

## Sales & Operations Planning (S&OP) for Chemicals

Supply Chain Integration – Overcoming the Barriers and  
Meeting Today's Challenges to Succeed with Sales &  
Operations Planning

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Sales & Operations Planning was introduced to the chemical industry as the process that could tear down the walls of functional silos within a business and eliminate internal barriers to continuous and sustainable business improvement. Although many chemical companies adopted the S&OP process during the past 20 years, most are not functioning as designed or have been discontinued altogether. Various industry studies report that only 25-35 percent of chemical companies are satisfied with the results from the S&OP processes. Why is this? There may be several reasons:

- Lack of executive sponsorship and support
- Lack of defined ownership
- No established performance metrics
- Management compensation is not tied to the correct business process measures, therefore there are road-blocks to collaboration
- Ill-aligned organizations that can't support the process

The answer just may be “all of the above.” So what does it take to succeed with Sales & Operations Planning in this industry? Let’s take a look.

## ORGANIZATION, PROCESS & TECHNOLOGY

Sales & Operations Planning in the chemical industry is a complex, global collaboration both internally within the organization as well as externally with customers and suppliers. The current global landscape is one of volatility and risk due to continued instability in employment, financial markets, natural disasters and energy. As an industry we are also faced with slow growth in mature markets, demand shifts in emerging markets, industry consolidation, increased regulatory compliance (REACH) and asset utilization decisions. All of these elements contribute to the complexity and challenges associated with Sales & Operations Planning in chemicals. This POV will discuss areas related to organization, process and technology in Sales & Operations Planning.

## S&OP ORGANIZATION: THE FOUNDATION

Building a strong foundation for Sales & Operations Planning is critical for the success of any S&OP initiative. The foundation starts with clearly defined Executive Sponsorship/Leadership at the highest level of the organization. S&OP has a major impact across the entire organization. With any initiative of this size and complexity, Executive

Sponsorship/Leadership is a prerequisite. The CEO/COO must set the vision for the organization to embrace Sales & Operations Planning as standard operating procedure and not the latest flavor of the month. S&OP should be incorporated as a key strategy of the organization with the appropriate strategic Key Performance Indicators (KPIs) set as a part of strategic corporate objectives. **S&OP Team KPI's must be tied directly to management compensation.**

The CEO/COO must assign the responsibilities for S&OP decisions to business executives such as a Business Unit Leader or General Manager with full profit & loss (P&L) responsibilities. The business and financial decisions made as part of S&OP will have both short- and long-term impact on the organization. Executives with P&L responsibility must be responsible for S&OP decisions. As P&L responsibility is tied to compensation, Business Unit Leaders and General Managers have a vested interest in making informed, accurate and timely S&OP decisions aligned directly with their compensation plans.

Depending on an organization's business needs and requirements, the S&OP organization can be regional or global. Considerations must be made concerning a number of organizational and business variables to properly decide on the appropriate global versus regional structure.

The S&OP team is typically comprised of leaders from Finance, Supply Chain (Demand Planning, Procurement and/or Logistics), Manufacturing/Operations, Sales, Marketing, R&D and a Business Unit Manager (when applicable). The composition of this team always covers the aforementioned functional areas, but personnel involvement may vary dependent upon the size of, and the organizational structure of, the business. Clear ownership of the S&OP process is a prerequisite for the establishment and long-term effectiveness of the S&OP team. In many organizations you will find S&OP process ownership assigned to the senior executive that is in charge of Supply Chain or Manufacturing/Operations. Key Performance Indicators aligned to compensation for the S&OP team bring a shared responsibility to the team for integrated performance.

