Measure Performance, Identify Opportunities,
Define Improvement Activities

SAP SUPPLY CHAIN PERFORMANCE INDICATOR

bigbyte™

bigbyte
software
systems

"Darkness cannot drive out darkness –
only Light can do that"

DR. MARTIN LUTHER KING

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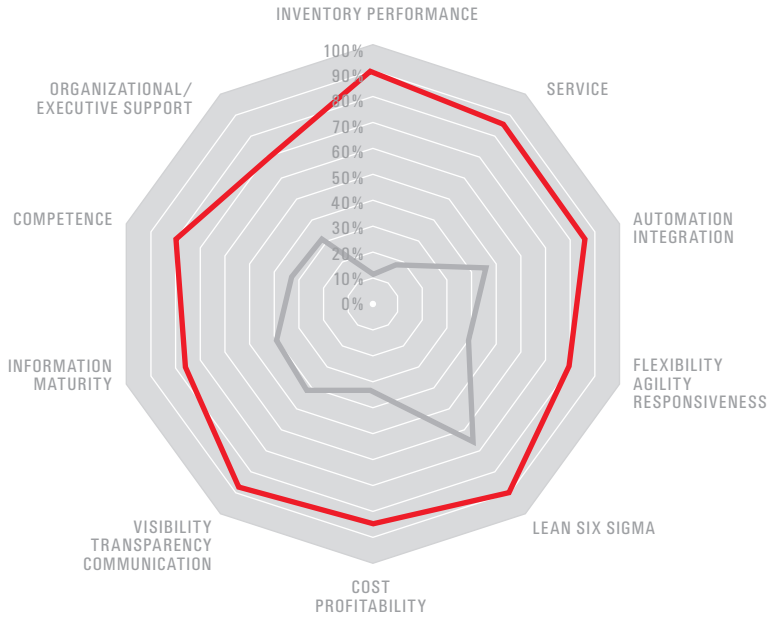
SAP PERFORMANCE EVALUATION IS POSSIBLE

Since the dawn of ERP systems, companies have tried to evaluate if they are on the right track implementing and using the software that runs their operations. SAP is undoubtedly the most widely used software application, supporting supply chain management and its complex functions and processes.



Measuring progress in the implementation and use of the software is a challenge. It is hard to know if you are improving, and it's tricky to compare one state of efficiency with another.
One of the greatest challenges is picking the right Indicators and measures. There are probably more KPIs than one could wish for and to pick the ones that provide useful result is difficult to say the least. Some of them are measurable in numbers, others need interpretation and a lot of experience to determine the rating.

The consultants at bigbyte have developed "SCPI" (pronounced "Skippy") to measure, evaluate, and rate your SAP supply chain performance. Ten major categories break down into individual Key Performance Indicators. Through a carefully designed weighting system, the individual ratings aggregate to the category evaluation, which provide the overall SCPI. Once aggregated, the SCPI can be evaluated on every level and compared to previous states or to another entity.
SCPI provides an excellent tool to uncover weakness and suboptimal states in your SAP supply chain. It also supports the definition of activities and projects to optimize the use and efficiency of SAP software, measuring the progress to achieve those goals.
SCPI can be measured for an individual plant or warehouse, and you can also apply it for your entire organization. Of course, it is possible to compare various entities inside your organization and you may also compare your organization to the industry standard.

