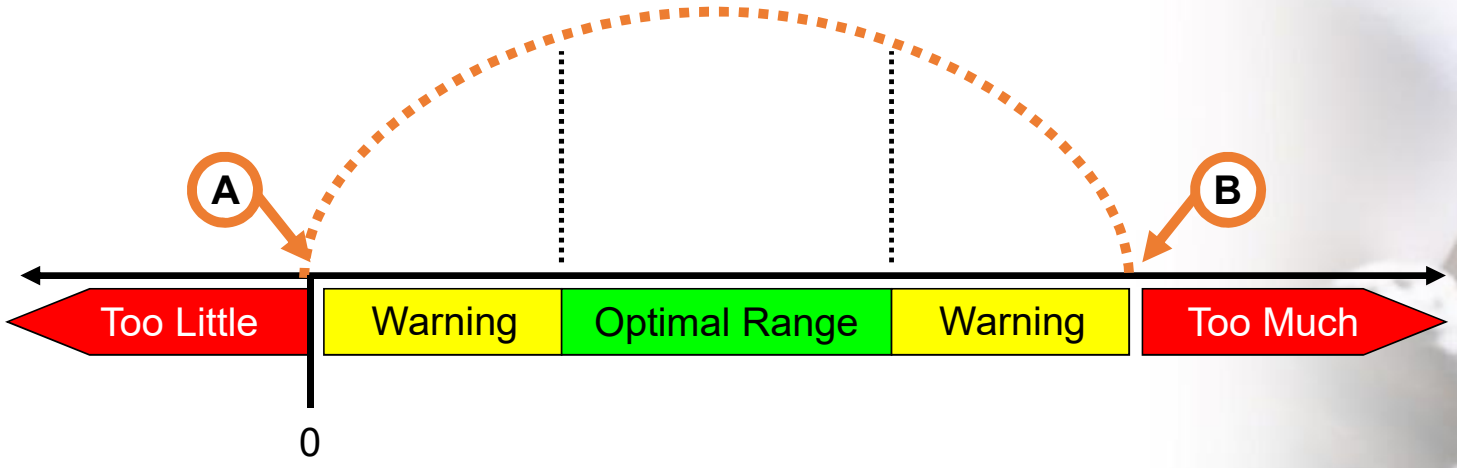
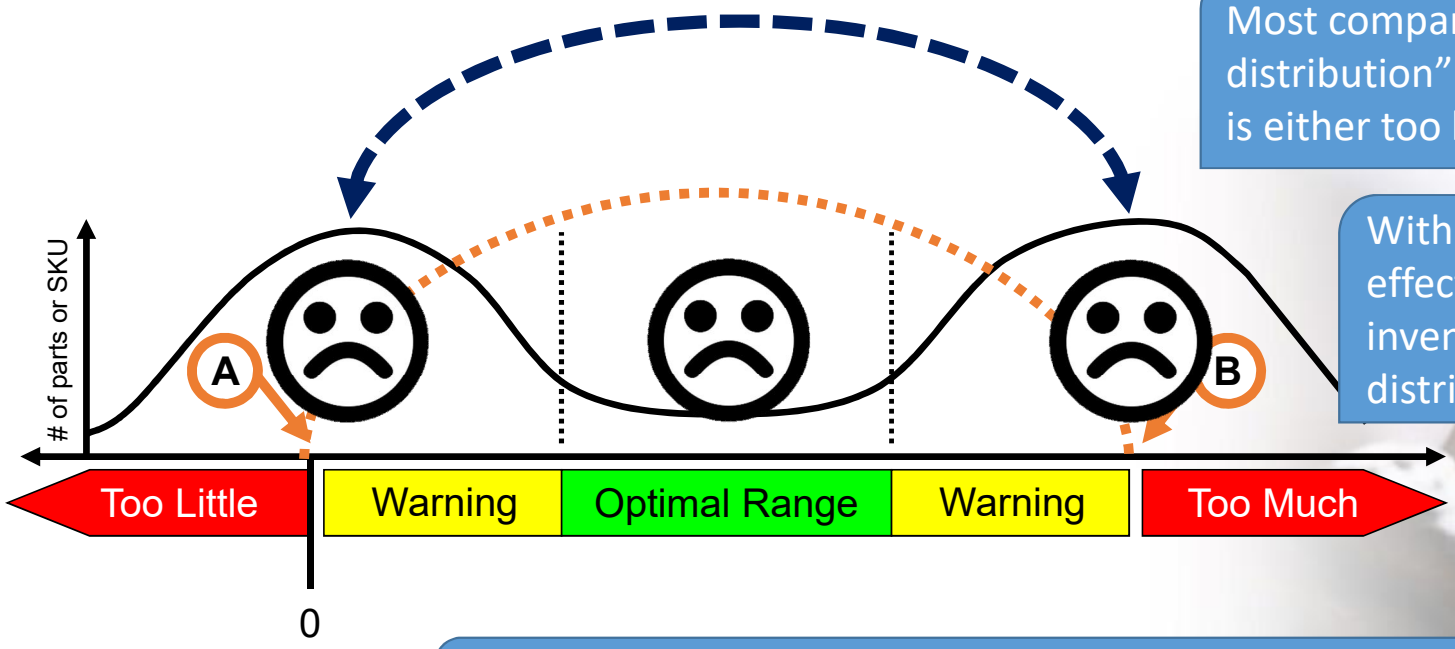
Conventional Inventory Management Effects



Conventional Inventory Management Effects



Most companies exhibit a "bi-modal distribution" – most of the inventory is either too low or too high

With every MRP run an oscillation effect often occurs in which inventory quickly moves from one distribution to the other.

90% of companies report this issue!