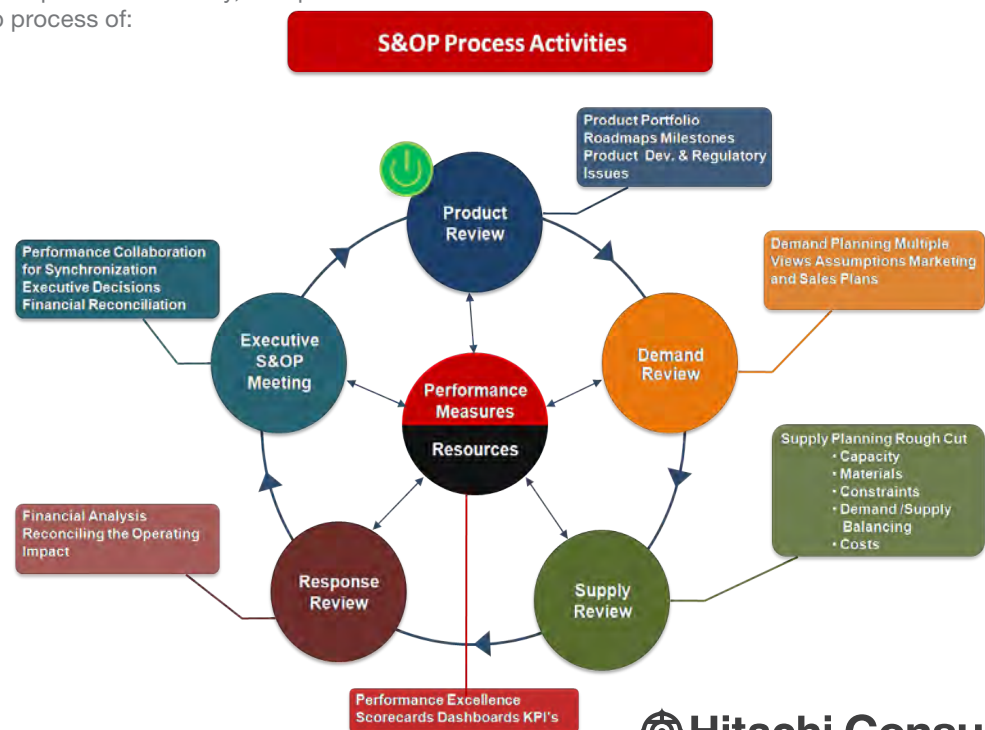
In a few organizations, there is a trend of S&OP process ownership being assigned to finance. With the continued emergence of Integrated Business Planning (IBP) as the key financial element of the S&OP process, financial executives are being asked to step up to take the lead ownership role in S&OP. S&OP teams are being tasked to focus on areas such as cost cutting, visibility (demand and cash), inventory optimization, value chain collaboration and financial simulation (income statement, balance sheet, working capital). Scenario planning ("what if" planning) has become the norm in developing the long-term plan (two to 18 months) due to today's global market dynamics. Most areas have a strong relationship to finance.

This is a new role for finance which will require a deep understanding of the business. The S&OP process orchestration to sequence inputs from Supply Chain, Manufacturing/Operations, Sales, Marketing, R&D is similar to the budgeting and business planning process. Current state S&OP is a monthly budgeting and planning process that simulates the effects of Demand and Supply forecasts for a period of two to 18/24 months. The emergence of finance as the owner of the S&OP process is a clear indication that Integrated Business Planning is fast becoming the norm.

### S&OP PROCESS: THE MAGIC

Discipline is required to build a world-class S&OP organization and S&OP processes. S&OP is not an ad hoc process; it requires consistency, discipline and stamina. We support the Oliver Wight five-step process of:

1. Product Review
2. Demand Review
3. Supply Review
4. Response Review
5. Executive S&OP Meeting



## COLLABORATION: TEAM

The S&OP process that is optimized for performance is a collaborative effort. It has to be as inputs from Finance, Supply Chain, Manufacturing/Operations, Sales, Marketing, R&D are all elements of S&OP. Participation is not optional, it is mandatory. Executive Leadership, KPI alignment and discipline are all elements which make the collaboration function.

The Sales & Operations Planning process must be an internal and external collaborative effort because it requires input from each functional area along with suppliers and customers to balance the demand with the supply capability to meet the business and market requirements. Therefore, the best information available to the team is dependent on the contribution of each team member. It is important the organization is structured to support the S&OP Process and the S&OP Process is well-defined so each functional component and partner understands their roles and responsibilities. S&OP activities and performance must be reported to the organization routinely to retain and maintain organizational engagement. The diagram below depicts team members and their roles and responsibilities.



There are a few additional areas important for future S&OP process collaboration optimization. In today's expanding and demanding global market, it is increasingly important to bring your customers and suppliers into the S&OP process when possible.

