Forecasting and SAP
It would be worthwhile to go through the Supply Chain 101 Power Point at the start of the "SAP Lovin' it" page before going through the forecast discussion, just to get a broader context around the forecast topic.

Why do we forecast?
We forecast when we cannot respond to demand within lead times requested. We use our best guess about what we will sell in order to pre-build or buy materials or capacity needed for our saleable items that take longer to procure than our customers are willing to wait.

Since forecast is a guess, we know sometimes it will be wrong. This is the really the fun part, because forecast error creates a very convenient excuse for both bad Sales Planning and bad Supply Chain execution. And we know that whenever we have bad execution on the part of Sales or Supply Chain, we have the opportunity for quite a lot of creative debate and finger-pointing.

In companies that are weakly process oriented, this really just becomes a pure school yard power play; whomever the executive leadership likes best, wins. And even though the lack of process and lack of accountability can cause the company to earn sub-optimal profits, if a group inside the company can garner an increased share of those profits, the incentive to improve processes can be very one sided. If you find this an interesting concept, and want to see how it applies on a national scale, check out Mancur Olson's book The Rise and Decline of Nations: Economic Growth, Stagnation, and Social Rigidities.

Impact of Forecasting
A good forecast does not exist in isolation. Companies that feel good about their forecasting process have a lot of other "goodness" baked into their business. No one will ever claim to have a good forecast, if they also do not have:
- A good new product launch process
- A good Promotion and Roll-out process, centered on a published calendar of events.
- Good supply chain processes, including lead time maintenance, rational lot sizes and safety stock policies, and strong interactive partnerships with key suppliers.

Bad execution and finger pointing invariably comes back to forecast through either complaints about service (under forecasting) or complaints about excess inventory (over forecasting). When you hear the complaints about forecast accuracy, check the other process elements around new product launches, promotions, and supply chain practices. I can almost 100% guarantee, that in almost all situations there is a deficiency in one or all of these other areas, but the focus will be on improving the "forecast".

I will give you a few test questions if you find yourself in this situation:
- For Sales, ask if there is a promotional calendar. Ask them to see it. Ask them if the forecaster has it. Ask them how many are launched within lead time (and then ask the forecaster). My own experience here is that promotions are often the response to missing sales forecasts, and if they are launched within lead times, they can create a lot of "noise" around why future sales projections were missed.
- For New Product Launches, ask how many are on schedule. How many revisions occur after launch?
- For Supply Chain, what is the safety stock level set at? Is it correlated to lead times? If we oversell forecast by 25% in a given month, is that an excuse for stock outs? Is it understood that one week of safety stock is equal to a 25% buffer in any given month? If you have a product with 12 weeks lead time, and one with 2 weeks lead times, should both have safety stocks set at 2 weeks? Is it understood that a reliable 10 week lead time is far better than an unreliable 6 week lead time?

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- For all – what is the Forecast in the SAP system loaded at, and how does it compare to the Sales Plan? Are inventory and sales goals the same for all channels and product lines? Where are the growth opportunities and what area generates the profit margins?

Sales and Operations Planning
Most companies will talk endlessly about needing a good Sales and Operations Planning process, but few actually really get one together. In the preceding section, some of the key elements of an S&OP process were touched on. Specifically, the main output of a process such as this is alignment between the sales plan and the operations plan. The main inputs are however, surprisingly hard to get.

Part of the problem is the operating plan submitted previously. Most companies fix their budgets for the current year in the prior year, and often the sales goals are set before the various sales plans (new product launches, promotions, channel strategies, etc.) are set. From this point on, the Sales team will very typically try and come up with plans to reach the usually increased year over year sales targets. Operations will typically budget for an increase, with reduced expenses (called productivity improvements). Where they can get disconnected is within the SAP forecasting system.

Any forecasting system will make some assumptions around the idea that the future will be similar to the past. It will statistical smooth and adjust spikes and seasonality based on trying to get to a statistical "Least-Squares error variance". Grab your statistics or physics book if you want to learn more, because this is as far as I am going in this document. The main point is that the system will do its statistical thing, and make its forecast based on history, *unless you tell it to do something different*.

A good Sales and Operations Planning Process will look at what is in SAP, and what is in the sales projections, and try to make them line up. Product Hierarchies allow you to see what product groups are selling, and BW reports can help you see who is buying what, but organizing by channel can be a little difficult. Usually, you end up backing your way into a channel forecast.