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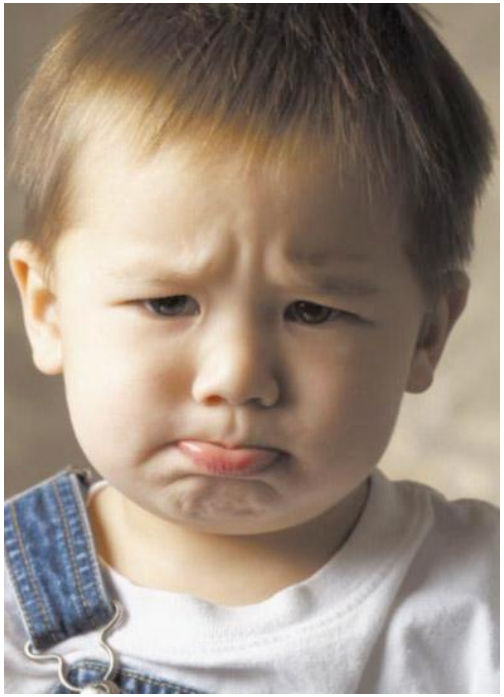
Three Bottom Line Effects to Companies:

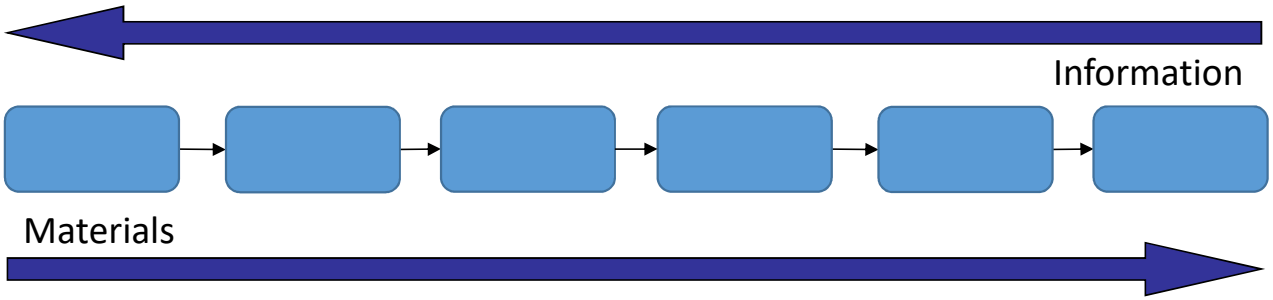


1. Chronic Shortages
2. Excessive Inventory
3. High Expedite Expenses & Waste

But the real problem is at a higher level!

Reorienting to Flow

All benefits will be directly related to the speed of FLOW of materials and information. George W. Plossl



Protection and Promotion Flow =

ROI Maximization

When flow is occurring:

- **Service** is consistent and reliable when a system flows well.
- **Revenue** is maximized and protected.
- **Inventories** are minimized.
- **Expenses** ancillary and/or unnecessary are minimized.
- **Cash flow** follows the rate of product flow to market demand.

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Explaining Flow

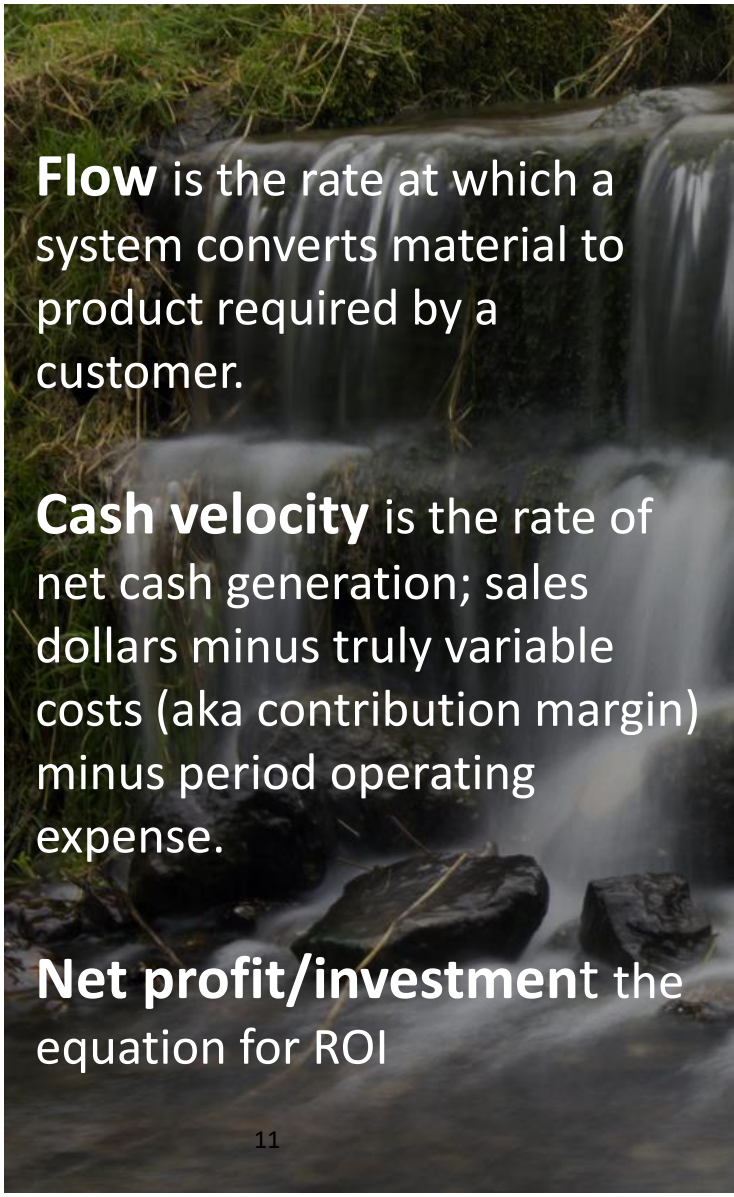
$$\Delta\text{Flow} \rightarrow \Delta\text{Cash Velocity} \rightarrow \Delta\left(\frac{\text{Net Profit}}{\text{Investment}}\right) \rightarrow \Delta\text{ROI}$$

Queuing Theory

The less time it takes products to move through the system, the less the total inventory investment

- The simple equation is Throughput * Lead Time = WIP or
- WIP/Lead Time = Throughput
- WIP/Throughput = Lead Time

It seem so obvious…



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The Missing Element for Flow

$$\Delta\text{Visibility} \rightarrow \Delta\text{Variability} \rightarrow \Delta\text{Flow} \rightarrow \Delta\text{Cash Velocity} \rightarrow \Delta\left(\frac{\text{Net Profit}}{\text{Investment}}\right) \rightarrow \Delta\text{ROI}$$

Variability is defined as the summation of the differences between our plan and what happens.

Variability ↓ = Flow ↑

Variability ↑ = Flow ↓

Visibility is defined as **relevant information** for decision making.

Visibility ↑ = Variability ↓

Visibility ↓ = Variability ↑

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The Biggest Question Becomes…

How do we gain visibility to relevant information in today's complex environments in order to manage to flow?