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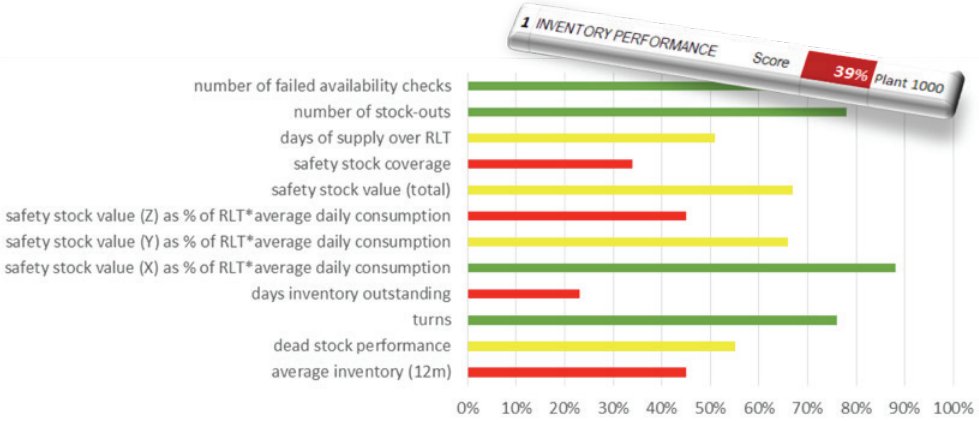
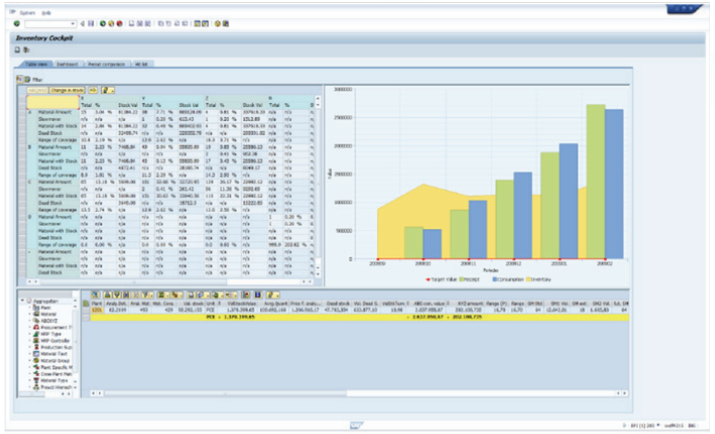
INVENTORY PERFORMANCE

Inventory is the lifeblood of any supply chain. Very often inventory is simply viewed as a liability with efforts to reduce it for increased financial performance. Some lean practitioners strive to achieve 'zero inventory' but as 'Factory Physics' and many other theories rightfully preach: "Without inventory there will be no Throughput". Inventories need to be optimized, not simply reduced. The delicate balance between availability (service) and inventory is dynamic, and therefore the way you evaluate whether you have too much or too little of the right item in the right place at the right time is of utmost importance.

As an example: Dead stock is a very good measure of how well your inventory performs. But by itself the measure is worthless... a $30,000 dead stock value doesn't tell you much! But if you relate it to your average inventory holding and consumption, you will get some answers. As soon as dead stock represents more than 25% of your average inventory holding, you have room for improvement.

Additionally, SCPI measures turns, safety stock values, days of supply and stock outs, and relates the result with a weighting system to derive a meaningful inventory performance measure.





Individual KPIs define improvement and optimization activities. The above situation, as an example, calls for better safety stock planning on X items (materials with consistent and predictable consumption). Overall we can derive that the inventory is too high for what is actually required. There aren't many stock outs, the availability check finds stock regularly, and the safety stock values are high. An inventory reduction effort is in order as long as the high availability and low stock-out rating is kept. This can be achieved with better replenishment policies and the introduction of an exception monitoring method.

Many of the KPIs come from the standard SAP Logistics Information System, but some additional ones like Safety Stock Value, Inventory developments, and different coverages come from the Inventory Controlling Cockpit. This cockpit combined with a Safety Stock Simulator, a Lot Size Simulator and The MRP Monitor, define sustainable and continuous optimization efforts.

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INVENTORY PERFORMANCE

Inventory performance for finished goods in the warehouse is measured separately from raw materials and WiP. Evaluating each category individually allows targeted measures and activities to be defined and executed. Eventually, the various KPIs are aggregated with a weighting system to derive the overall rating for your company's Inventory Performance.

SCORE 46% INVENTORY PERFORMANCE

	KPI		RESULT	RATING	WEIGHT	TOTAL
FINISHED GOODS					0,3	61%
	Average Inventory (12 m)		*from MRP Monitor*	45%	0,1	5%
	dead stock		*from MRP Monitor*	11%	0	0%
	dead stock % of average	calc		55%	0,2	11%
	turns		*Measures how many times an company's inventory has been sold (turned over) during a period of time. "It equals" the cost of goods sold, divided by the average inventory level of inventory on hand*	78%	0,1	8%
	days inventory outstanding		*Inventory levels for a period, dividing by total revenue, and then multiplying by the number of days in the period. This measures how many days of sales a company on average holds in inventory.*	23%	0,1	2%
	safety stock value (X)		*from MRP Monitor*	11%	0	0%
	safety stock value (X) as % RLT* average daily consumption		*from MRP Monitor*	88%	0,1	9%
	safety stock value (Y)		*from MRP Monitor*	11%	0	0%
	safety stock value (Y) as % RLT* average daily consumption		*from MRP Monitor*	66%	0,05	3%

