



MIT MASSACHUSETTS INSTITUTE OF TECHNOLOGY

MIT Center for Transportation & Logistics



## Designing a Sales and Operations Planning (S&OP) Process

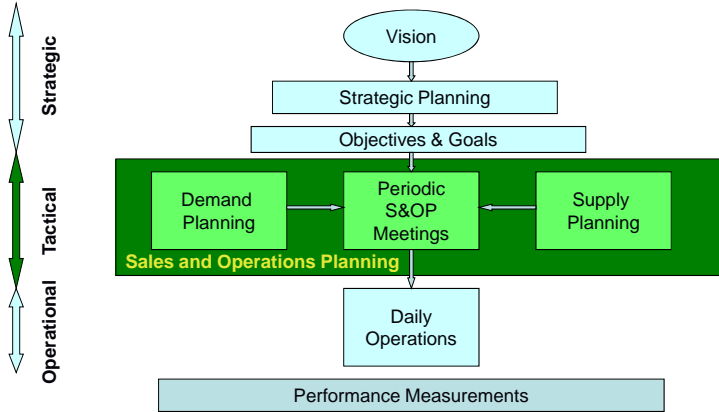
InBev:AB Executive workshop  
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Larry Lapide, Ph.D.  
Research Affiliate, MIT CTL  
llapide@mit.edu


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### What Is S&OP?: It Is a Routine Tactical Planning Process to Match Future Supply and Demand




Source: Peng Kuan Tan, "Demand Management: A Cross-Industry Analysis of Supply-Demand Planning", MIT Master of Engineering In Logistics Thesis, June 2006

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Larry Lapide 2011



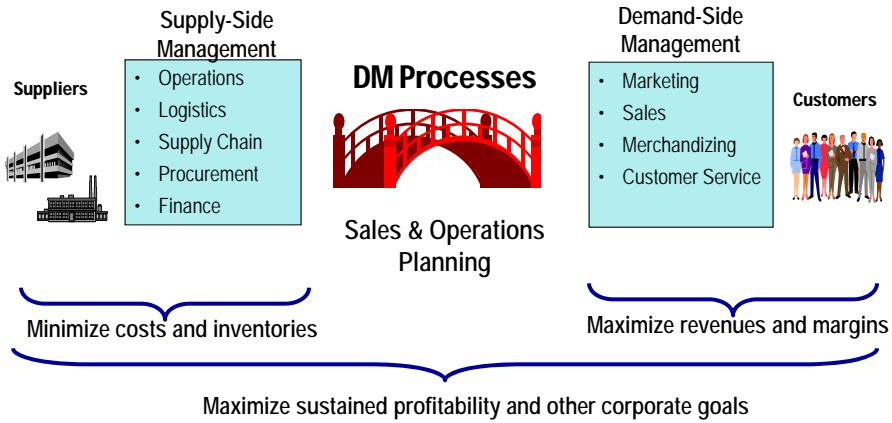
## Agenda

- Importance of the Sales and Operations Planning (S&OP) Process
- How S&OP is done
- Success factors (including the planning hierarchy)
- Improving the S&OP process

## Companies Have Been Revising or Implementing S&OP for their First Time because:

- More global selling (internationally into multiple countries)
- More global sourcing (internationally from multiple countries)
- More fragmented supply lines (e.g., outsourcing )
- Longer supply lines and lead times (e.g. off-shoring)
- Rise of consumerism has led to more competitive environments to plan:
  - Broader product lines with more Stock-Keeping-Units (SKUs)
  - Shorter product-life cycles (with more fashion-oriented products)
  - More Mergers & Acquisitions to gain customers/products
- Greater uncertainty and risks