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Four Prerequisites for Relevant Information

1. Understanding Relevant Ranges
2. Implement a Flow-Based Operating Model
3. Implement Flow-Based Metrics
4. Tactical Reconciliation (bi-directional) between Relevant Ranges

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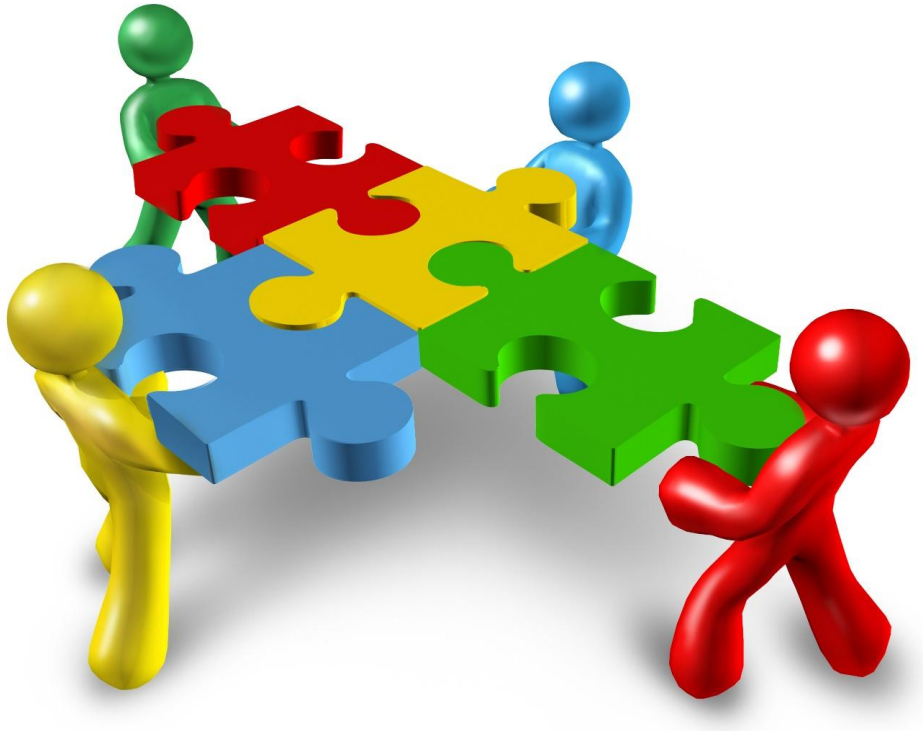
Thoughtware

These four prerequisites allow an organization to think, communicate and behave systemically for flow.

When these prerequisites are in place an organization has the proper "thoughtware" installed for flow.

Now we need a framework to utilize this thoughtware.



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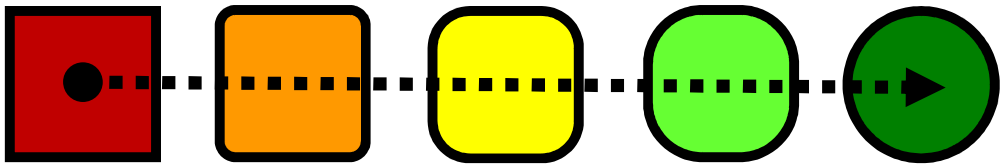
Demand Driven Adaptive Enterprise™



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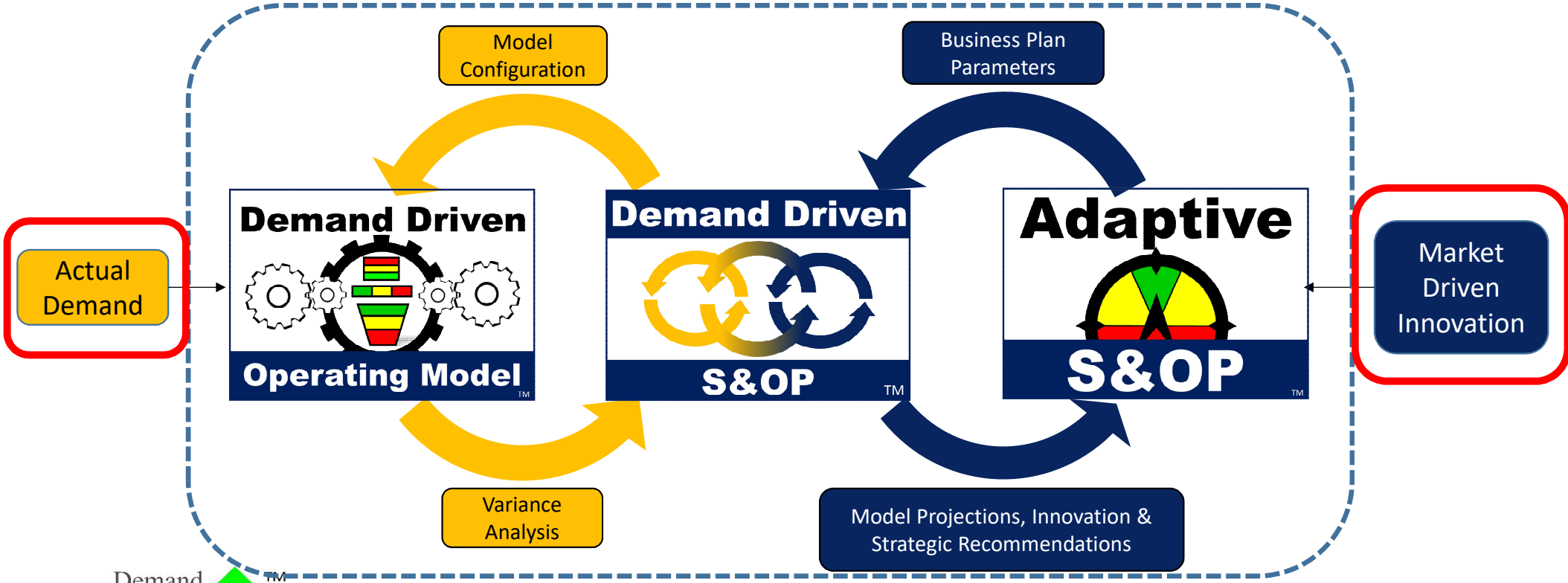
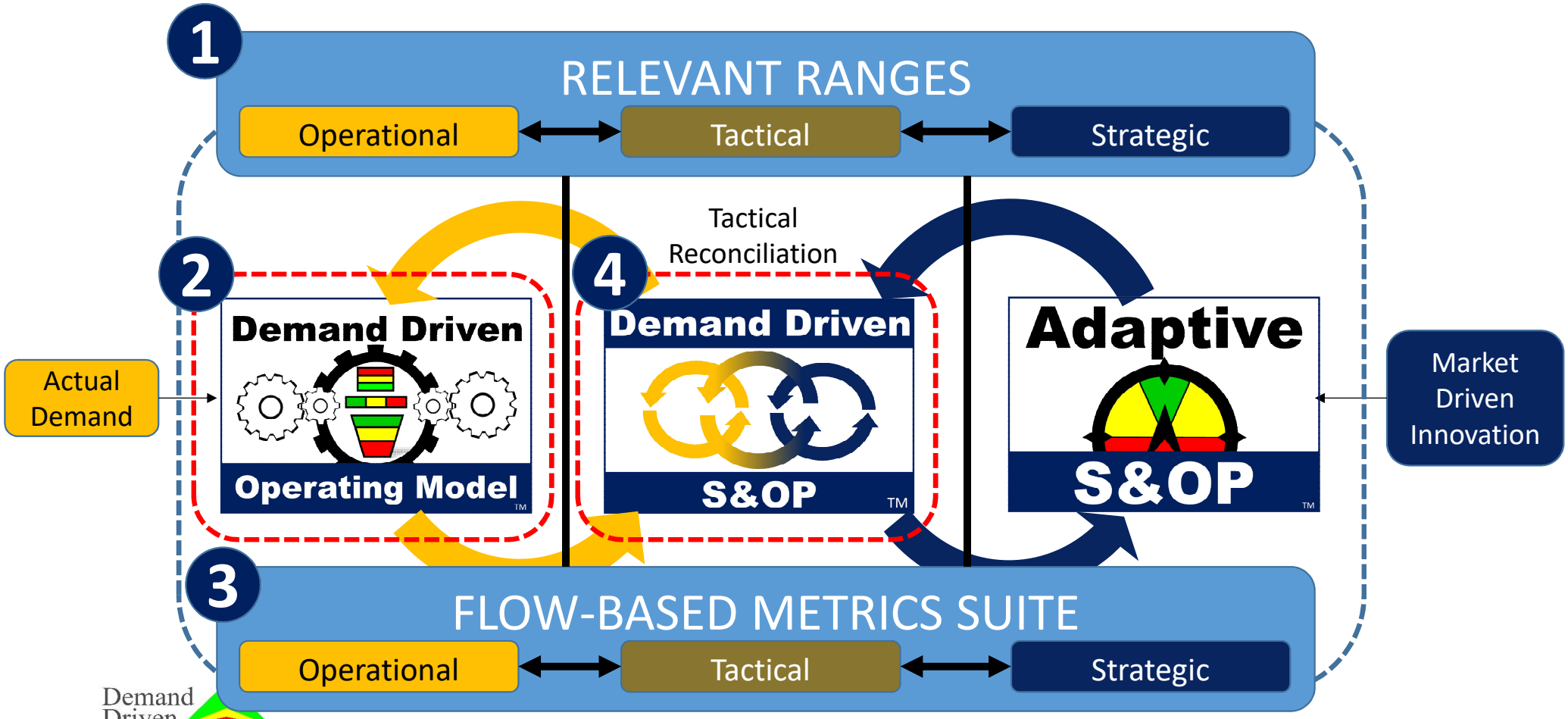
Demand Driven Adaptive Enterprise Model