Regardless of how you get where you think you are going, run your COGS forecast and your COGS history, and see how the trends look. If Sales is forecasting a 15% lift in Sales in a category, and you do not see it in your SAP COGS forecast, you need to have a conversation.

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Maintaining Forecasts

There are four general paths to maintaining a forecast in SAP that I am aware of.

- The Advanced Planning and Optimization Module (APO) is widely used and is standard SAP. I personally have never used it, but in terms of functionality, I have heard good things about it. In terms of complexity, I have heard it can be a lot of work to implement. I have also heard it is quite costly. Again though, I have not worked with it so I would look elsewhere for information on it.

- Flexible Planning is also Standard SAP. I have used it personally, and I really hate it. There are two reasons for this. First, it is oddly delicate. It periodically just goes all "fritzie" and when you pass the forecast, you need to spend a fair amount of time verifying ALL the forecast passed. The only way I can describe it is that it acts like an Excel file that has too much data, and needs to go to Access. Fewer and fewer people use it and I have found only one legitimate consultant who can help maintain and when necessary rebuild the tables.

- Planned Independent Requirements (MD61, MD62, MD63) allows you to manually enter demand by part number. When I was at Lucent, I put all my accessories, the thousands of miscellaneous thing you could never forecast correctly, into Flexible Planning and let them fend for themselves. All the expensive products I cared about I planned manually through the Planned Independent Requirements. The word of caution here is to plan in only one area. If you put a plan a part in both areas, you get both forecasts coming over.

- Bolt on systems exist for forecasting in SAP, primarily because flexible planning is so terrible. Many of them are also very economical, and have significantly better features and functionalities. Demand Solutions is one I have seen used very successfully with both SAP, Oracle, and other packages. I would be careful to make sure you get good, experienced support specified in the contract before you buy it though, or it will take longer than it should to implement. Implementation is easily possible in a 30 day window if resources are applied to it.

A process note of some interest is that if you use the Flexible Planning system or a bolt on, there is an opportunity to separate the regular SAP forecast process from special events such as promotions, roll-outs, and seasonal lifts. What I have seen done at both SAP companies I worked with is that the regular trended forecast would be maintained in Flexible Planning, and the roll-out or bump would be added through Planned Independent Requirements. It makes it easier to both see what you did, and also to maintain it as dates shift for promotions, etc.

I do have at the end of this document an example of a method you can use to manage the communication on roll-outs and promotions, and to create an audit trail for a "lessons learned" discussion post-roll-out.

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Terms

Forecast Consumption: When an actual customer order comes in, it consumes forecast. The purchase order for 10 from the customer will reduce the forecast by 10 (in theory). In reality though, most of us set some backwards and forwards consumption logic in the system. Assuming a monthly forecast cycle, with some months having 5 weeks (25 work days), we might see a consumption logic set at backwards of 25 days, and forwards of 10 days. What this would do is cause your system to consume any existing forecast backwards up to 25 days, then start to consume forwards up to 10days of future forecast.

Now this is the fun part – once the forecast inside the range is consumed, typically the rest of the orders are dropped at the time fence, often with the assumption of infinite capacity. And that really upsets those searching for perfect answers to "When will we ship" because often we do not have infinite capacity. And one more note here, in general you do want to always consume all or your forecast backwards, all the time. To get in a situation where you have consumed forward forecast but none back, can create a confused MRP picture. The data is set in the materials master in SAP, specifically in MRP3, MRP4 and the forecasting tabs.

Unconsumed Forecast: In general, forecast outside the current forecast period should not exist in the past. If you are forecasting monthly and the month is April, all unconsumed forecast for prior months should be deleted. You don't want to guess about sales you did, or did not get, in the past. You should know what they were, and they are either backlog or were shipped.

Available to Promise: The question of when will we have a correct Available to Promise (ATP) has come up at both SAP companies I have worked at, and in other systems I have worked on. In general, at best you can get the higher volume, repetitive items in line most of the time using system parameters, but highly variable items are not going to do well with system generated ATP. A comment - I have never met someone who worked in a company that used SAP ATP and thought it worked well. I may just know a lot of people who are in general dissatisfied with everything, or this could be a real concern. I will also add that companies that I have worked at that have better promise abilities tended to have regular verbal discussions between customer service and production.