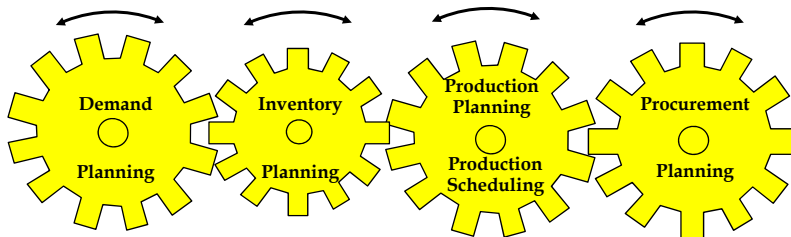
## S&OP Keeps the Critical Bridge Between Demand and Supply-Side Management Open



L. Lapide, "The S&OP Rudder", Supply Chain Management Review, March 2009

## An Integrated Supply Chain Requires S&OP

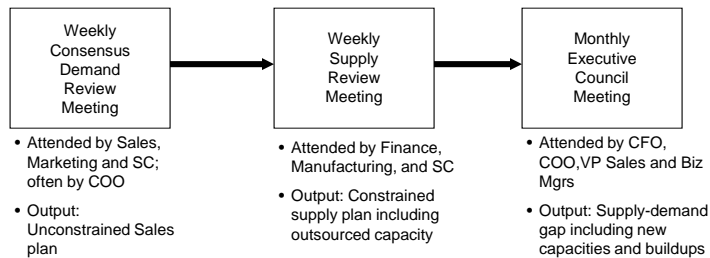
Aligning supply and demand plans helps ensure product availability with minimal waste and inefficiency



## Agenda

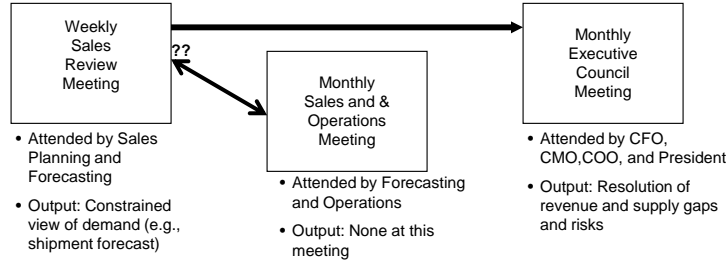
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## Semi-Conductor Company's S&OP



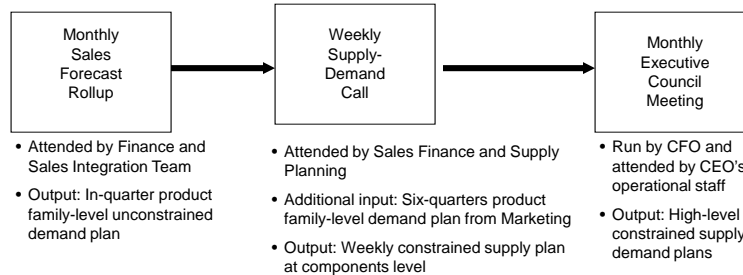
- Process driven by Integrated Process Director from Supply Chain (SC)
- Plans by month for 18 months
- Improvements:
  - Automate to allow more demand-side planning focus
  - Incorporate demand uncertainty
  - Plan for external fabs and foundries

## Consumer Telecommunications Equipment Manufacturer's S&OP



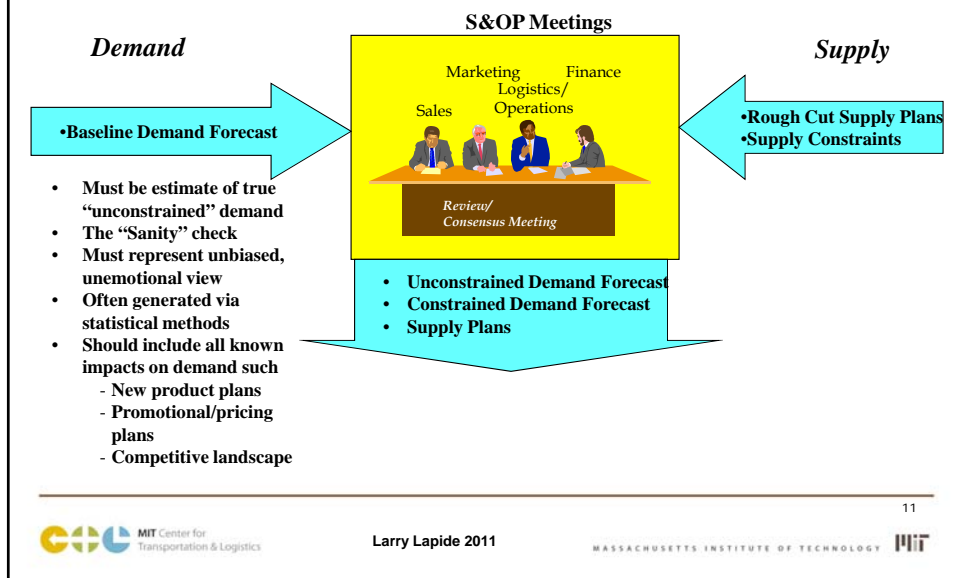
- Process driven by Director of Forecasting
- Plans by month for 12 months
- Improvements:
  - More feedback from Operations