Demand Driven Adaptive Enterprise Model



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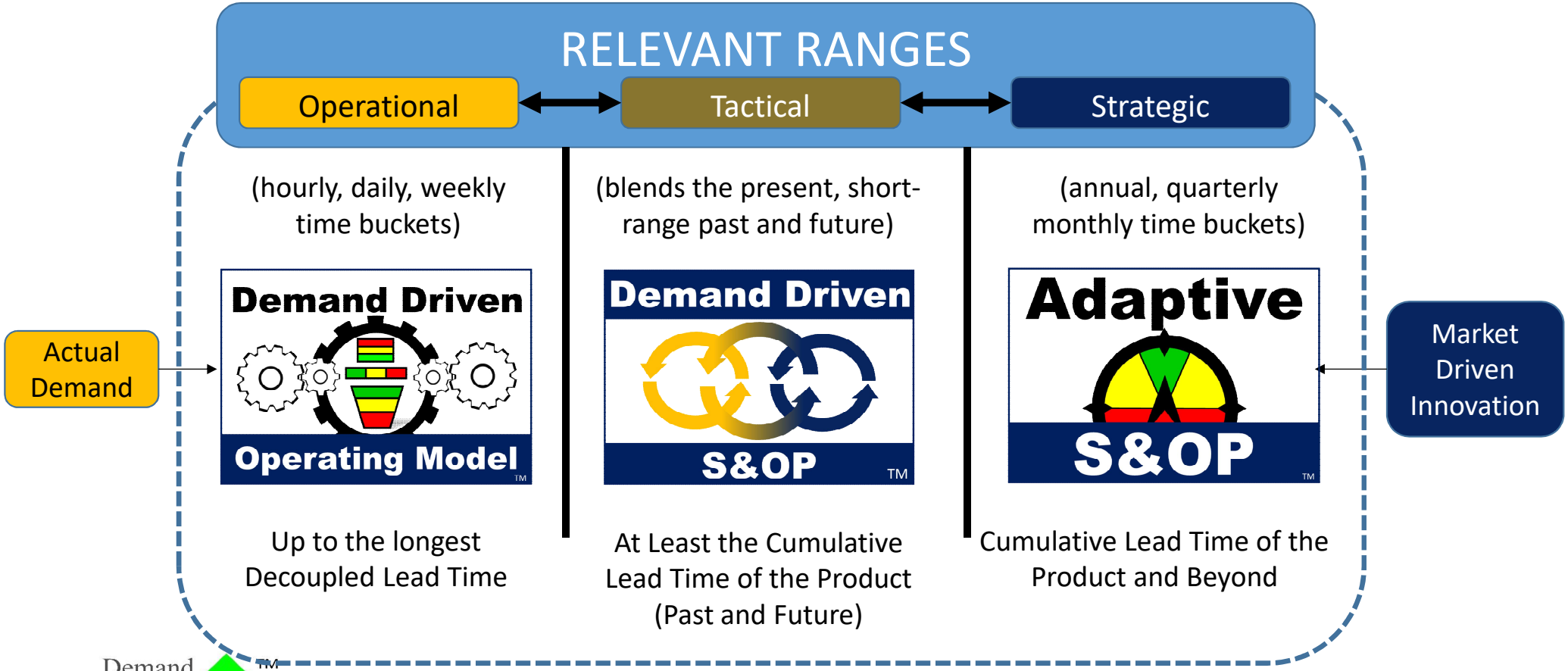
1. Relevant Ranges in the DDAE Model

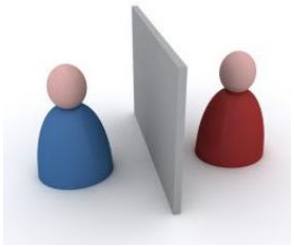


2. The Flow-Based Operating Model

Combines elements of MRP, DRP, Lean, Theory of Constraints, Factory Physics and Six-Sigma.

