Forecast Simulation

TRAINING GUIDE

70-2852A
Database: Train eB2
July 2003

70-2852A

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Contents

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About This Course

Course Description

QAD designed this course to cover the basics of preparing to implement the Forecast Simulation module of MFG/PRO. The course includes:

- An introduction to the Forecast Simulation module
- An overview of key business issues
- Setting up the Forecast Simulation module
- Operating the Forecast Simulation module
- Activities and exercises throughout the course
  - Students practice key concepts and processes in the Forecast Simulation module

Students learn how to:

- Analyze some key business decisions before setting up the Forecast Simulation module
- Set up and operate the Forecast Simulation module

Who Should Attend This Course

- Implementation consultants
- Members of implementation teams
- Key users

Prerequisites

- *Initial MFG/PRO Setup* training course
- *Sales Order Management* training course is very strongly recommended
- Basic knowledge of MFG/PRO as it is used in the business
- Working knowledge of the manufacturing industry in general

Approximate Length of Course

- This course is designed to be taught in one day

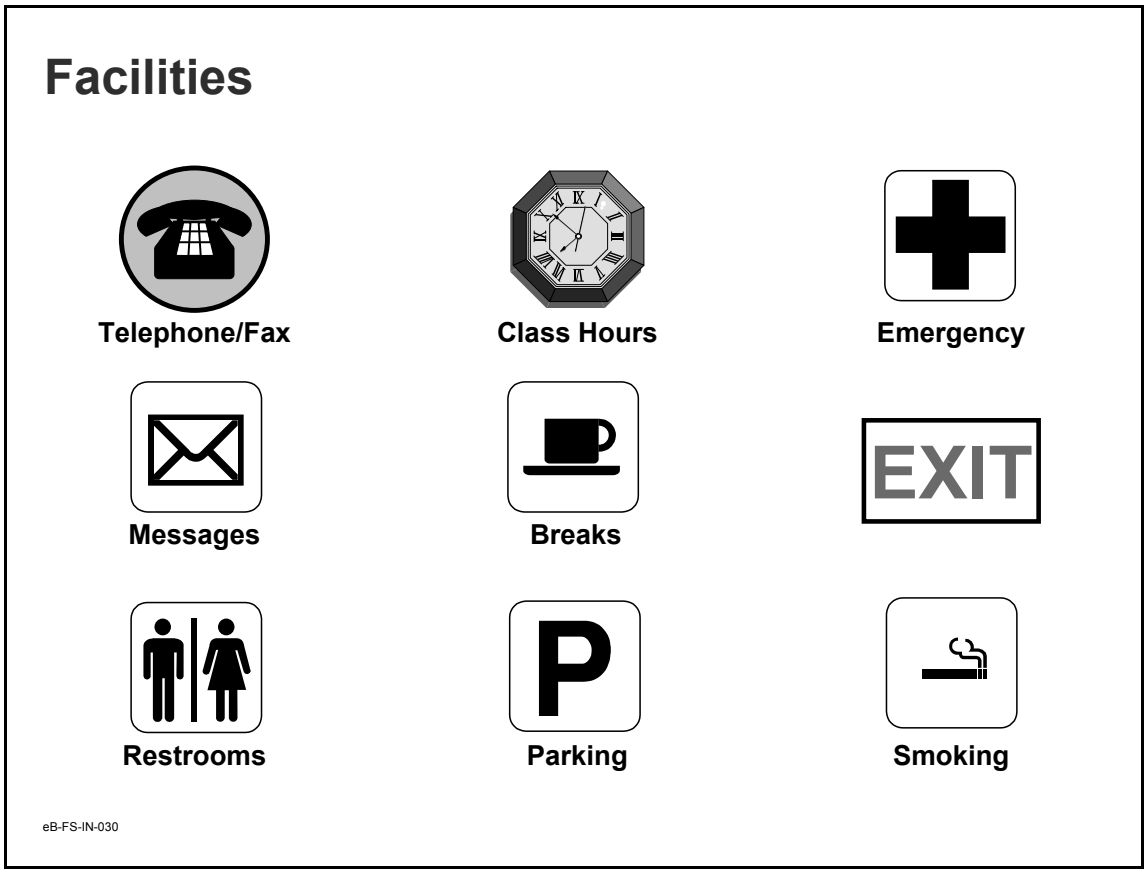
Certification Preparation

This course is one of several courses designed to assist students in preparing for QAD certification examinations. However, QAD does not guarantee anyone a passing grade as a result of having taken this course.

Students preparing for certification examinations should study all available materials (user guides, training guides, on-line help, for example) and acquire industry and field experience.

Using This Training Guide

Implementation consultants, members of implementation teams, and operators can use this guide in instructor-led classes, while knowledgeable consultants can use this guide for self-study.

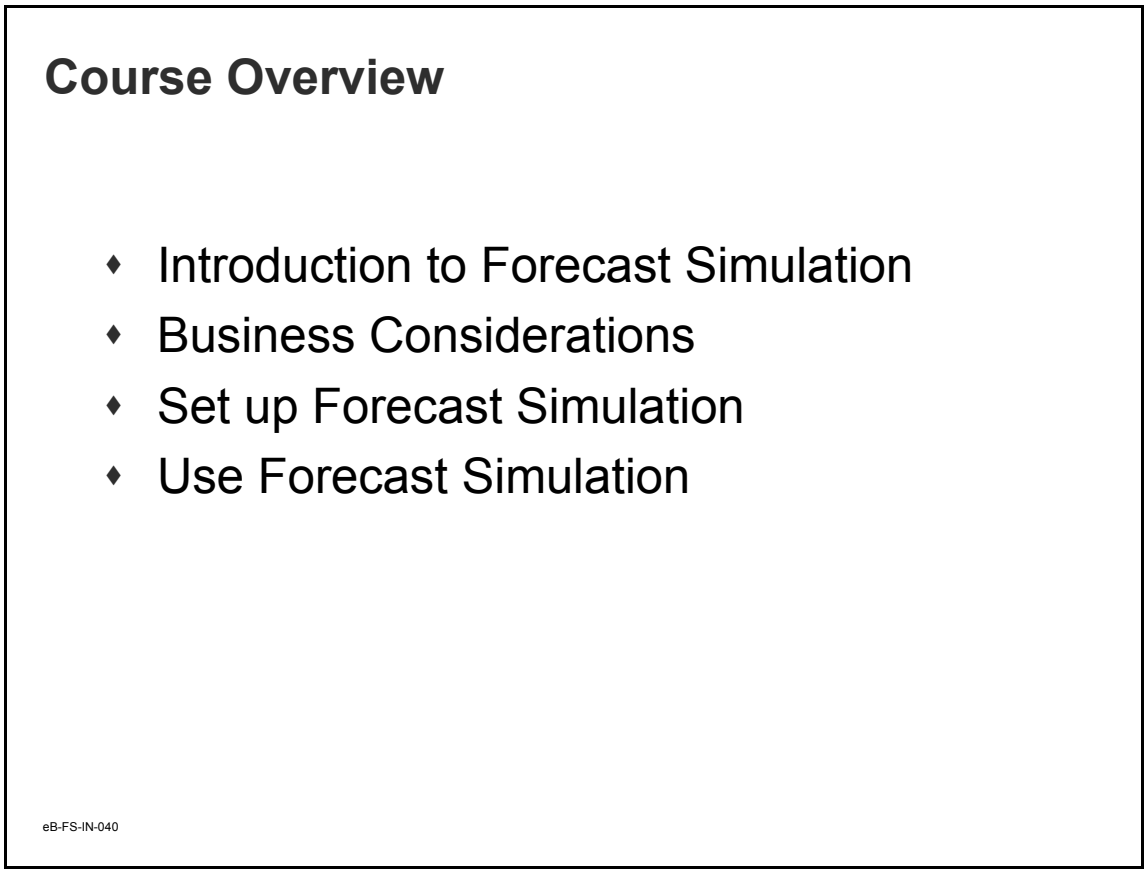


General Training Facilities Information

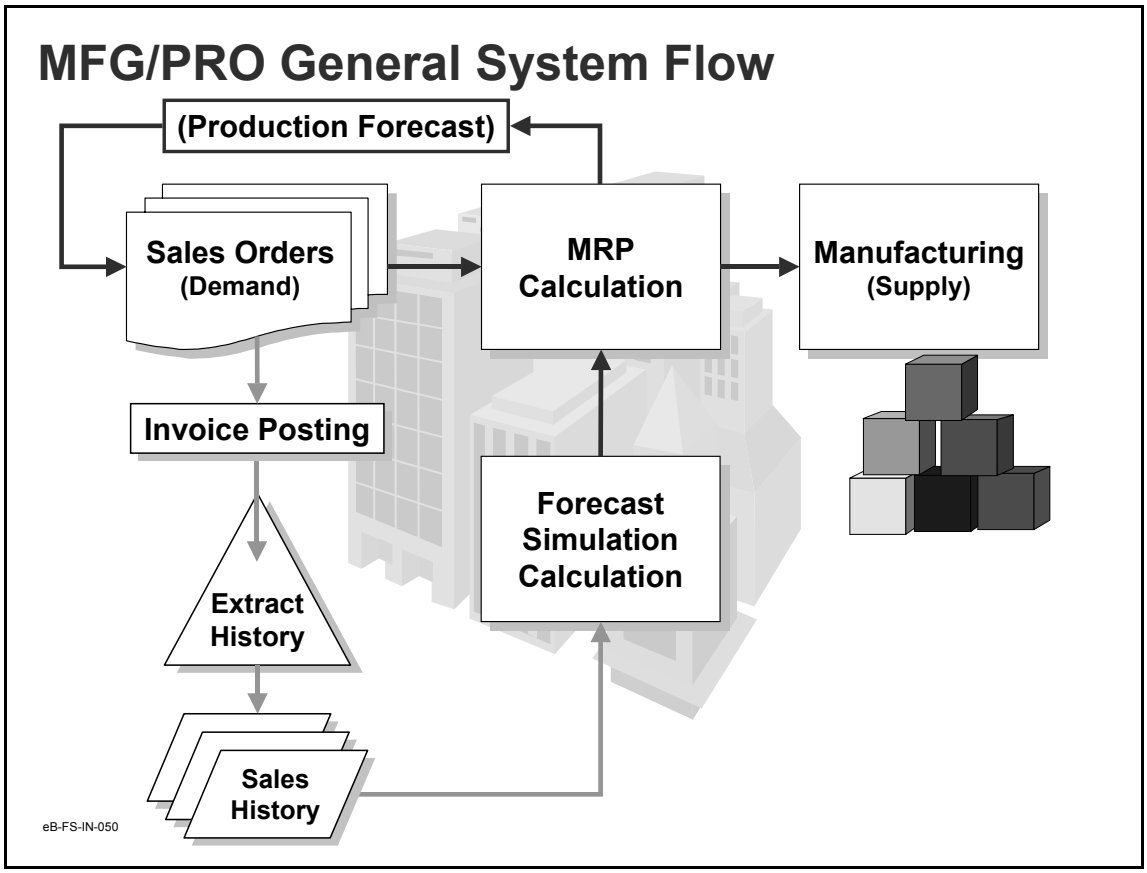
- Telephone or fax
- Messages
- Restrooms
- Class hours: start and finish times, and punctuality
- Breaks: frequency, approximate times
- Parking considerations; carpooling
- Emergency procedures: location of first aid, contact person for assistance
- Exit locations, building hours
- Location of approved smoking area

CHAPTER 1

Introduction to Forecast Simulation

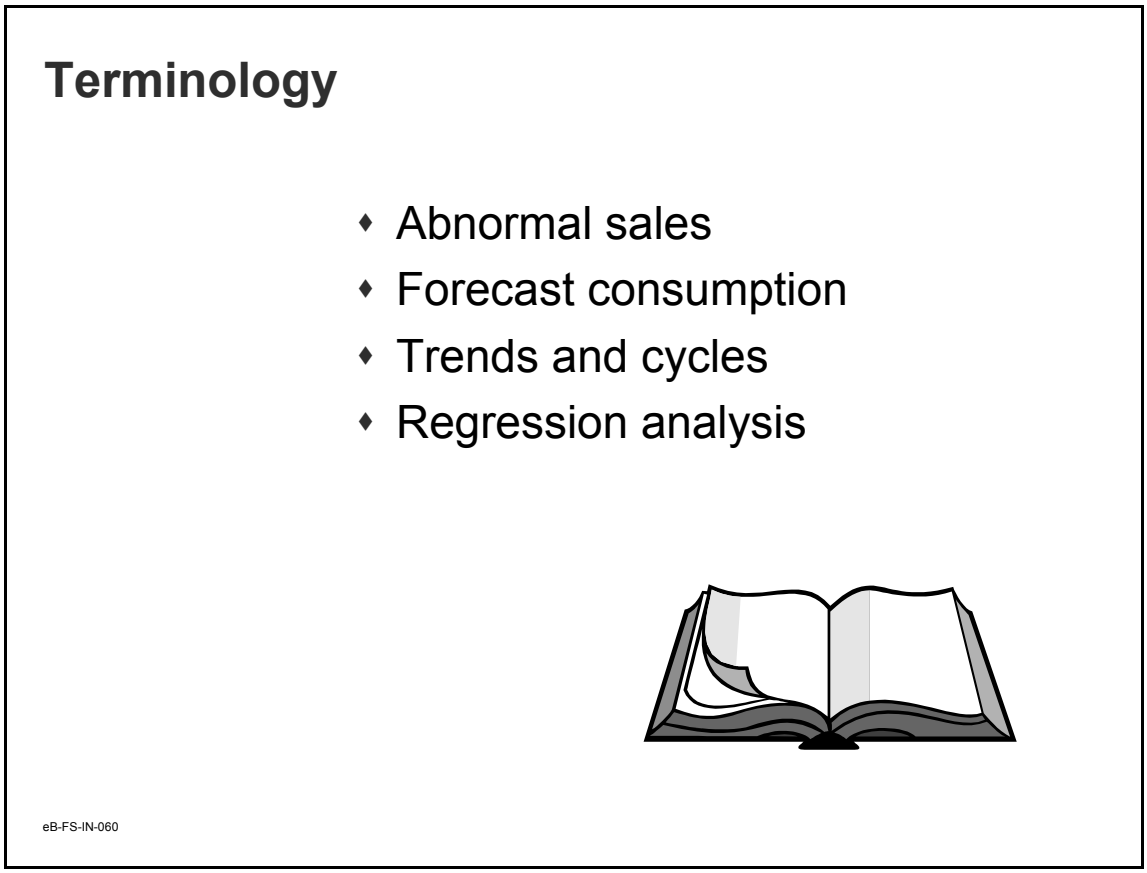


Overview



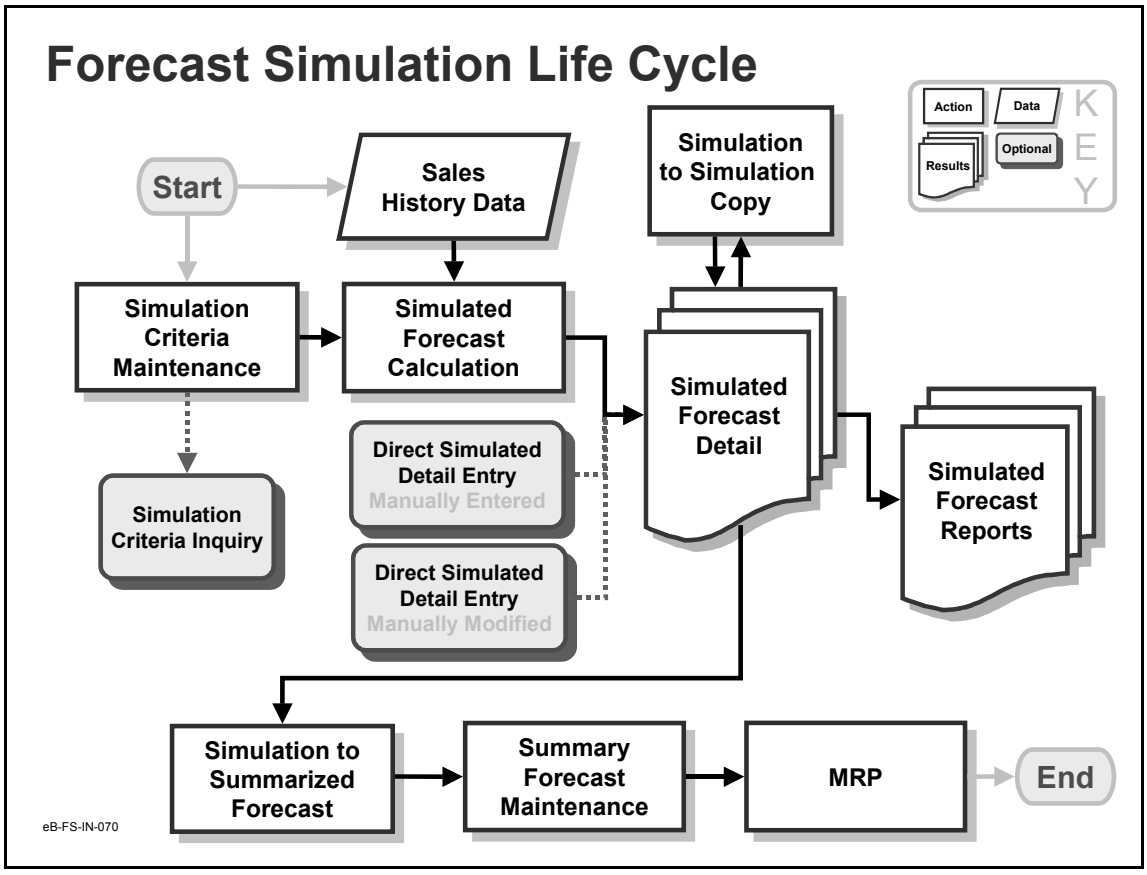
General System Flow

- Customer places sales order
  - Extract Sales History
  - History drives Forecast Simulation Calculation
- Forecast Simulation Calculation and Sales Orders feed MRP Calculation
- Manufacturing supplies needs of MRP Calculation



Terminology

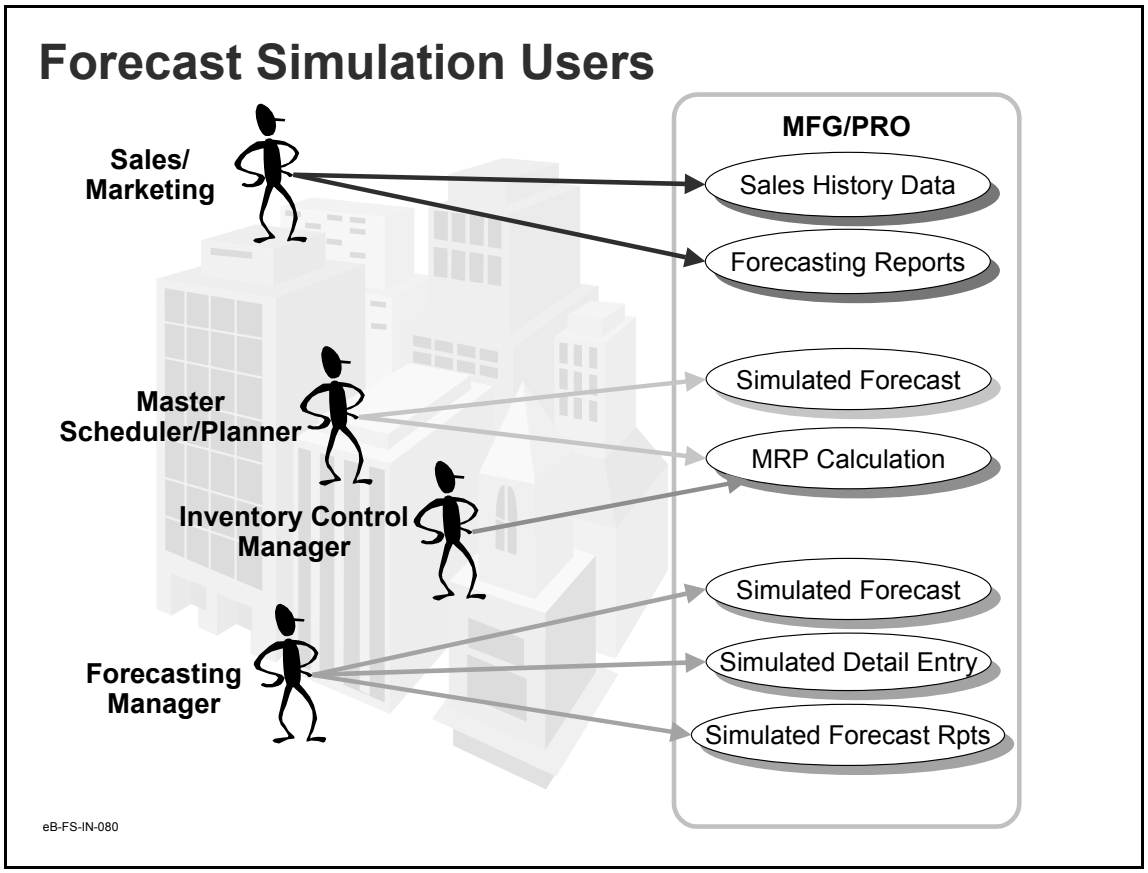
- Abnormal Sales—When unusual, unanticipated sales demands are discounted from normal sales demand. Example, sales related to a natural disaster. Often called an "outlier" in statistics. See *Modifying Forecast Results* on page 88.
- Forecast Consumption—Reducing the forecast quantities by the confirmed sales order quantities. See *Forecasting Consumption* on page 49.
- Trends and Cycles—Multipliers for increase or decrease in demand; and repeated patterns of varying demand. See *Sales History Patterns* on page 61.
- Regression Analysis—Statistical method to determine the best relationship between a response and independent variables. See *Calculation Methods* on page 60 and *Simple Regression* on page 69



Forecast Simulation Life Cycle

This life cycle is explained in detail in the Setup chapter.

See in this training guide: *Lifecycle Summary* on page 41



Typical Users

Various people typically control key tasks. This chart illustrates typical users and the most common tasks in Forecast Simulation with which they would be involved.