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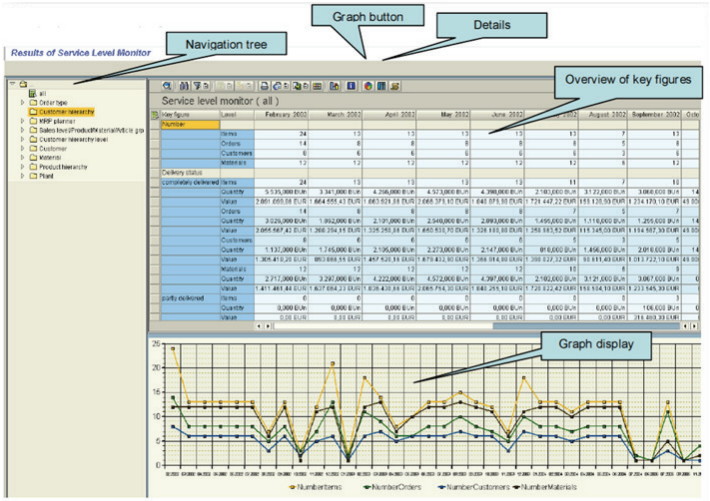
SERVICE

Service measures how well *customers receive product to their requested delivery date* and how well promises are kept. But we can also measure the service level from *production to the warehouse* (how well the planning strategies work), from the *raw materials warehouse to the shop floor* (how well purchasing performs in supplying production) and the *service from our suppliers* (how well suppliers perform to orders from your purchasing department).



Each service rating in SCPI is measured to its:

- Delivery Service – how well do you deliver in full and on time
- Delivery Ability – to what degree can you confirm to the customer's requested delivery date
- Delivery Reliability – as do what degree do you keep the confirmed date and quantity

SCPI works with Add-On tools native to SAP, displaying detailed results generated by the individual ratings of the Key Performance Indicators, and determining your Service Rating.

Each entity (plant or distribution center) may be evaluated separately and an overall score is determined based on a weighting system and aggregation of the individual KPIs and entities. Again, you may want to design improvement activities and optimizing configuration settings based on the details of the ratings.

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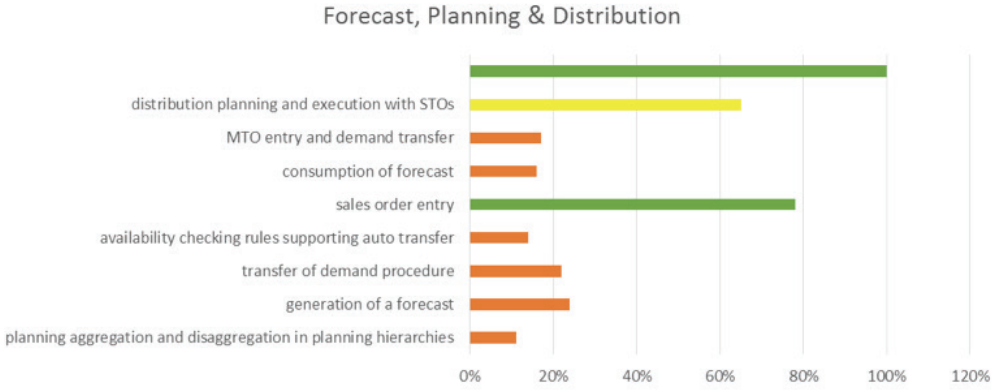
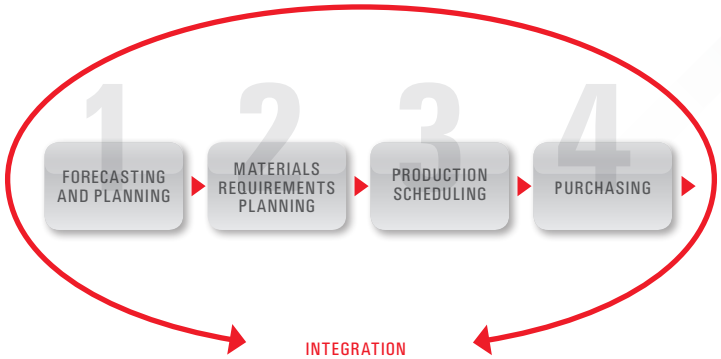
AUTOMATION INTEGRATION

The level of automation – using SAP functions – poses lots of improvement opportunities. Planned Orders can automatically convert into a production program; Packaging materials can be automatically procured; Policy setting methods can be applied regularly and the resulting exception messages can be monitored. Many firms do not use these helpful standard tools available in the SAP functionality. Automation can be increased easily by implementing some of the standard functions available in the areas of Sales & Operations Planning, Materials Planning, Production scheduling and Procurement of your current SAP system!