1. Regulatory Participation
2. End-Customer Markets
3. Suppliers

## COLLABORATION: REGULATORY

As global regulations such as European Union (EU) and China REACH have a more complicated compliance impact on the industry, Regulatory will have an increasingly important role as a collaborative participant in the S&OP process. Regulatory will be called upon to provide compliance guidance concerning the acquisition of compliant raw materials and the sales of compliant finished products in downstream-users markets. The initial EU REACH registration for substances greater than 1,000 tonnes went into effect in 2010. There are 3,500 substances which were registered with the European Chemicals Agency (ECHA) by the 2010 REACH deadline that met the criteria to be classified as hazardous. Starting June 1, 2011, under the REACH regulations, producers and importers of articles have a legal obligation to notify the ECHA if any Substances of Very High Concern (SVHC) are included in the Candidate List.

Regulatory will be the conduit on the S&OP team which will view compliance across the value chain from raw material sourcing to finished products sold. As Demand and Supply views are being developed, the certification of complaint raw materials and the understanding of registration bands for substances will play an ever-important aspect of S&OP planning. Regulatory review of new products from R&D and their impact on commercialization must be incorporated into the S&OP process. Expansion of existing products where substances are added to the SVHC Candidate List must be viewed from a Regulatory standpoint to make sure the financial impact makes good business sense.

## COLLABORATION: END-CUSTOMER MARKETS

The chemical industry ships 60 percent of its volume to other chemical companies to incorporate in their products. This means that 60 percent of the volume is not sent to end-customer markets. As was evident during the United States' financial crash of 2009, there was a rapid deterioration of business that cascaded from end-



customer markets to Tier 2 producers. S&OP collaboration must include a clear view into the end-customer markets (Automotive, Construction, Electronics, etc.) for proper visibility into demand signals and requirements. Marketing will be required to work with the Tier 2 producers to gain a better understanding of their end-customer market demand signals. A more rapid response to changes in demand will be a key element for more accurate and effective S&OP planning.

#### **COLLABORATION: SUPPLIERS**

Increased focus must be placed on supplier collaboration. The continued industry consolidation and repositioning of assets and businesses has added additional complexity to the supply of raw materials. Raw materials are the single largest cost to a chemical company representing 50 – 60 percent as a percentage of sales. Having a clear understanding of supply positions and pricing as part of the S&OP process is critical. As more companies progress to Integrated Business Planning, the financial accuracy of raw materials plays an increasingly important role in developing accurate S&OP financial models. Raw material markets have been volatile for a few years as oil prices continue to rise and fall. No one can predict the future but collaboration with suppliers will provide a more discrete level of accuracy to the process.

Additionally, the Regulatory aspect of supplier collaboration should be integrated into the S&OP process as discussed under Regulatory Participation in S&OP.

#### **PERFORMANCE MANAGEMENT KPIS**

Earlier in this POV, we mentioned the need for KPIs aligned with compensation as a critical element to bring discipline to the S&OP process.

Our opinion is that for an immature S&OP team and process, the team should be measured against a maximum of five to 10 KPIs. The initial set of KPIs will focus on team behavior such as Meeting Attendance/Participation and process effectiveness such as forecast accuracy (Sales, Marketing, Demand Planning, Financial) and production plan adherence.

As the team matures and becomes more proficient in the S&OP process, a number of enhanced KPIs will be incorporated into the performance management metrics. The measure could include Backlog versus Plan, Inventory Turns, On-Time Shipments, Perfect Order, Profit versus Plan, RONA and Working Capital (DOH, DPO, DSO).

A balanced alignment of KPIs relating to Income Statement, Balance Sheet and Capital Utilization such as RONA will provide integrated view of performance across the business operations.

There are many cause and effect relationships within S&OP KPIs. There is a primary owner of the KPI with a number of dependencies as well. When aligning KPIs with compensations, the dependencies must be identified, recognized and incorporated. The dependencies unfortunately cut across different departments of the organization and will/can cause conflicts. As an example, Manufacturing/Operations is measured against Production Plan

Adherence. What if the Procurement organization is delayed in releasing orders to suppliers for a critical raw material to reduce end-of-month inventories or logistics changes carriers to save inbound freight costs and the carrier has an equipment shortage which delays delivery? Late delivery of raw materials for various reasons forces a change in the production schedule and Production Plan Adherence. Manufacturing/Operations did not cause the delays but will be affected by an unfavorable variance to their Production Plan Adherence KPIs.

