



**VICS S&OP Presentation by Andre Martin
March 23, 2011**

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Linking CPFR & S&OP: A Six Step Process

Someone asked Ronald Regan what it was like to be president. He replied, “I always imagined there was a lever of government, and there is such a lever. The problem is - it’s not connected to anything.”

That’s where we are today in the retail supply chain. Retailers have top-level plans, but they are not integrated either horizontally across the retail organization or vertically with their suppliers.

This six-step process addresses a retailer and manufacturer who wish to work together on a mutually agreed-upon set of plans.

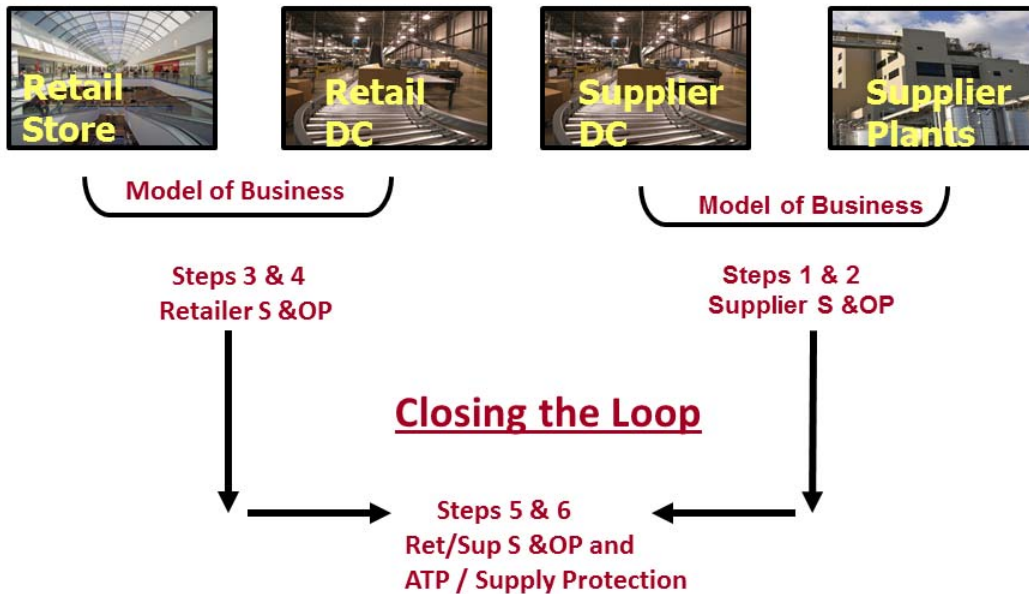
Retailers interested in working only within their own organization should see steps 3 and 4.

The book “Orchestrating Success” by Richard Ling and Walter Goddard is the best reference on Sales & Operations Planning (S&OP). The key bullet points are:

- Create an important link between the business plan and each area’s operations.
- Orchestrate the actions of each functional area through consistent frequent communication.
- Develop a realistic plan, capable of achieving the company’s objectives.
- Ensure that each business decision is made with a deliberate view of its impact on the entire organization.

The diagram below shows the integrated process for a retailer and manufacturer who have agreed to work together on a common set of plans.

Linking CPFR & S&OP: A Six Step Process



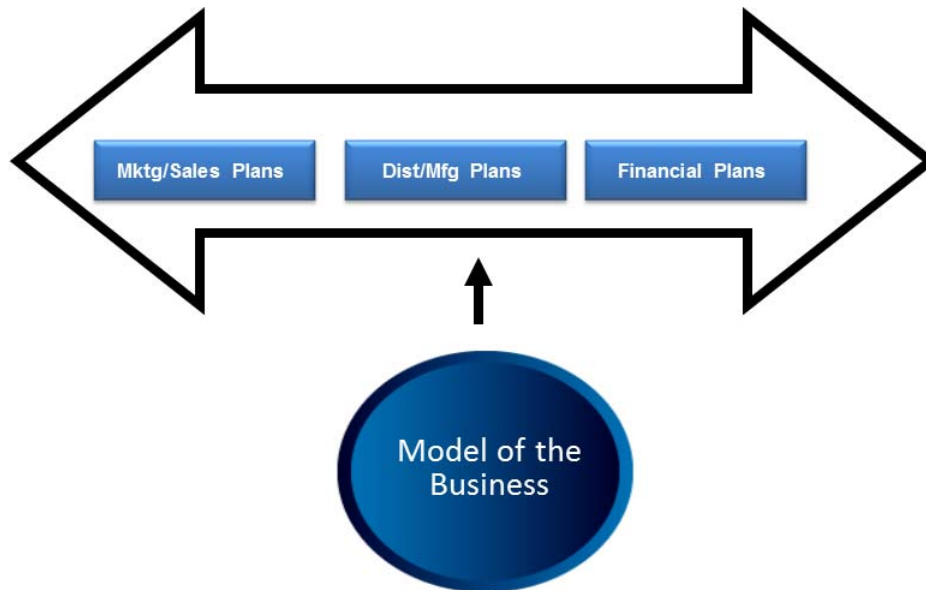
Note: Body of knowledge exist. IT Tools exist – Users around the corner

