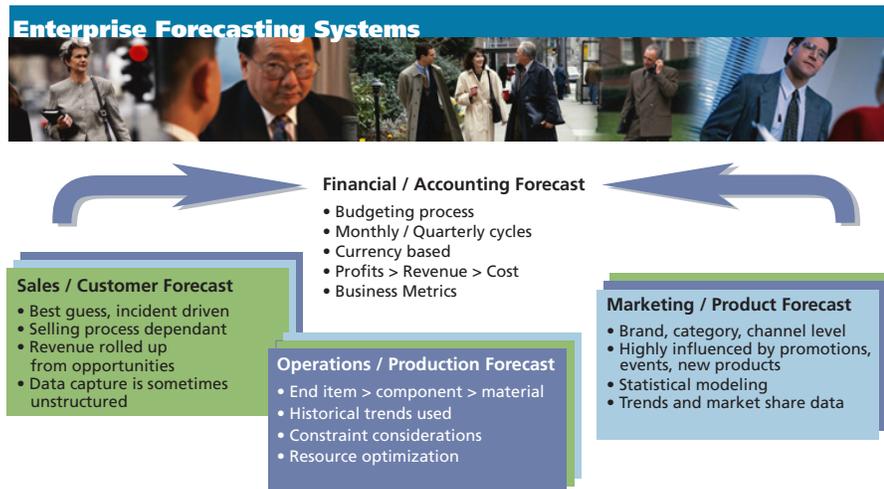Silvon
THE eBUSINESS ANALYTICS COMPANY

COLLABORATIVE DEMAND FORECASTING: A TOOL FOR SURVIVAL

One-number forecasting, coupled with performance measurement, reduces costly surprises

In a demand-driven environment where the focus is on meeting customer expectations, accurate demand forecasting is only achieved when a collaborative process integrates various forecasting systems. By adding performance analytics to measure the iterative plan and understand trends, along with exception processing to generate alerts, companies can become even smarter about anticipating shifts in demand. The end result of improved forecast accuracy is reduced inventory costs, better customer service and improved cycle time and fill rates.

Today's Spectrum of Enterprise Forecating Systems

Looking across the enterprise we see several different forecasting systems, each with valid agendas and driven by different incentive systems. The Financial/Accounting forecasting system is obviously required for driving the top-level budget downward and for managing the overall business. The business metrics and KPIs provided by the Financial systems must be fed from below by various operational systems.

Enterprise Forecasting Systems

Financial / Accounting Forecast
- Budgeting process
- Monthly / Quarterly cycles
- Currency based
- Profits > Revenue > Cost
- Business Metrics

Sales / Customer Forecast
- Best guess, incident driven
- Selling process dependant
- Revenue rolled up from opportunities
- Data capture is sometimes unstructured

Operations / Production Forecast
- End item > component > material
- Historical trends used
- Constraint considerations
- Resource optimization

Marketing / Product Forecast
- Brand, category, channel level
- Highly influenced by promotions, events, new products
- Statistical modeling
- Trends and market share data

The Operational forecasting systems are where the problems begin to arise. Marketing has the job of predicting and driving the success of products while Sales has the job of executing on the plans and converting product demand into customer opportunities. With marketing focused on products, they seldom have knowledge of customer actions especially in a real-time, day-to-day mode. Sales is assigned to carry the product flag into battle but in the end, they must come home with the sale regardless of the product mix. Production on the other hand, simply cannot produce product from brand or category level forecasts. They then have the challenge of exploding the marketing forecast into product item level detail. The system will not work without all of these somewhat opposing forces working together.

The challenge is one of focus and knowledge. Sales does not view the world from a product perspective and Marketing rarely views the world from an individual customer perspective. Sales drives their business from a transaction-by-transaction perspective and revenue forecasted is the sum of a series of customer transactions expected to occur throughout a sales cycle. Depending upon the industry, detailed customer-product forecast information is rarely managed by Sales and is usually a mere "best guess". Sales tools for forecasting are simply the summation of individual customer forecasts updated on a frequent event-driven basis.