Even though Automation and Integration are to some degree a subjective measure, they can very well be rated fair and meaningful.





Consider the above example: The interface between Sales and Production Planning is executed manually, it is not driven by automation and therefore loses the benefits of integration. Integration provides the ability to define activities that implement appropriate planning strategies, effective availability checking rules, and an optimized and correctly configured transfer of demand. Human beings are not capable of those volumes of sophisticated calculations. But your SAP system can – accurately, quickly, and happily!

Automation and Integration is a defining measure for the areas of Material Planning, Production Planning, Sequencing and Scheduling and Procurement.

AUTOMATION INTEGRATION

An agile supply chain is defined by its ability to react quickly to a changing environment. Fluctuating customer demand, irregular lead times, and short product life cycles require flexibility to keep the service levels high. To increase flexibility, various activities like implementing SAP's Variant Configurator can widen the product spectrum to the customer.

The strategic placement of an inventory / order interface with a resulting 'Finish To Order' policy has a positive effect on your rating, as does using the correct scheduling option and an optimized mix of the buffers inventory, time and capacity.

Categorizing the product portfolio to set an MTS versus a MTO strategy is as important as the integration between the Sales and Production Scheduling departments which is driven by an optimized Availability Checking rule and the resulting transfer of Demand.

	KPI	RESULT		RATING	WEIGHT	TOTAL
RESPONSIVENESS					0.5	61%
	forecast accuracy			75%	0.1	5%
	responsiveness to change in strategic direction / change of policy			55%	0.1	0%
	are the correct scheduling options used			32%	0.2	11%
	use of buffers capacaty / time / inventory			66%	0.2	8%
	is the WIP control in a pull system			22%	0.1	2%
	inventory / oder point strategically optimized		*order based thinking is prevelent. This results in a lot of noise in the production program ... especially in upstream operations. If changes (?????) in finished goods demand are propagated through the entire BoM structure, it is impossible to smooth and level out the supply program*	21%	0.2	0%
	effectiveness pf availability checking procedure an transfer of demand from STO			12%	0.1	9%
					1	0%
AGILITY					0.5	39%
	variety in SKU portfolio			60%	0.2	12%
	MTS versus MTO split			33%	0.1	3%
	customer lead time for MTO SKUs			22%	0.2	4%
	lenghts of STO conversion period	8 weeks		44%	0.1	4%
	lenghts of forecast freezing period	2–3 months		76%	0.1	8%
	variability in demand			33%	0.05	2%
	supplier delivery variability			22%	0.05	1%
	production yield variability			4%	0.1	0%
	adherences to plan			44%	0.1	4%

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LEAN SIX SIGMA

A lean supply chain is defined by its low degree of producing or causing waste. As an example: the waste of overproducing finished goods to the warehouse can be induced by a high forecast error or a faulty transfer of demand.

Additionally, ineffective planning procedures may lead to ineffective supply programs that produce lots of waste. Another form of waste lies in long cycle times. If, for example, production orders are released to the shop floor without performing all necessary steps – like an availability check for components, capacity leveling and proper sequencing of jobs – the orders remain on the line unprocessed and block valuable machine time and reserve raw or packaging material that other orders could use.

Six Sigma mostly measures defects and strives to introduce processes that will reduce the number of defects to avoid waste and achieve a lean supply chain with a high sigma – or low number of defects for high quality in process and product.

COST PROFITABILITY

A profitable supply chain delivers high value with low cost.
We measure *direct cost*, like ordering and stock holding expense, *process cost* in purchasing, planning, forecasting and scheduling, and *technology cost*.