Paces operations to **actual demand**

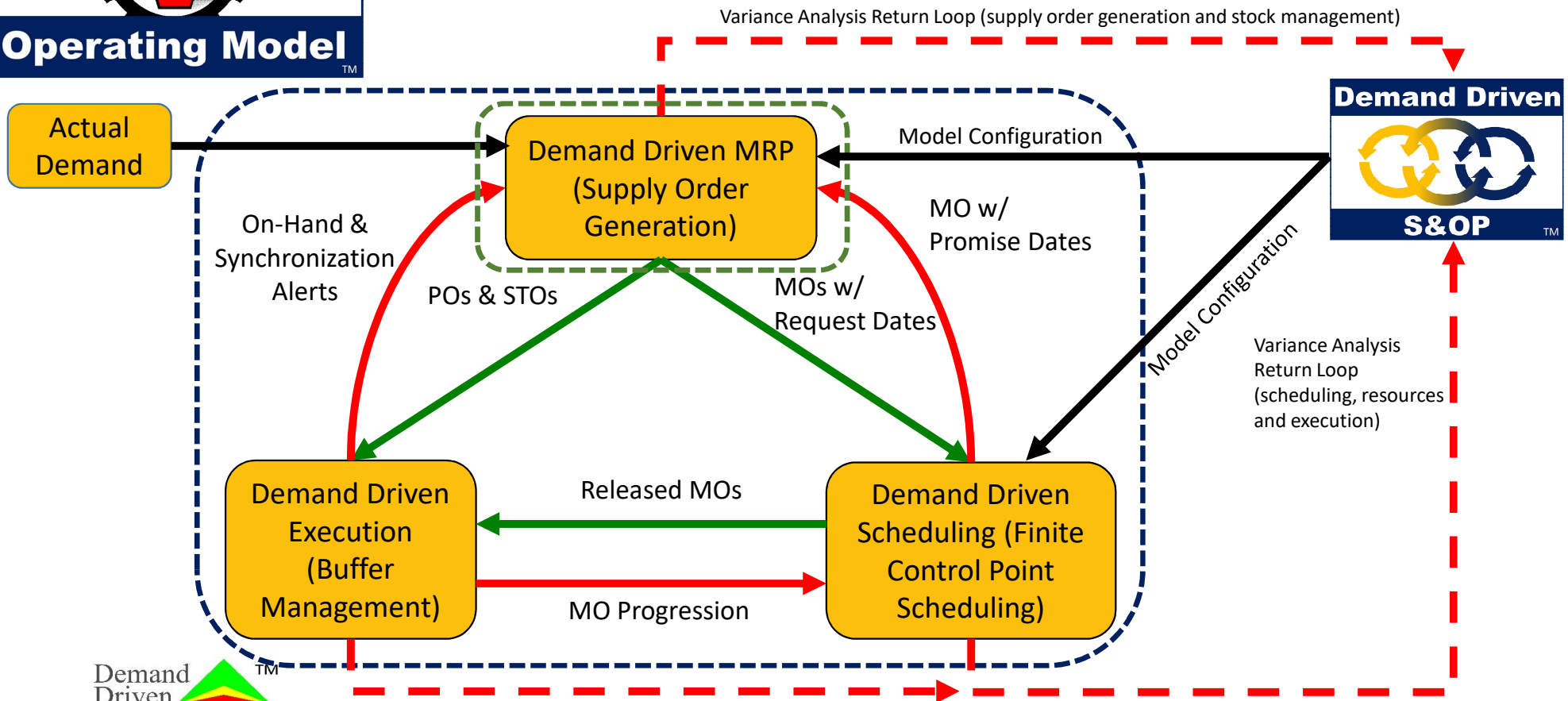
Strategically places **decoupling points** for lead time compression and variability (bullwhip) mitigation.



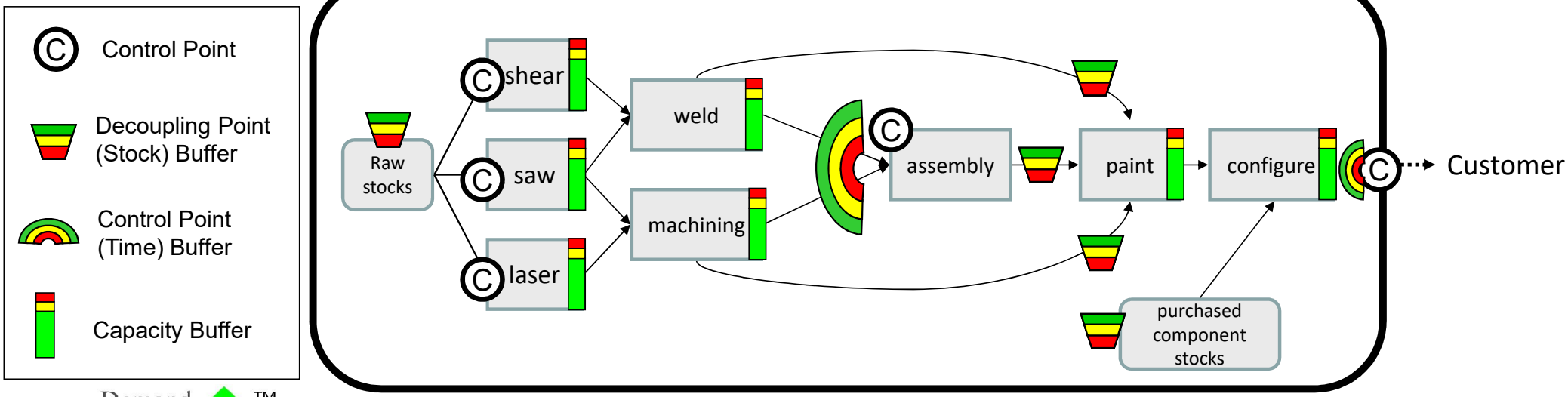
Strategically places **control points** for schedule synchronization