## Computer System Manufacturer's S&OP



- Process driven by Senior Director, Supply Planning and Mgmt
- Plans by week for one year
- Improvements:
  - More input and accountability from Marketing
  - Get information to suppliers quicker
  - More focus on "extended" lead-time products

## An S&OP Process Is Typically Driven by a Baseline Forecast Predicted on a Pre-Defined Demand Plan



## Elements of S&OP meetings

- Number of meetings
  - One: To match supply and demand
  - Three: Demand review, then Supply Review, then final executive-level review and adjustments (e.g., Executive S&OP)
- Frequency and length
  - Monthly and/or weekly
  - 2 hours to half of a day
- Cross-functional
  - Demand forecasting organization
  - Supply chain
  - Operations ( e.g., manufacturing, logistics)
  - Marketing
  - Sales
  - Finance

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## S&OP Success Factors

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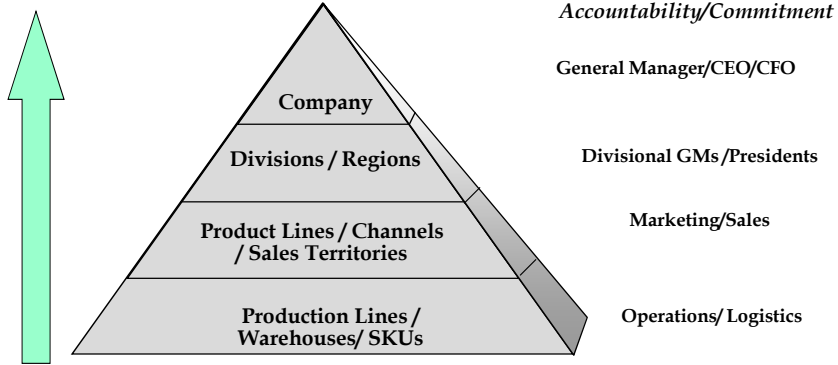
1. Ongoing routine S&OP meetings
2. Structured meeting agendas
3. Pre-work to support meeting inputs
4. An unbiased baseline forecast to start the process
5. Cross-functional participation
6. Participants empowered to make decisions
7. An unbiased, responsible organization to run a disciplined process
8. Internal collaborative process leading to accountability/ consensus\*

\*A planning hierarchy is important to a collaborative process

L. Lapide, "Sales and Operations Planning Part I: The Process", Journal of Business Forecasting (JBF), Fall 2004

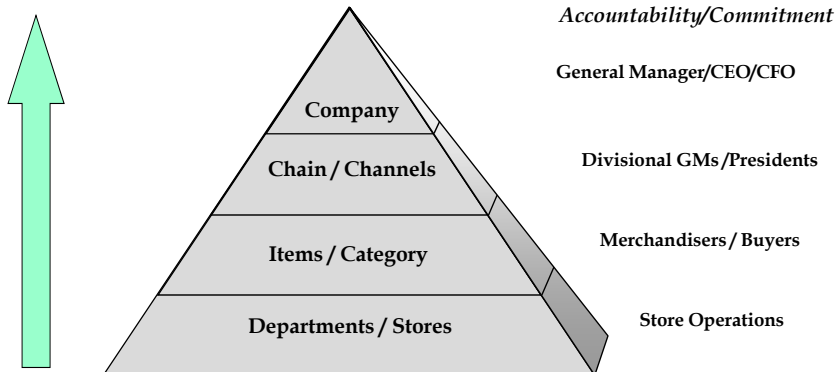
## Manufacturer "One Number" Functional Accountability