Course Objectives

In this class you learn how to:

- Identify some key business considerations before setting up Forecast Simulation in MFG/PRO
- Set up Forecast Simulation in MFG/PRO
- Use Forecast Simulation in MFG/PRO

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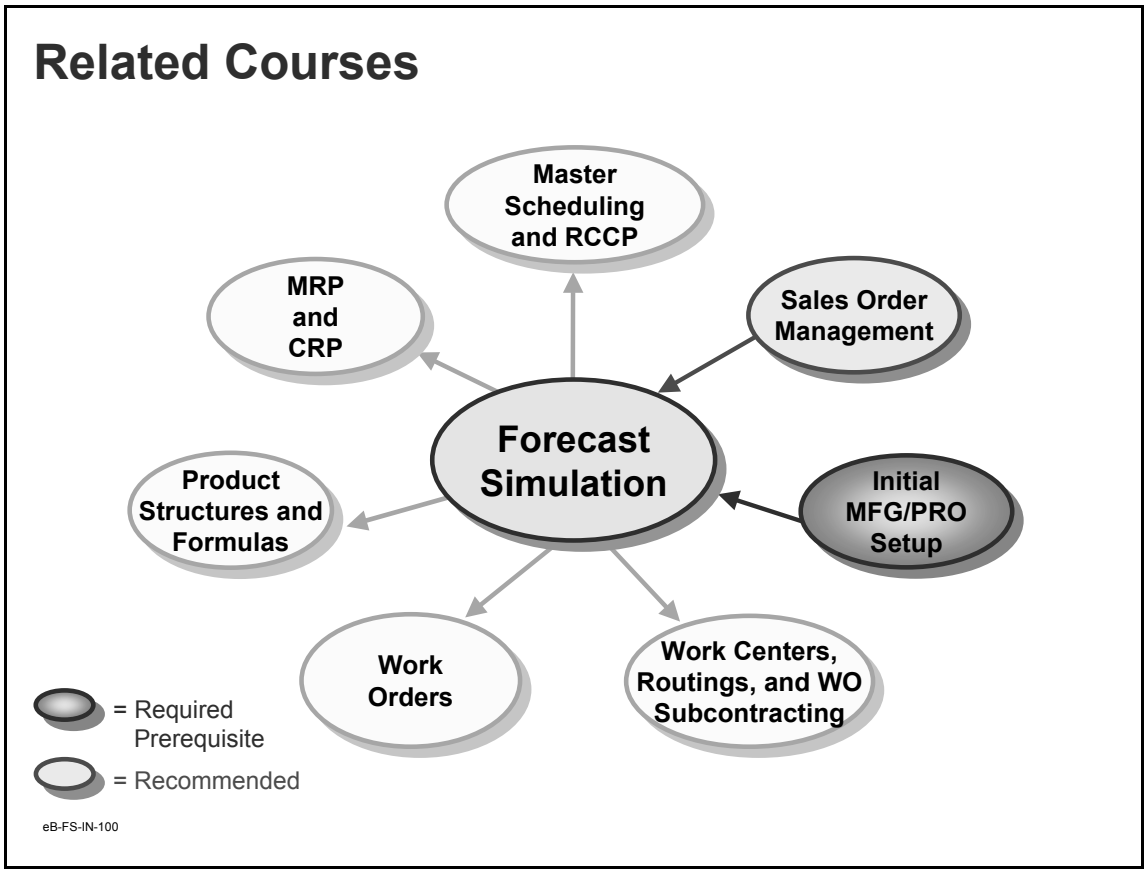
Course Objectives



Related Courses

Course Overview

- ✓ Introduction to Forecast Simulation
- ♦ Business Considerations
- ♦ Set up Forecast Simulation
- ♦ Use Forecast Simulation

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CHAPTER 2

Business Considerations

Business Considerations
In this section you learn how to:

- ✓ **Identify some key business considerations before setting up Forecast Simulation in MFG/PRO**
- ♦ Set up Forecast Simulation in MFG/PRO
- ♦ Use Forecast Simulation in MFG/PRO

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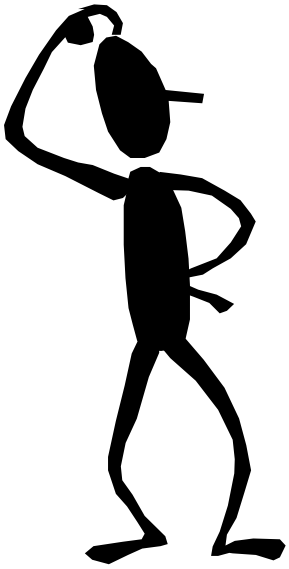
Business Considerations

Business Issues



- ✓ Product life cycle
- ✓ Forecast consumption
- ✓ MRP horizon
- ✓ Production forecasts
- ✓ Spare (service) parts
- ✓ Multiple sites

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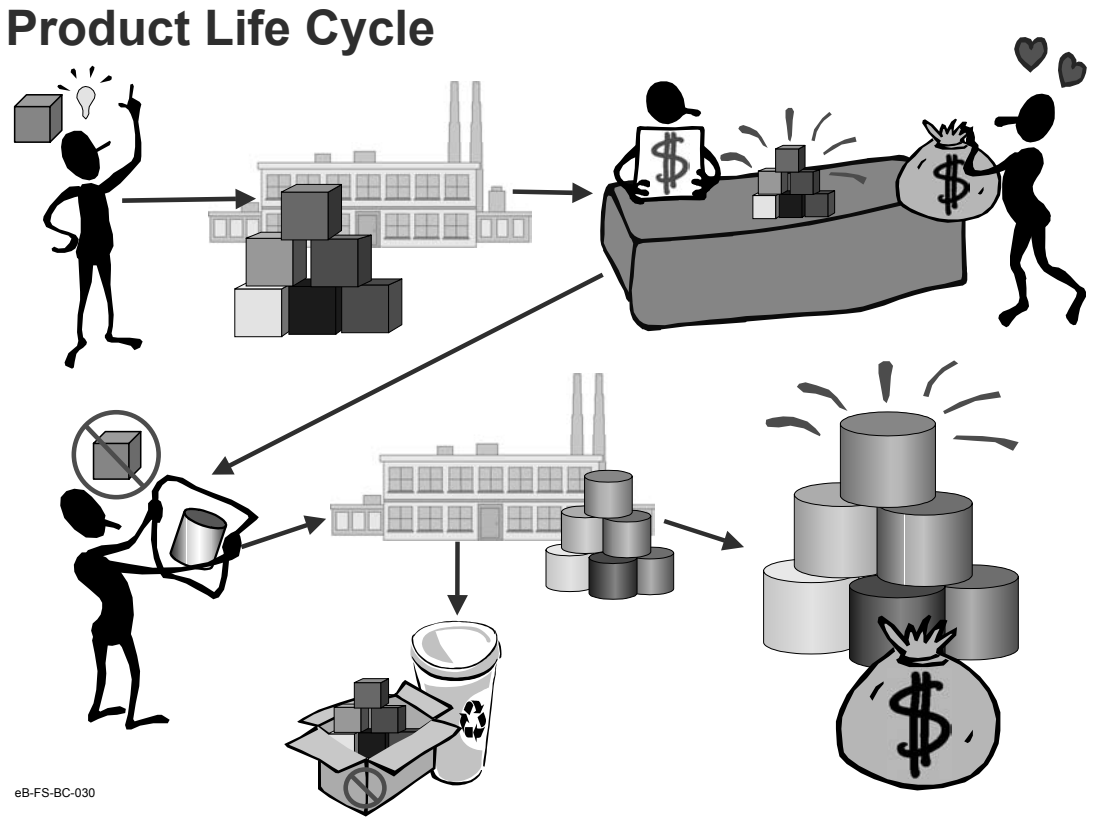
There are several business issues to take into consideration before setting up MFG/PRO. This section does not discuss all potential issues, but presents some issues to generate thought and discussion.



Product Life Cycle

Definition

Any product goes through some form of a life cycle at the manufacturer. The product idea is conceived, designs created, manufacturing commences, and the product moves into sales and customer availability.

For many products, design changes and modifications are applied, additional manufacturing is completed, old product is retired, and new product enters sales and customer availability.

Why Consider?

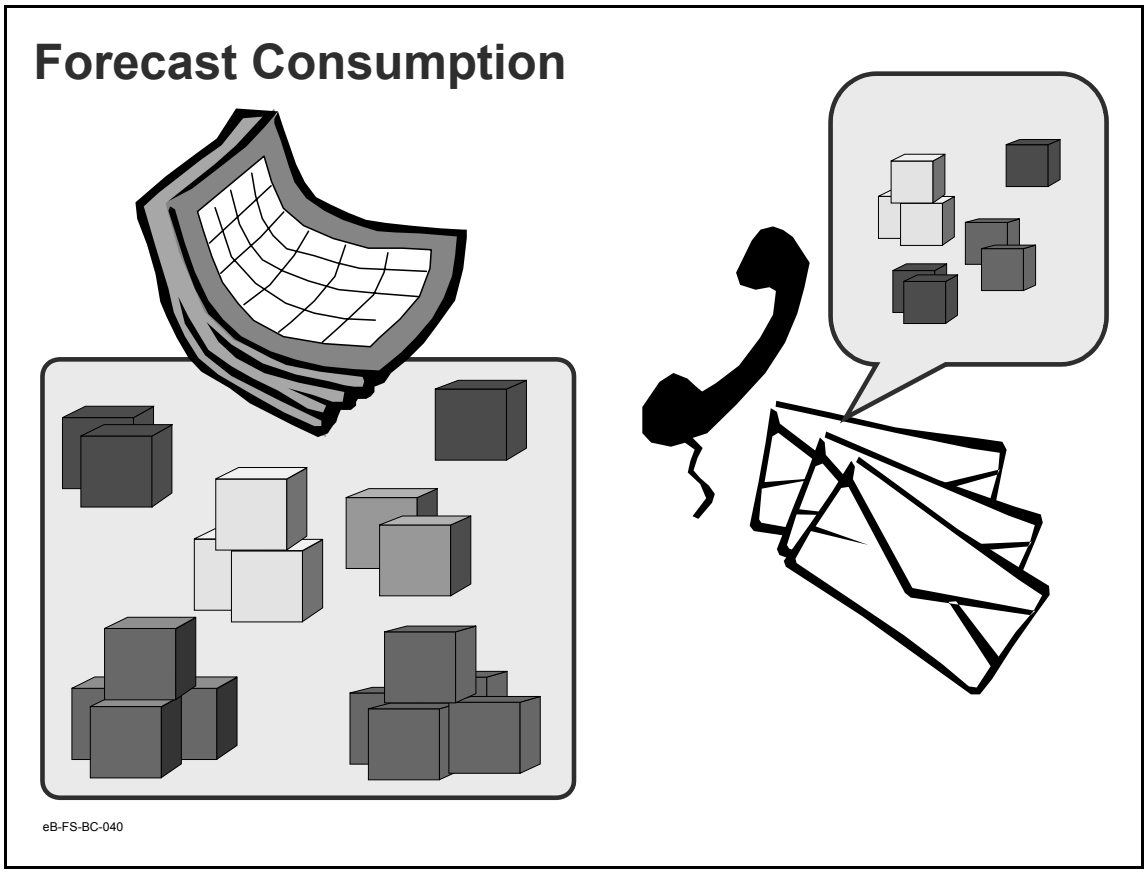
- Item status can be used to manage different stages in a product life cycle–examples include:
  - Prototype
  - Planning
  - Costing
  - Active
  - Phase out
  - Obsolete
- The bell curve effect of product demand can be forecast different for each item status

Functionality in MFG/PRO

- Restrict forecasting based on Item Status/Life Cycle
- Use Item Status Code Maintenance to set up item status codes
- Assign item status codes in the Item Master screens

Setup Implications

- History across item numbers for new life cycles, new products
- Set up item status for life cycle data
- Use Family BOM and Item Status percentages for forecasting



Forecast Consumption

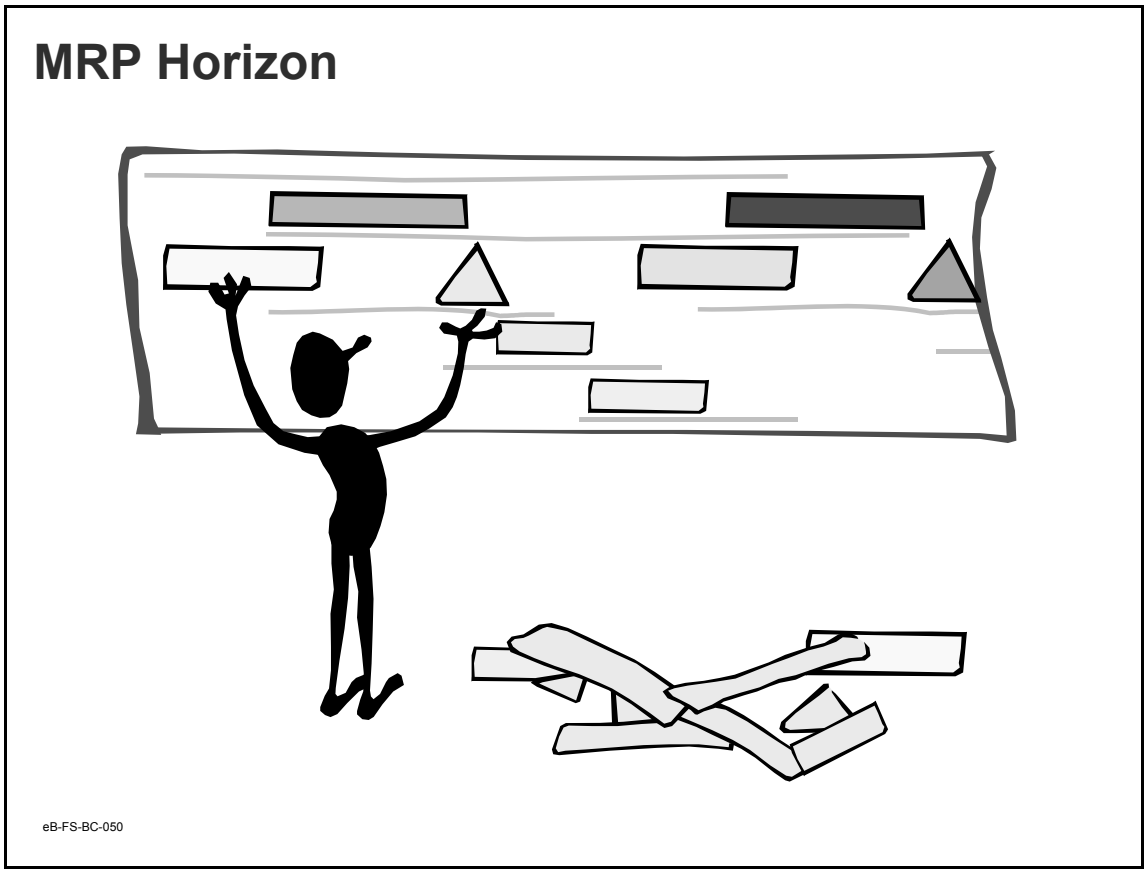
Definition

Consumption is controlled by Sales Order Control. The control program can be set to consume either forward or back, and is set based on variability of sales and forecast.

Abnormal consumption is any unplanned emergency, such as when a tornado hits and the abnormal consumption of destroyed materials causes increased demand. (An abnormal sales demand is also known as outlier.)

Why Consider?

- Consumption of forecast can make MFG/PRO “nervous” – affecting how MRP drives demand for components
- Window of forecast consumption effects product availability
- Forward/back consumption and abnormal consumption can be done at the Sales Order line from Marketing
- Forecast may be based on when you get the order (booking) whereas MFG/PRO forecasting is based on due date



MRP Horizon

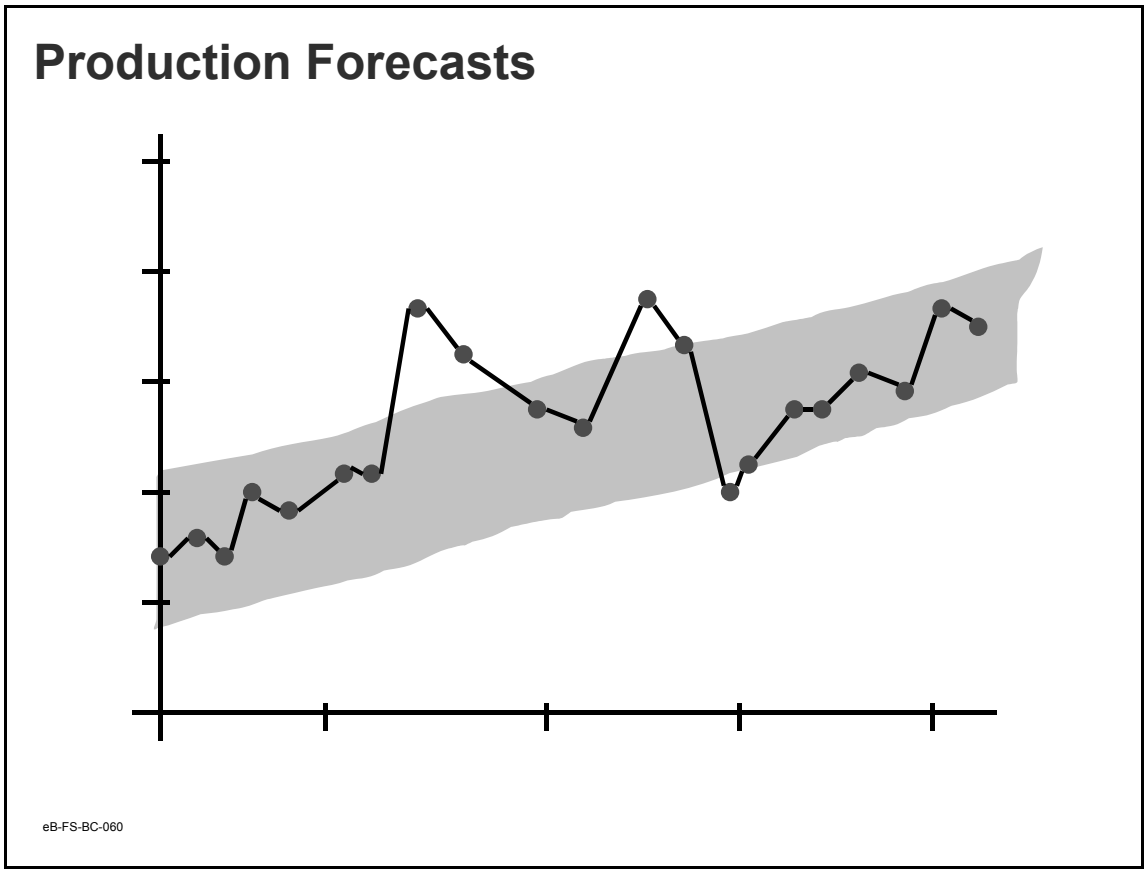
Definition

Material Requirements Planning (MRP) horizon and number of days in forecast need to be made compatible so the window and forecasting go out similar.

Ideally forecast past the MRP Horizon.

Why Consider?

- Forecasting and MRP data is significantly different when horizon and forecast are not coordinated



Production Forecasts

Definition

Production forecasts result from multilevel Master Scheduling (higher-level forecasts). The production forecasts work with forecast consumption (for O/P product types).

Why Consider?

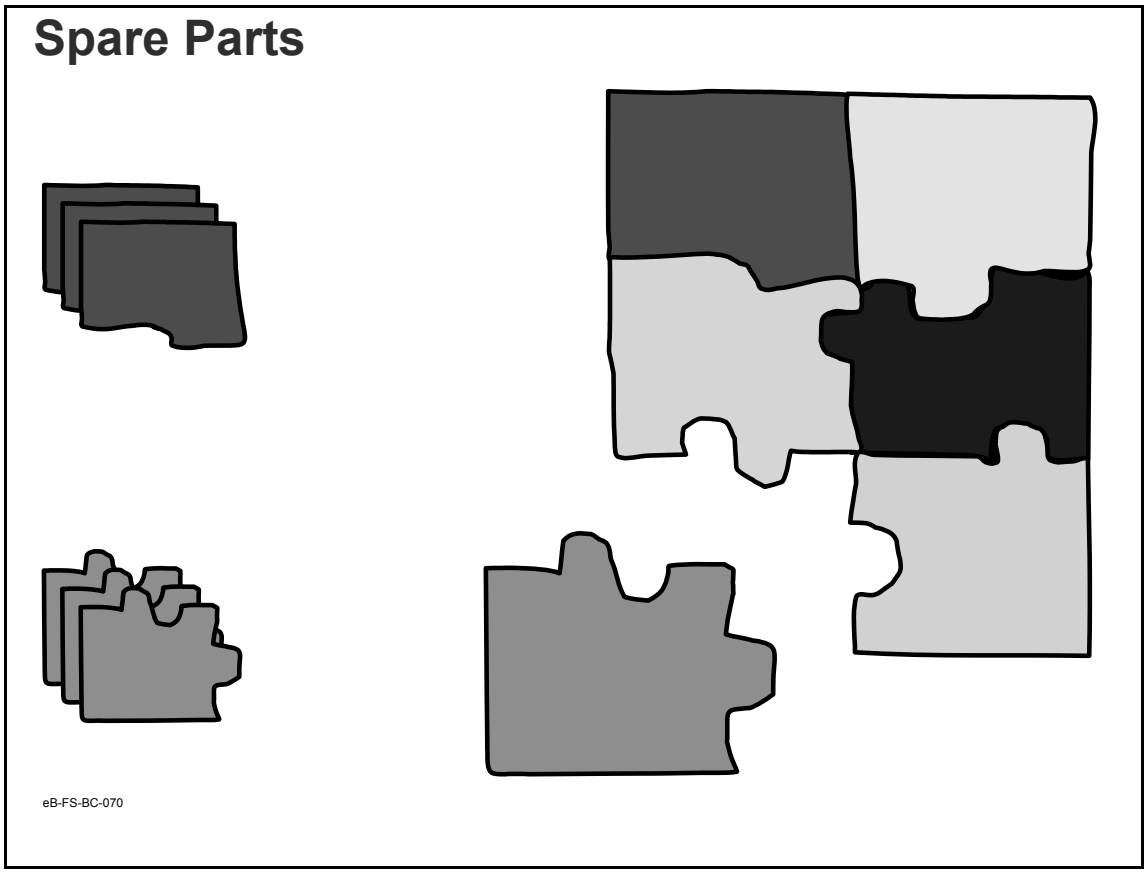
- Planning structures

Functionality in MFG/PRO

- Configured products, need a percentage on the parent item for consumption

Setup Implications

- Forecasting discreet numbers at option of configure
- Have sales consume at the option level



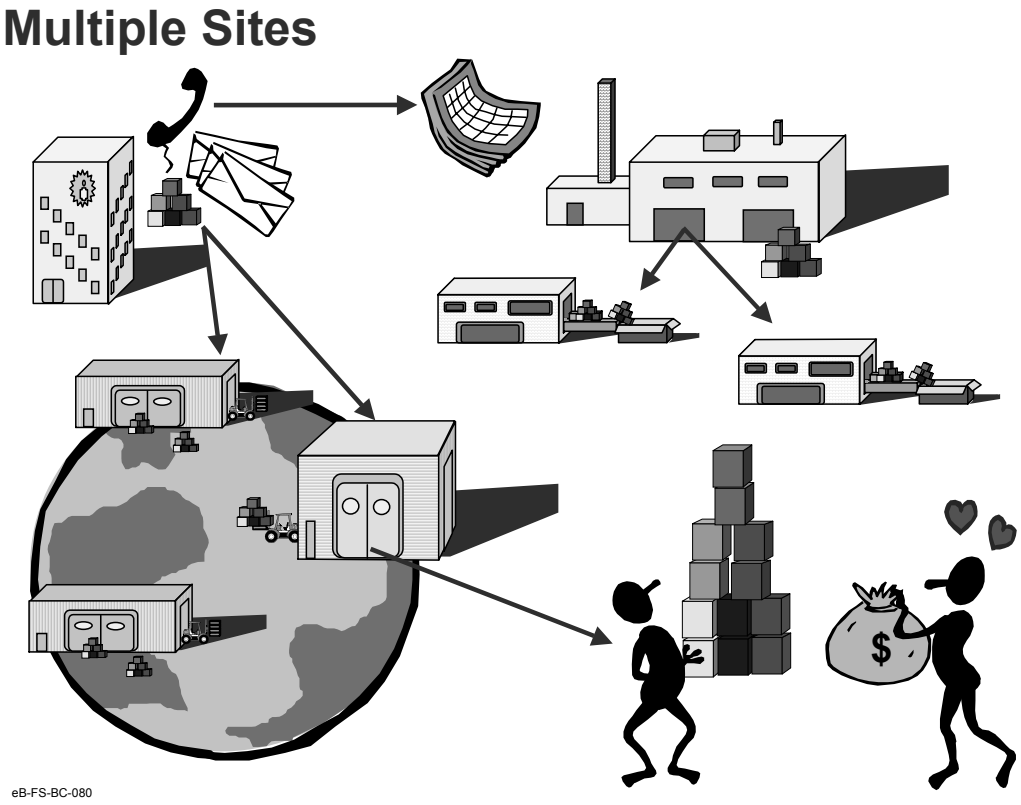
Spare Parts

Definition

Some products may be individually sold as replacement or service parts, outside the demand of the parent assembly.

Why Consider?

- Independent forecast on spare parts
- Dependent forecast on the same item based on work orders



Multiple Sites

Definition

When multiple sites carry the same service part, you can change the site listed on the Sales Order line to get available parts elsewhere. However, the sales credit and forecast consumption goes to the delivering site, not the ordering site.

Why Consider?

- Sales history goes to the ordering site
- The ordering site needs to start stocking, or increasing the stock, of the ordered part
- Do you calculate the forecast by Sales Order header site or Line item site?