Forecasting and Capacity Planning: if you want to use capacity planning, such as CM01 or CM03, you need a forecast in the system. You can disconnect some purchasing and planning from MRP as you go lean, but if you want to do any machine capacity planning, you need to keep forecasting. On the positive side of this is you can have more sku level error, as long as the family level (really machine center level) is reasonably close.

Flexible Planning Tables: This used to be standard the SAP forecast module. It is cumbersome, highly aggregated, and inconsistent. It is horrible. Do not use it. In reality I have only met one human being who really understood how to make it work, and I will not give you his name. This module needs to go away.

Long Term Planning: Looks and feels like Flexible Planning, designed for scenario planning. So if you want a cumbersome, highly aggregated, and inconsistent system based on statistically smoothed random guesses that you then tweak with other wild guesses about what is going to happen 2 to 5 years down the road, you are stupid and should get off of my website. Do not read any more of my stuff. Go away.

Forecast Types: There are four general types of forecast that I have worked with in SAP. When you look in planning in MD04 (or through MD06 or MD07) they are the requirements with the suffixes VSE, VSF, BSF, and LSF. I do want to emphasize up front that the VSE and VSF are dynamic through the forecast period. If demand comes in high, at the time fence, it will load more. The LSF and BSF are static through the forecast period. What passes over at the start of the forecast period is what you will build.

Planning without Final Assembly (VSE): this can be used in situations where you have a product line with similar products, but with some configuration options, but do not want to assemble it out until you get an actual order. You

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could have a two week time fence here, where the forecast drives components up to the two week fence, but then drops off if no actual orders are received.

Net Requirements with Final Assembly(VSF) – this is a build to stock strategy that builds forecast minus what ever you currently have in inventory. It nets demand against inventory to give you a production plan. If your sales plan is for 100 units, and you have 50 in stock, the MRP requirements are to build 50 more to add to the 50 in stock to meet the requirement for 100 units total.

Gross Requirements with Final Assembly (LSF, BSF)- These are used when you want your production plan to mirror the forecast. The only difference between the two is that the LSF looks at inventory at the start of the month, nets it out, then puts a firm forecast /production plan into MRP. The BSF does not net inventory ever, and simply moves the forecast to the production plan. The only time I have seen them used was in a capacity constrained setting when you wanted to be sure you built out every possible unit.

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Appendix 1: Managing Roll-outs and Promos
Purpose – To create a standard process for managing and authorizing significant changes in the Demand Plan (including deletions).

Definitions
Roll-out – a launch of a new or existing products, at a new customer or in a new channel.
Promo – a promotional event designed to increase sales on an item or a set of items.
Bump – a bump is a requested increase in forecast of 15% or more.
Roll-out Sheet – the basic template, which can be customized in that more information can be added as long as the required information is complete, that is used for communication, including sign-off and approval. It is required complete prior to any forecast being entered or purchases being authorized.
Red-Green Sheet – this is the sheet where we track the roll-outs and their progress, both pre-launch and post launch.
Funnel Report – a document similar to the red green sheet that can be used to track potential changes in demand, increases in volume, etc.

Documents
-Roll-out/Promos/Bump Sheet (Master) The Roll-out sheet below shows the most basic required information.
-Roll# - refers to the Roll-out number assigned by the Roll-out coordinator.
-Date - refers to the date the sheet was created.
-Customer- refers to the specific customer or channel that the roll-out or promo is targeted to.
-Intro Date is when the roll-out or promo is expected to start selling/shipping
-Prod Mgr – The Product Manager or can be the program/launch Manager

The boxes next to the words "Promo, Roll-Out, New, Samples, Discontinued" needs to be checked so we know what type of change we are working on.