A robust Performance Management for the S&OP environment will provide the foundational discipline to sustain a high performance S&OP team and process. S&OP team KPIs must be tied directly to management compensation. Performance Management for S&OP must be designed as a composite of measures across the S&OP team integrating the team while removing the silos which typically exist in an organization. Performance Management KPIs for the S&OP team should balance the Finance, Supply Chain, Manufacturing/Operations, Sales, Marketing, R&D and Regulatory metrics in a way that encourages team building, consensus planning and links to the tactical and strategic objectives of the organization. Conflicting KPIs across Finance, Supply Chain, Manufacturing/Operations, Sales, Marketing, R&D and Regulatory will misalign incentives and sub-optimizes the process and results of the organization.

When repeated, consistent unfavorable or favorable variances appear with in a KPI, root cause analysis of the variance

must be completed. Favorable variances need the same level of scrutiny as do unfavorable ones. The objective is to drive the process where on target, minimum variation is the goal through continuous improvement.

As the number of KPIs grows in maturity, value and complexity, the ability to acquire and present the information through the performance management system will also be more complex. We discuss performance management system in the upcoming Technology Section.

## INTEGRATED BUSINESS PLANNING

Integrated Business Planning (IBP) refers to the technologies, applications and processes of connecting the planning function across the enterprise to improve organizational alignment and financial performance. IBP accurately represents a holistic model of the company in order to link strategic and operational planning with financial planning.

By deploying a single model across the enterprise and leveraging the organization's information assets, corporate executives, business unit heads and planning managers use IBP to evaluate plans and activities based on the true economic impact of each consideration.

Recent developments and successes in the areas of Business Intelligence and Performance Management technologies are accelerating the adoption of Integrated Business Planning. While IBP has been a vision for more than 10 years, the technology required for modeling, optimization and scaling was not integrated and operationally effective.

Although technology has and does play a critical role in IBP, it is not the Achilles Heel. The Achilles Heel to IBP is what this POV has been discussing: the organization and processes of S&OP.

IBP is initiated by the demand requirements published via the S&OP process. The demand requirements are then input into the IBP tool to begin the IBP process. If the demand requirements are inaccurate, inconsistent or outdated, the entire value of the IBP process and resulting simulation models have little to no value. Bad data input gives you bad

data output which is basically useless and is of higher risk than no data at all.

The foundation for world-class IBP is a strong foundation in your S&OP team along with consistent, repeatable and, most importantly, accurate information from the S&OP process. The Integrated Business Planning pyramid below depicts this model.

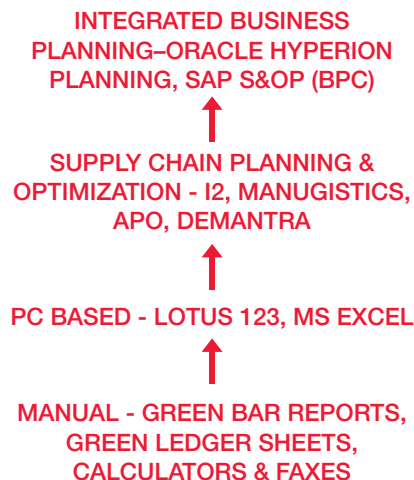
## INTEGRATED BUSINESS PLANNING PYRAMID



### S&OP TECHNOLOGY

Technology in S&OP plays a crucial role on two fronts, the S&OP process and S&OP performance management.