Marketing on the other hand is a different kind of "best guess" usually supported by statistical tools applied to past product performance. The trends give marketers clues to what will happen given the same set of conditions as in the past. The challenge then becomes the use of various promotions and events to modify the expected outcome. And in most cases, the Sales operation rarely knows about the promotional activities until after their forecasts are completed.

The operations area must also have product detail-level forecasts from someone. Additionally, that detailed forecast must be compared to capacity thus producing a schedule using either the ERP scheduling system or using a more extensive Supply Chain planning system to blend suppliers with internal resources.

Now the issue surfaces as to which numbers are the most correct or incorrect.

Enter Collaborative Demand Forecasting

Collaborative demand forecasting is a great idea, but one that is generally difficult to pull off.

Top-level goals are largely driven by the corporate financial plan as described in the Financial/Accounting forecast - basically to do more with less, love thy customer and do what you tell me you will do. Again, it's a simple plan that is difficult to execute.

Collaborative Demand Forecasting

Top Level Goals
- Predictable performance
- Best-in-class customer service
- Improved asset utilization
- Cost reduction

Challenges
- Disparate Forecasting Systems
- Forecast accuracy
- Multi-level, multi view
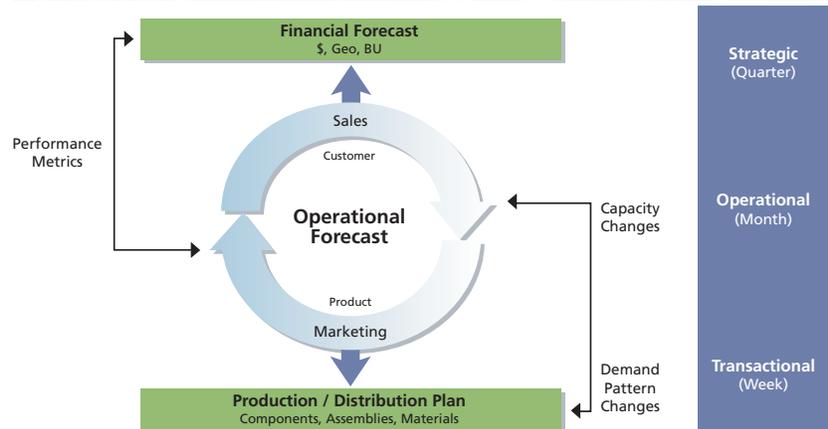- Technology integration

The biggest challenges with various forecasting systems is that they are driven by different departmental needs and incentive systems combined with the rapid cycle of the business itself and its competitors. This all leads to forecast inaccuracy that is really just the indicator that customer service, asset utilization and costs are mostly likely sub-optimized. Corporations of any size with lots of customers and products simply cannot even hope to optimize their operations without the integration of real-time business performance measurements, expert systems, and collaborative planning engines linked to their ERP or front office systems. The thorniest problem may be a by-product of the disparate forecasting systems in the enterprise – the lack of detail that represents a consensus view of demand.

The challenge has always been to develop a single forecast that is "agreed upon" and understandable by everyone in the enterprise. Each part of the enterprise operates at a different, but interconnected, rate. From a strategic perspective the corporate financial forecast at the top is usually a yearly budget with performance against plan reported quarterly in currencies about business units and regional conditions with only limited visibility to markets and customers.

The Demand Planning Environment

At the bottom or the end of the whip in most corporations is the production and fulfillment system driven from the top by business metrics and budgets and from the operational perspective by customer demand. Caught between their suppliers and inaccurate forecasts from the operational teams, the production and distribution management group usually can't win with changing demand patterns and supplier schedules, not to mention internal resource fluctuations. Obviously for the production operation to function they must have demand patterns from customers converted to the proper product mix starting at the item level and going down to components and raw materials.

Demand Planning Environment

Financial Forecast
$, Geo, BU

Performance Metrics

Sales
Customer

Operational Forecast

Product
Marketing

Capacity Changes

Demand Pattern Changes

Production / Distribution Plan
Components, Assemblies, Materials

Strategic (Quarter)

Operational (Month)

Transactional (Week)

The driver, as well as the true indicator, of enterprise success then becomes the operational layer or more specifically the collaboration between sales and marketing. That collaboration means producing a single forecast that reflects customer-product demand at a detailed end item level. Lets take a closer look at the operational forecasting process.