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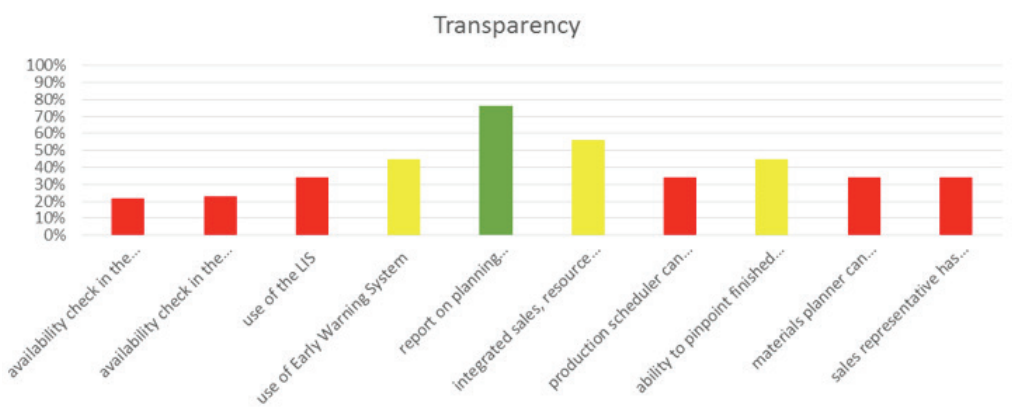
VISIBILITY TRANSPARENCY COMMUNICATION

Of major importance is the way the system creates *visibility* up and down the supply chain. Material Planners need to be able to 'see' when plan and actual are about to differ. They need transparency into the replenishment cycle and have an idea about when demand falls off the planning chart. A Production Scheduler should be aware of delays in supplier's deliveries or changes in demand of an important customer. Sales Representatives must be updated on finished goods inventory levels and progress on the production lines.



To determine *"the Degree of the Exception Minded Business"* we look at the procedures and tools available to the Material Planners in managing exceptional and unforeseen situations like a delivery delay, unusual demand, changes in lead and cycle times, and dangerously low or excessive inventory levels. We measure the ability of the planner to handle the (possibly overwhelming) number of exceptions occurring every day. The better a process to manage and handle exceptions every day is in place, the higher the rating.

Communication is crucial for a well running supply chain. This indicator evaluates how information flows from one department to the other and if there are regular meetings or activities scheduled, so that exceptions, additional demands or delays can be addressed across the entire supply chain and not just in the specific department.
Should it turn out that the communication rating is low, regular meetings might be scheduled to align a demand plan with a supply plan under conditions of variability and uncertainty.

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INFORMATION MATURITY

SAP's basic data setup represents the most important driver of accuracy and efficiency for replenishment and planning policies. It also drives automation. SAP's basic data includes material master data, routings, work centers, resources, production versions and bills of materials. It needs to be evaluated on a regular basis and changes must be coordinated between the affected departments. The sum of all settings in SAP's master (or basic) data represents a policy by which inventories and orders are filled, service levels are met, and automation happens.

Very important decisions in regards to basic structures and data maps will have to be made during the implementation. Not always is the best possible type or grouping used and sometimes it is difficult to change what was designed and configured before. However, one size does not fit all! For example, if discrete production orders are setup for process manufacturing, it is probably better to go through the effort to replace discrete routings with the more accurately representing recipe, rather than moving on without the possibility of any improvements or increases in efficiency.

The category 'Information Maturity' provides evidence about how well the existing basic structures reflect the physical process or supply chain activities. Using this Indicator, one can pinpoint inefficient data and define activities to improve the accuracy and effectiveness of the data structures.

Basic Data is expressed in policies which drive replenishment in economic lot sizes to achieve optimal service and inventory levels. Here we can measure how well policies are defined and used by the planner.