Steps 1 & 2 (Sales & Operations Planning for manufacturers) have been in existence for thirty or so years. Consequently these business processes are well established and in place for most retail supply chains.

Steps 3 & 4 (Sales & Operations Planning for retailers) is new. Manufacturers have had the tools to do the aggregation and reconciliation of detailed schedules to top level plans for decades. However, retailers have only recently been able to do this aggregation and reconciliation because of the much greater data volumes at the retail store level.

Once both the manufacturer and retailer have their respective Sales & Operations Planning business processes in place, then steps 5 & 6 close the loop by integrating the plans, including the use of Available-To-Promise as a method of protecting supply to the retailer.

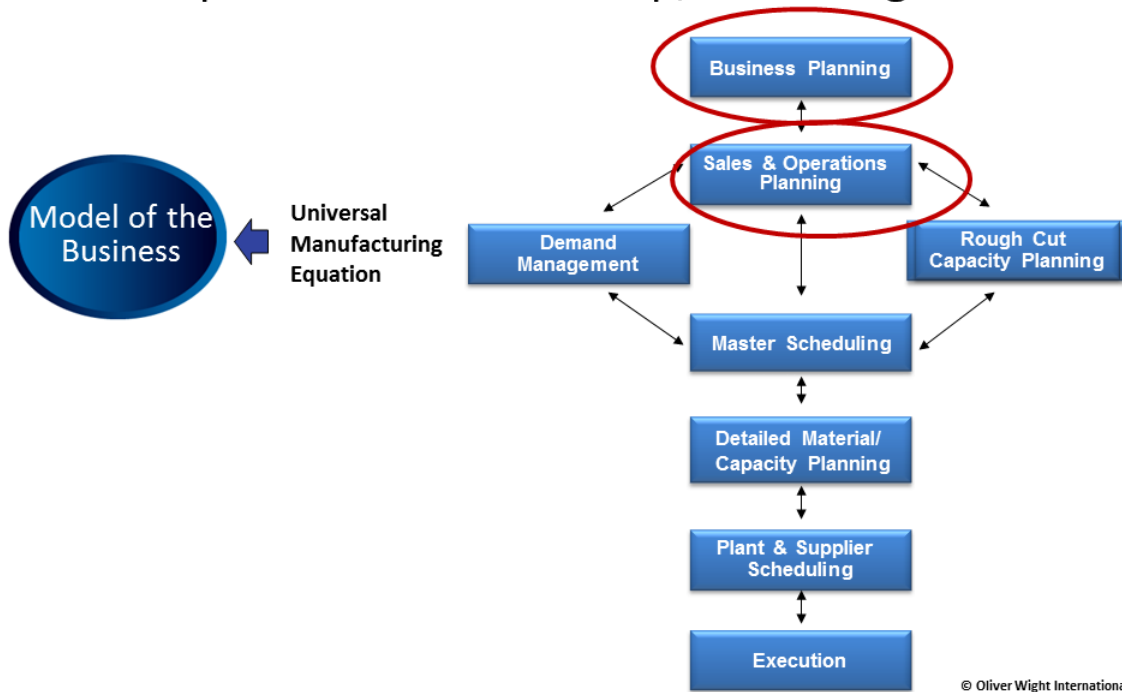
Step 1: Manufacturer: Cross Functional Alignment



Note: Body of knowledge & IT Tools exist. Many users & well documented

Step 1 shows the traditional and well-established process for Sales & Operations Planning for a manufacturer. There is an existing body of knowledge in this area, software tools to support the business process, and many successful implementations.