Review

- Processes and Procedures
- Reporting Requirements
- Customer Expectations
- Product Configuration

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Review

Course Overview

- ✓ Introduction to Forecast Simulation
- ✓ Business Considerations
- ♦ Set up Forecast Simulation
- ♦ Use Forecast Simulation

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CHAPTER 3

Set Up Forecast Simulation

Set Up Forecast Simulation
In this section you learn how to:

- ✓ Identify some key business considerations before setting up Forecast Simulation in MFG/PRO
- ✓ **Set up Forecast Simulation in MFG/PRO**
- ♦ Use Forecast Simulation in MFG/PRO

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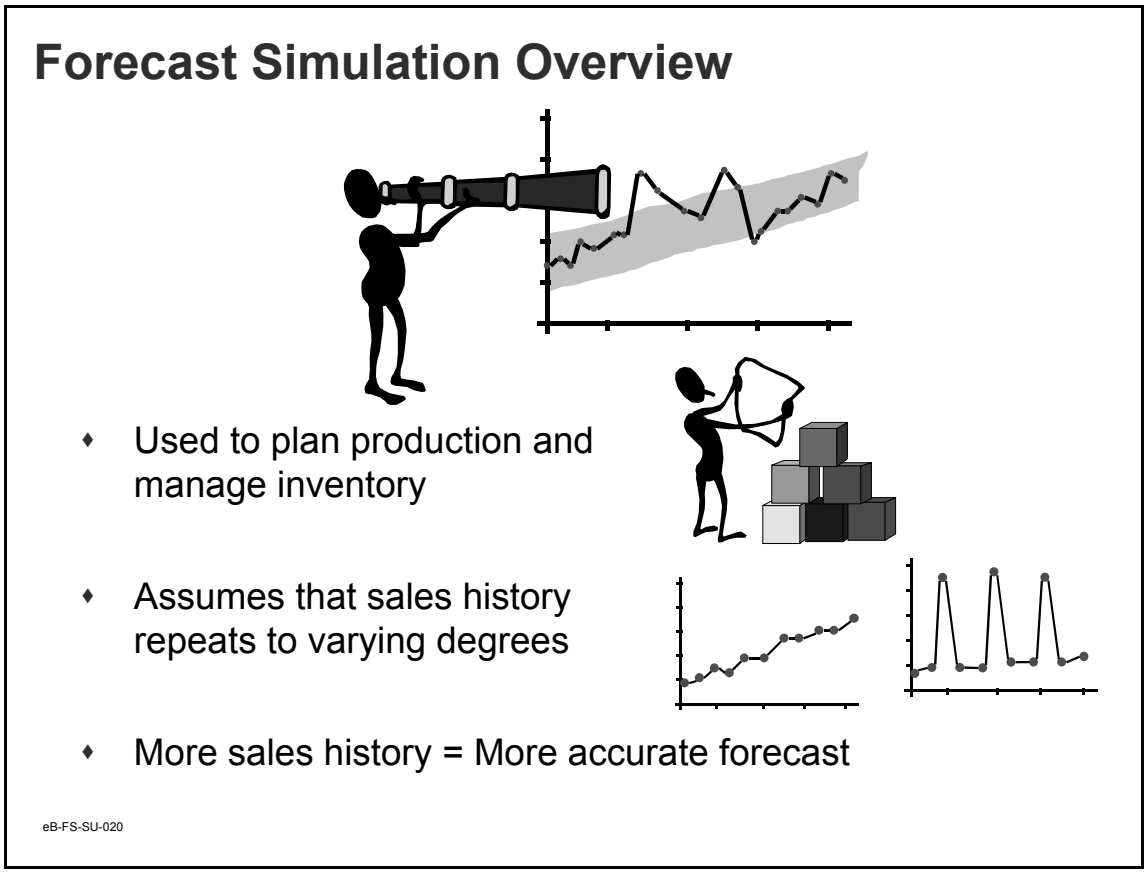
Set Up Forecast Simulation

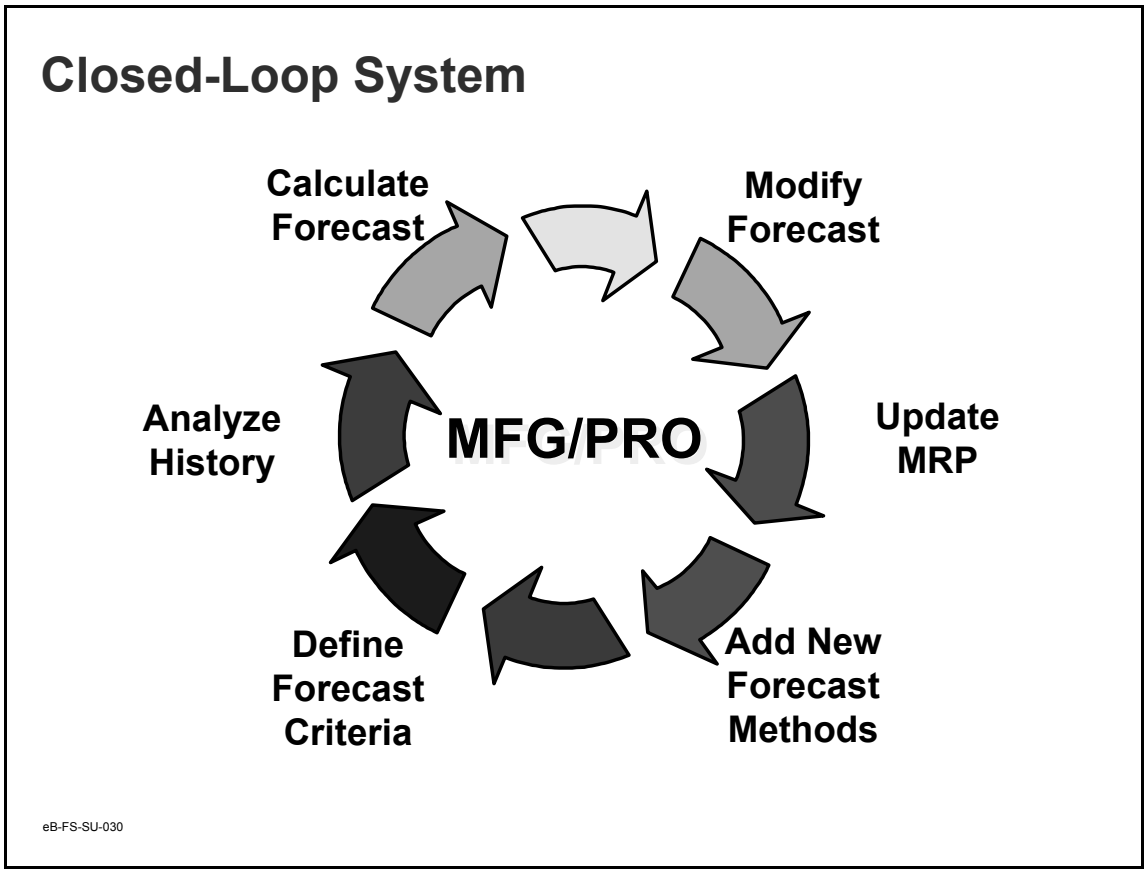
Note The forecast setup discussed here is for Forecast Simulation and all the menus contained within Forecast Simulation. This should not be confused with Forecast Maintenance, a major component of Master Scheduling.

Also discussed in Master Scheduling, a sister course in the Manufacturing Planning and Scheduling training class



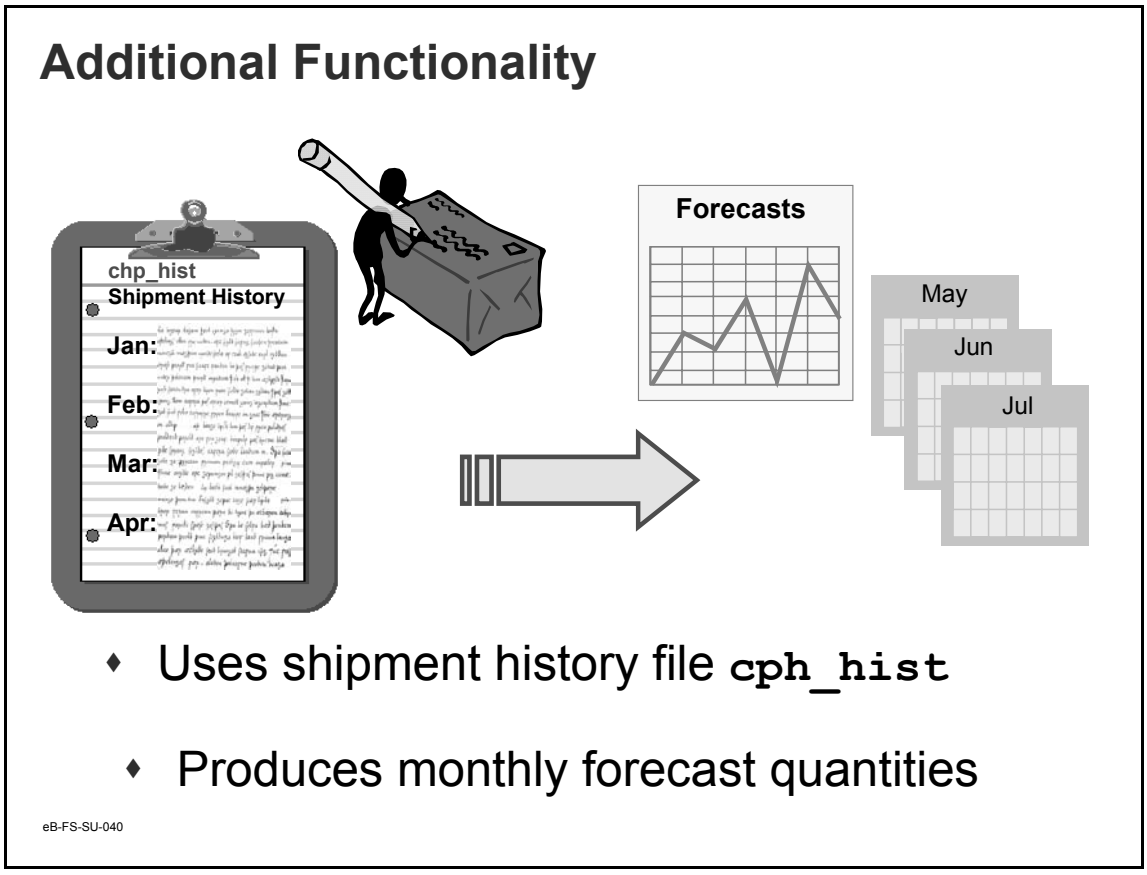
Forecast Simulation Overview

- Typically use forecast simulation to plan production and manage inventory
- Forecast simulation assumes that historical sales patterns are repeated to varying degrees in the future
- Accuracy of the forecast depends on the value of the sales information
- Five forecasting methods and a best fit model are available
- Statistically, a forecast should have at minimum 30 data points; however, Forecast Simulation will work with as few as 3 data points



Closed-Loop System

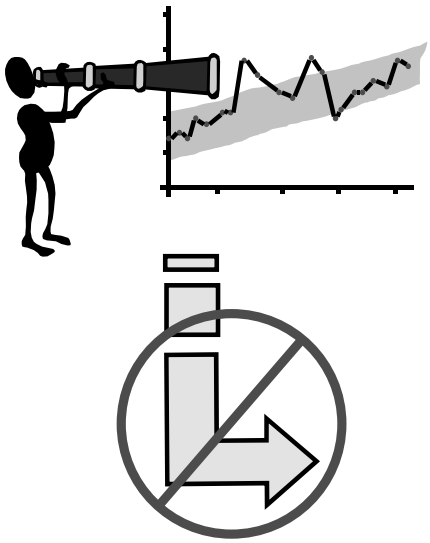
- The Forecast Simulation module makes MFG/PRO a closed-loop system
- The map above is used throughout this training course to indicate on which step you are working at any time



Additional Functionality

- Forecasting simulation enables you to produce a forecast based on shipment history
- Also can produce a rolling forecast for the next 12 months or for a given calendar year

Limitations



- Cannot use data other than sales history in calculation
- Cannot forecast configured products
- Cannot forecast by sales channel
- Cannot generate forecast based on dollar value of sales history
- Inflationary base currencies not supported via current indexing of currency amounts

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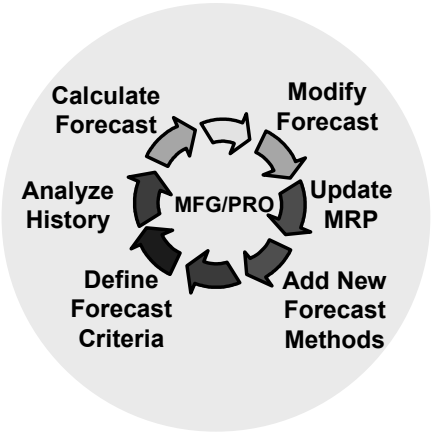
Limitations

- Forecast simulation cannot use data other than the sales history information
- Configured products cannot be forecast, must individually forecast for components
- Historical sales data used is:
  - Product / type / group / line
  - Site
  - Customer / region
  - Ship-to or sold-to address
- Sales channel, dollar values, and currencies are also not part of the forecast simulation calculation

Lifecycle Summary

- Create criteria template to direct forecast calculation (1)* Action
- Forecast calculation (2) Action analyzes the shipment history (3) Data and produces a forecast detail record (4) Results
- If produced outside MFG/PRO, the detail record can be manually entered (5) Optional
- Detail record can be altered manually (6) Optional



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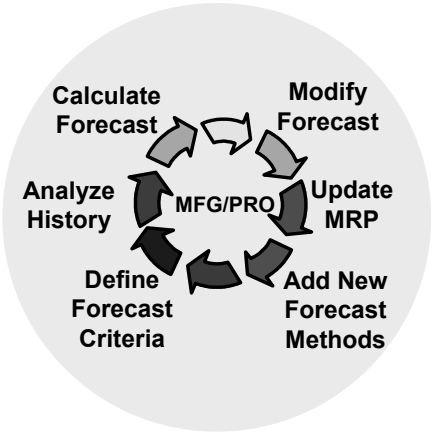
* Numbers correspond with Lifecycle Flowchart

Lifecycle Summary

- The overall workflow summary illustrates all steps of the process, both setup and processing
- The summary description above matches the graphic representation in the *Lifecycle Flowchart* on page 43

Lifecycle Summary (Continued)

- Can optionally copy and/or combine detail forecast records (7)* Action
- Can generate a report that displays cost, price, and profit margin for the forecast quantities (8) Results
- Forecast quantities can be loaded in the summary forecast file to become demand to drive the MRP calculation (9) Action
- Can adjust the quantities in summary forecast file (10) Action
- Run MRP (11) Action



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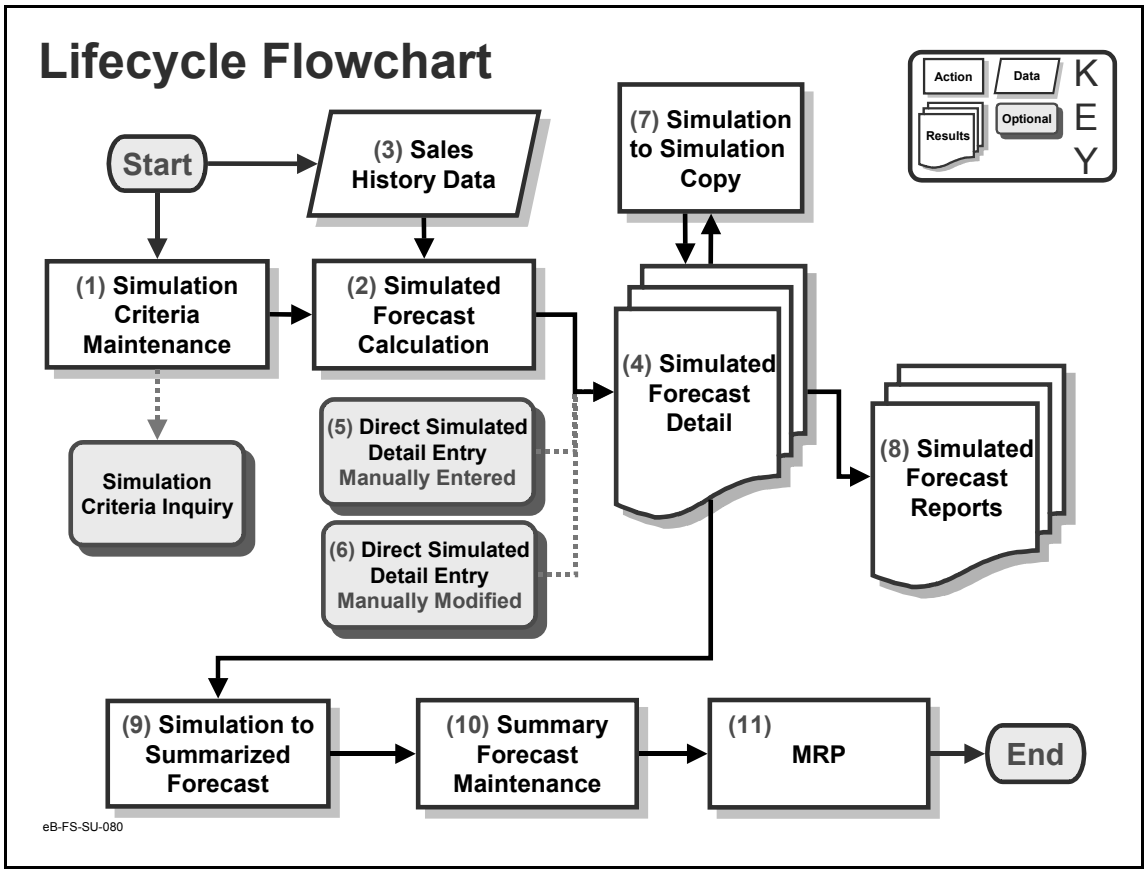
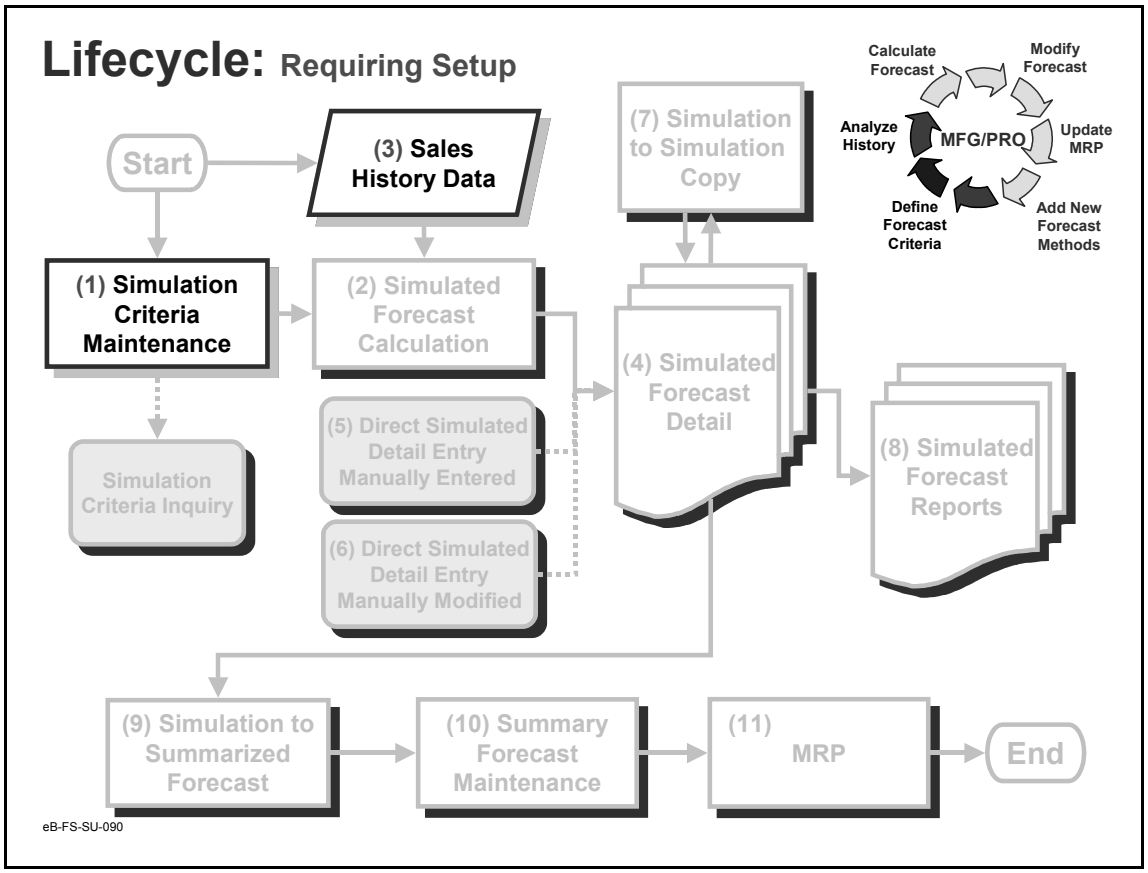
* Numbers correspond with Lifecycle Flowchart



Lifecycle Flowchart

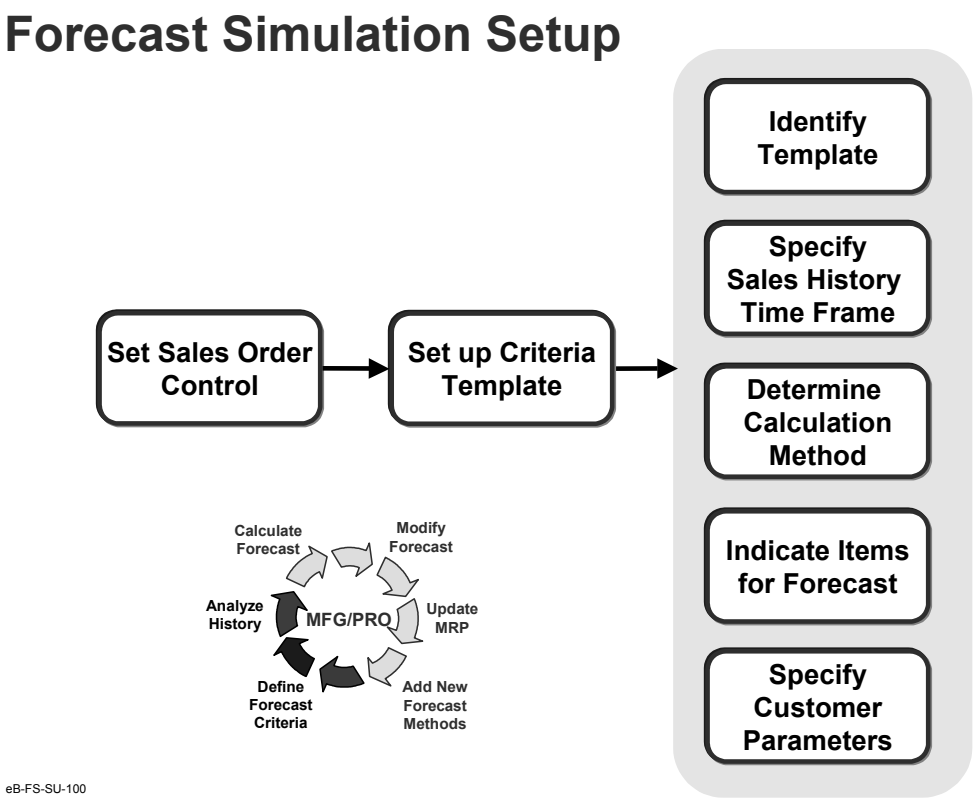


Workflow: Setup Steps

The lifecycle steps requiring setup include steps 1 and 3:

1 Simulation Criteria Maintenance

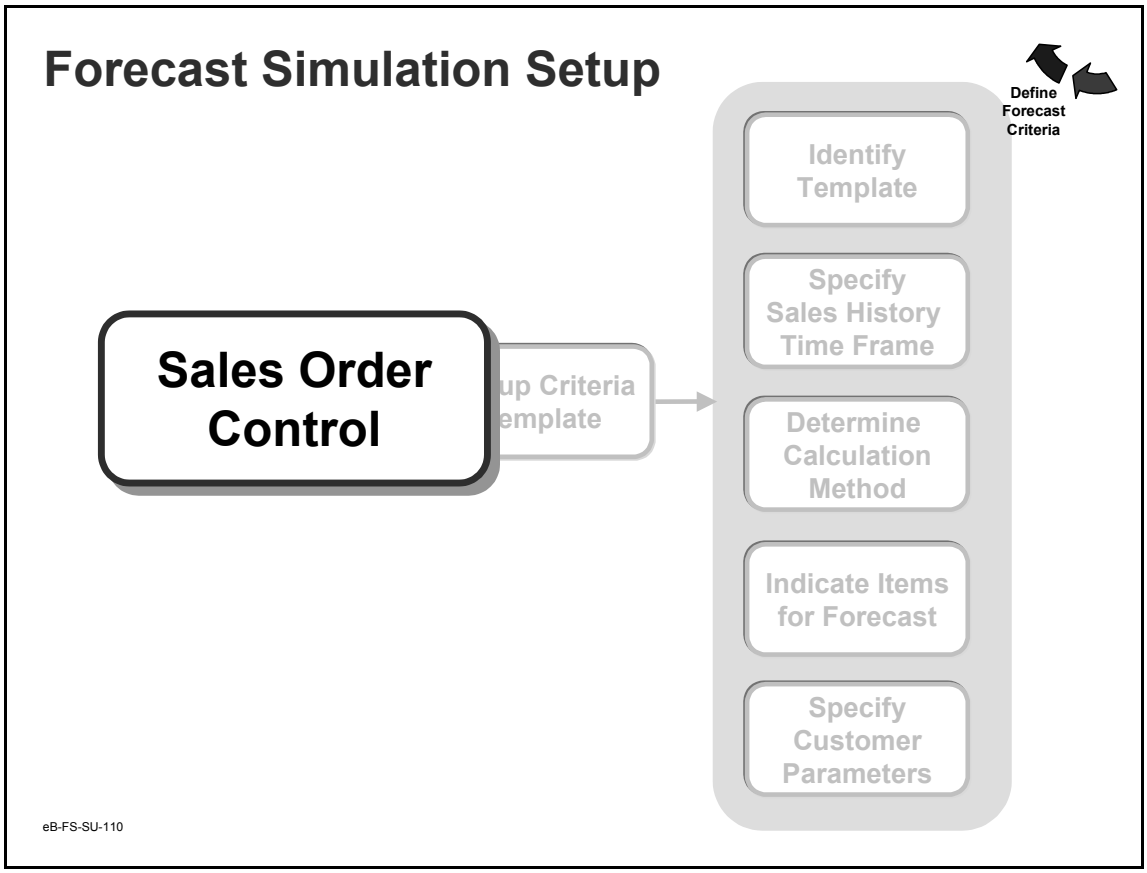
3 Sales History Data



Forecast Simulation Setup

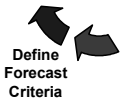
This illustration is a suggested setup sequence of master files for the Forecast Simulation module which is based on information that flows from one master file to another and prerequisites that need to be accomplished before setting up a file. Reading the illustration:

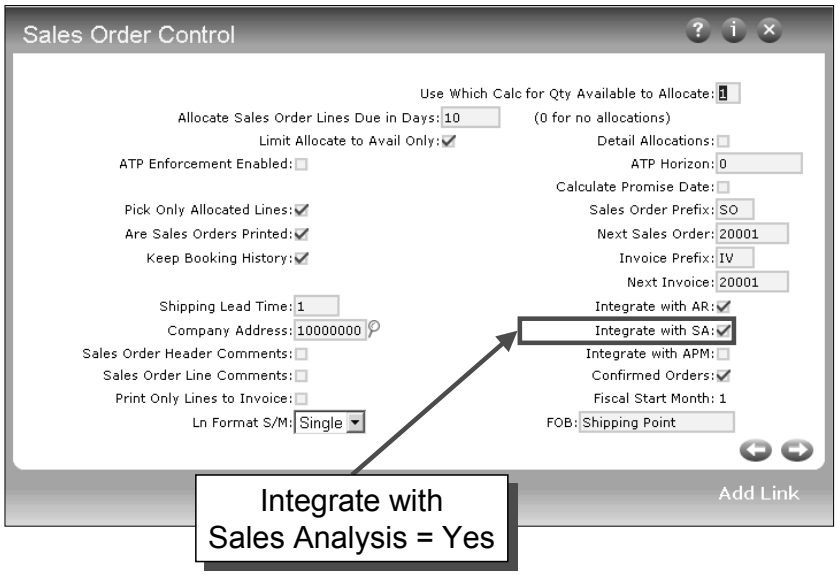
> Boxes with solid lines are required to set up Forecast Simulation and are covered in this course.