Protects decoupling and control points through stock, time and capacity buffers

2. The Flow-Based Operating Model

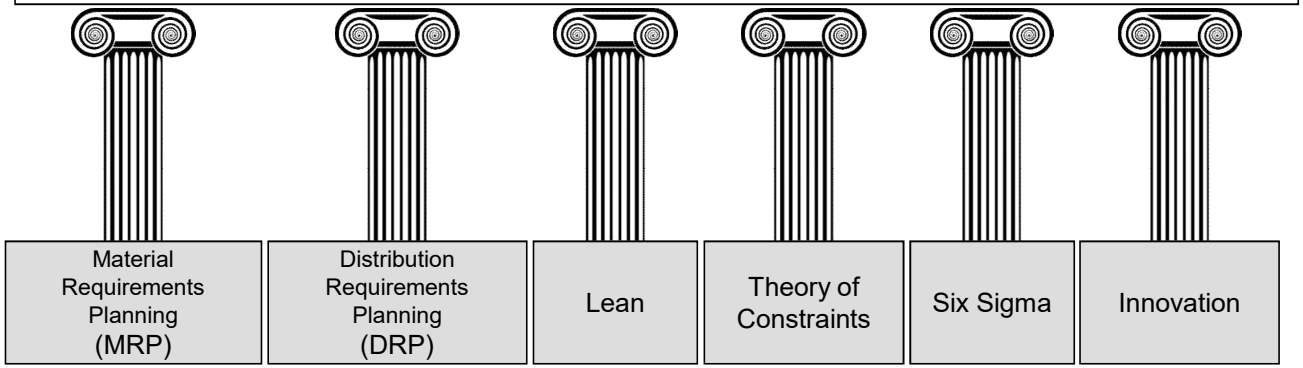


Example of a Demand Driven Operating Model Design

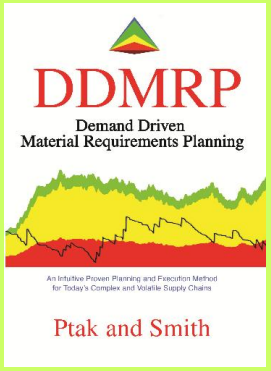


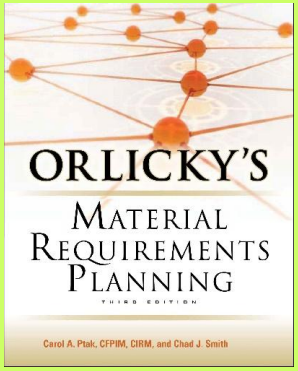
Demand Driven MRP

A method to model, plan and manage supply chains to protect and promote the flow of relevant information and materials. DDMRP uses strategic decoupling points to drive supply order generation and management throughout a supply chain.



Position, Protect and Pull





First articulated in 2011 by the Demand Driven Institute after 15 years of research and extensive application.

Through innovation critical planning needs are fused with mainstream improvement disciplines based on FLOW.

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DDMRP's Proven Benefits

Benefit	Typical improvements
Improved Customer Service	Users consistently achieve 97-100% on time fill rate performance
Lead Time Compression	Lead time reductions in excess of 80% have been achieved in several industry segments
Right-sizes Inventory	Typical inventory reductions of 30-45% are achieved while improving customer service
Lowest total supply chain cost	Costs related to expedite activity and false signals are largely eliminated (fast freight, partial ships, cross-ships, schedule break-ins)
Easy and Intuitive	Planners see priorities instead of constantly fighting the conflicting messages of MRP