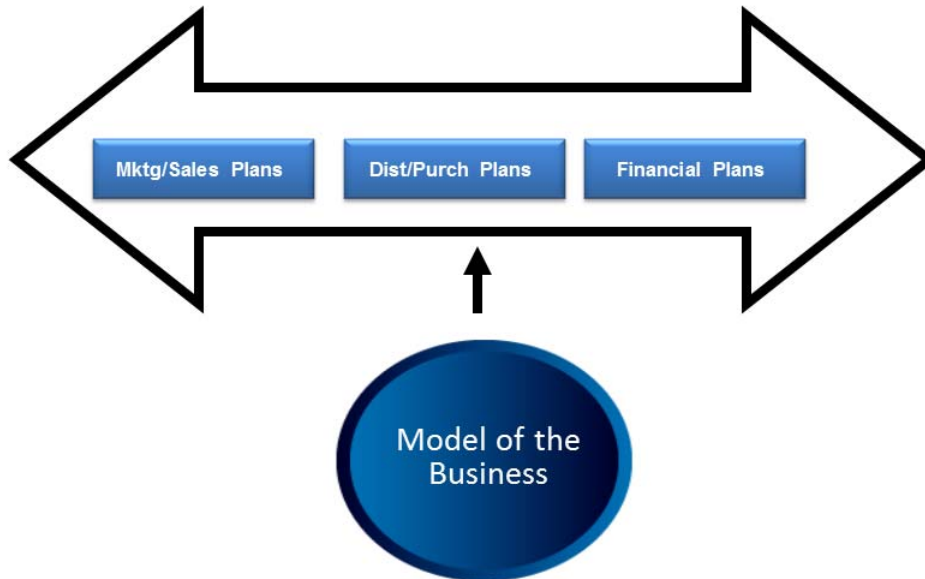
Step 2: Manufacturer: Top/Down Alignment



Note: Body of knowledge & IT Tools exist. Many users & well documented

Step 2 illustrates the process of taking the top level plans and using them to align the manufacturing organization including suppliers. Basically, this is an aggregation and reconciliation process to verify that the forecasts, Master Production Schedules, and projected inventory levels, when aggregated, agree with the numbers from the S&OP process within an agreed upon tolerance. This graphic is a well-accepted diagram from the Oliver Wight organization.