Set up Sales Order Control

Sales Order Control





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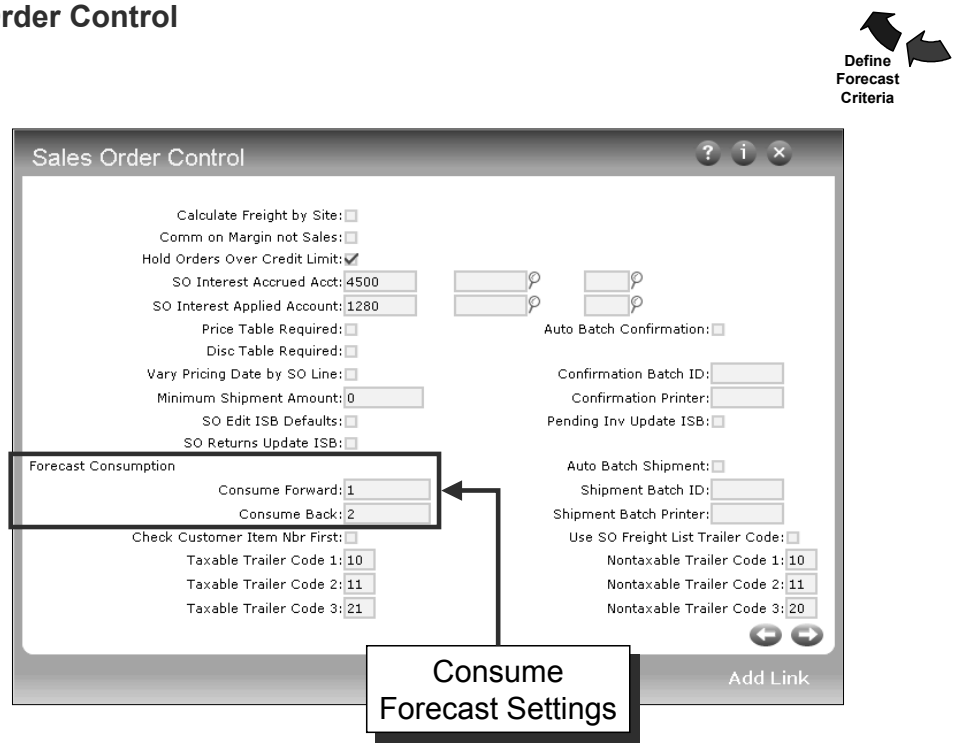
Sales Order Control

- Forecast Simulation analyzes the shipment history
  - The shipment history is captured when the Integrate with SA field is set to Yes
- To forecast accurately, you need sufficient sales history

Also discussed in Sales Order Management

Sales Order Control



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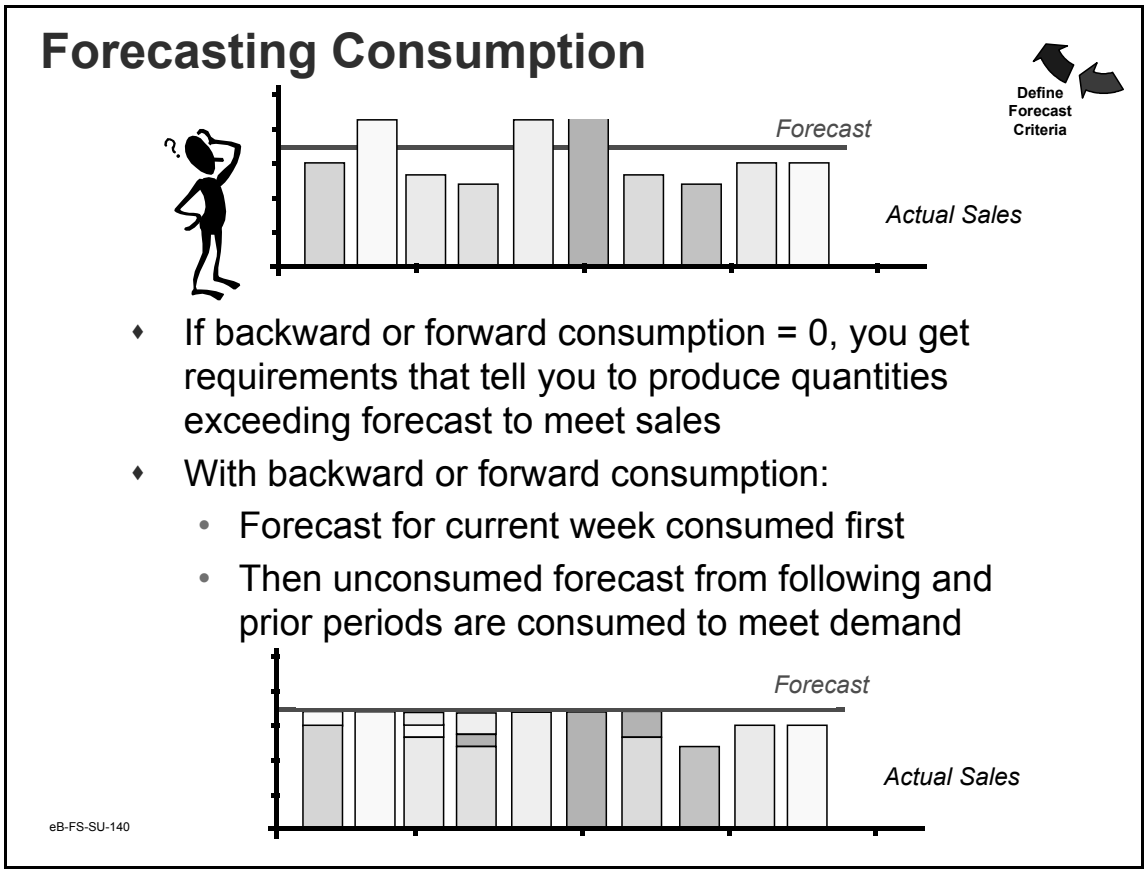
- Long-term forecasts are generally more accurate than short-term ones
- Forecasts are calculated for one month periods–actual sales seldom correspond to the forecast for a monthly period

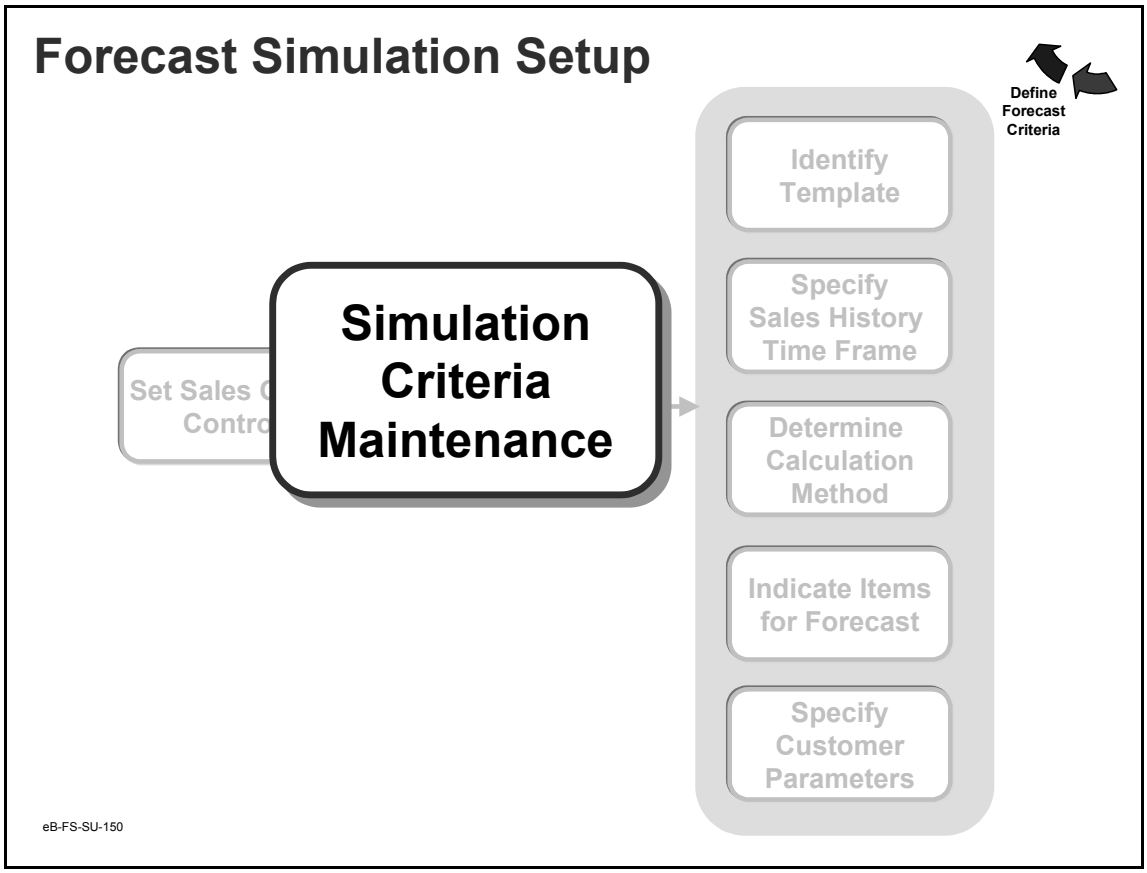
Important Forecasting quantities in Forecast Simulation are in monthly buckets. Forecasting quantities in Master Scheduling are in weekly buckets. (Master Scheduling forecast quantities are accessed in Forecast Maintenance, not Forecast Simulation.) Note this difference between Master Scheduling and Forecast Simulation.

- To compensate for this inaccuracy, you can expand the forecast window by using forward and backward consumption
  - Forecast consumption periods, in the Sales Order Control, are in weekly buckets



Forecasting Consumption

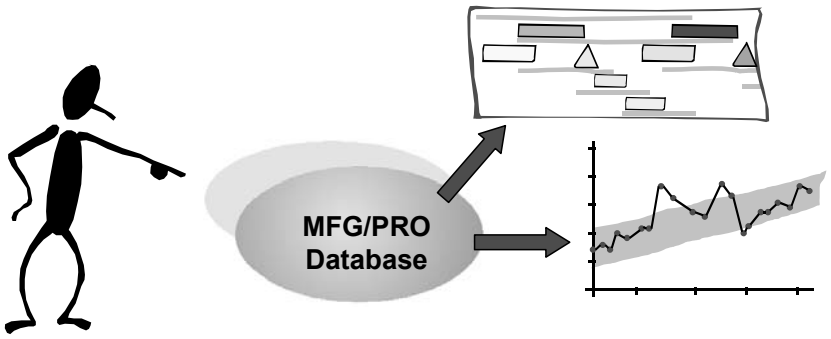
- The system consumes the forecast for the specified number of periods, first by going back, then forward, one period from the original forecast period
- It then continues to search backward and forward until the specified number of previous and future periods have been examined, or the entire sales order quantity has been applied
- Only confirmed sales orders consume the forecast



Set Up Criteria Template

- To let MFG/PRO run the forecast simulation calculation, you must first develop a criteria template
  - Specifies what sales history to use
  - Defines how to perform the forecast simulation calculation

What is a Criteria Template?



- Tells MFG/PRO how to do the calculation
  - Statistical data, Product information, Customer qualities
- Template is identified and stored on the system by Forecast ID
- Once the template has been used in a calculation, it cannot be further modified

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What is a Criteria Template?

- The criteria template specifies statistical data, product information, and customer qualities to use in the forecast simulation calculation
- Each criteria template is identified by a unique forecast ID
  - Results with the same forecast ID overwrite existing results with the same ID
- A template can only be modified until it has been used for a calculation
  - Once a template has been used for a calculation, it cannot be modified
- The forecast simulation is produced in monthly buckets for either the year specified (yearly) or for the next 12 months, beginning with the current month (rolling)
  - To setup a yearly forecast, you must enter an ending year earlier than the forecast year
  - A rolling forecast must have an ending year that is the same as the forecast year

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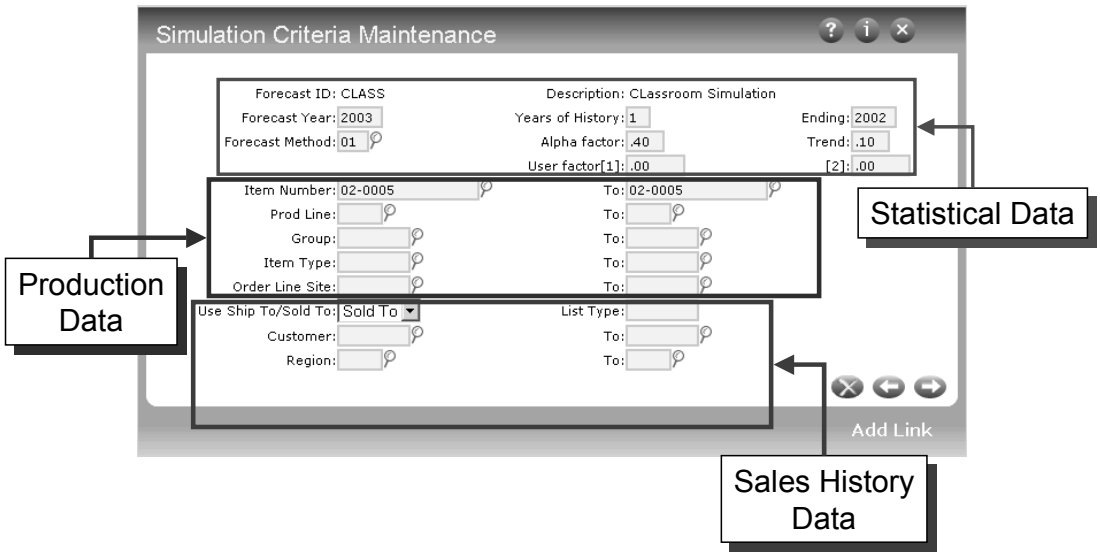
Simulation Criteria Maintenance



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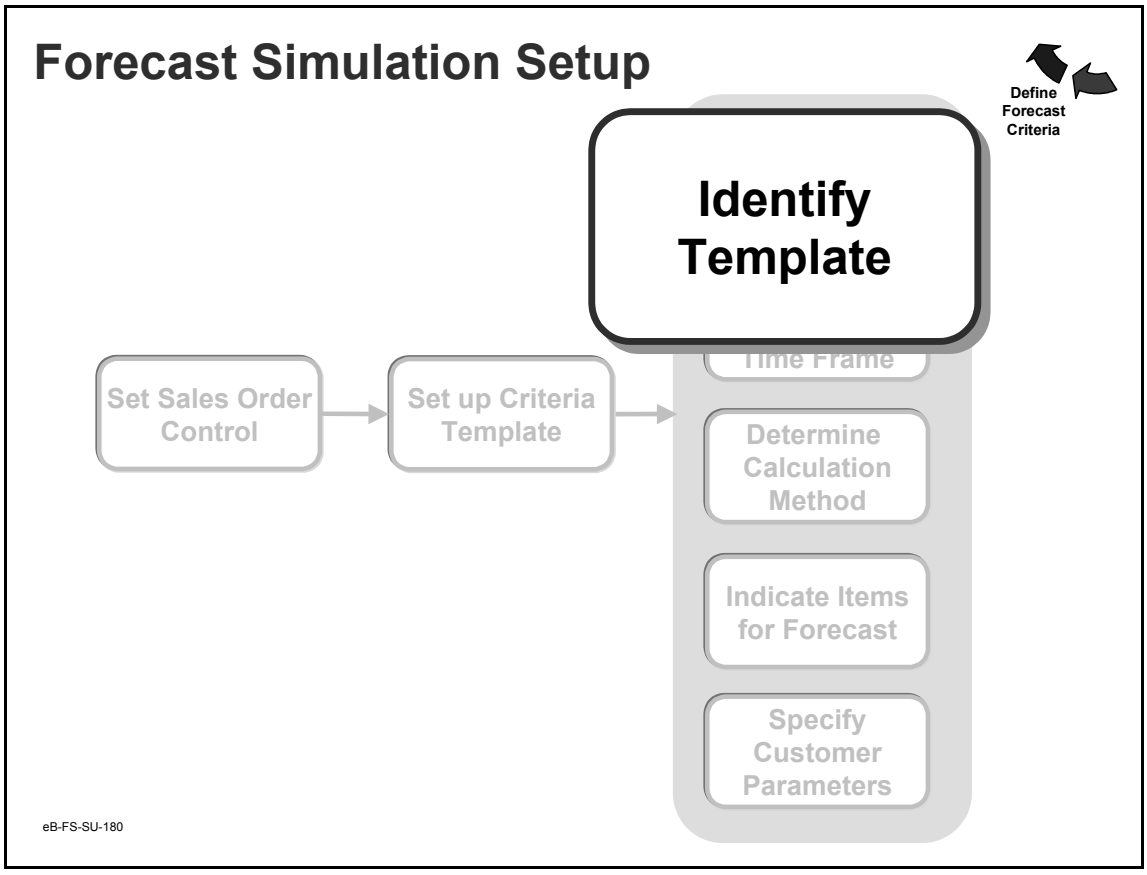
Simulation Criteria Maintenance

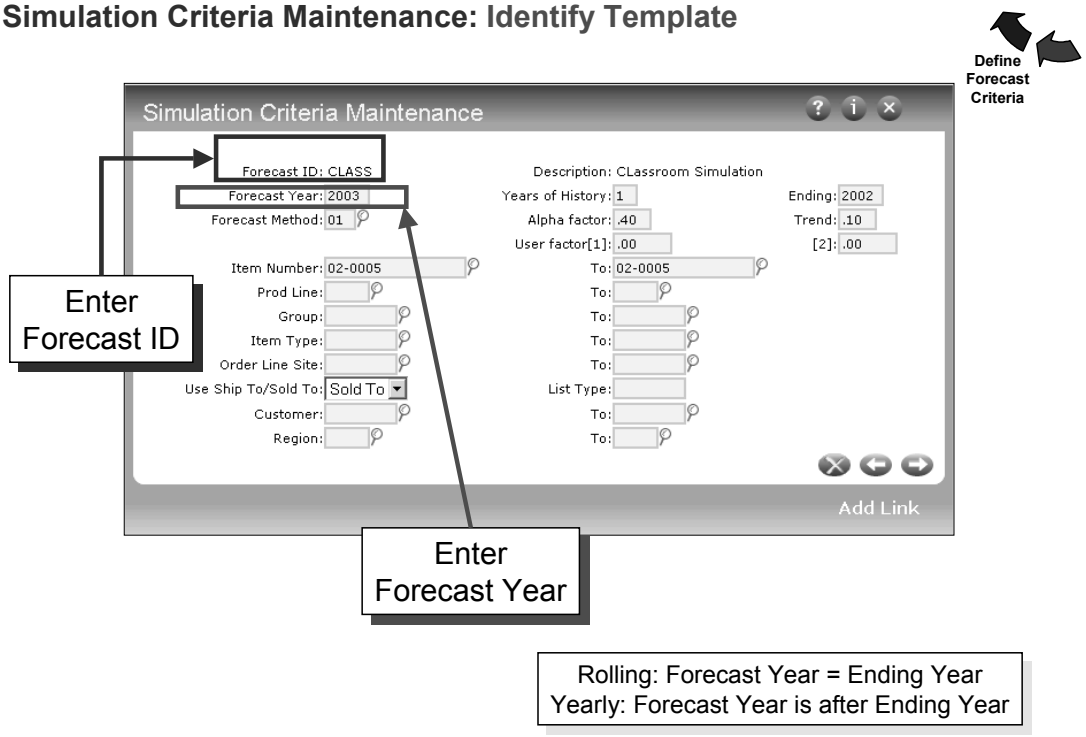
Category	Defines
Statistical Data	Method, trend, alpha factor. Also includes user factors to a specified user-defined forecast method
Production Information	Item, product line, group, item type, and order line site being forecast
Sales History Data	How to use sales history data (customer, region, and list type) in the calculation



Identify Template

- The Forecast ID identifies a template of criteria for analyzing historical sales data in the calculation
- The criteria template may be modified each time a calculation is performed
  - Forecast results are stored by forecast ID, year, and item
  - Prior forecast results from the calculation of annual forecasts, identified by Forecast ID, are overwritten
  - Rolling forecast results, identified by Forecast ID and Forecast Year, are overwritten starting with the current month forward
  - You must specify a Forecast ID and Forecast Year