There is a list of approvals that need to happen, which can be e-mail confirmations, and can be added to if required for some reason.
-Old Item – if a new item is replacing a similar old item, populate both the old item and new item fields. If it is a discontinuance, just put in the item being discontinued.
-VS – reference the Value Stream the item is a member of.
-New Item is the new item.
-Description is the item description.
-Add means this item is being added through the roll-out sheet.
-Del means this item is being Deleted through the roll-out sheet.
-QTY is number of pieces on the roll-out, or promo, or bump.
-Invoice is Invoice price per unit.
-MK/Buy tells us whether the item is a make or a buy.
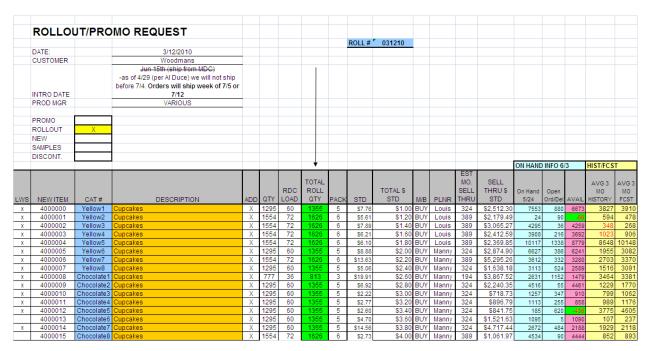-Planner tells us who the Planner is

ROLLOUT/PROMO REQUEST

								ROLL #				
	DATE:											
	CUSTOMER											
	INTRO DATE											
	PROD MGR											
				Approval Required (Yes/No)	Names							
	PROMO		Sales									
	ROLLOUT		Marketing									
	NEW		Plant Manager(s)									
	SAMPLES		Product Manager(s)									
	DISCONT.		Materials Director									
			VS Manager									

OLD ITEM	VS	NEW ITEM	CAT #	DESCRIPTION	ADD	DEL	QTY	INVOICE	TOTAL $	MK/BUY	PLANNER
									$0.00		
									$0.00		
									$0.00		
									$0.00		
									$0.00		
									$0.00		

Roll-out sheets can have additional information added as needed. Note a variation with Woodmans specific needs.

ROLLOUT/PROMO REQUEST

		ROLL #	031210
DATE:	3/12/2010		
CUSTOMER	Woodmans		
INTRO DATE	Jun 15th (ship from MDC) -as of 4/29 (per Al Duce) we will not ship before 7/4. Orders will ship week of 7/5 or 7/12		
PROD MGR	VARIOUS		
PROMO			
ROLLOUT	X		
NEW			
SAMPLES			
DISCONT.			

																EST MO. SELL THRU	SELL THRU $ STD	ON HAND INFO 6/3			HIST/FCST	
LWS	NEW ITEM	CAT #	DESCRIPTION	ADD	QTY	RDC LOAD	TOTAL ROLL QTY	PACK	STD	TOTAL $ STD	M/B	PLNR						On Hand 5/24	Open Ord/Del	AVAIL	AVG 3 MO HISTORY	AVG 3 MO FCST
x	4000000	Yellow1	Cupcakes	X	1295	60	1355	5	$7.76	$1.00	BUY	Louis	324	$2,512.30				7553	880	6673	3827	3910
x	4000001	Yellow2	Cupcakes	X	1554	72	1626	6	$5.61	$1.20	BUY	Louis	389	$2,179.49				24	90	-66	594	478
x	4000002	Yellow3	Cupcakes	X	1554	72	1626	6	$7.89	$1.40	BUY	Louis	389	$3,065.27				4295	36	4259	348	268
x	4000003	Yellow4	Cupcakes	X	1554	72	1626	6	$6.21	$1.60	BUY	Louis	389	$2,412.59				3908	216	3692	1023	906
x	4000004	Yellow5	Cupcakes	X	1554	72	1626	6	$6.10	$1.80	BUY	Louis	389	$2,369.85				10117	1338	8779	8648	10148
x	4000005	Yellow6	Cupcakes	X	1295	60	1355	5	$8.88	$2.00	BUY	Manny	324	$2,874.90				6627	386	6241	1955	3082
x	4000006	Yellow7	Cupcakes	X	1554	72	1626	6	$13.63	$2.20	BUY	Manny	389	$5,295.26				3612	332	3280	2703	3370
x	4000007	Yellow8	Cupcakes	X	1295	60	1355	5	$5.06	$2.40	BUY	Manny	324	$1,638.18				3113	524	2589	1516	3091
x	4000008	Chocolate1	Cupcakes	X	777	36	813	3	$19.91	$2.60	BUY	Manny	194	$3,867.52				2631	1152	1479	3464	3381
x	4000009	Chocolate2	Cupcakes	X	1295	60	1355	5	$6.92	$2.80	BUY	Manny	324	$2,240.35				4516	55	4461	1229	1770
x	4000010	Chocolate3	Cupcakes	X	1295	60	1355	5	$2.22	$3.00	BUY	Manny	324	$718.73				1257	347	910	799	1062
x	4000011	Chocolate4	Cupcakes	X	1295	60	1355	5	$2.77	$3.20	BUY	Manny	324	$896.79				1113	255	858	989	1176
x	4000012	Chocolate5	Cupcakes	X	1295	60	1355	5	$2.60	$3.40	BUY	Manny	324	$841.75				185	620	-435	3775	4605
x	4000013	Chocolate6	Cupcakes	X	1295	60	1355	5	$4.70	$3.60	BUY	Manny	324	$1,521.63				1095	5	1090	107	237
x	4000014	Chocolate7	Cupcakes	X	1295	60	1355	5	$14.56	$3.80	BUY	Manny	324	$4,717.44				2672	484	2188	1929	2118
	4000015	Chocolate8	Cupcakes	X	1554	72	1626	6	$2.73	$4.00	BUY	Manny	389	$1,061.97				4534	90	4444	852	893