Step 3: Retailer: Cross Functional Alignment

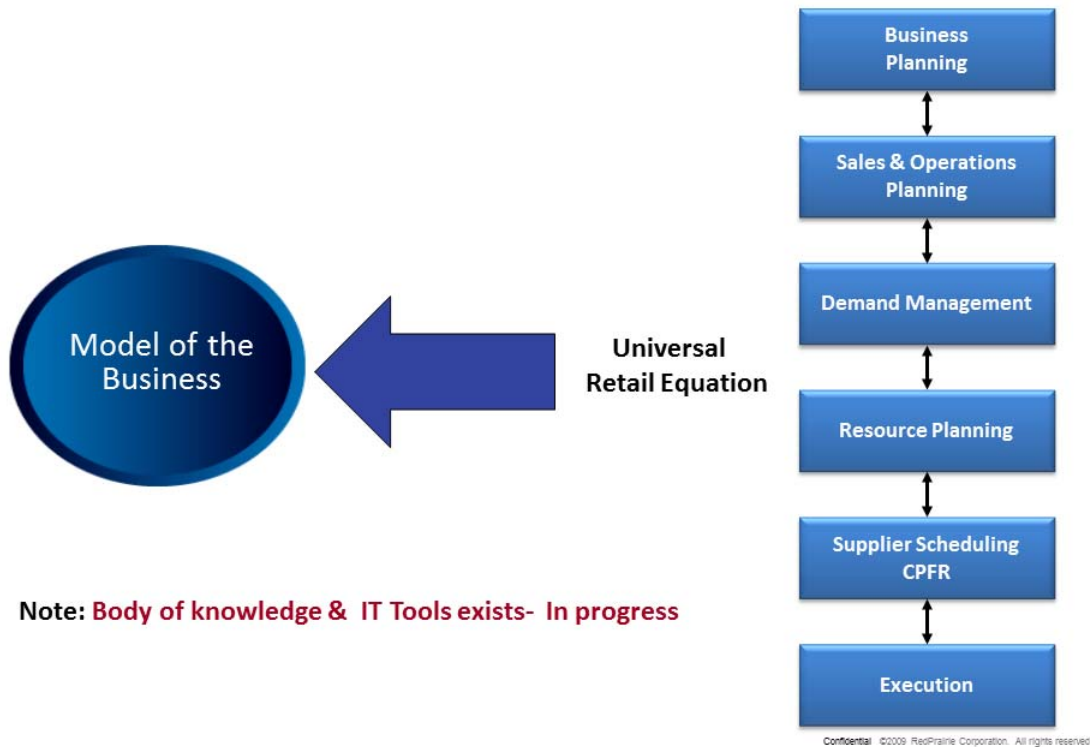


Note: Body of knowledge & IT Tools exists- In progress

Step 3 represents the Sales & Operations Planning process at the retailer. This is new territory. As my colleague Darryl Landvater has said, Sales & Operations Planning for a retailer has the same objective as Sales & Operations Planning in manufacturing. However, the mechanics of aggregation and reconciliation are somewhat different. A manufacturer typically has a much more narrow breadth of product line than a retailer. A manufacturer would not produce both food and consumer electronics. Many retailers sell both. Consequently, a manufacturer can realistically select 10-15 product families which are similar enough for use in Sales & Operations Planning. A retailer will have many more families of products, so this will require exception logic to identify the subset of families which are appropriate to discuss in the Sales & Operations Planning meeting. Additionally, the huge data volumes in retail make the aggregation process more challenging. Manufacturers do their Master Scheduling at a “choke point” which is typically the minimum number of items. Retailers have no such “choke point” so the systems must be able to handle large scale aggregation quickly and efficiently.

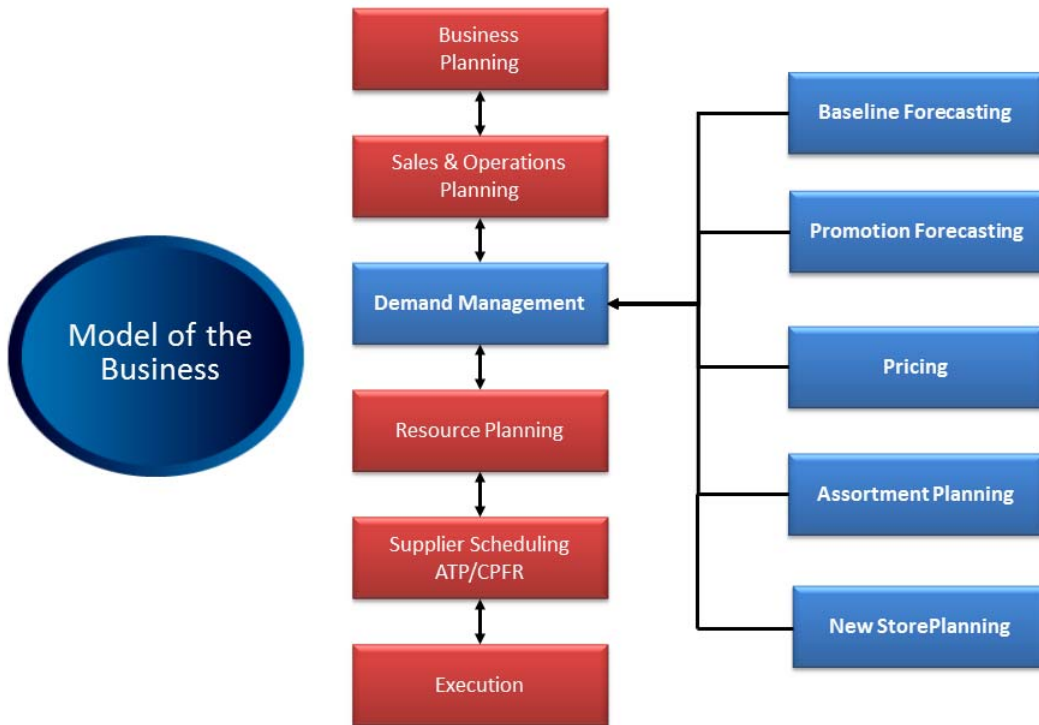
Notice the financial planning arrow on the figure above. Experience shows that to get the entire management group aligned the Sales & Operations Planning numbers must be converted into the “universal language of business” – Dollars, Euros, or other monetary unit. While the buying organization can work in cases, pallets, truckloads, finance, for example, must work in terms of money. Additionally, this allows the Sales & Operations Planning numbers to be integrated into the income statement.