Simulation Criteria Maintenance: Identify Template



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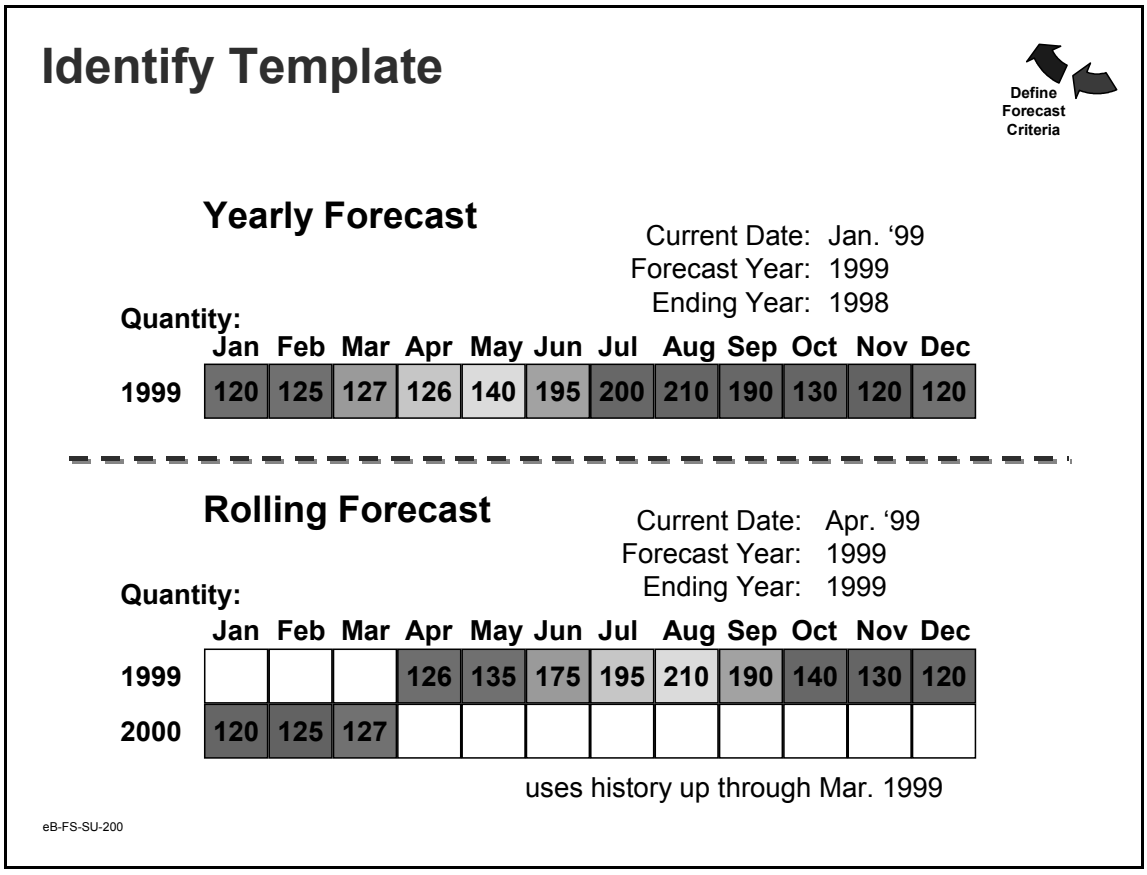
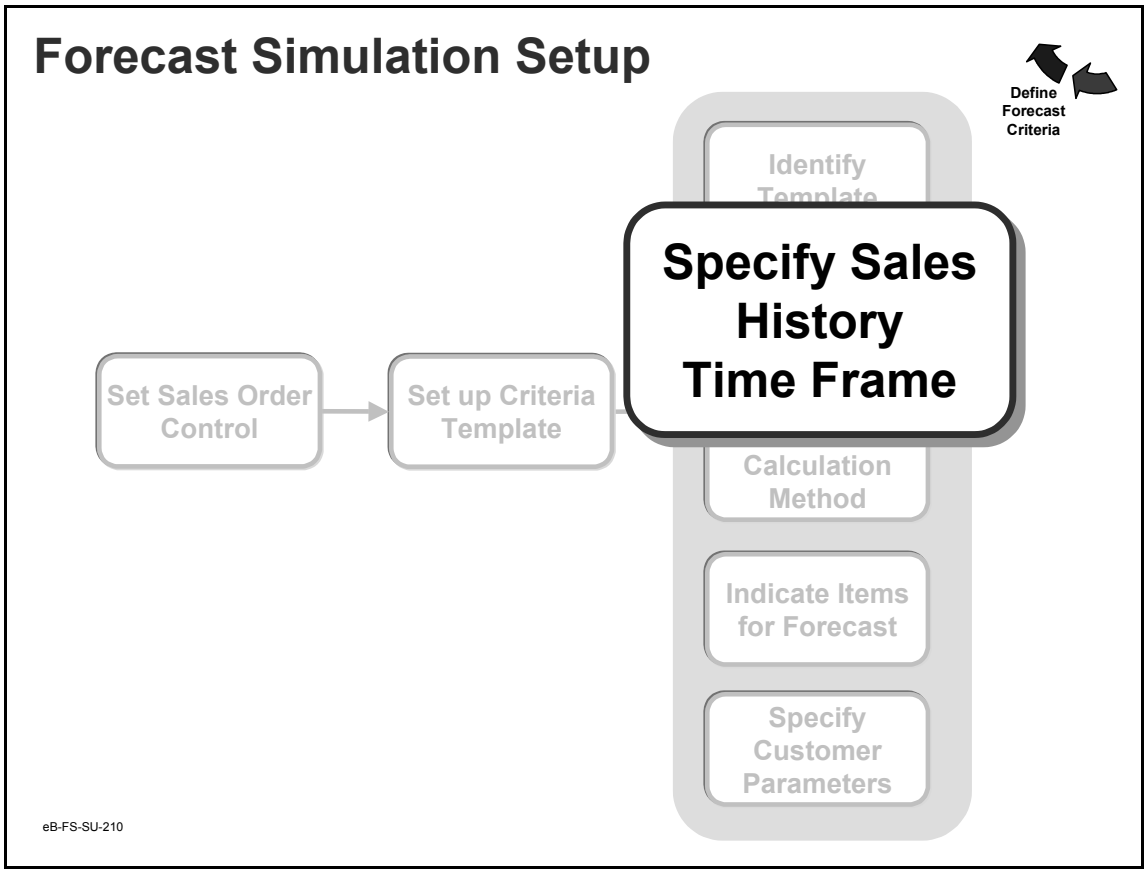
Simulation Criteria Maintenance: Identify Template

- Forecast ID is an eight-character alphanumeric, user-assigned
- Description is optional



Yearly or Rolling Forecast

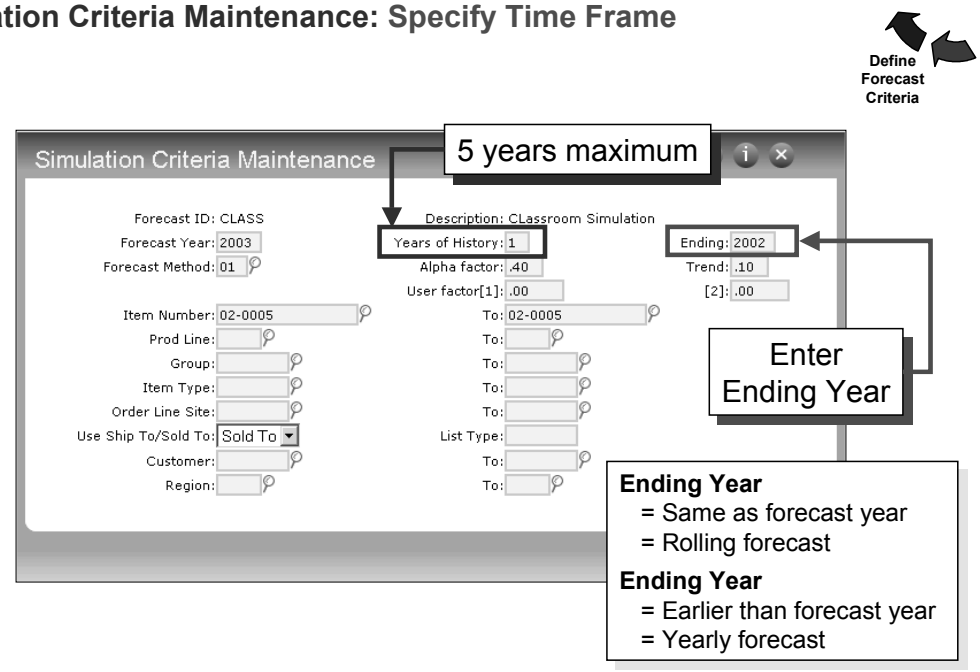
- In the first example above, the forecast has been set up as a yearly forecast:
  - Uses sales history ending in 1998
  - Projects forecast quantities for all the months of 1999
- In the second example above, the forecast has been set up as a rolling forecast:
  - Uses sales history ending in March 1999
  - Projects forecast quantities for April 1999 through March 2000
- Each forecast example above would have a unique Forecast ID
- When identifying your new Criteria Template, choose the forecast year and ending year based on whether you want a yearly forecast or a rolling forecast



Specify Sales History Time Frame

- After identifying the template ID and years, select the sales history time frame for the calculation

Simulation Criteria Maintenance: Specify Time Frame



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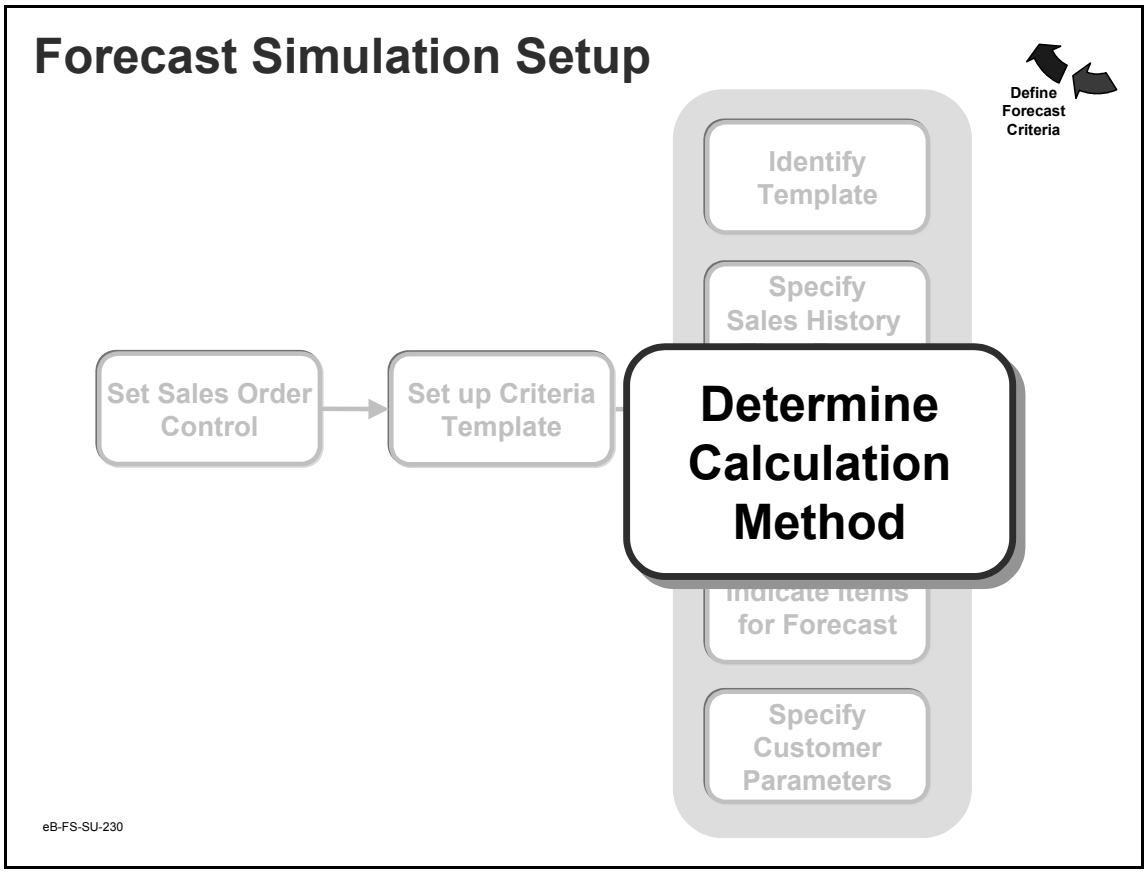
Simulation Criteria Maintenance: Specify Time Frame

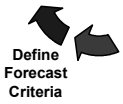
- Can analyze up to five years
- The system reduces the number of years if there are no sales for a year
- Ending year must be the same or earlier than the forecast year
  - Same = Rolling Forecast
  - Earlier = Yearly Forecast



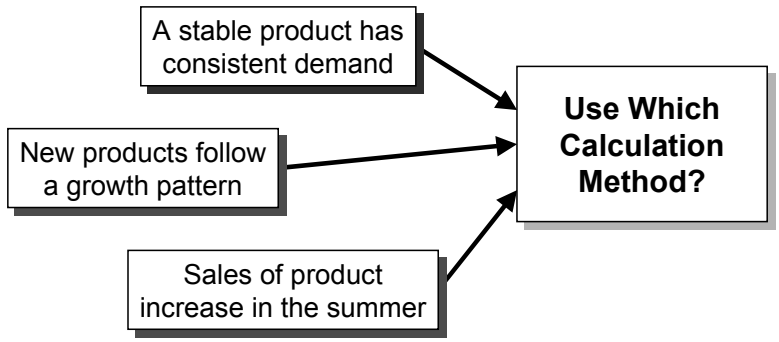
Determine Calculation Method

- After identifying the template by a unique ID, and selecting the type and years for the forecast and the history, you must determine what type of calculation to use
- Standard calculation methods are available
- Custom calculation methods (written in PROGRESS) can be designed by the user

Calculation Method



- Two digit forecast method indicates which PROGRESS procedure to run
- Alpha, trend, and user factors are used by some of the methods



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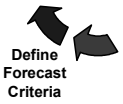
- You must decide which calculation method best suits the needs of your products

QAD

Calculation Methods



- Sales history can contain four underlying patterns of demand:
  - Trend (new products)
  - Seasonal (yearly cycle)
  - Horizontal (stable products)
  - Cyclical (business cycle level)

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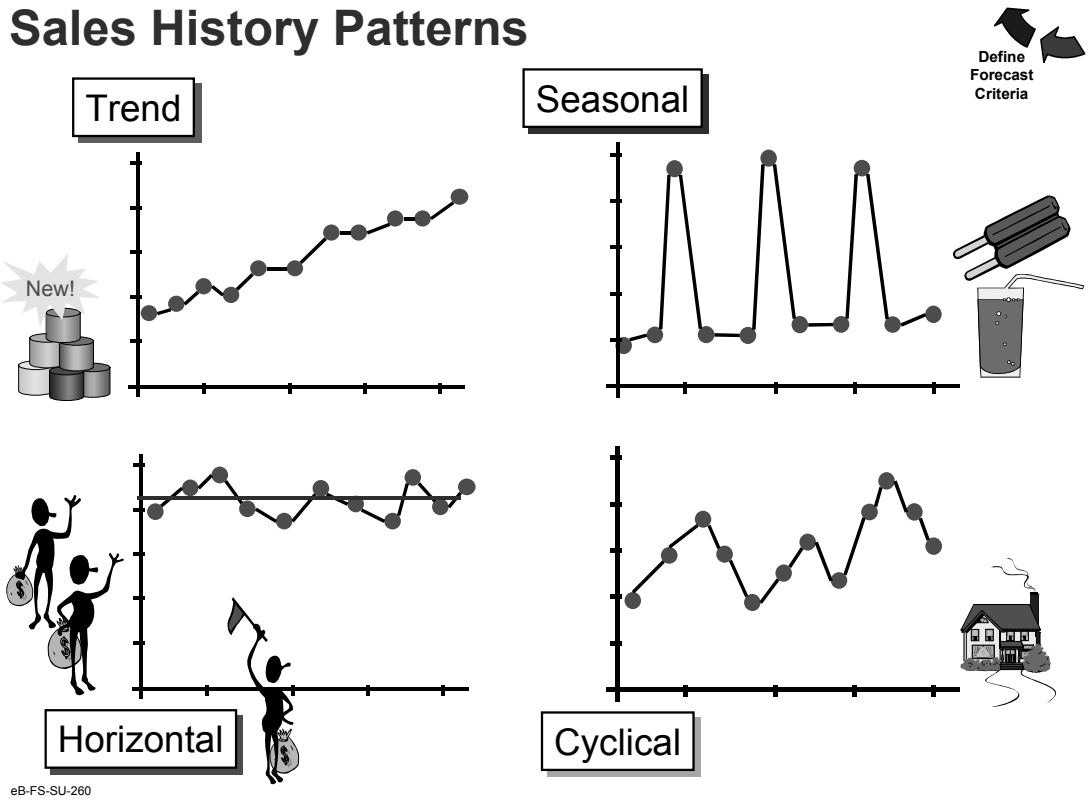
Calculation Methods

- Some typical considerations for selecting a calculation method include determining the sales history patterns of demand
- Four typical patterns are:
  - Trend – a steady growth of demand
  - Seasonal – cyclical patterns of greater and lesser demand, that usually repeat each year
  - Horizontal – a steady demand for product that has little deviation
  - Cyclical – greater and lesser demand that usually cycles over several years, and may not be easily predicted



Sales History Patterns

Pattern	Description	Example
Trend	Sales quantities generally increase over time.	The growth pattern of a new product
Seasonal	Sales quantities fluctuate according to some seasonal factor such as weather or the way in which a firm has chosen to handle its operations.	Sales of soft drinks, which increase in the summer months
Horizontal	Sales quantities do not increase or decrease substantially.	A stable product with consistent demand
Cyclical	This pattern is similar to seasonal, but the length is greater than one year. The pattern does not repeat at constant intervals and is the hardest to predict.	The sale of houses

Forecasting Methods

- Analyze sales history to forecast future demand
- Use basic “time series analysis” techniques
  - Mathematical manipulation of the sales history
- Six forecasting methods coded
  - Methods may/may not account for underlying patterns

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Forecasting Methods

- Calculation methods examine sales history to make mathematical predictions for future product demand

Method Codes

- Methods 01-06 are predefined
- Methods 07-50 are reserved for QAD
- Methods 51-99 are for other forecasting methods
- Method 00 indicates that the forecast detail record was not generated by the system
  - Manually created
  - Loaded through CIM interface
  - Created using the copy functions

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Method Codes

- MFG/PRO offers you six predefined forecast methods
- A choice of best fit is based on the least mean absolute deviation of the other five
- You can add additional methods to the system with User Forecast Method Maintenance

See in this training guide: *User Forecast Method Maintenance* on page 120

Method Codes

- 02: Double Moving Average
- 03: Double Exponential Smoothing
- 04: Linear Exponential
- 05: Classic Decomposition
- 06: Simple Regression

- 01: Best Fit
  - Uses Methods 02-06

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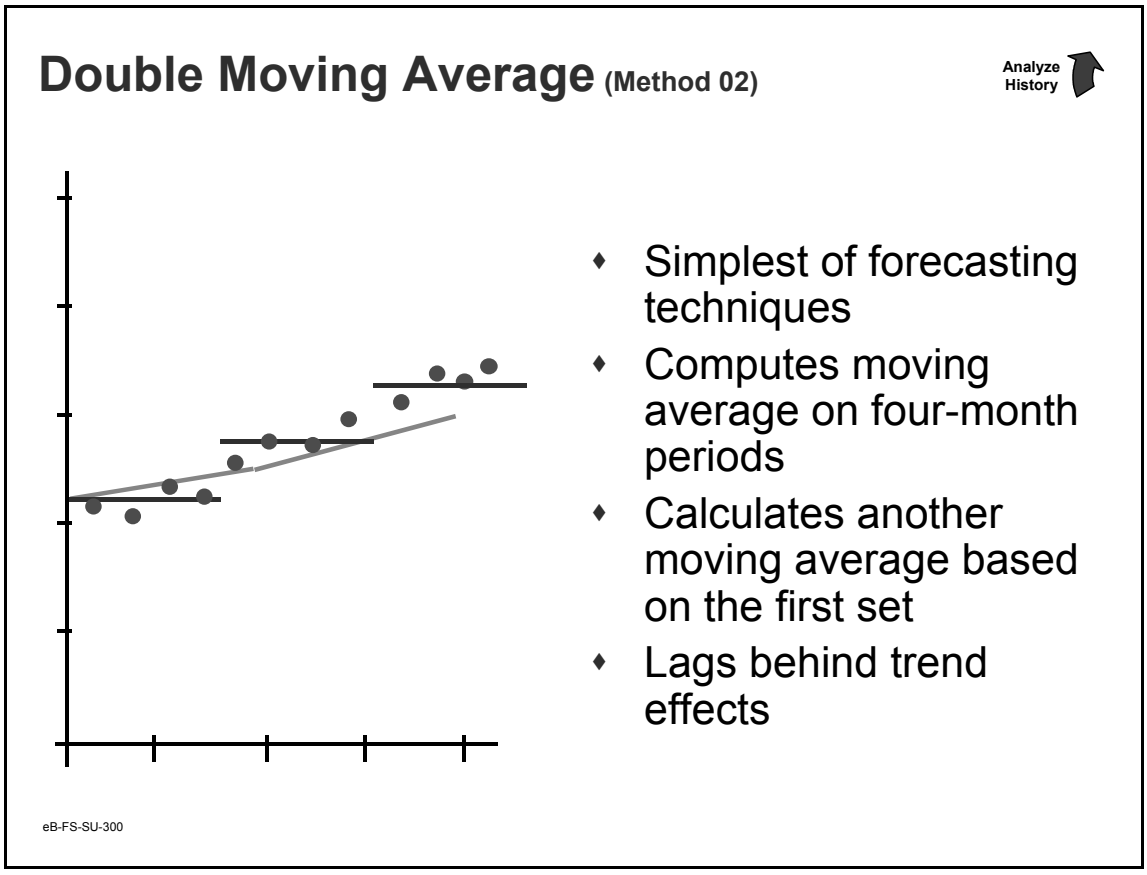
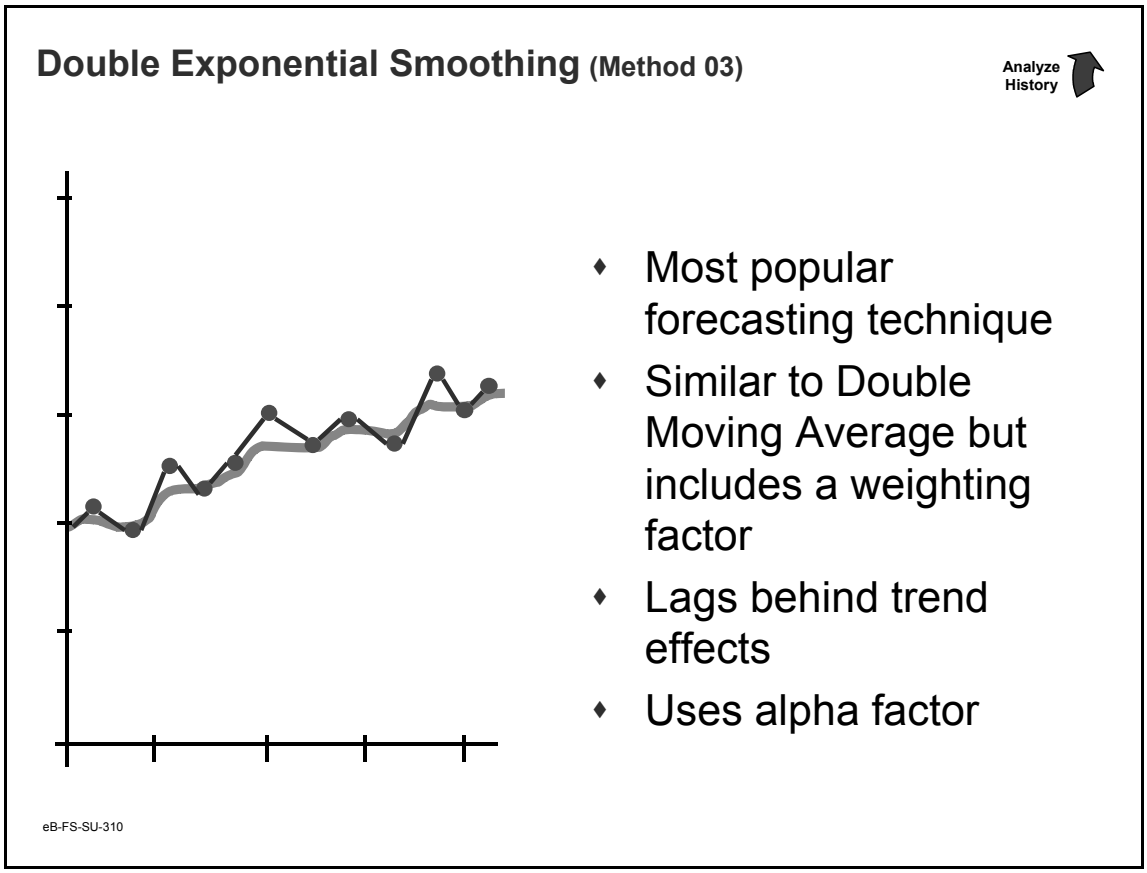
- The existing calculation methods provided in MFG/PRO are methods 02-06
- Method 01 examines the results of 02-06 to select a best fit solution
  - Each of these codes is discussed further in the following pages