*One Number Plan*



## Retailer "One Number" Accountability

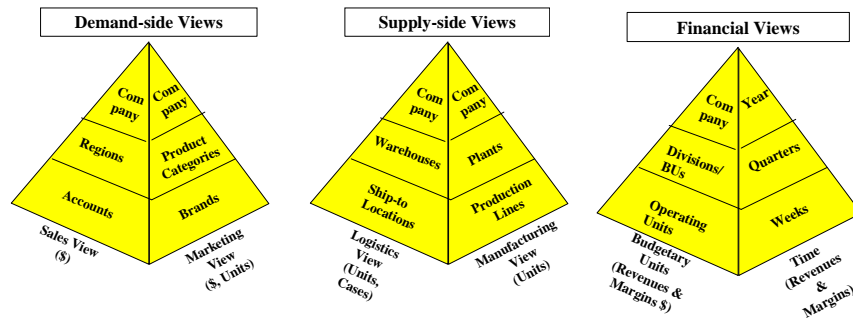
*One Number Plan*





## Planning Hierarchies

Single number plans need to be translated into terms stakeholders can understand



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## Current S&OP Processes Are Challenged in Seven Ways

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1. Operations and APICS-oriented, and often not Marketing & Sales friendly
2. Don't leverage organizational capabilities well
3. Internally-focused
4. Not globally-focused
5. Blind to uncertainties and risks
6. Lack adequate process measurement
7. Technology-challenged

## 1. What Needs the Most Improvement?

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### Frequent Imbalance in Functional Participation/Accountability