Step 4: Retailer Top/Down Alignment



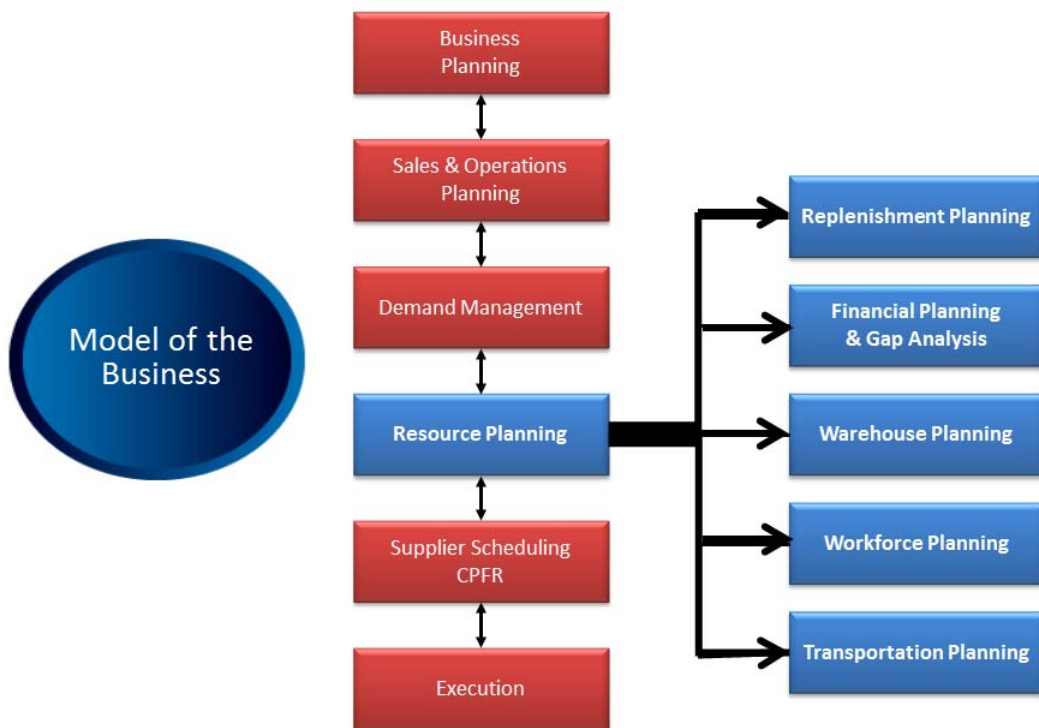
Step 4 shows the process of taking the top level plans and using them to align the retail organization including the linkage to suppliers. Most retailers do not have planning systems of the type illustrated in this diagram. Consequently, most retailers today can produce top level plans but they are not connected to what happens on a day-to-day basis. This is the “lever of government” disconnect explained in the earlier analogy. The good news is that systems of this type have recently emerged for retailers allowing time-phased plans to be economically recalculated daily for every item at every store and DC going more than a year into the future, making Step 4 practical for the first time.