## Operational Forecast Management

Not only do we need to provide SKU or end item-level forecasts to the production execution systems, we need to monitor and make appropriate changes to the demand patterns as they are detected. Those changes may not be within the production or materials contract planning horizon, so the feedback from Supply constraints may cause customer service problems.

At the core of the operational forecasting system is a data repository that houses enterprise data for doing multi-dimensional analysis and providing performance analytics in the form of customer score cards, KPIs, etc. The repository holds customer – product detailed level sales, returns, rough cut capacity, open orders, costing and units information. The key is that the information is reorganized in a time series usually for multiple years and becomes the basis for feeding the built-in expert system-based forecasting engine.

Operational Forecast Management

This environment supports the primary objectives for Marketing to be able to study product and market trends and arrive at a detailed end item forecast. At the same time Sales must use the identical information from a different angle (customer) to arrive at the same place. The process of arriving at a single consensus forecast is called sales and operations planning.

Once the baseline plan has been created it must be monitored and controlled with an exception management system. That system must provide performance metrics from many different perspectives — customers, channels, markets, products, cross-selling results, promotional effectiveness and external market trends. For companies with many products and many customers the process is greatly simplified with a rules-based system for alerting operational teams about changes that must be dealt with.

In the end, the process is iterative and continuous and only possible with the right combination of today's technology.
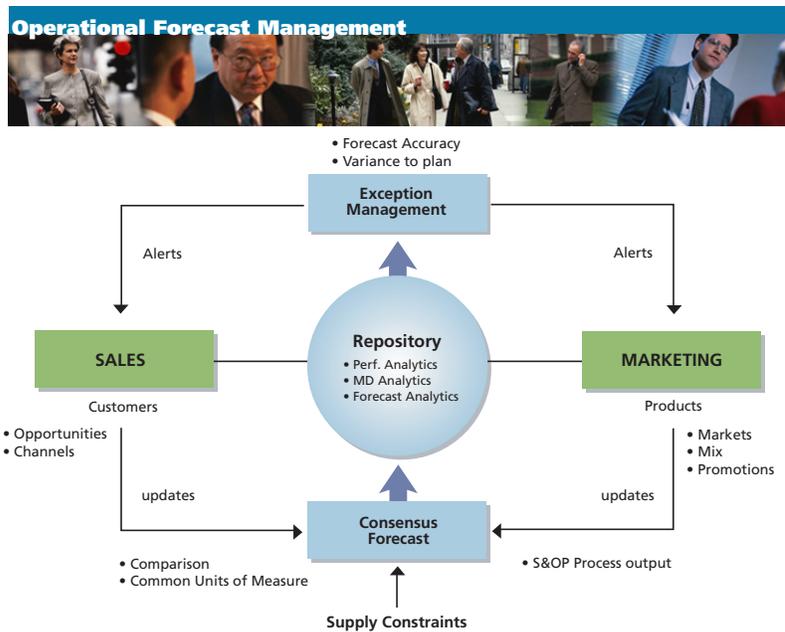
Shortfalls of Current Systems

Let's look at where and how current systems fall short in meeting these challenges.

Supply Chain Planning systems are the most advanced solutions for producing a collaborative forecast but they are costly and frankly have not met the expectations of users. AMR reports that while those systems that have been implemented are being used to plan nearly all the products, their uses have been limited to internal production operations by

Current Systems Fall Short

	SCP	ERP	CRM	BI TOOLS
Cost / Implementation time	High / Long	High / Long	High / Long	Low/Medium
Typical ROI	Years	Years	Years	Months
Scope / Complexity	Planning	Financial Process Mgmt.	Sales Operations	Decision Support
Performance Analytics / Exception Management	None	Limited	Limited	Must build
Data Management / Data Access / Repository	Poor	Poor	Fair	Good

providing demand planning and not supplier planning. Supply Chain Planning systems rarely if ever have data management (or data warehouse) and analysis capabilities to support ongoing improvements in business other than the demand plan itself. This is all good, but not for the high price and long complex implementation times they require.