#### S&OP technology maturity:



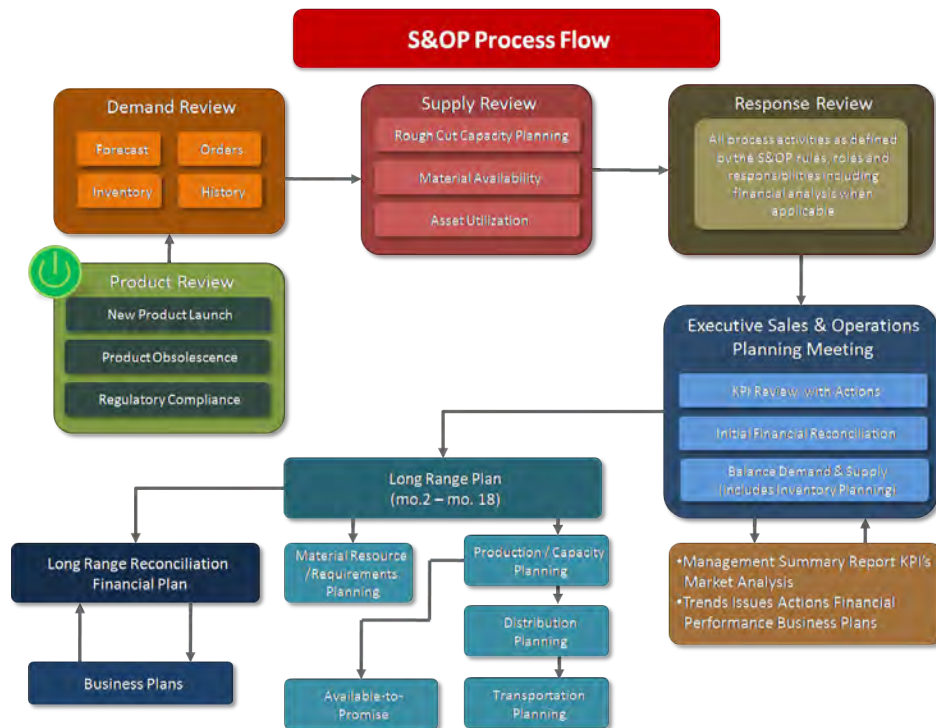
Before PCs, S&OP technology was pen, pencil, highlighters, calculators and fax machines. What a quantum leap we made with Lotus 123 and then Excel. The first generation of true S&OP tools

from i2 and Manugistics totally changed the technology game followed by tools such as SAP APO and Demantra. The next generation of Integrated Business Planning tools are being developed by Oracle, SAP and other technology solution providers.

Where does your organization stand relative to S&OP technology?

If your organization is still using Excel for S&OP planning, you are now close to a generation behind in the deployment of S&OP technology and the business processes associated with world class S&OP. As IBP becomes more mainstream, are you risking a competitive advantage in the marketplace?

The IBP model below depicts an example of an S&OP environment.



## S&OP PERFORMANCE MANAGEMENT

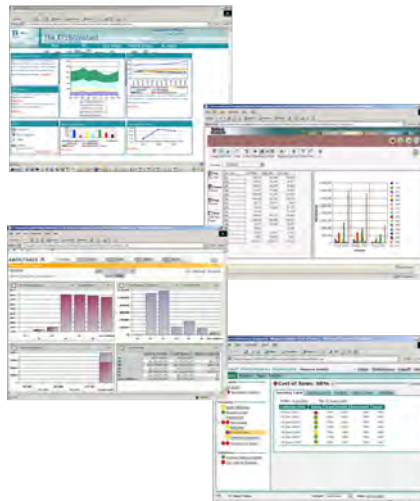
Hitachi Consulting's S&OP Performance for Chemicals is the strategy, people, process, technologies, tools, and methods used to capture, manage, and deliver S&OP performance capabilities across an enterprise.

- S&OP Performance Management provides alignment, guidance and direction
  - ✓ Define S&OP value discipline/value proposition
  - ✓ Clarify S&OP accountability
  - ✓ Negotiate S&OP service level agreements (SLAs)
  - ✓ Standardize S&OP data/KPIs
  - ✓ Increase S&OP timeliness and accuracy

Scorecards are an excellent delivery vehicle to deploy S&OP KPIs across the organization.