Double Moving Average

- The simplest of the forecasting techniques
- Used a set of simple moving averages based on historical data, then computes another set of moving averages based on the first set
- Produces forecast that lags behind trend effects

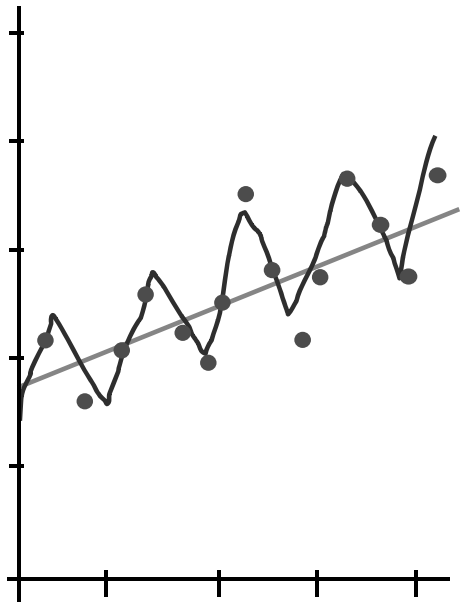


Double Exponential Smoothing

- The most popular of the forecasting techniques
- Uses the alpha factor to weight the most recent sales data more heavily than the older sales data

Linear Exponential (Method 04)

Analyze History



- Similar to Exponential Smoothing
- Incorporates a trend/seasonal factor
- Uses alpha factor
- Uses trend factor
- Requires two years of history

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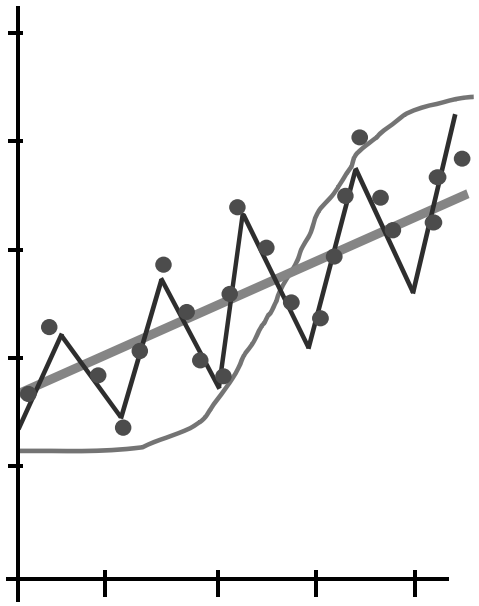
Linear Exponential

- Produces results similar to Double Exponential Smoothing
- Extra advantage of incorporating a seasonal/trend adjustment factor
- Uses both trend and alpha factors
  - Large trend (close to one) weighs heavily any sharp changes in sales
  - Small trend (close to zero) begins to ignore sharp increase/decreases

Note Requires minimum of two years of sales history

Classic Decomposition (Method 05)

Analyze History



- Recognizes three underlying patterns
- Trend factor assumed to be straight line
- Seasonal factor accounts for annual fluctuations
- Cyclic factor follows business cycle
- Requires two years of history (three is better)

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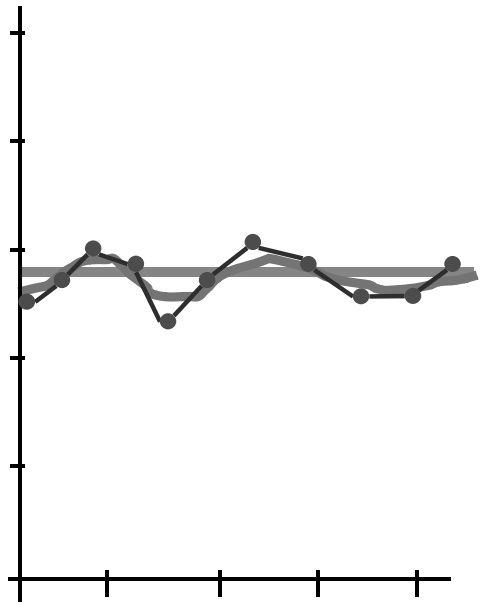
Classic Decomposition

- Usually the preferred method for seasonal, high-cost items
- Eliminates all random fluctuations

Note Requires a minimum of two years sales history. Better forecast with three years history.

Simple Regression (Method 06)

Analyze History



- Also called Least Squared Method
- Ensures that forecast quantity is equally likely to be higher or lower than quantity sold
- Good for horizontal time series data

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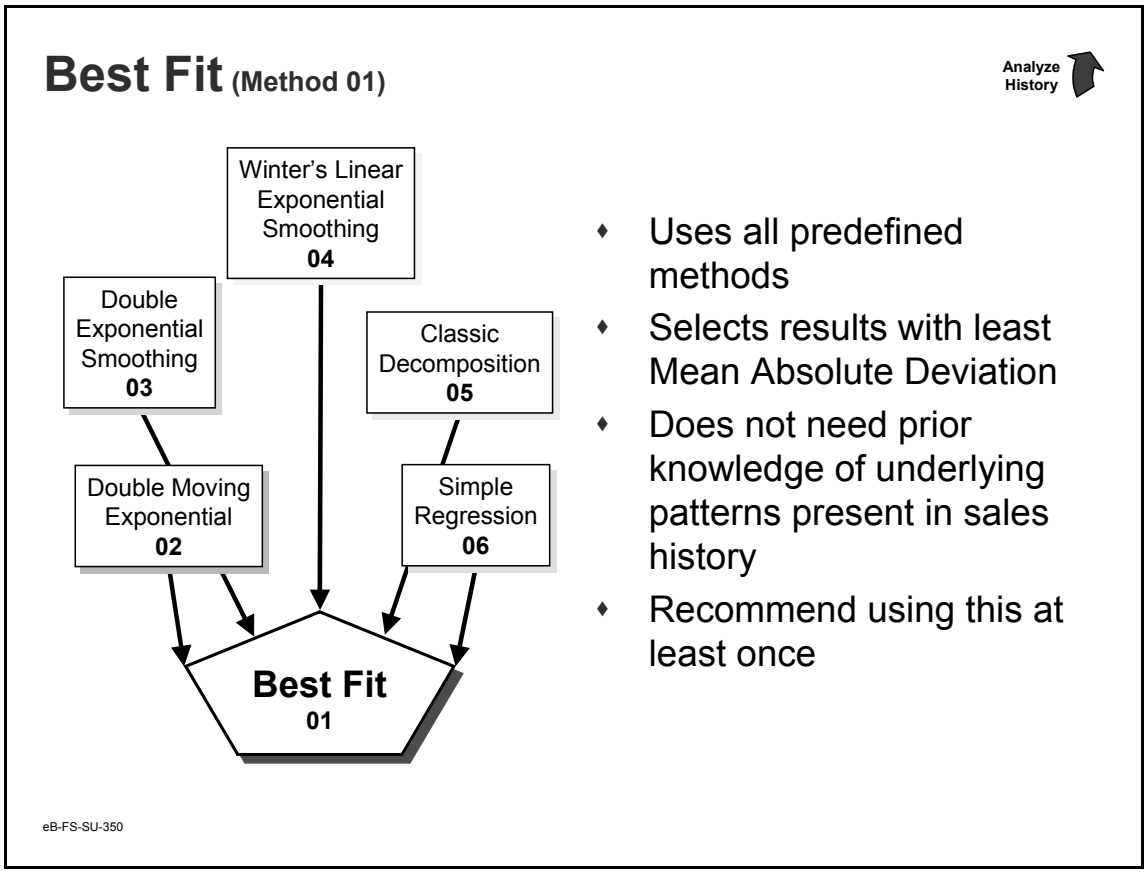
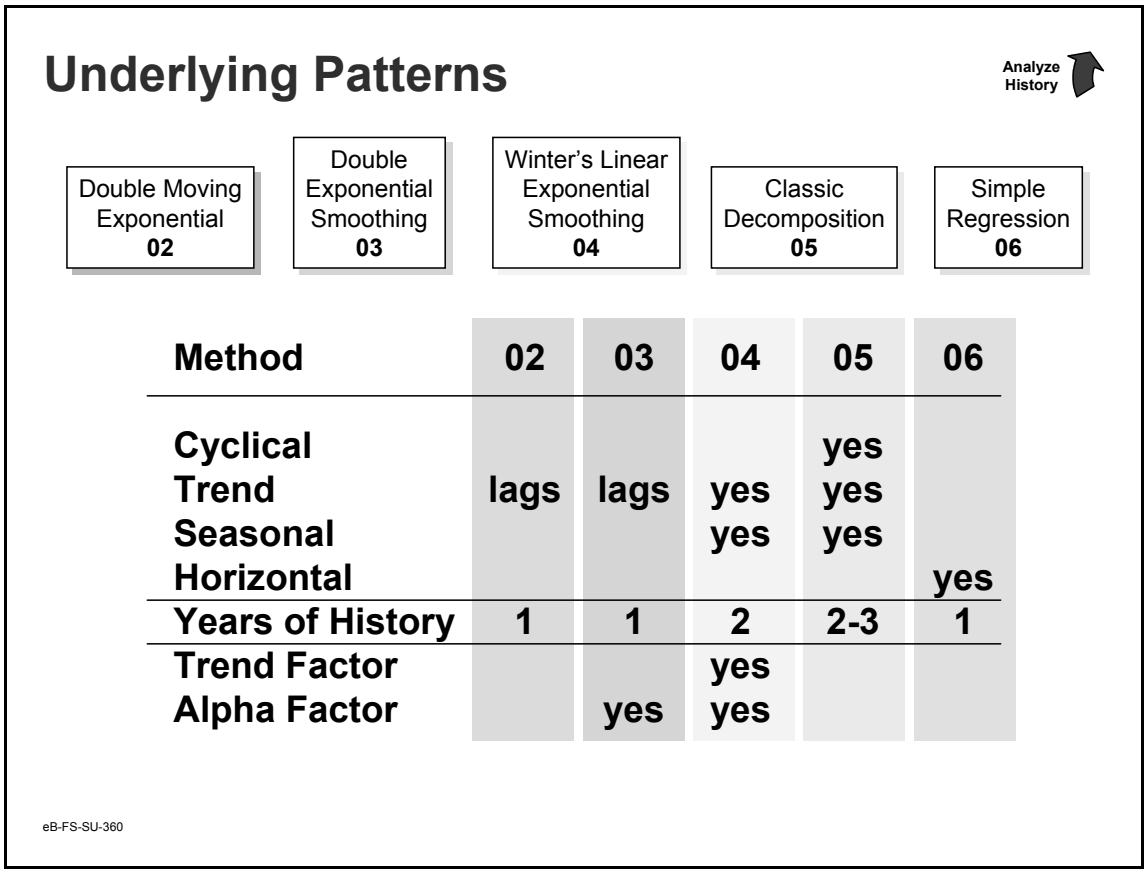
Simple Regression

- Analyzes the relationship between objects (sales) and time space (month)
- Good for products with a stable history



Best Fit

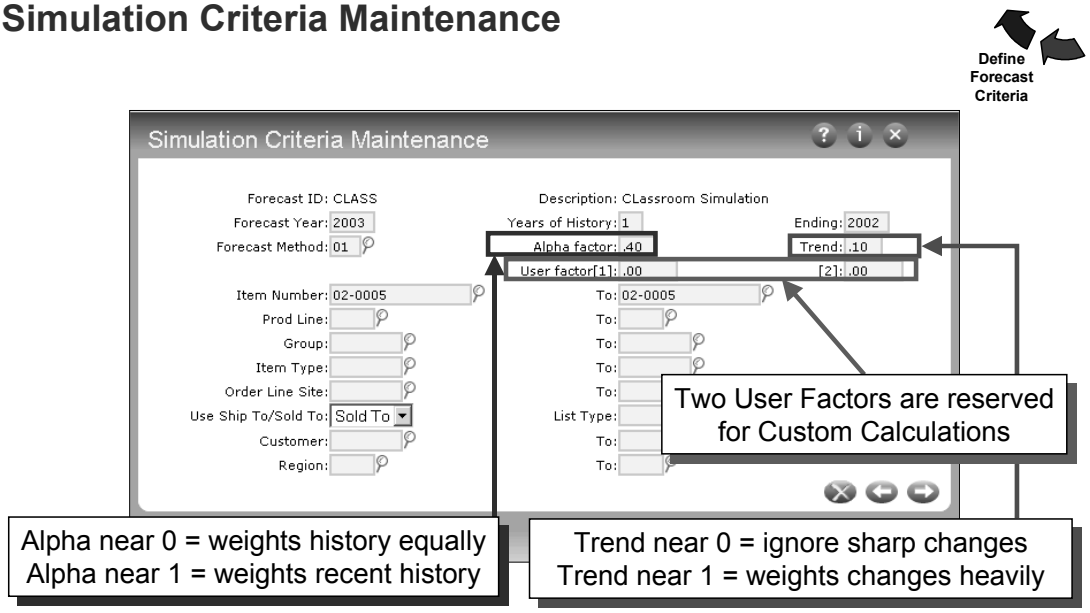
- Best Fit does take the longest to run, of codes 01-06
- Examines the results of each 02 through 06, before making a recommendation based on the least mean absolute deviation
- Recommended to be used at least once



Underlying Patterns

- Summarizing the methods, patterns predicted, years of history required, alpha, and trend factors for the predefined methods

Simulation Criteria Maintenance



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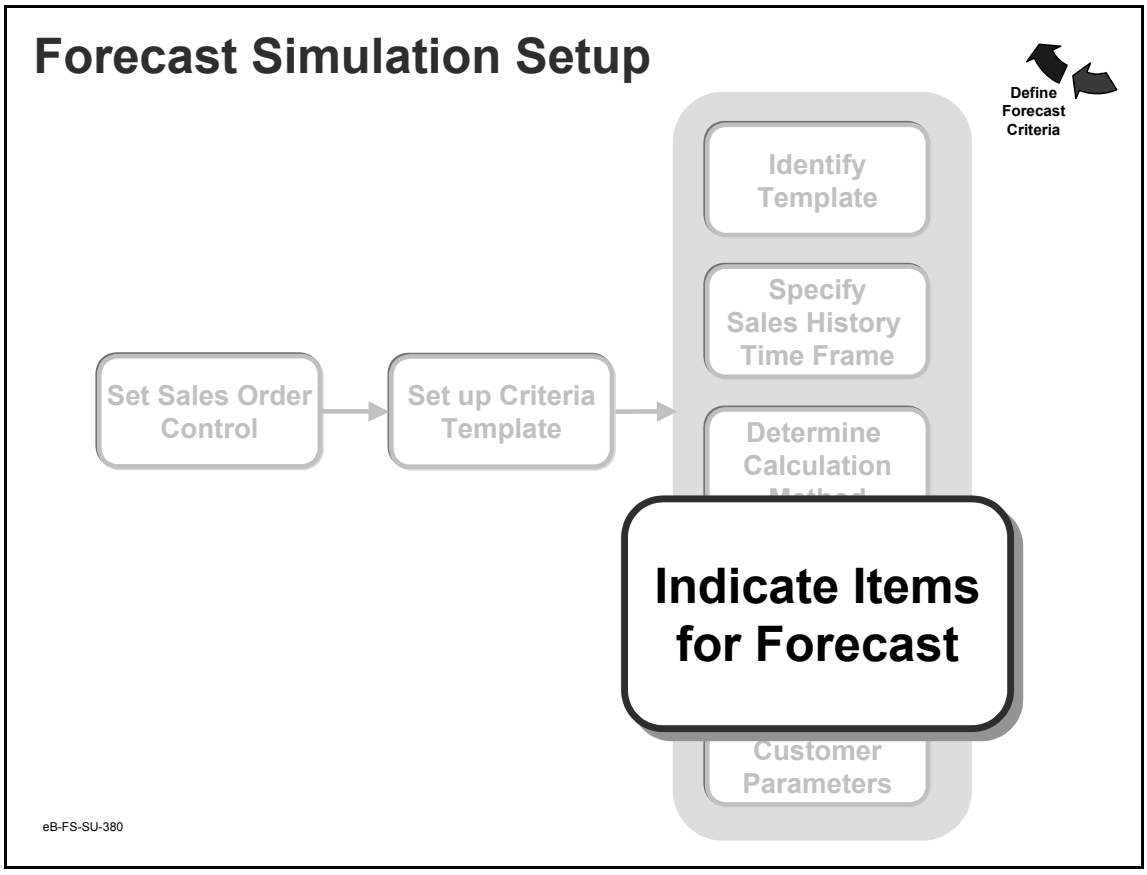
Simulation Criteria Maintenance: Alpha and Trend Factors

- Alpha and trend must be between zero and one

Factor	Zero	One
Alpha	Equal weight on all history	Weighs recent history
Trend	Ignores sharp changes in history	Weighs heavily sharp changes in history

Simulation Criteria Maintenance: User Factors

- User factors (1) and (2), in the Simulation Criteria Maintenance, are reserved for custom calculation method factors

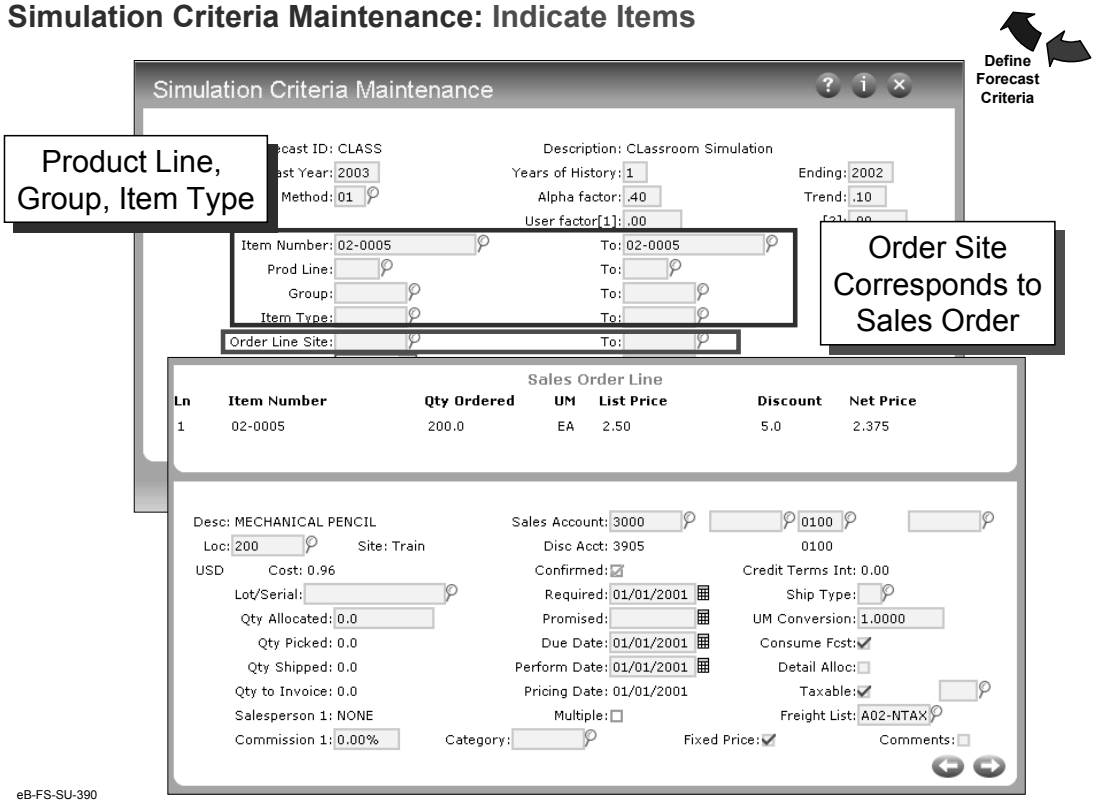


Indication Items for Forecast

- After selecting a calculation method, you indicate for which items the forecast performs the calculation

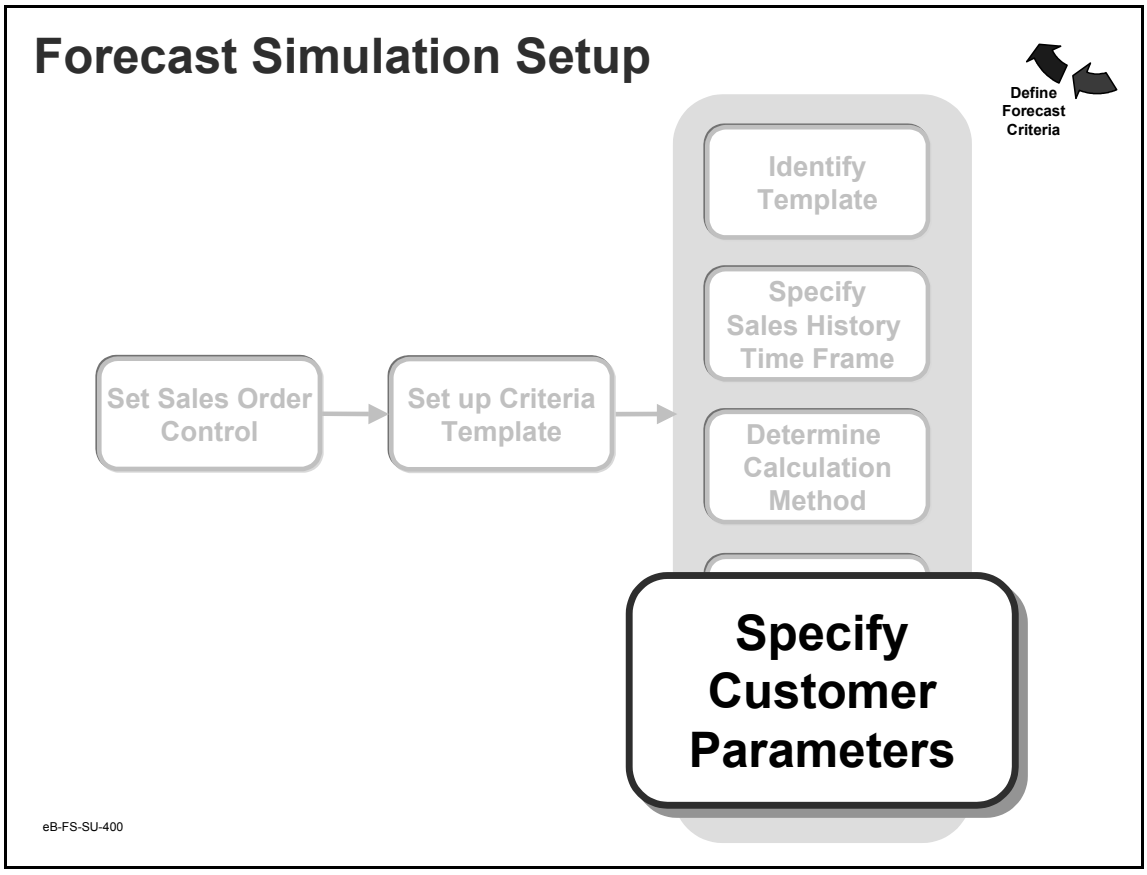
Note Select items with sales history information. For forecasts without history, use one of the copy functions.