Major Adopters

Unilever

Nestlé

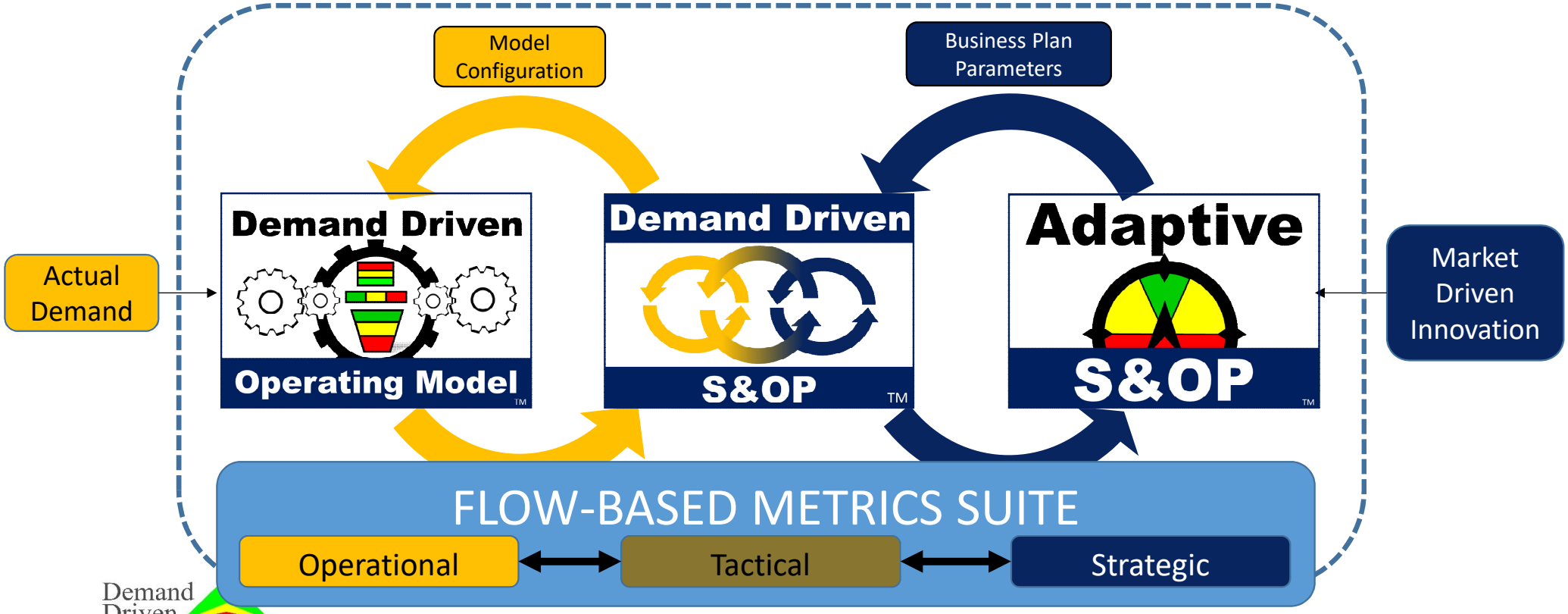
CCA COCA-COLA AMATIL

BT

MICHELIN A better way forward

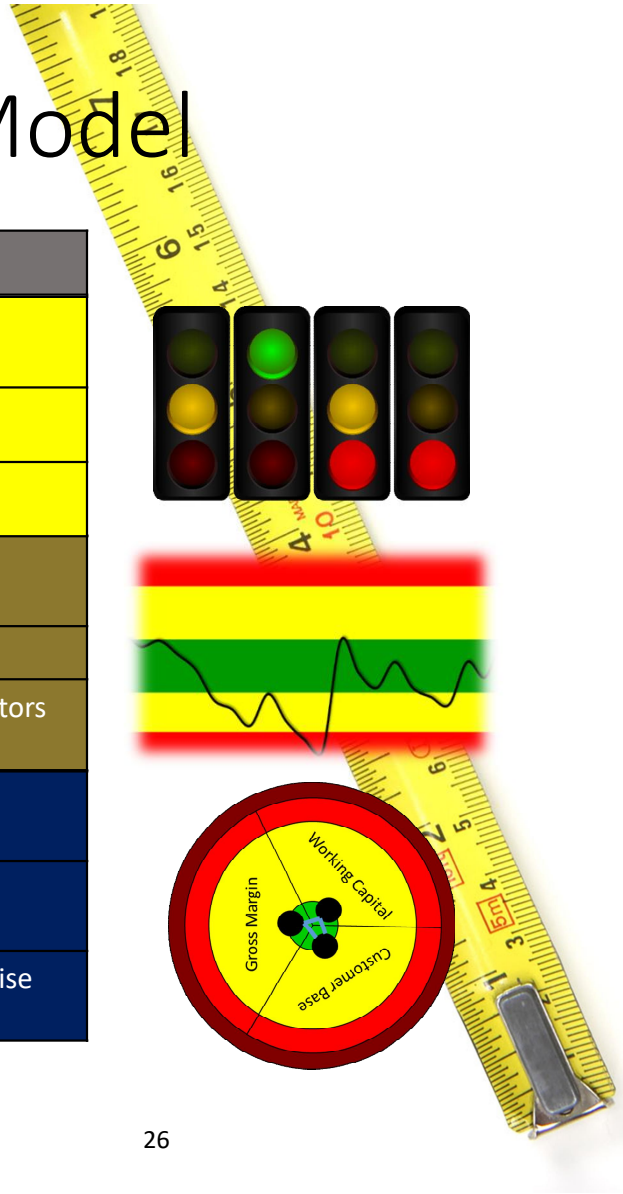
Demand Driven INSTITUTE™ Allergan™ LVMH MOËT HENNESSY LOUIS VUITTON AMOREPACIFIC

3. Flow-Based Metrics



Flow-Based Metrics in the DDAE Model

	Metric Objectives	The Message Behind the Objective
Operational	System Reliability	Execute to the model, plan, schedule and market expectation;
	System Stability	Pass on as little variation as possible;
	System Speed/Velocity	Pass the right work on as fast as possible;
Tactical	System Improvement & Waste Reduction (Opportunity $)	Identify and prioritize obstacles/conflicts to flow
	Local Operating Expense Control	Spend minimization to capture the market opportunity
	Strategic Contribution	Maximize system return according to relevant model factors (volume and rate)
Strategic	Contribution Margin (cash generation rate)	Drive innovation (internal and external) and growth to increase cash generation capability (RATE)
	Working Capital (inventory & cash & credit)	Ensure proper levels of working capital to protect and promote flow in the short and long term
	Customer Base (market share, sales & service & quality)	Ensure and grow a solid base of business for the enterprise (VOLUME)



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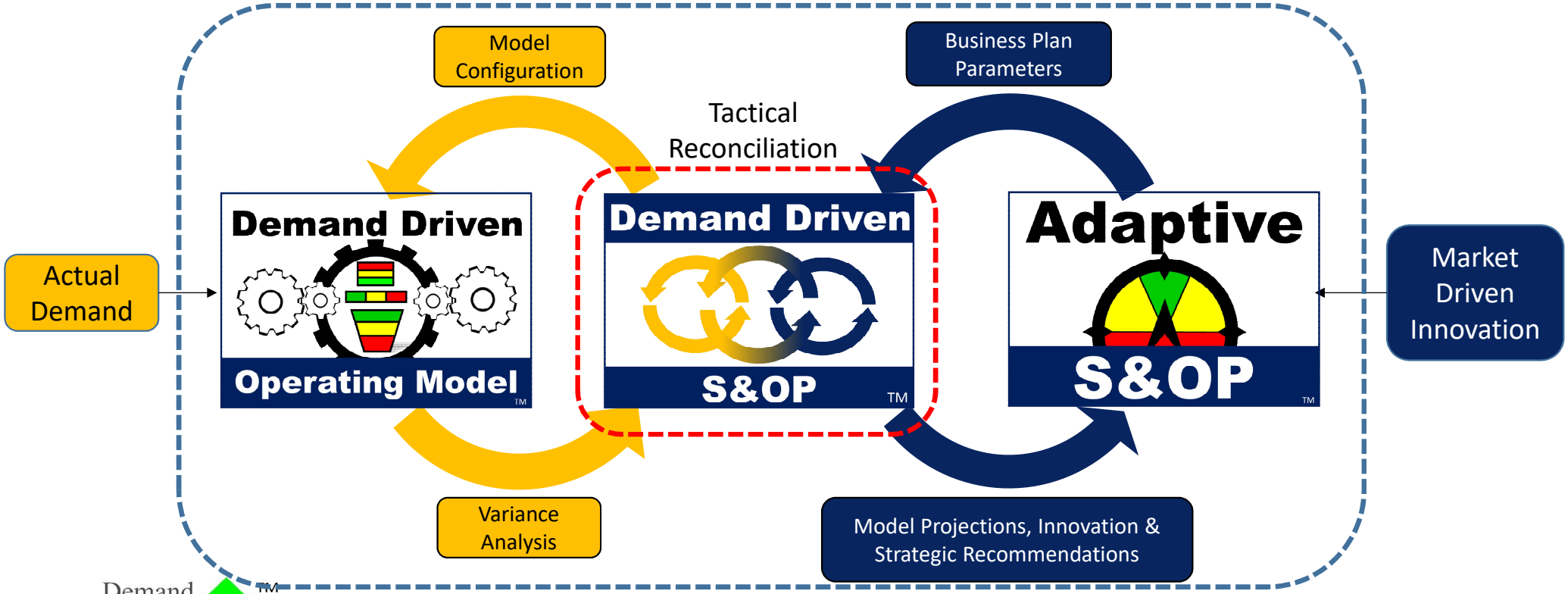
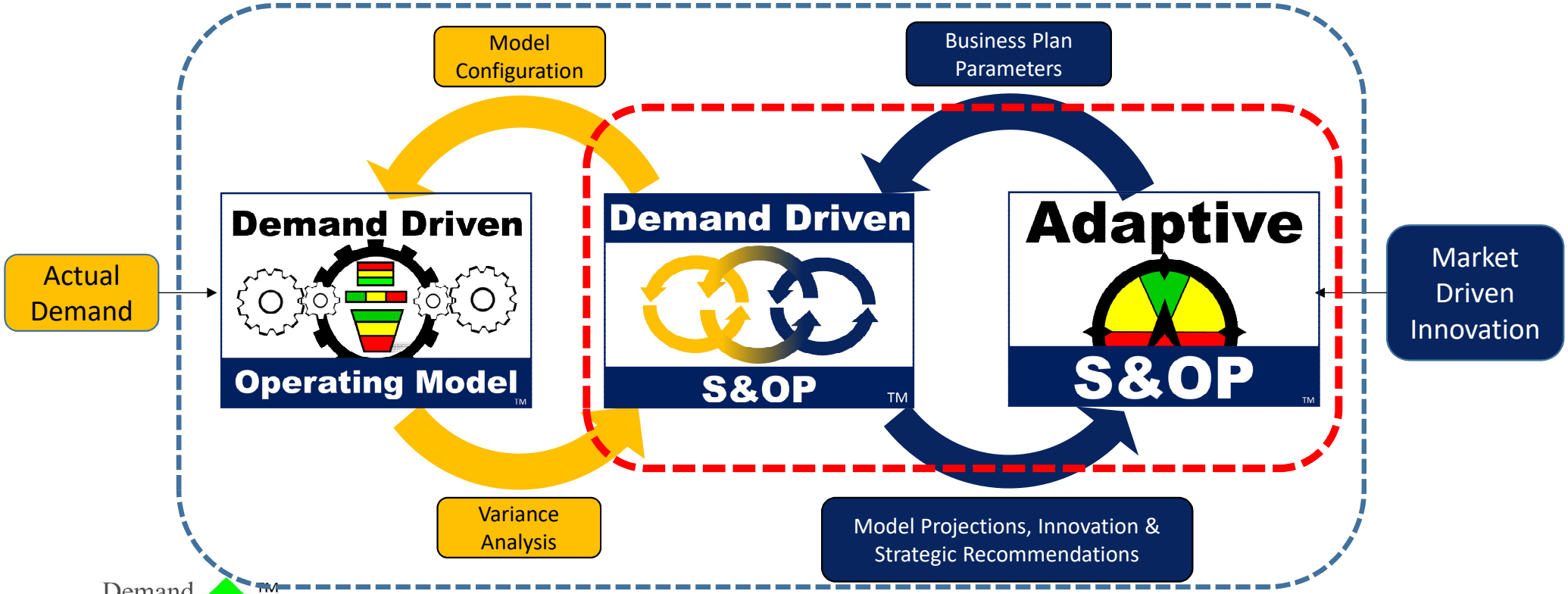
4. Tactical Reconciliation