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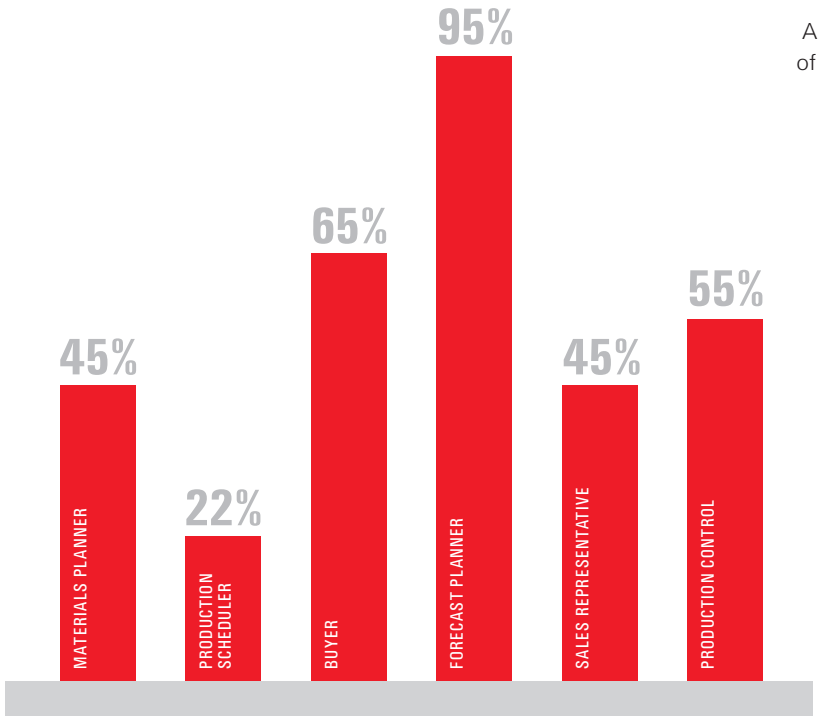
COMPETENCE

How much training was provided for the user? What was the level of detail and quality of the training? Is the system perceived to drive value? What is the level of user acceptance?

To measure competence we provide questionnaires and tests for *material planners, forecast planners, production schedulers, sales representatives and buyers*. Based on these results, we can determine the areas that will benefit from additional coaching, training and workshops.

A detailed educational program can be defined based on the findings of the evaluation.



ORGANIZATIONAL SUPPORT

Much attention should be paid to determine the level of organizational support that is given to the SAP user. We consider of great importance that executives in the company, the people who made the decision to buy and use SAP, are in full support of making the best use of the investment in SAP software. Therefore it's of great value that executives are involved to a fairly detailed degree and help support any improvement, sustainability and optimization projects around a better use of SAP software to drive supply chain excellence.

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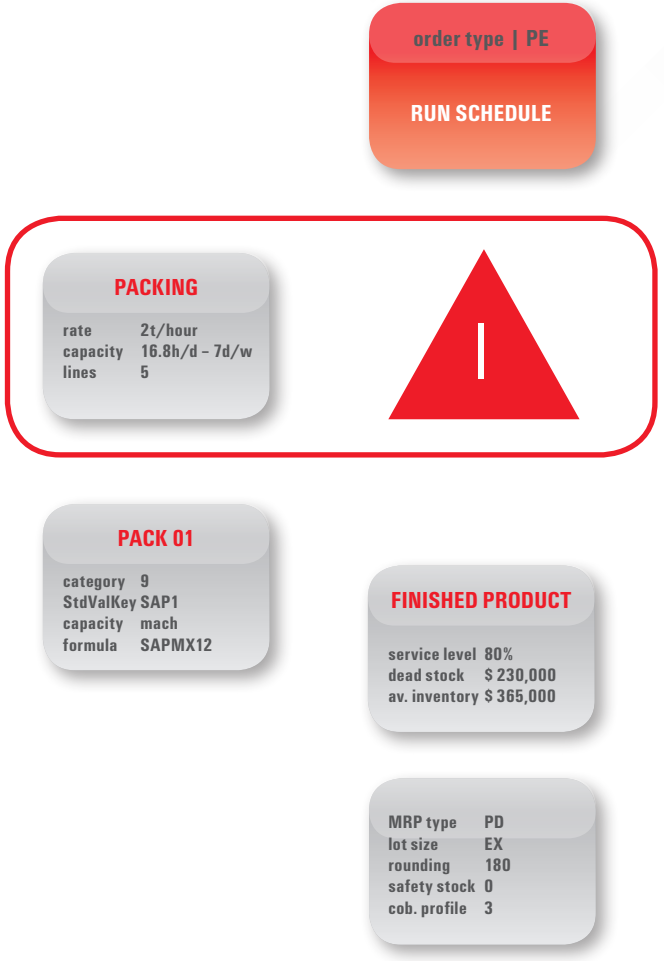
PUTTING IT ALL TOGETHER

When you embark on an optimization and evaluation of your supply chain, value stream mapping and building a reference model is very helpful. An SAP value stream map allows you to document the current state of your supply chain. As with any value stream mapping initiative, you can also define a future, more optimized state on the map which would serve as a guideline for any activities and projects seeking improvements and progress in the efficiency of the supply chain dynamics.