Simulation Criteria Maintenance: Indicate Items



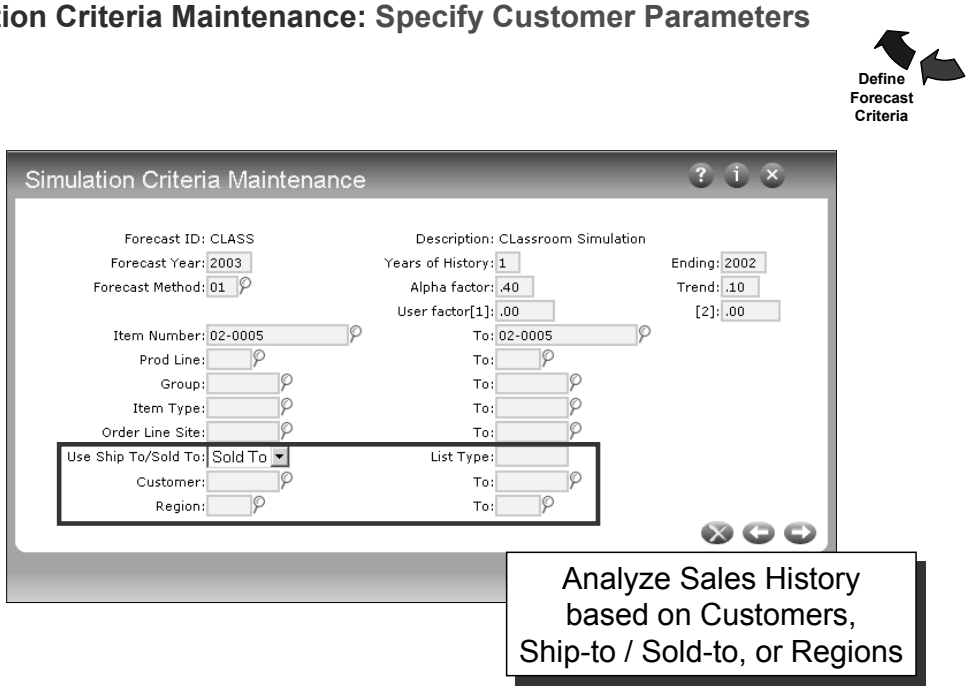
Simulation Criteria Maintenance: Indicate Items

- Enter item or range of items by item number, product line, group, and/or item type
- Further define by order line site on the sales orders



Specify Customer Parameters

Simulation Criteria Maintenance: Specify Customer Parameters



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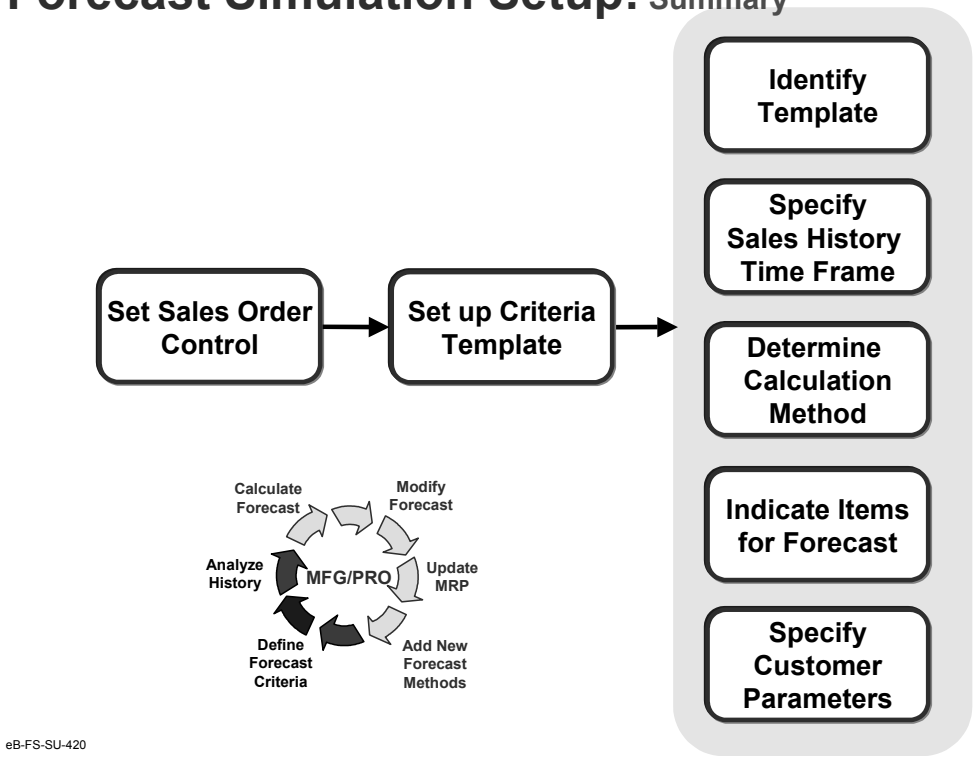
Simulation Criteria Maintenance: Specify Customer Parameters

- Setting the use Ship-to/Sold-to flag selects sales history for analysis based on customer addresses
- List type, customer, and region fields identify a subset of customer
- If you select ship-to and regions, only permanent ship-to addresses within the region are selected

Forecast Simulation Setup: Summary



Forecast Simulation Setup: Summary

Course Overview

- ✓ Introduction to Forecast Simulation
- ✓ Business Considerations
- ✓ Set up Forecast Simulation
- ♦ Use Forecast Simulation

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CHAPTER 4

Use Forecast Simulation

Use Forecast Simulation

In this section you learn how to:

- ✓ Identify some key business considerations before setting up Forecast Simulation in MFG/PRO
- ✓ Set up Forecast Simulation in MFG/PRO
- ✓ **Use Forecast Simulation in MFG/PRO**

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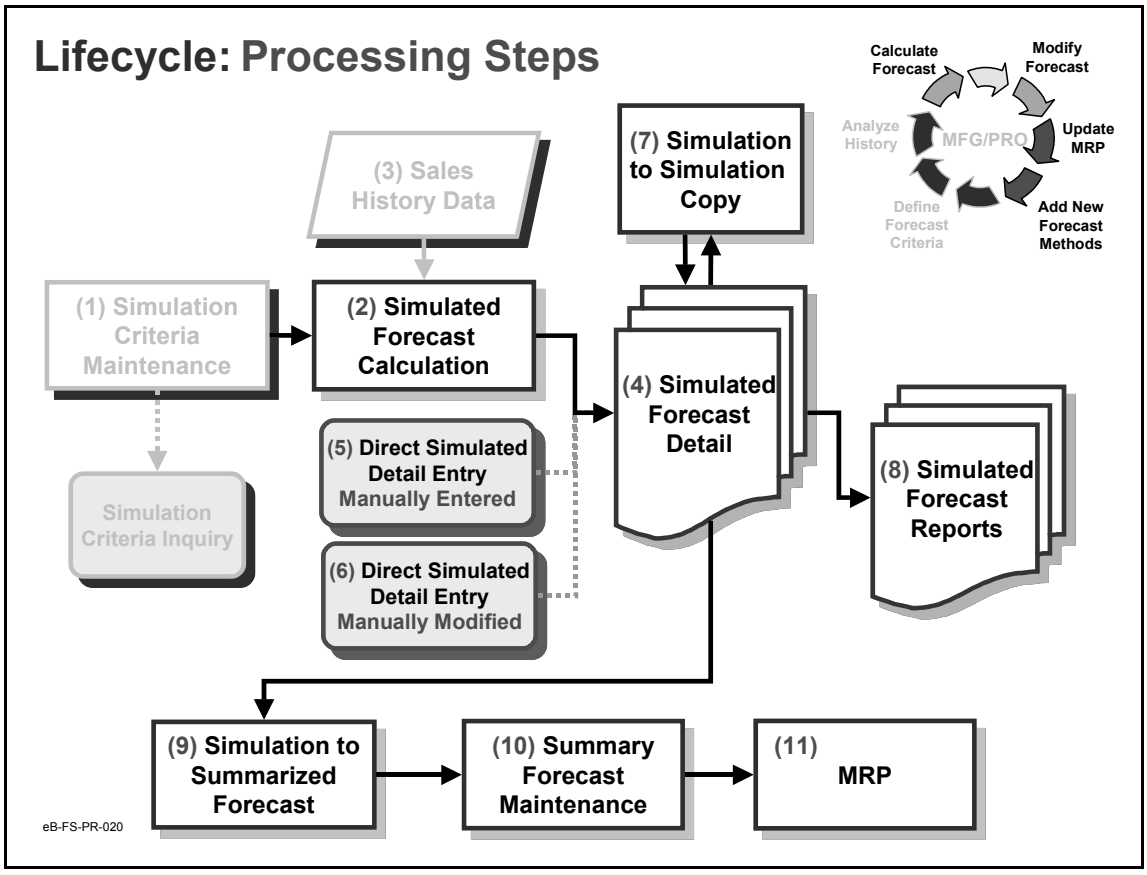
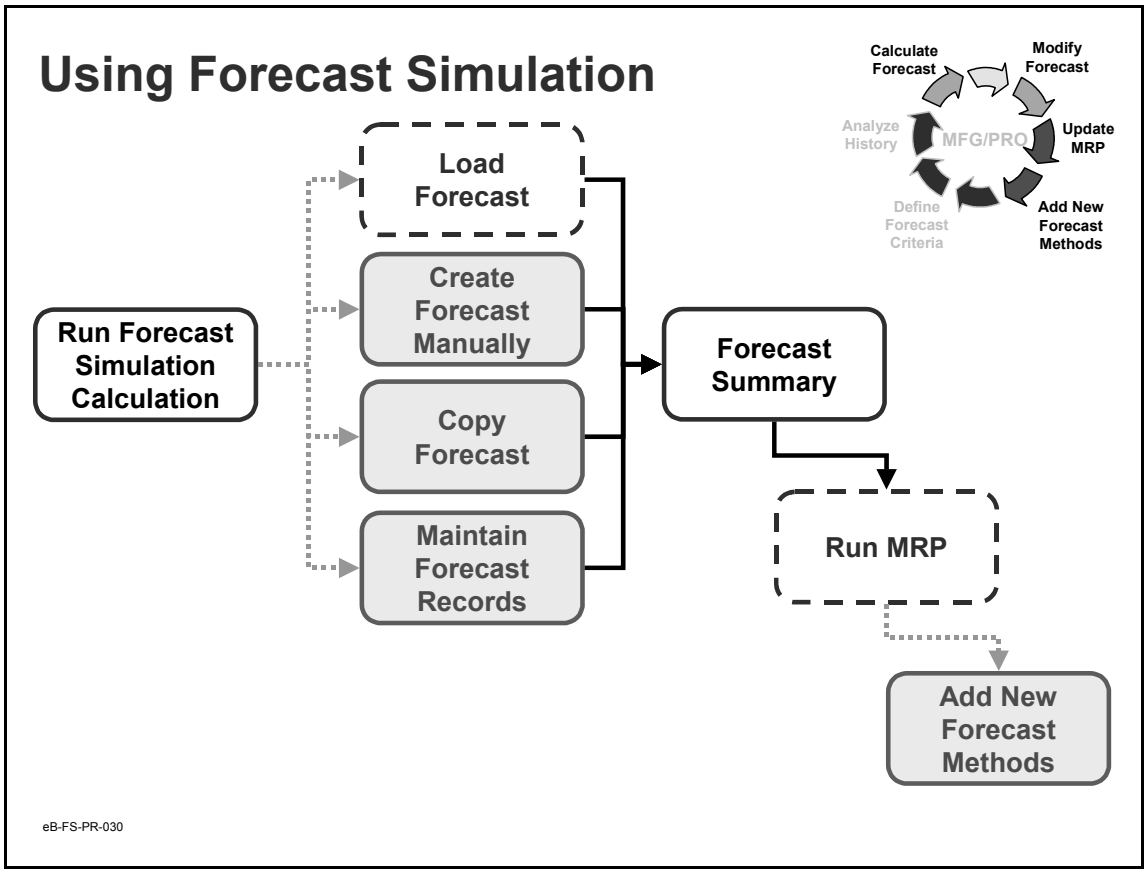
Forecast Processing



Workflow: Processing Steps

- The highlighted items in the lifecycle above are the steps performed while processing the forecasting simulation module
  - Steps 4 and 8 above are results, not actions



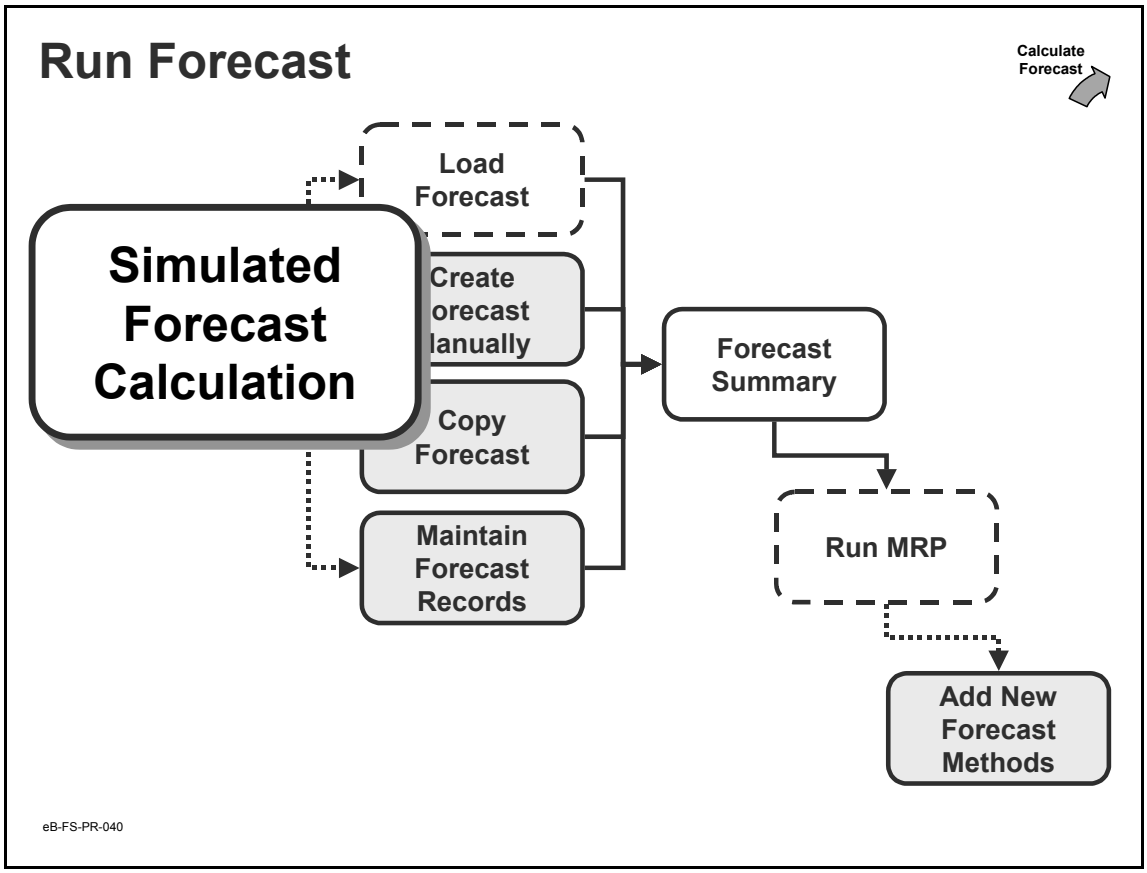
Use Forecast Simulation

This illustration is a suggested processing sequence for Forecast Simulation which is based on information that flows from one file to another and prerequisites that need to be accomplished. Reading the illustration:

Boxes with solid lines are required to use Forecast Simulation and are covered in this course.

Shaded boxes reflect optional steps, but are covered in this course.

Boxes with dotted lines are required, but are covered at length in another course.



Run Forecast Simulation Calculation

- Simulated Forecast Calculation analyzes an item's sales history and predicts what quantity will be sold in the future
- Forecast quantities are maintained in forecast detail records
- There are four ways to create a forecast detail record:
  - Run the forecast calculation using sales history and a specified forecast method
  - Use the CIM interface and load a forecast generated elsewhere
  - Create a forecast detail record by entering forecast quantities
  - Copy existing forecast detail records to a new forecast ID

Calculating Quantities

- Simulated Forecast Calculation
  - Enter criteria template ID previously defined
  - Or, define template at time of calculation
- Forecast generated for every item within the item range
- A report follows the calculation showing the number of sufficient and insufficient items
- Template and detail records are updated at the time of calculation
  - Previous template and records are deleted
  - Template is frozen & cannot be further modified in Simulation Criteria Maintenance

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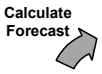
Calculating Quantities

- At least one sales record is required to produce nonzero forecast quantity
- When insufficient history exists to create a valid forecast, the detailed forecast record is created with quantities of zero and the item is printed out as insufficient

Note Negative results are shown as zeros.

Calculating Quantities (Continued)



- Calculation analyzes history to predict sales
  - For a given year
  - For the next twelve months
- Results are only as good as sales data referenced
  - The system requires at least one sales record
  - “Insufficient” items have quantities of zero
- Calculate forecast frequently for high-cost items
- Re-calculate when sales data has changed
- Rolling forecast uses all history up through the previous month
  - Benefit from doing forecast on a monthly basis

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To generate a forecast:

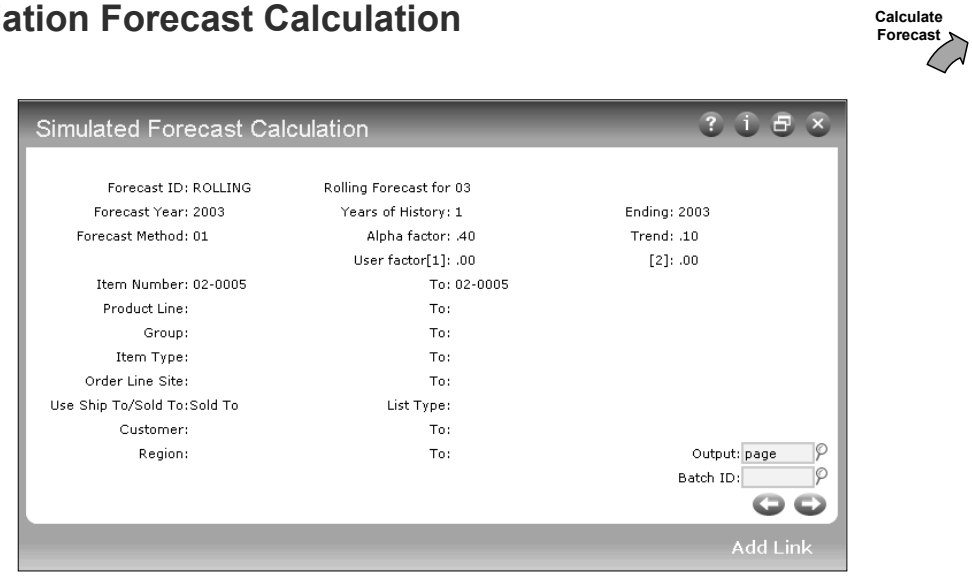
1 Identify the criteria template.

   a If no criteria template is previously defined for a given ID, you can define the criteria template at the time of the calculation.

2 Specify an output device for the generated report of calculations.

3 After the calculation is run, the template and detail records are updated. Previous templates and records are deleted. The template is frozen and cannot be further modified.

Simulation Forecast Calculation



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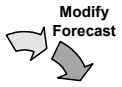
Simulation Forecast Calculation

- Sales history data is analyzed to predict sales quantities for the year specified
- This calculation may take some time to process—you may wish to submit it in batch
- The calculation requires a criteria template
  - You can use the criteria template defined in Simulation Criteria Maintenance and stored in the system by forecast ID
  - Or you can define the template here
- Items must exist in the item master file
- When Ship-To and regions are defined to select the sales history data, only permanent Ship-To addresses in the address master file are in the selected region range
- At least one sales record is required to produce a non-zero forecast quantity

  - When insufficient history exists to create a valid forecast, a forecasting master record is not created and the item is printed out as “insufficient item”
  - Negative results are shown as zeroes
- Memo items and drop shipments are excluded from any forecast calculations
- To recover a deleted forecast record, you must run the calculation again
- This function should be password controlled

Modify Results Before Running MRP



- Forecast quantities may require manipulation to be more reflective of future market demand
- Especially true when forecast results are based on historical data that included unprecedented sales (abnormal sales demand or outlier)
  - Examples: Sales promotions or natural disasters
- Typical modifications also include business-appropriate rounding for decimals or for order quantities

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Modifying Forecast Results

- Make adjustments to the forecast results whenever there is a reason to expect future demand to differ from sales history
  - Abnormal sales demand (outlier)
  - Unwanted decimal sales quantities from calculations
- Make all adjustments prior to copying forecast quantities to MRP

Modification Methods

- Detail Forecast Maintenance
  - Manually alter the detail records
- Single Item Simulation Copy
  - Copy forecast quantities of one item to another item
  - Optionally apply a multiplicative factor
- Simulation to Simulation Copy
  - Replace or combine forecast quantities in one detail record with another
  - Optionally apply a multiplicative factor

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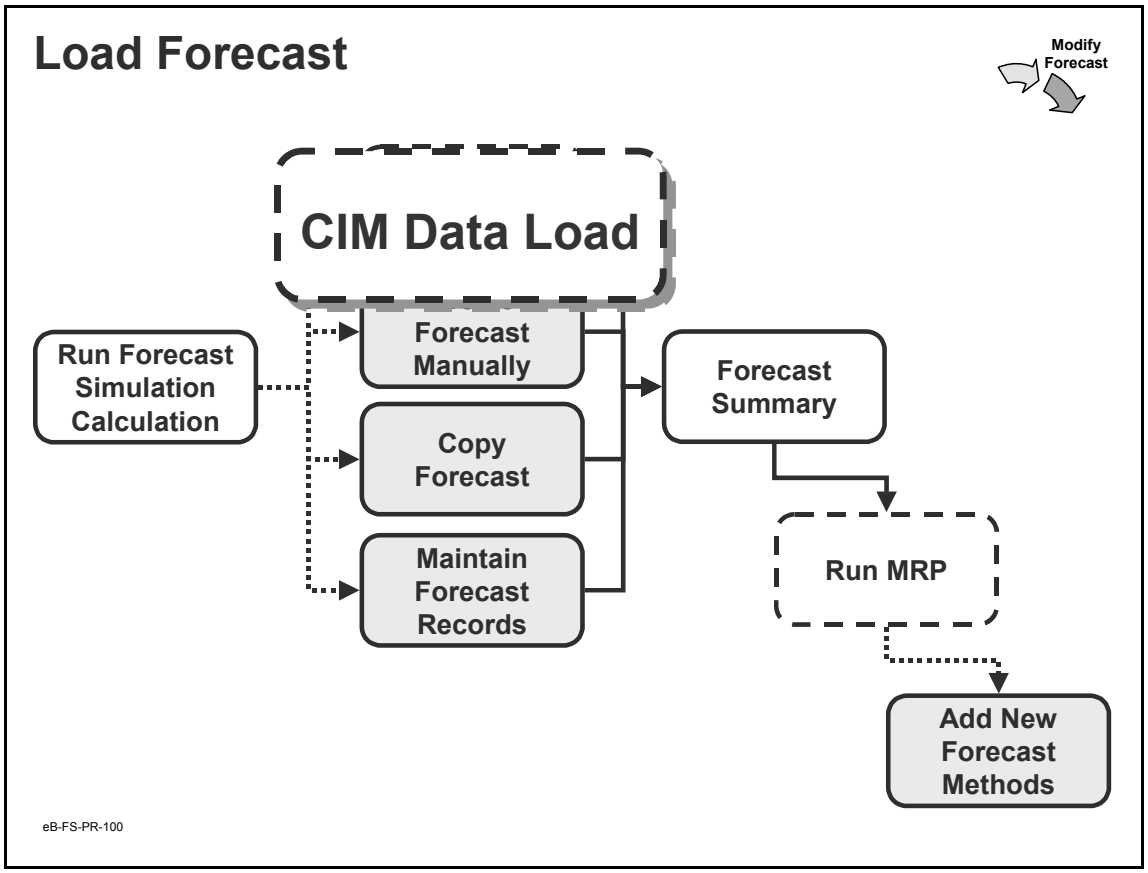
Modification Methods

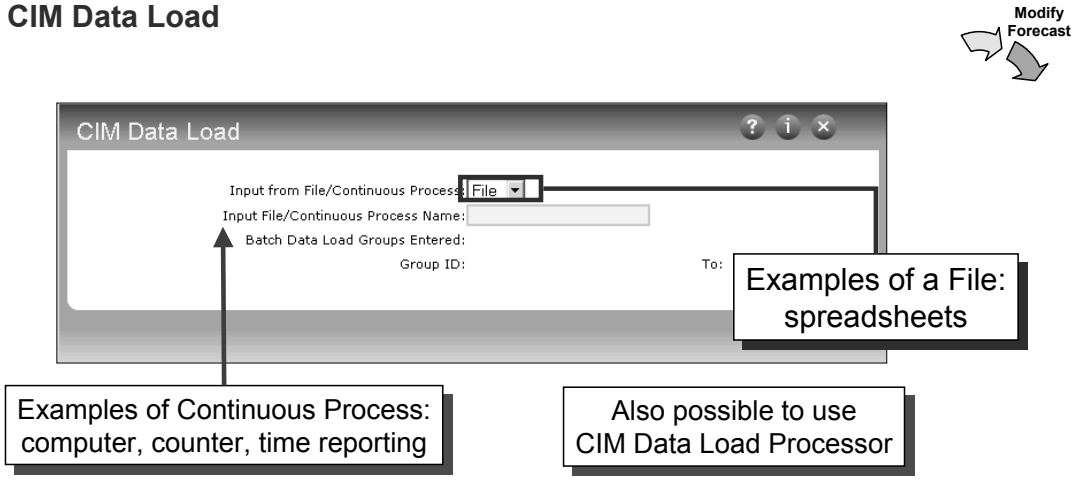
- Three most common ways to adjust forecast quantities manually are:
  - Detail Forecast Maintenance
  - Simulation to Simulation Copy
- Single Item Simulation Copy
- You can also load forecast records from outside MFG/PRO with a CIM load

Now let's discuss each of these methods in more detail.