**s&OP**

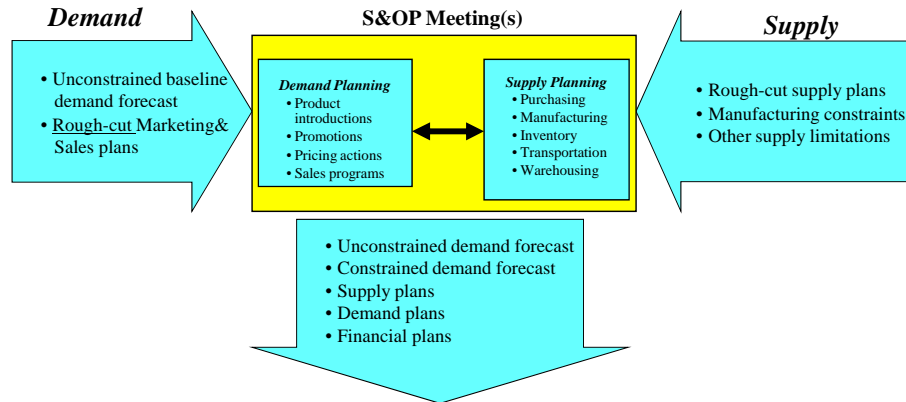
or

**S&oP**

instead of

**S&OP**

## 1. S&OP Does This by Enabling Joint Demand and Supply Planning



**“Need a process that is able to chase demand or supply quickly”**

## 2. Organizational Capabilities: Many S&OP processes turn into Arm-Wrestle conflicts



Source: DS.com S&OP Knowledge Center, DemandSolutions, 2008

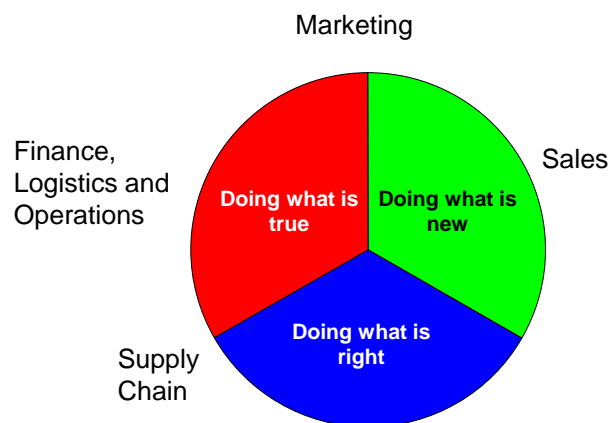
## 2. Organizational Capabilities: Types of Manager Mindsets\*



Sources: \*Based on concepts discussed by Dr. Shalom Saar (MIT-CTL) at Demand Management Symposium held at MIT in 2006  
 Larry Lapide, "Sales and Operations Planning (S&OP) Mindsets", Journal of Business Forecasting, Spring 2007  
 Larry Lapide, "S&OP Psych 101", Supply Chain Management Review, April 2007

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## 2. Major Mindsets of S&OP Participants



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## 2. Roles in the S&OP Process That Leverage Mindsets

- Sales: Identifying the sales possibilities, sales plans and market assumptions.
- Marketing: Identifying the demand plans, market assumptions, and possibly forecasting the demand.
- Operations & Logistics: Developing the supply plans and possibly forecasting the demand.
- Finance: Monetize the supply-demand financial plans.
- Supply Chain: Moderating a disciplined collaborative process and possibly forecasting the demand.

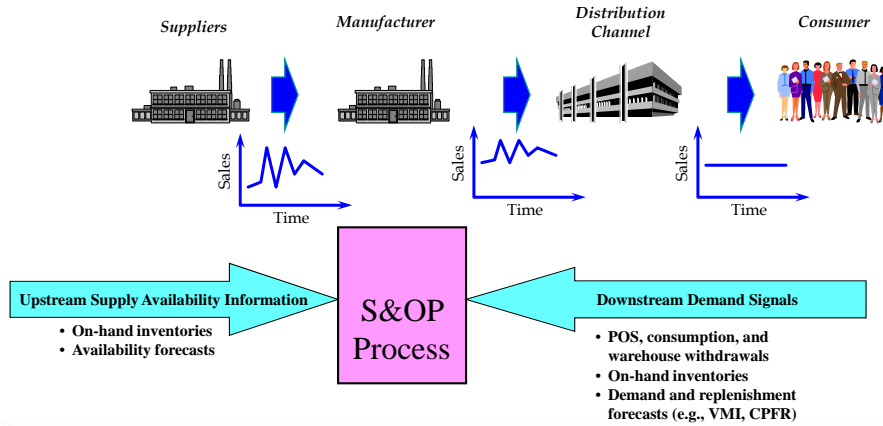
## 3. What Also Needs Improvement?

### Internal “Four Walls” Concept With Little External Collaboration



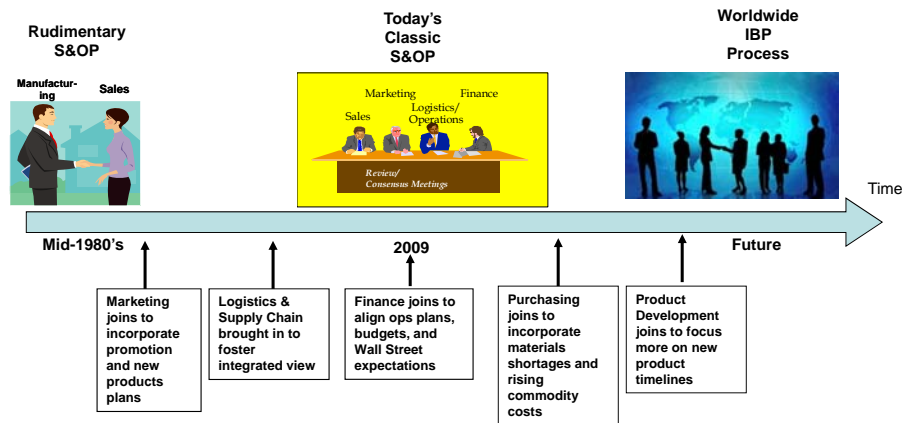
### 3. Greater Use of Downstream and Upstream Collaborative Information is Needed