In the material flow of the value stream map, inventory points are represented by material master records. Various KPIs like average inventory value, dead stock value, ranges of coverage and service level can be captured right here.

The settings of the materials master's four MRP screens can be documented right underneath the inventory point. This allows policies to be identified that drive automation, optimized inventory levels and high service ratings. Processing steps and assembly or fabrication operations are also part of the value stream and the corresponding settings in the SAP work center or resource are captured in the map. Also, routings are identified which represent orders of different types. This way a distinction can be made to identify where discrete, process or repetitive manufacturing are best suited to reflect and manage the material flow in the configured and customized SAP software.

The information flow is also drawn up in the SAP value stream map. Functional areas like Sales & Operations Planning, Materials Requirements Planning, Scheduling and Purchasing can be designed and the transaction codes are identified.



PUTTING IT ALL TOGETHER

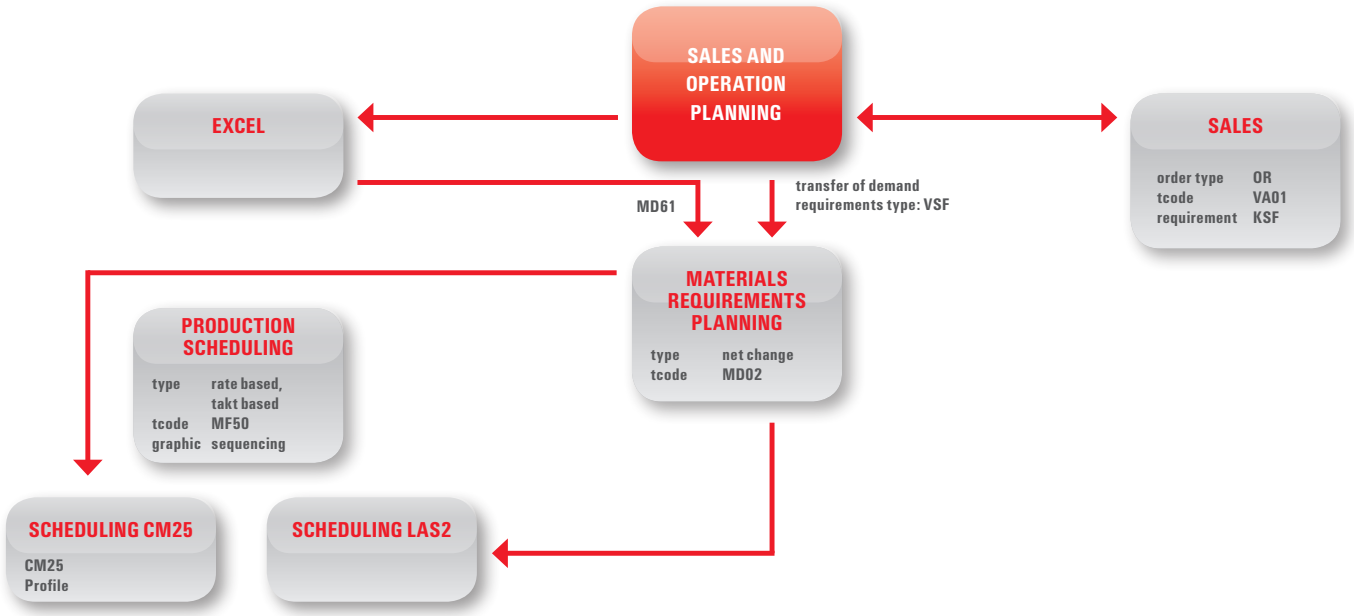
As one evaluates the map and its information and material flows, we can now make design decisions for better flow, more automation, increased transparency and superior inventory performance. In the following example inventory between the processes 'sieving' and 'mixing' was eliminated and a 'pull' system was introduced from the packaging line.

Various modeling options may now be designed and configured into your SAP system. From there we can now start measuring, identifying and evaluating the performance of the SAP supply chain and define the activities necessary to optimize the SAP supply chain and its performance.

The bigbyte SCPI allows you to perform a honest and realistic assessment of your SAP supply chain. Even though there are subjective measure involved, with experience and knowledge about what's possible with SAP functionality, a true evaluation is absolutely given.

In the end it is all about finding those weak areas where an improvement effort gives you very large benefits if the activities are well thought through and executed by people who understand the functionality and the process.

bigbyte SCPI is all about getting those benefits and moving towards a high performance SAP supply chain, that is sustainable and effective.