Step 4: The Demand Management piece



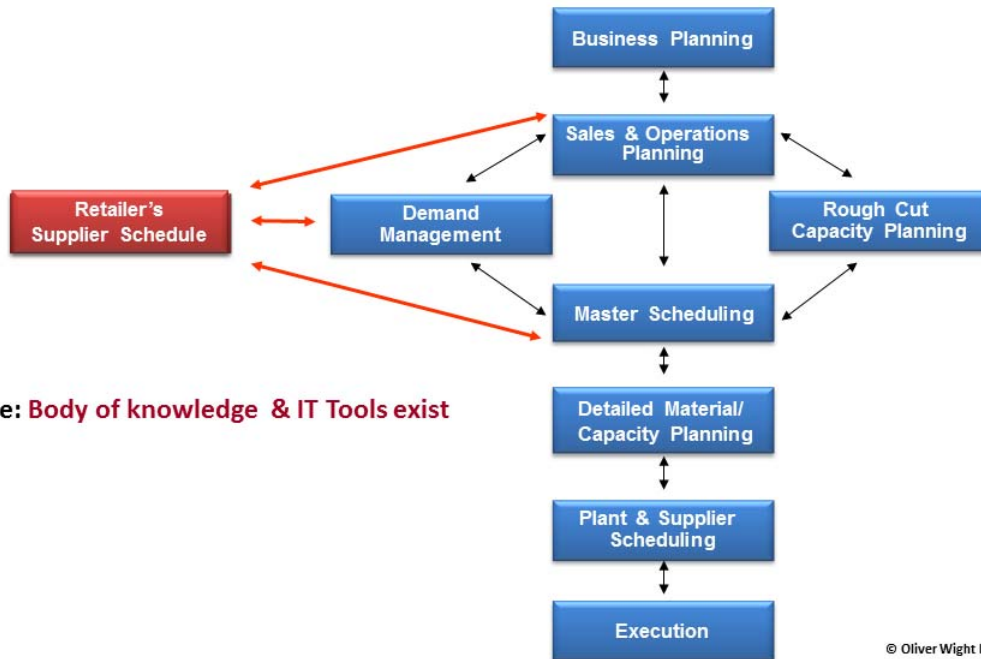
This diagram expands step 4 into the demand management components (Baseline Forecasting, Promotion Forecasting, Pricing, Assortment Planning, New Store Planning). These systems have existed for years in retail organizations. They are now being applied in a time-phased manner. For example, time-phased price changes, product start dates, product end dates, store opening dates and store closing dates are all part of the time-phased plan - the model of the business. Time-phasing these existing retail systems is essential to creating a valid model of the business, which in turn allows a valid reconciliation to the numbers from the Sales & Operations Planning process.

Step 4: The Resource Planning piece



This diagram expands step 4 into the resource planning components (Replenishment Planning, Financial Planning & Gap Analysis, Warehouse Planning, Workforce Planning, Transportation Planning). Retailers have systems for replenishment planning, financial planning, warehouse planning, workforce planning, and transportation planning. The difference in this diagram is these systems are now based on a common set of numbers, a single version of the truth as it's many times called.

Steps 5 & 6: Retailer/Supplier Top/Down Alignment



The retailer's supplier schedule provides the concrete link between the retailer's and manufacturer's planning systems. At this point, the top level plans of the retailer and manufacturer have been developed through their respective Sales & Operations Planning processes.

The retailer's supplier schedule is used by the manufacturer in three ways:

First, the sum of the supplier schedules is used in Sales & Operations Planning to build up the aggregate demand numbers. This is the first red line on the diagram above and is illustrated in the following two spreadsheets.

Manufacturer's S&OP: Today

All numbers in (000)
Time periods = months

Sales					Today	Curr	+1	+2	+3
Plan		-3	-2	-1		60	60	60	60
Actual		55	62	61		32			
Difference		(5)	+2	+1					
Cumulative Difference	0	(5)	(3)	(2)					
Production									
Plan		60	60	60	60	60	60	60	
Actual		60	60	60	60				
Difference		0	0	0					
Cumulative Difference	0	0	0	0					
Inventory									
Plan		150	150	150	150	150	150	150	
Actual	150	145	147	148	148				
Difference		(5)	(3)	(2)					

The figure above is a simplified but typical Sales & Operations Planning spreadsheet. The upper left quadrant shows the history of sales plan versus actual sales for the last three months. The middle left is planned production versus actual for the same months, and the lower left is planned inventory versus actual. The upper right shows the sales plan for the future (current month plus the next three months), middle right is the production plan for the same months, and lower right the planned inventory.

The cells in yellow show the actual customer orders against the sales plan. Like most manufacturers, there is limited future visibility from the customers.