As roll-outs, promos and bumps are developed, they will require the sign-offs at appropriate stages. Approved changes will be result in the Roll-Out/Promo being issued, and will be recorded onto the Red Green Sheet.

Roll-outs that are progressing on track both pre-launch and post launch will be recorded as Green. Those with some minor issues that do require intervention will be Yellow. Those that are missing roll-out dates or are missing the sales numbers will be coded Red.

Below is a sample of how the document would look.

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	Rollout	#	Description	Sales	PM	Planner	Issues	Rollout Recv Date	Request Date	Initial Planned Ship from Supplier Date	Current Planned Ship Date from Supplier	Current Planned Ship from MDC DATE	Current Planned In store date
					Contact Person					These dates are fixed		These dates move	
	Woodmans Cupcakes	102909	Store transitions to Greenlee Product	Various	Various	Jerry	1/27/10 - 3 Items in questions for delivery (Jeff and Scott working on). 3/1/10 Shipped 100% MTD.	10/29/2009	2/1/2010	var	var	2/8/2010	
	Kroeners	012010	Product Assortment promo	Various	Various	Louis	1/20/10 - Received rollout request on 1/20/2010. Promo planned start date Feb 1st. Plan was to take 20% of the rollout qty and split over Feb & March (25% Feb, 75% Mar), then take 80% of rollout qty and split over Q2 (25% Apr, 35% May, 40% Jun). 1/29/10 - Received email from Julie stating that the 80% Q2 portion was shifting to start in May. 2/12/10 - Received email from Julie stating that the Promo was changing to now start shipping in March and April (very little would sell in Feb).	1/20/2010	2/1/2010 - 6/30/2010				
	Kroener/High Lander	012710	New Finger cakes	Various	Dr. Doom	Manny	1/27/10 - Tina holding rollout sheet - waiting for Launch date. 2/26/10 - received forecast and sell thru numbers	1/27/2010	5/17/2010				
	Stop and Shop	012810	various product	M. McC.	Galactus	Manny/Jerry	1/28/10 - Rollout request date 3/15. Issue with Paladin tools that will delay rollout to mid-April. 2/16/10 - received sell thru fcst	1/28/2010	3/15/2010				
	IGA	012910	Pie Rollout	M. McC.	Magneto	Jerry	2/1/2010 - Recvd rollout 1/29. Product to roll now to Fry's stores. Need Sell thru Fcst. 2/16/10 Received sell thru Fcst.	1/29/2010	Now/ Feb				
	11-Jul	020410	Nut Rolls	Various	Submariner	Jerry	New Product Rollout. 3/1/10 - received forecast for the 7 pc nutdriver. 4/9/2010 - Jeff Carroll tracking shipment - will advise	2/4/2010	5/7/2010 (7 pc 5/21/10)				
	Dixie	021010	Battery Tool - Lithium Ion	J. Fee	The Penguin	Jerry	Inventory availability (small qty ordered so may not be an issue). Rollout date 2/17/2010	2/10/2010	2/17/2010				

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Roll-outs, Promos and bumps will be reviewed at least monthly in the pre-SIOP meetings and KDP. E-mails will be sent, to the best of our knowledge, to all parties and functions who may be impacted. All parties are encouraged to respond to issues, and can request special meetings or access to the discussion in SIOP.