The "Bull Whip Effect" can be reduced and better understood using multiple upstream and downstream data in the S&OP process



### 4. S&OP Needs to Support Larger, More Complex Global Businesses

S&OP's evolution towards becoming 'The Integrated Business Planning (IBP) Process' requires a global/multi-country focus



#### 4. S&OP Needs to Support Larger, More Complex Global Businesses

- Christopher Michael Honstain", Sales & Operations Planning in a Global Business", MIT Master of Engineering In Logistics Thesis, June 2007:
  - Research question: How do you break up S&OP for complex and global businesses?
- Findings:
  - Break up the S&OP process into closest entities that represent Profit & Loss (P&L) centers
  - Using the supply-side to best determine the P&L structure
  - Have Finance consolidate and harmonize the operational pieces
    - *It becomes more important to translate operational plans into financial plans*

#### 5. Current S&OP processes Don't Account for Uncertainties

- Most S&OP process use point forecasts and plans, assuming certainty
- Need to incorporate risk management techniques and methods to account for uncertain supply as well as demand
  - Francis Bacon: "If a man will begin with certainties, he shall end in doubts; but if he will be content to begin with doubts, he shall end in certainties".
- Yanika Daniels and Timothy Kenny, Leveraging Risk Management in the Sales and Operations Planning Process , MIT MLOG thesis, June 2008
  - Research Question: What risk management techniques can be brought into S&OP?
- Findings:
  - Use of range and scenario forecasts ( to represent uncertainty)
  - Methods such as buffer strategies\*, multiple sourcing, etc.
  - Customer and product segmentation (importance vs forecastability /order lead times)

\*Larry Lapide, "How Buffers Can Mitigate Risk", *Supply Chain Management Review*, April 2007

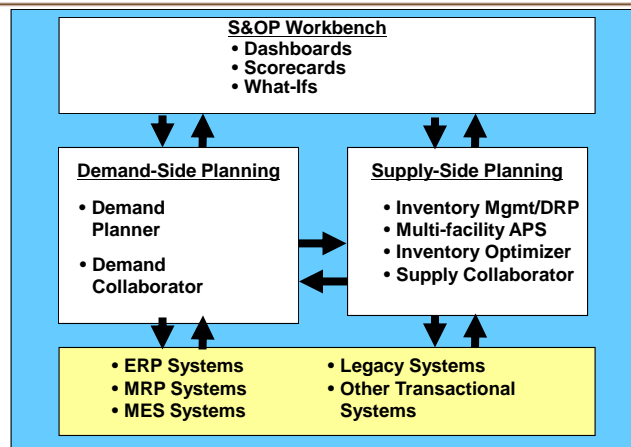
## 6. S&OP Needs More Process-Based Performance Metrics (e.g., KPIs)

- Demand-side
  - Forecast accuracy ( compared to demand variation or naïve forecast)
  - Variance to baseline forecast
  - Demand versus budget and Sales and Marketing goals
  - Adherence to demand plan
  
- Supply-side
  - Adherence to manufacturing /operational plans
  
- Supply-Demand
  - Efficient Perfect Order (the ultimate measure of S&OP)\*
  - “Interplant Shipments” (August Busch III)

\* See: Larry Lapide, “Not-So-Perfect Order”, *Supply Chain Management Review*, July/August 2007

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## 7. Lastly, An Integrated Supply-Demand Planning Technology Enabling Architecture is Needed



L. Lapide, “Sales and Operations Planning Part II: Enabling Technology”, *JBF*, Winter 2004/2005  
 L. Lapide, “Sales and Operations Planning Part III: A Diagnostics Model”, *JBF*, Spring 2005

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# Questions?