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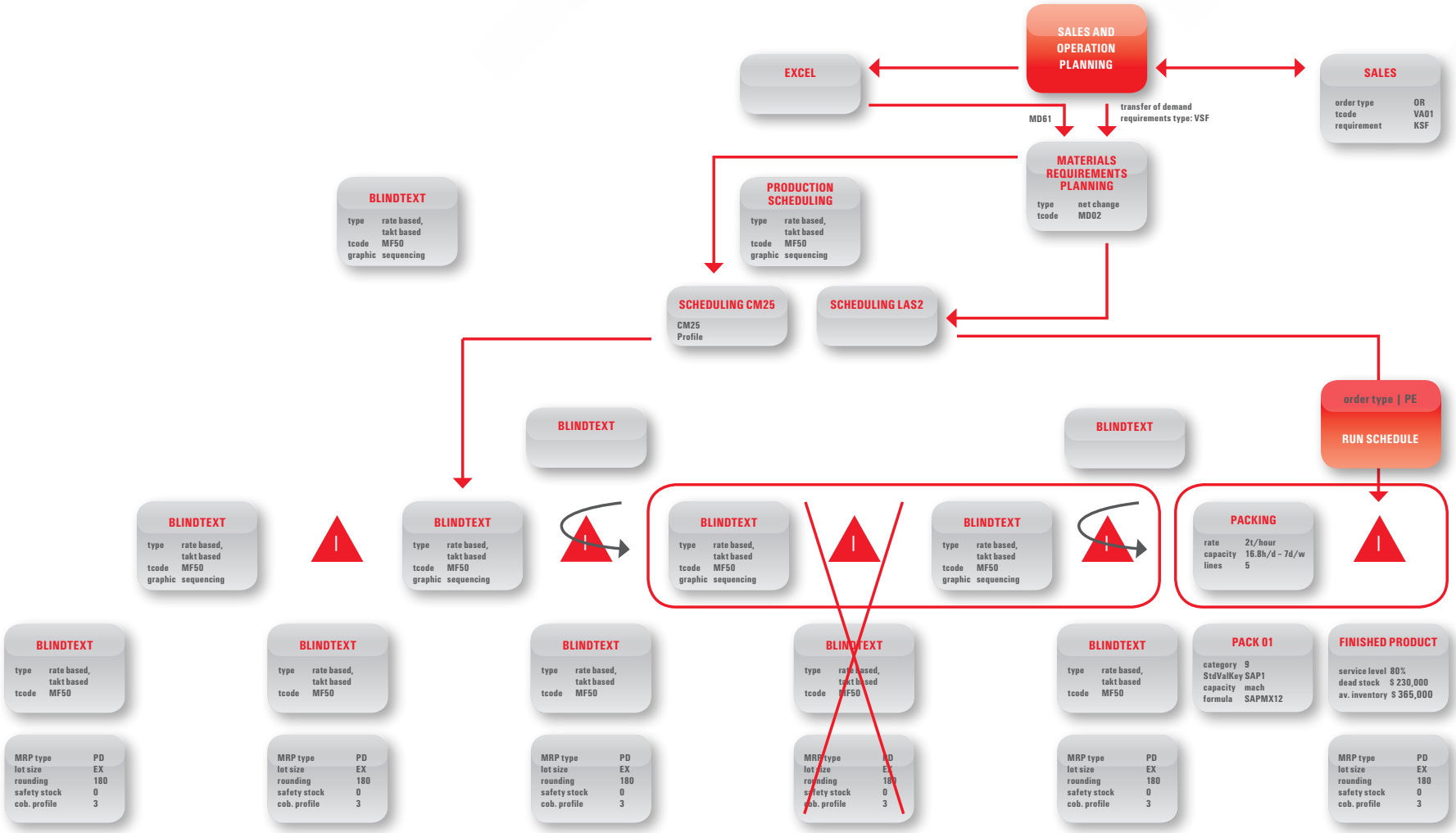

Contact us for further discussions
on how to get value out of your SAP supply chain

Uwe Goehring // bigbyte software systems inc.
99 Reade Street, PHE, New York, NY 10013
www.bigbytesoftware.com
sap-supply-chain-ideas.blogspot.com
uwe@bigbytesoftware.com
Phone +1 (646) 420 9670 US
+49 (151) 17279781 EU

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