DDS&OP + Adaptive S&OP = Robust S&OP



How to Get Started?

DDAE III	Sensing, Adapting and Innovating across the supply chain (customers and suppliers) for continual ROI improvement. Mature DDAE Model.
DDAE II	Leverage the Demand Driven Operating Model capability across the enterprise and into the market. DDS&OP and Adaptive S&OP in place.
DDAE I	Synchronizing and leveraging operational capability for better flow performance. Expand the implementation of a Demand Driven Operating Model.
Stage 2	Begin to emphasize flow-based operational efficiency with the preliminary implementation of DDMRP.
Stage 1	Focused on cost-based operational efficiency (Cost reduction AND Responsiveness in conflict).

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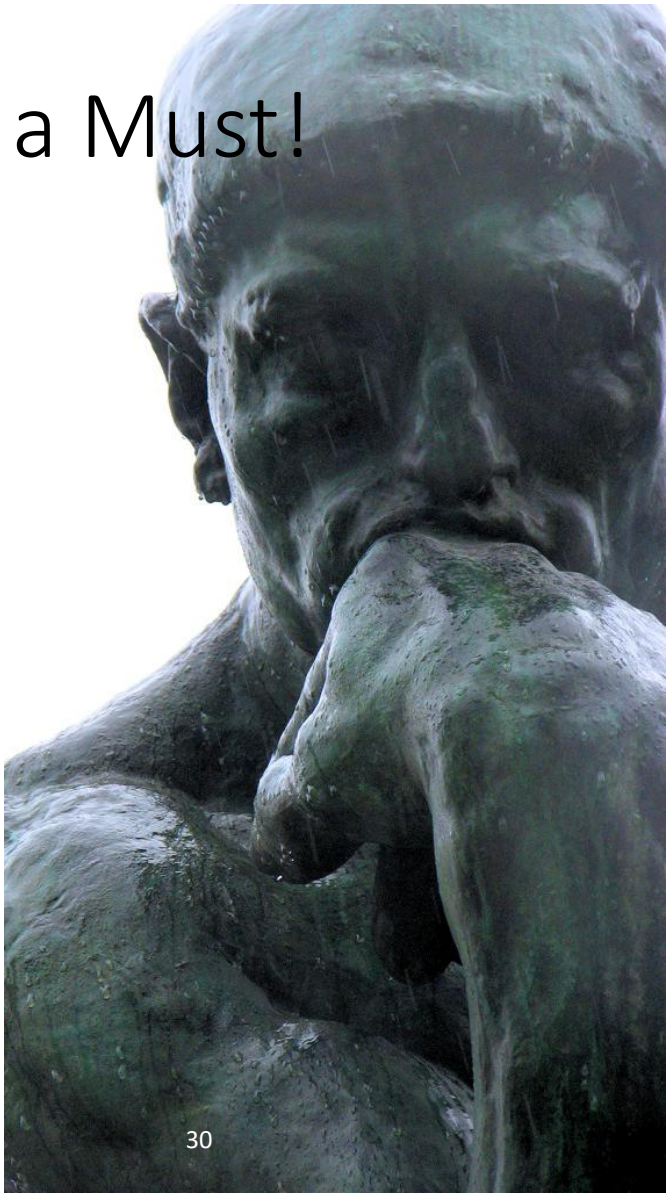
A Final Element - Thoughtware is a Must!

- Thoughtware BEFORE hardware and software! Invest in people's ability to think and problem solve systemically.
- If you can't think systemically then you can't observe, identify and resolve distortions to relevant information and materials at the systemic level.
- That means your organization is INCAPABLE of thinking and adapting for FLOW at all levels.
- Ensuring and maintaining a framework for the four pre-requisites for relevant information should be the primary job of senior management



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