Manufacturer's S&OP Tomorrow

All numbers in (000)
Time periods = months

Sales		-3	-2	-1	Today	Curr	+1	+2	+3
Plan		60	60	60		60	60	60	60
Actual		55	62	61		45	50	30	40
Difference		-5	+2	+1					
Cumulative Difference	0	-5	-3	-2					
Production									
Plan		60	60	60	60	60	60	60	
Actual		60	60	60	60				
Difference		0	0	0					
Cumulative Difference	0	0	0	0					
Inventory									
Plan		150	150	150	150	150	150	150	
Actual	150	145	147	148	148				
Difference		-5	-3	-2					

The figure above shows the difference when the retailer and manufacturer are linked together using supplier schedules. The cells in yellow now show the sum of the retailer's supplier schedules. These quantities can be shown in the actual line (like the figure above) or can be used in place of the forecast and shown in the Sales Plan line.

The second use of the retailer's supplier schedules by the manufacturer is to replace the forecasts in Demand Management. This is the second red line on the earlier diagram (extending from the Retailer's Supplier Schedules to Demand Management). This is an application of the famous observation from Joseph Orlicky, "Never forecast what you can calculate."

The third use of the retailer's supplier schedules by the manufacturer is to calculate the Available-To-Promise in the manufacturer's system. This is the third red line on the earlier diagram (extending from the Retailer's Supplier Schedules to Master Scheduling).

Enabling Step 6: ATP & Supply Protection

Today

▶ DC 1 (DRP)		Period							
		1	2	3	4	5	6	7	8
Forecast		3,300	6,000	3,600	7,200	7,000	3,800	3,400	5,300
Orders		2,200							
Total Demand		5,500	6,000	3,600	7,200	7,000	3,800	3,400	5,300
Projected Available Balance	7,200	1,700	7,700	4,100	8,900	1,900	10,100	6,700	13,400
Available-To-Promise	5,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Planned Receipts			12,000		12,000		12,000		12,000

▶ **Manufacturing Plant (MPS)**

Dependent Demand		18,000	12,000	14,000	12,000	22,000	12,000	8,000	12,000
Projected Available Balance	36,000	18,000	30,000	16,000	40,000	18,000	30,000	22,000	34,000
Master Production Schedule			24,000		36,000		24,000		24,000

The figure above shows simplified but typical DRP and Master Production Schedule spreadsheets. The cells in yellow show a typical Available-To-Promise calculation. This is done with limited future visibility, since only the actual customer orders are visible to the manufacturer.

Step 6 : Supply Protection now completed

Tomorrow

▶ DC 1 (Flowcasting)	Period								
	1	2	3	4	5	6	7	8	
Forecast		1,000	1,000	1,200	1,200	1,500	1,500	1,300	1,300
Walmart's Supplier Schedule		4,500	5,000	2,400	6,000	5,500	2,300	2,100	4,000
Total Demand		5,500	6,000	3,600	7,200	7,000	3,800	3,400	5,300
Projected Available Balance	7,200	1,700	7,700	4,100	8,900	1,900	10,100	6,700	13,400
Available-To-Promise	2,700	4,600	500	500	7,600	8,000	8,000	8,000	8,000
Planned Receipts			12,000		12,000		12,000		12,000

▶ Manufacturing Plant (MPS)

Dependent Demand		18,000	12,000	14,000	12,000	22,000	12,000	8,000	12,000
Projected Available Balance	36,000	18,000	30,000	16,000	40,000	18,000	30,000	22,000	34,000
Master Production Schedule			24,000		36,000		24,000		24,000

Note: Body of knowledge & IT Tools exist.

Notice the differences in the “Walmart’s Supplier Schedule” and “Available-To-Promise” lines. The manufacturer is treating the retail supplier schedules as a type of order in the Available-To-Promise calculation. This is appropriate since the retailer is giving the manufacturer an up-to-date picture of what the retailer needs, and the manufacturer has a clearer picture of future demand. Both the retailer and manufacturer benefit.