ERP systems on the other hand were primarily designed to mange all of the financial and administration processes in the enterprise with some emphasis on resource optimization like materials and equipment. Again, there is no real built- in business performance capability. Cost, implementation time and complexity are huge and most corporations can only swallow one of these every 5 to 7 years.

CRM Systems exhibit all the same cost and implementation time barriers as SCP and ERP systems, but they do have the promise of providing customer-centric results. Practically speaking most CRM systems have been implemented to solve sales operational problems, not customer problems. These systems also lack data management capabilities and for the most part have no integrated consensus-based forecasting system in place. In fact, the forecasting systems are really one of forecasting pillars we discussed earlier that we need to overcome. CRM systems are important, but inadequate, for planning operations.

Finally, Business Intelligence tools are inexpensive enough if you consider only the "tip of the iceburg" and not the lengthy project below the surface. The key problem with these systems is that they are designed for reporting and lack exception management and true forecasting capabilities. In today's fast-paced, complex world of changing technology platforms, it simply is not practical to build your own solution from tools like these.

All of these systems, though, have excellent features and benefits when applied to the problems they were design to solve. Unfortunately none of them were specifically designed to solve the collaborative demand forecasting problem.

Now let's drill down a bit deeper and look at the process and technology it takes to support the requirements of collaborative demand forecasting.

Process and Technology Requirements

Following a list of key process and technology items that must be present in a collaborative demand forecasting environment. Of course, overlaying all this is cost, complexity, usability, time to results and availability of a packaged customizable solution.

Data repository with interrelated information – for the storage of both plans and performance- against-actual results and for serving as a true enterprise knowledge base against which KPIs and scorecards can be applied. The repository must allow multi-dimensional analysis for slicing and dicing of data from many perspectives to support the development of the consensus forecast and to measure performance against that plan.

Statistical tools to improve forecast accuracy – to provide an expert system for classical forecasting with multiple algorithms for best fit against past trends in data and for providing a means of simulating the future.

Web platform for intra/extra net operation – to help extend the information supply chain and allow secure access across the enterprise and ultimately out to customers, distributors and suppliers. This type of platform is the grease on the skids of the collaborative forecasting process.

Exception management engine – to manage many products and customers in a fast-moving market, which is nearly impossible without some type of rules-based mechanism for alerting planners and operations people when complex variance conditions exist. These conditions could be much more involved than just higher or lower sales or inventory positions.

Short cycle planning tools – to do multi-level allocation forecasting and provide aggregate views for management and detail views for planners.

Consensus methodology – a process-related item that has heavy support from the technology platform. This is the where sales, marketing, production and finance meet to agree on a single number. The technology platform must provide multi-views from aggregates to detailed data across different dimensions and time periods - all based on a common data integrate set where an iterative process is supported for minimizing the variance between the sales (customer) view, the marketing (product) view and the production (capacity) view.

Linkages to production / execution systems – to push the demand pattern changes back into the production execution systems. In turn, a reflection of the capacity changes and puts the system in equilibrium.

Inputs from enterprise data sources – To support automatic, periodic (usually daily) inputs from data sources like invoicing systems, order booking, shipping, returns management, inventory or POS data. The technology platform must be capable of scaling to meet changes and support large growth in data both horizontally and vertically.

An added benefit would be the ability to integrate this data in a single repository with financial, procurement, customer and production information and to provide the facility to do comparative analysis, perform drill downs across subject matter, and look at trends relative to related data.

A Single View is Key …

According to a January 2001 report published by the Gartner Group, "Enterprises that collaboratively integrate disparate forecasting systems (e.g. ERP, SCP and TES) and improve visibility will improve revenue predictability by 10 to 25% and decrease inventory carrying costs by more than 30% over a 3-year period." A one-number forecast can be a very lucrative investment for enterprises that manufacture and distribute fast moving consumer goods (e.g. food and household goods), electronics, and automotive products.

You can due your own math on the effects of a 10 to 25% improvement in revenue predictability. Obviously, the 30% savings in inventory is great, not to mention the more efficient use of other corporate assets like receivables and factory equipment, lower procurement costs, and better customer service that can be experienced.

When you add it all up, one-number forecasting coupled with performance measurement meets a number of key goals for enterprises in a continuing pursuit to meet customer expectations.