## The Role of Scorecards for S&OP

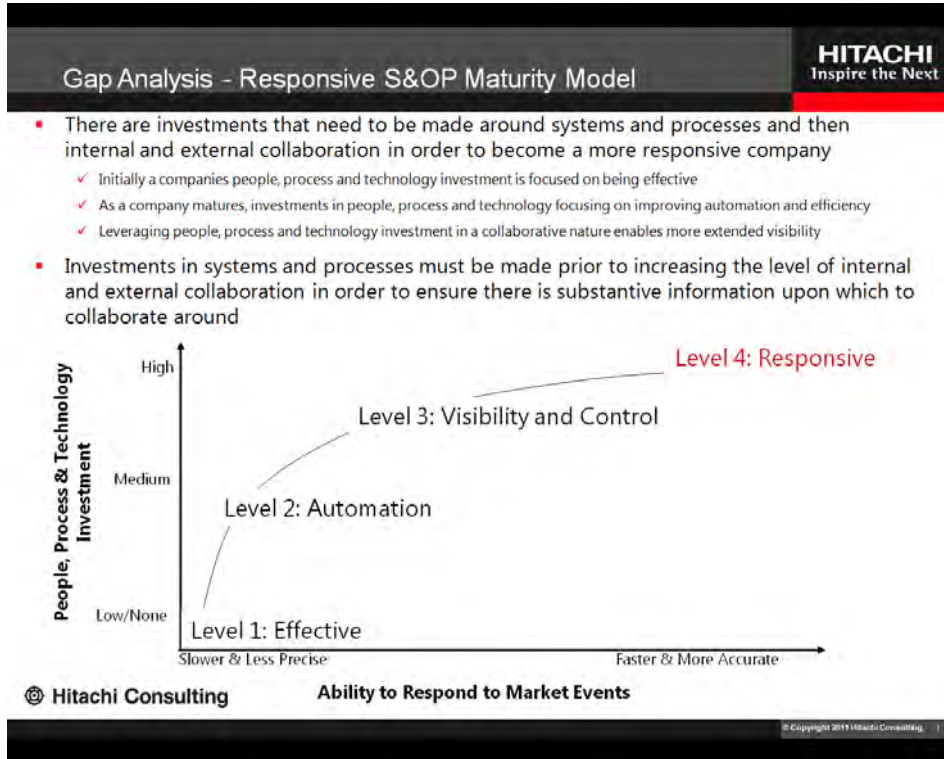
- ▶ Reduce information overload by focusing on the "critical" KPI's
- ▶ Enable exception-based management by comparing performance vs. plan
- ▶ Drilldown reveals sources of variance
- ▶ Provide trended performance analysis
- ▶ Increase visibility and accountability
- ▶ Simple and intuitive interface to data
- ▶ Highly accessible, web-based delivery
- ▶ Standardize key metrics across the enterprise, customers and vendors
- ▶ Increase the timeliness of reporting
- ▶ Decrease the cost of reporting



**SUMMARY**

As discussed, Sales & Operations Planning in the chemical industry is complex and as the global market grows it will become increasingly more difficult to meet the market's competitive demands. Mature companies in the S&OP process are moving forward to optimize the performance of their S&OP teams to build more accurate, robust, and financially focused S&OP plans. This POV touches on the essentials for a successful Sales and Operations Planning process – Organization, Process and Technology.

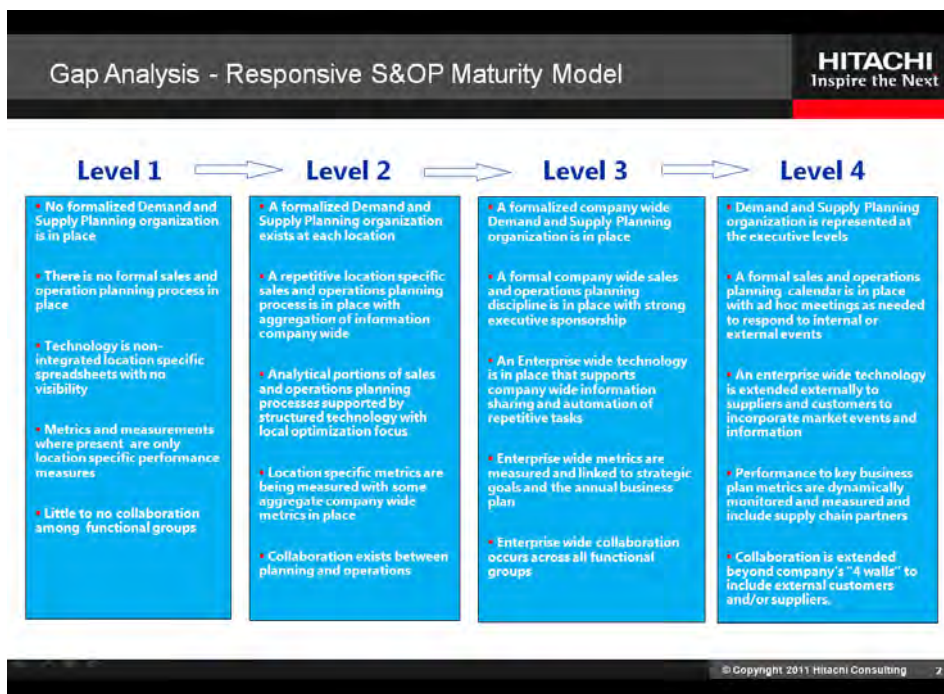
Below are two examples of maturity models to gauge your organization concerning S&OP maturity.



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