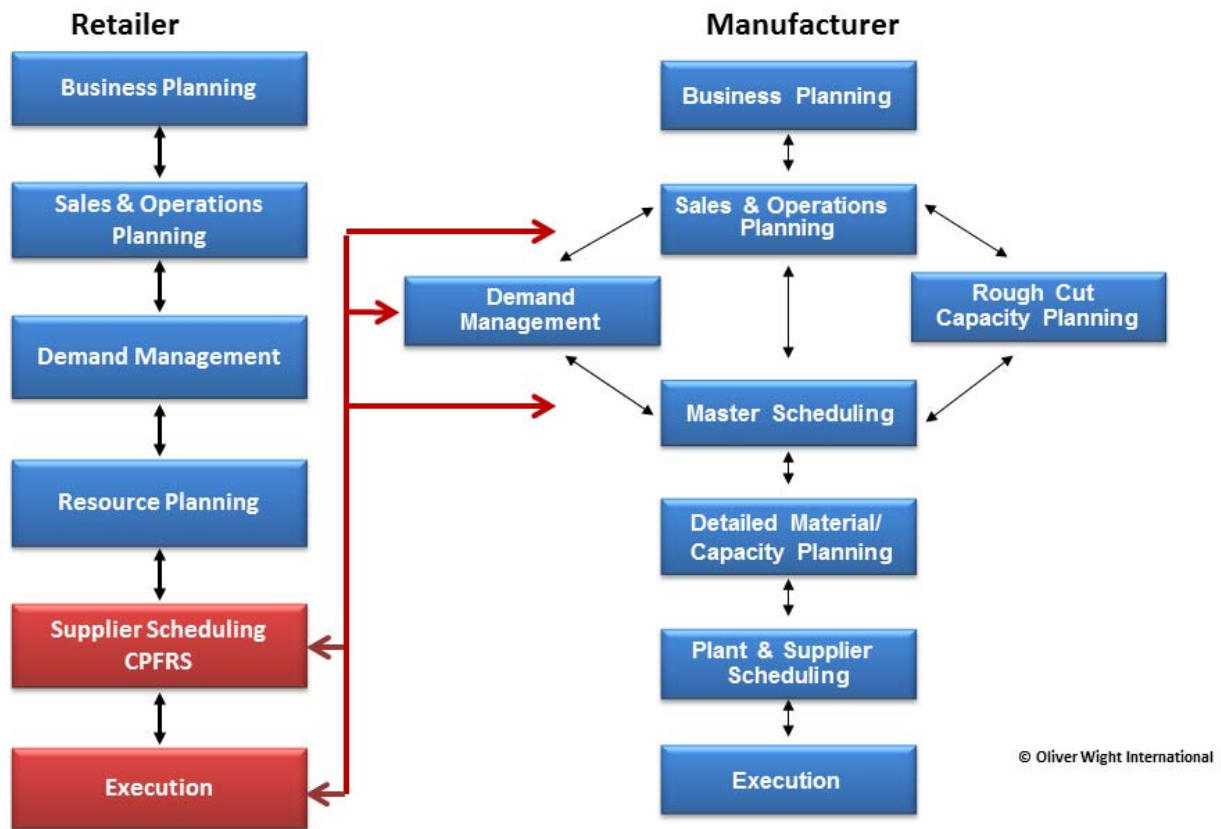
The Available-To-Promise calculation shows what is available to promise customers. In the first time period, 7,200 are available, and 4,500 are already treated as reserved for Walmart, leaving 2,700 available to promise to other customers requesting delivery in time period 1.

In the second time period, 12,000 are available to meet the needs of customers (Planned Receipts), 5,000 are treated as reserved for Walmart in time period 2, and 2,400 are treated as reserved for Walmart in time period 3. This leaves 4,700 available to promise to customers who are requesting delivery in either time periods 2 or 3.

As a simplified example, only one customer (Walmart) is shown. In an actual implementation, all customers who are providing supplier schedules would be shown.

Putting both the retailer and manufacturing systems on a single diagram looks like the following:

Collaborative Planning Forecasting & Replenishment Scheduling



Notice the actual orders as well as the supplier schedules flow from the retailer to the manufacturer – where they are used in Sales & Operations Planning, Demand Management, and Master Scheduling as explained earlier. Also notice that the arrows go in both directions so that supply problems at the manufacturer, for example, are reflected in the retailer's plans. This bidirectional flow provides a completely integrated retail supply chain with a working linkage between CPFR and Sales & Operations Planning.