Load Forecast

- For loading forecast quantities created outside the system



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CIM Data Load

- Use CIM Data Load to load data from an external data source into the MFG/PRO database for processing. Import data can be in ASCII file format or acquired in real-time.
- The CIM process has several steps:

  a Run CIM Data Load—loads the external data you specify into batch load data files

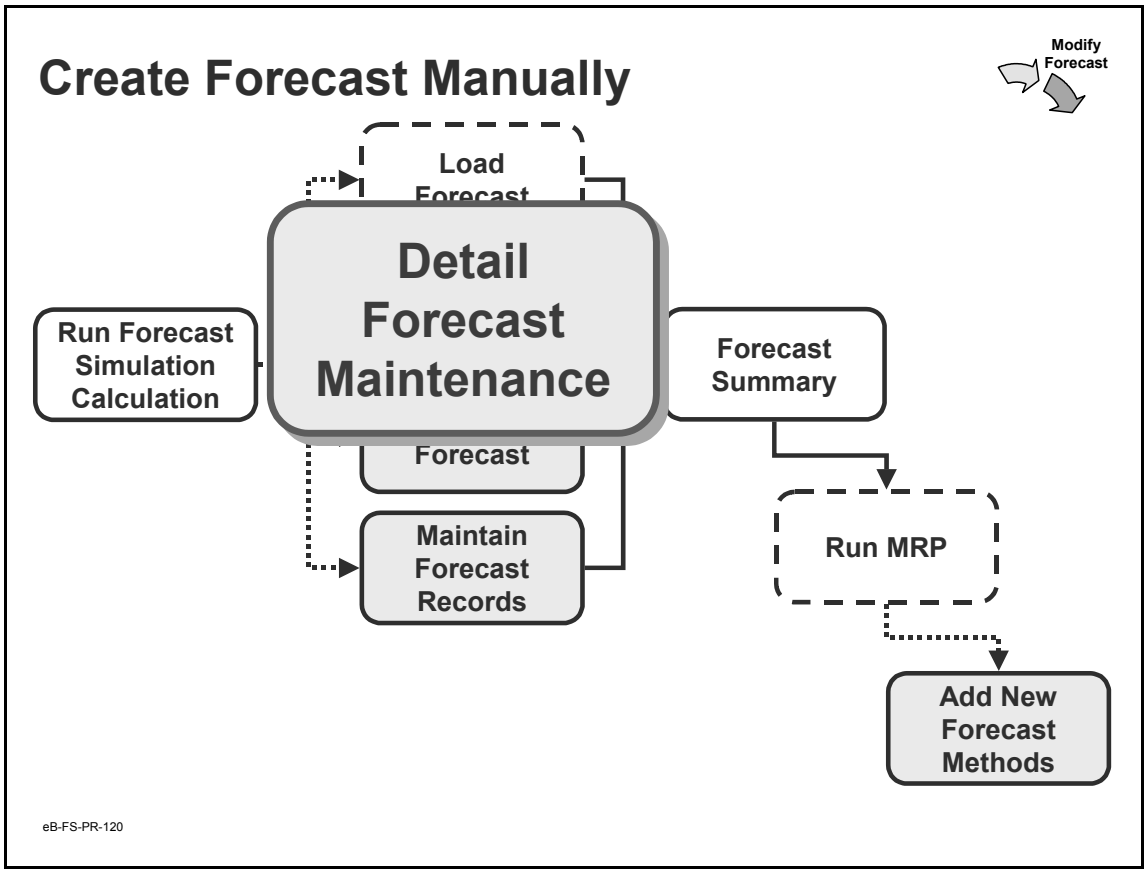
  b Specify which data to load by file name, if applicable, and data type–either a prepared file or real-time process

  c Run CIM Data Load Processor–takes the imported data and updates the appropriate MFG/PRO master files

  d Use CIM Data Load Process Monitor to monitor the load process, as needed

e Use Batch Request Detail Report to review processing errors and delete processed data, as needed

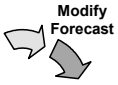
- In import files, data-load groups are segregated by special characters
  - `@@batchload` indicates the start of a new data-load group
  - `@@end` indicates the end
- CIM Data Load does not automatically format data–input files must be pre-formatted
  - Each import record's data must be in the sequence it would be if you were entering it manually using an MFG/PRO maintenance function



Create Forecast Manually

- Manual adjustments to forecast quantities are often made to reflect the experience of management in predicting future demand
- Enables you to adjust and aggregate forecast

Create Forecast Manually



- Cannot produce a rolling forecast manually
- Create or modify forecast quantities in the forecast detail record
- Provide Forecast ID, year, and item number
- Enter quantities for each month
- System creates corresponding criteria template
  - Manually created forecasts always use a forecast method of 00

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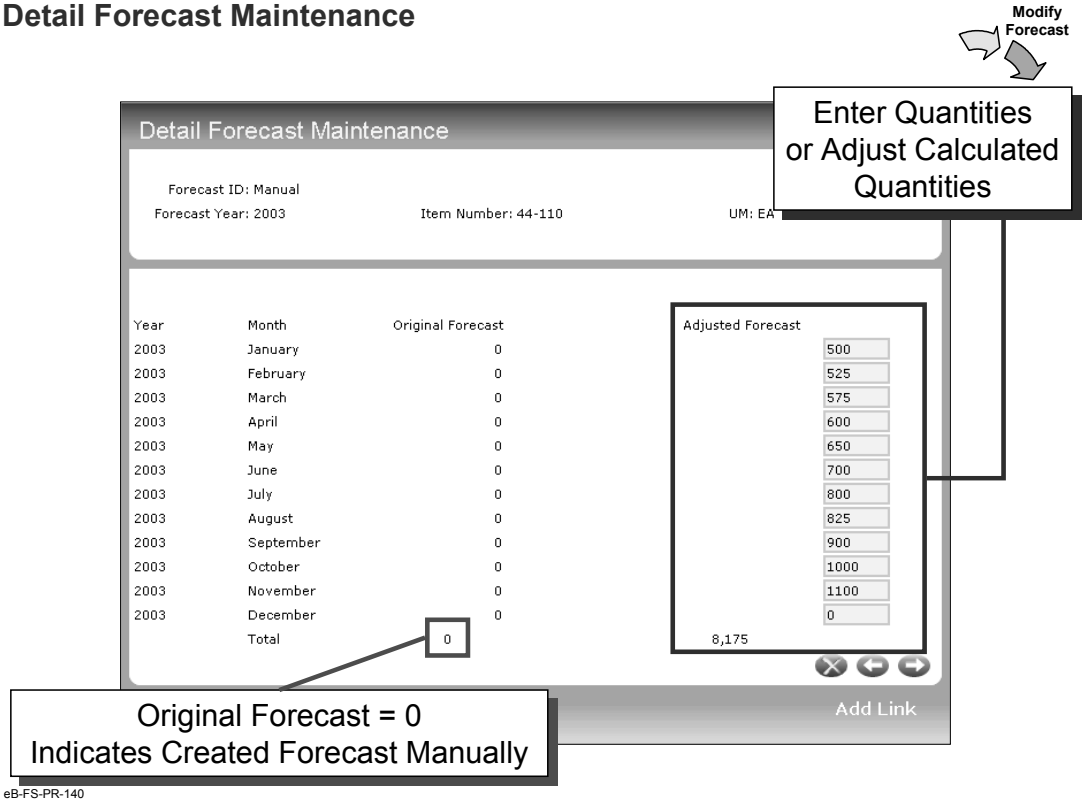
Some Guidelines for Creating Records Manually

- Records are created for January through December, therefore limiting the forecast to a yearly forecast
- You can create new records, or modify records from a CIM Load or the Run Forecast Simulation Calculation
- Still must provide the forecast template criteria–ID, year, and item(s)
- Calculation is always method = 00, since there is no forecast calculation performed against these records
  - You are creating the records by your own calculations, not the system's calculation

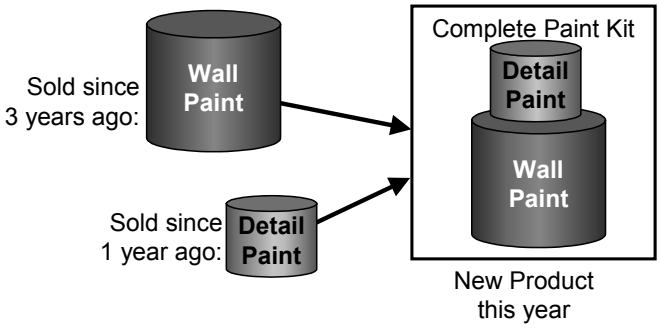
Detail Forecast Maintenance



Detail Forecast Maintenance

- Cannot manually create a rolling forecast, only yearly
- Original Forecast quantities generated by Simulated Forecast Calculation or through CIM Data Load
  - Run the calculation again to reproduce original forecast
- The Adjusted Forecast quantity column is where you manually change the original results
  - Before modifying forecast detail records, you should archive the original forecast or copy to another forecast ID
  - Typically used to adjust decimal results from the calculation

Copying Forecast Results

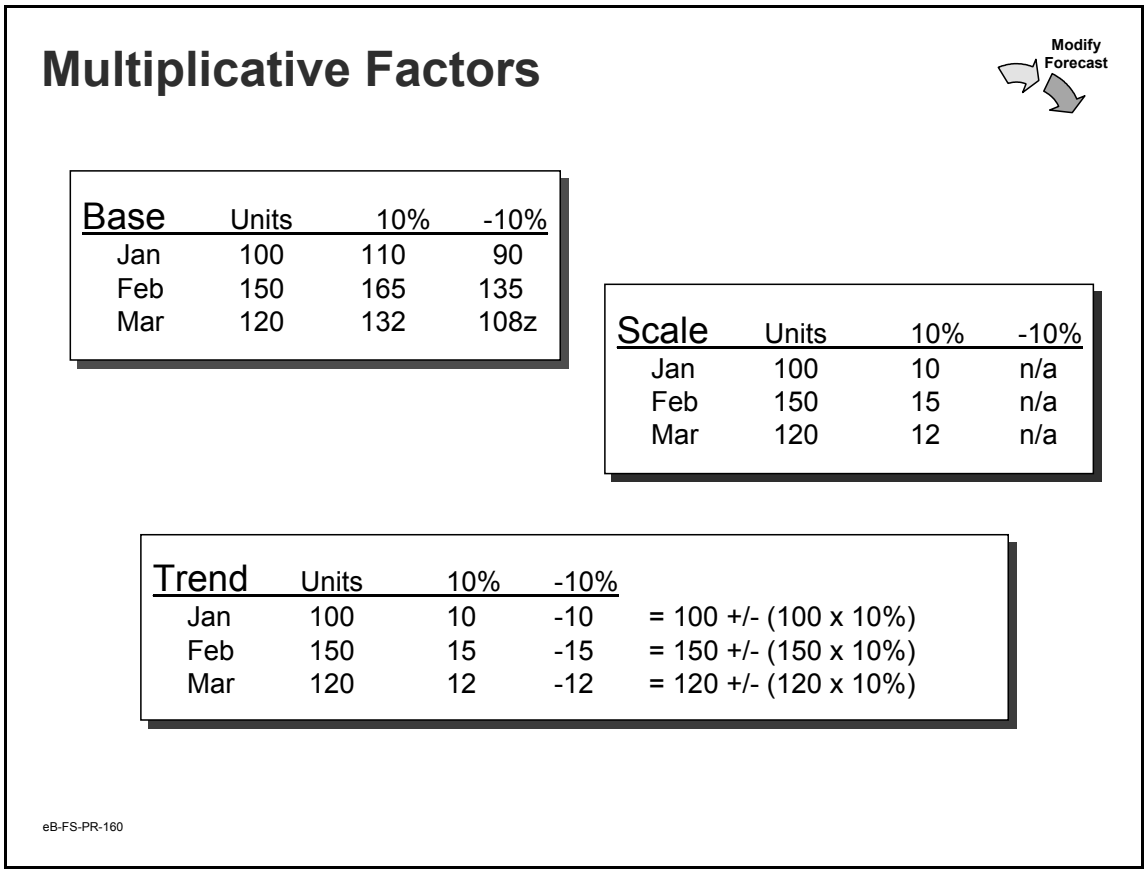


- Copying/combining forecast results when you:
  - Have to predict demand for a new product
  - Or want to aggregate all the forecast for an item
- Optional multiplicative factors
- Replace or combine monthly forecast quantities

eB-FS-PR-150

Copying Forecast Results

- Copying/combining typically used to:
  - Aggregate forecast for an item
  - Predict demand for new product
  - Apply multiplicative factors
  - Replace monthly forecast quantities, such as decimal production quantities

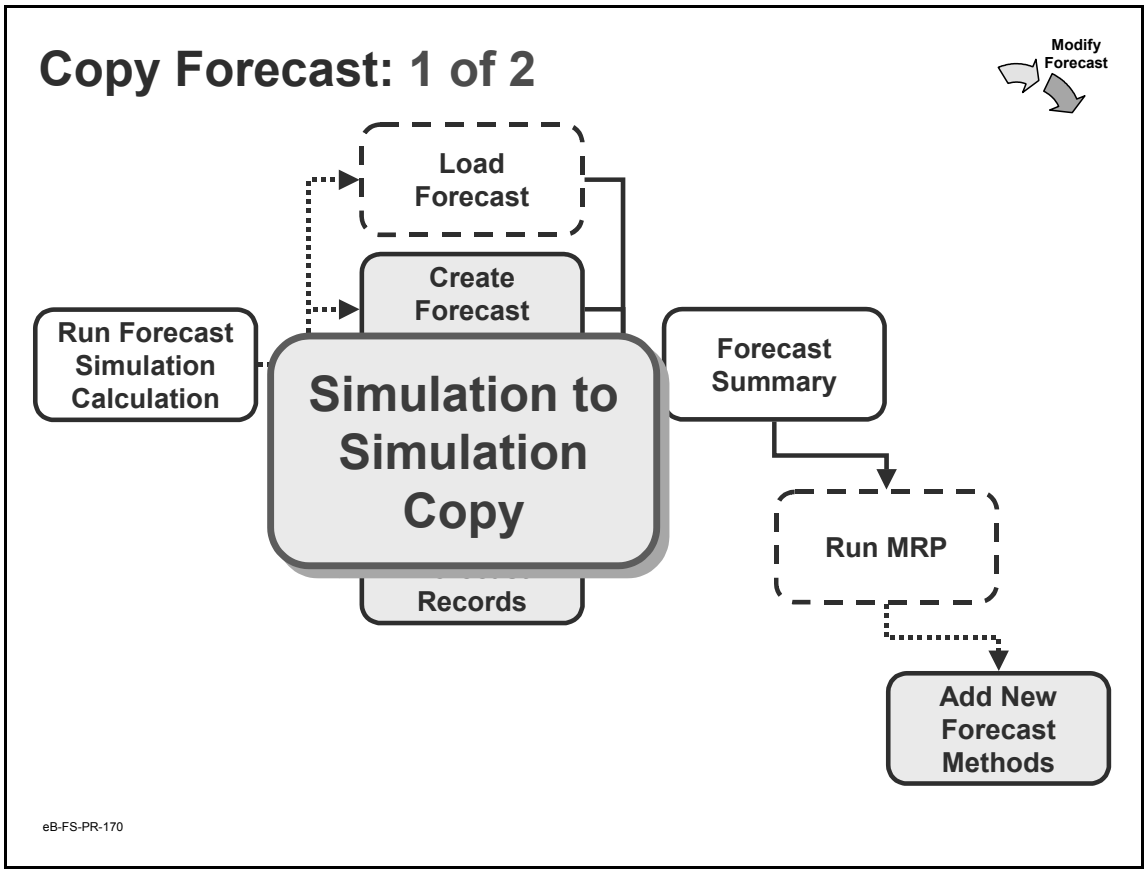


Multiplicative Factors

- Single Item Simulation Copy allows you to scale forecast results for the new item as some percentage of the old item
- Simulation to Simulation Copy enables you to apply multipliers to the entire item range

Note Scale cannot be negative.

- Trend multipliers increase each month
- You can use more than one multiplier at a time with a cumulative effect
  - Base increase/decrease is applied first, Scale second, Trend third
- Factors are applied to source quantities and the results added to the target, not applied to combined source and target quantities



Copy Forecast

- There are two ways to copy a forecast
  - Simulation to Simulation Copy and
  - Single Item Simulation Copy

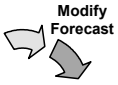
Simulation to Simulation Copy

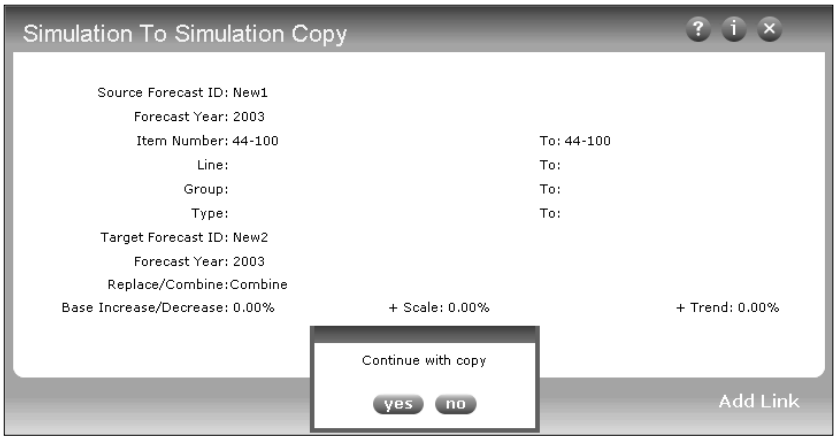
- Enter a source and target forecast ID
- If the target record exists, you may
  - Combine the source and target quantities
  - Overwrite the target with the source
- Specify the item range
  - Copy only a subset of items in the source

eB-FS-PR-180

- Enables you to copy (replace) or combine criteria temples and/or detail records
  - Valuable when you need to aggregate forecasts
  - Targets are changed/overwritten, source remains unchanged
  - If item ranges of target and source are different, the target range is expanded

Simulation to Simulation Copy

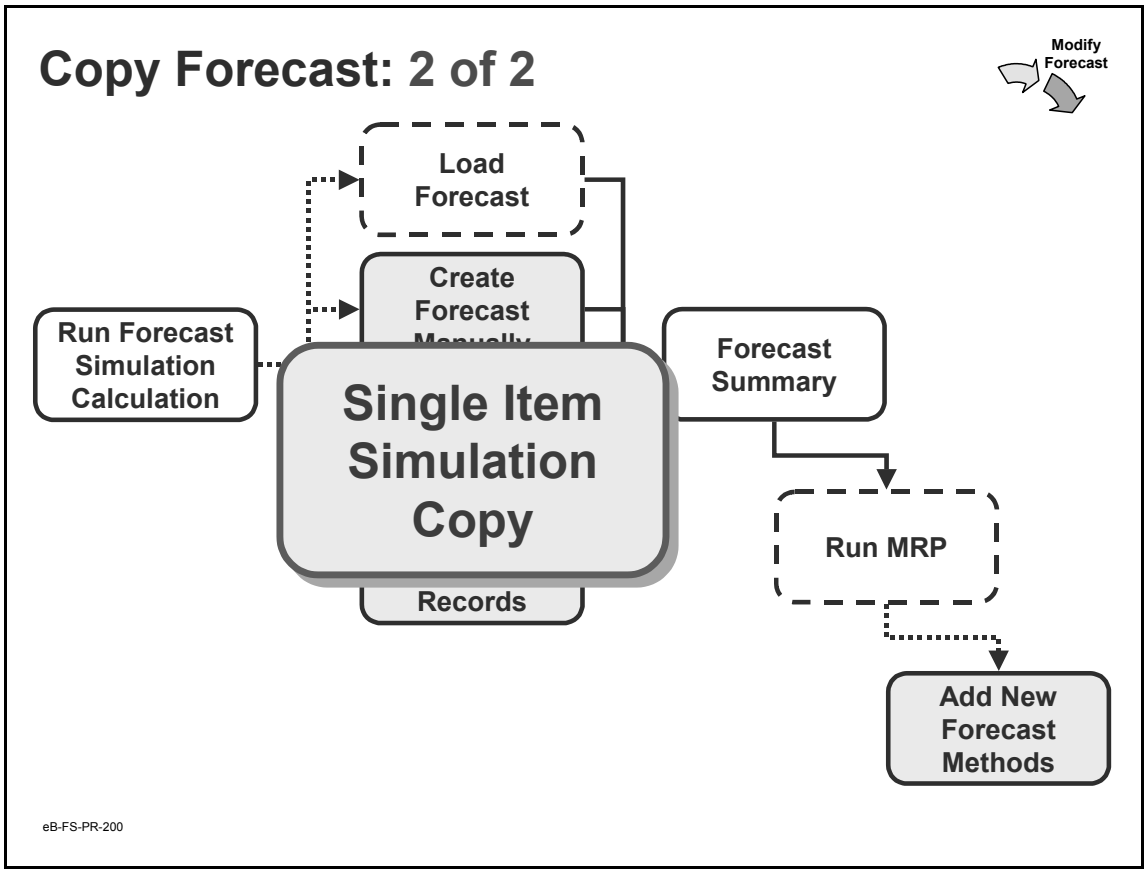




eB-FS-PR-190

Simulation to Simulation Copy

- Choose between replacing or combining forecast quantities
- If target forecast record exists, must use forecast method 00 for target
  - If target does not exist, record is created with method 00
- View the results in Detail Forecast Inquiry or Detail Forecast Report



- The second method for copying forecasts copies sales history from one item to another
- Helpful for new items that should have similar sales patterns as existing items

Single Item Simulation Copy

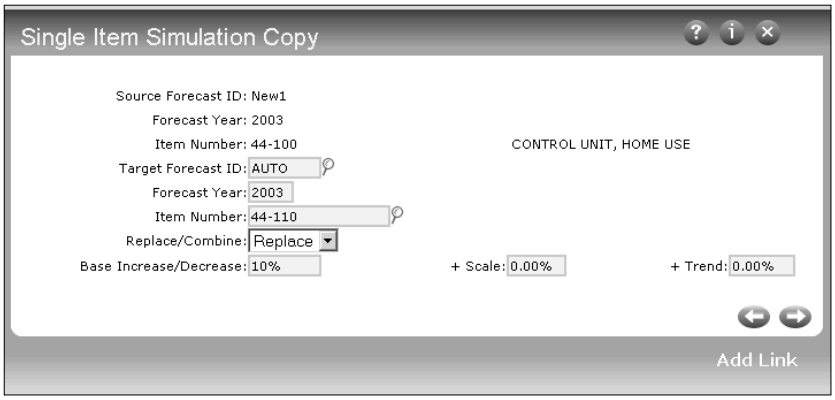
- Copy per item number
- Source and target items can be different
- Items must have identical units of measure
  - Or a unit of measure conversion must exist

eB-FS-PR-210

- Enables you to create forecast for a single new item based on the historical sales data of another item
- Useful for products with a shortage of sales history
- Copies forecast records to different items
- Can multiply by a Base Increase/Decrease, Scale, or Trend factor
- If target forecast record exists, must use forecast method 00 for target
  - If target does not exist, record is created with method 00

Warning During combine or replace, original target records and criteria template are overwritten. The source record is not altered.

Single Item Simulation Copy



eB-FS-PR-220

Single Item Simulation Copy

- Use this function to create forecast for a new item based on historical sales of another item
- Similar to Simulation To Simulation Copy but here forecast records are copied for a single item
  - The source record for an item is copied to another forecast ID with a different item
  - The new item must exist in the item master
- Forecast records are copied only in terms of units
  - Source and target items need identical units of measure or a unit measure conversion
- The Forecast Method for the target must be 00 if the target forecast record exists
  - If the target does not exist, a record is created with method 00

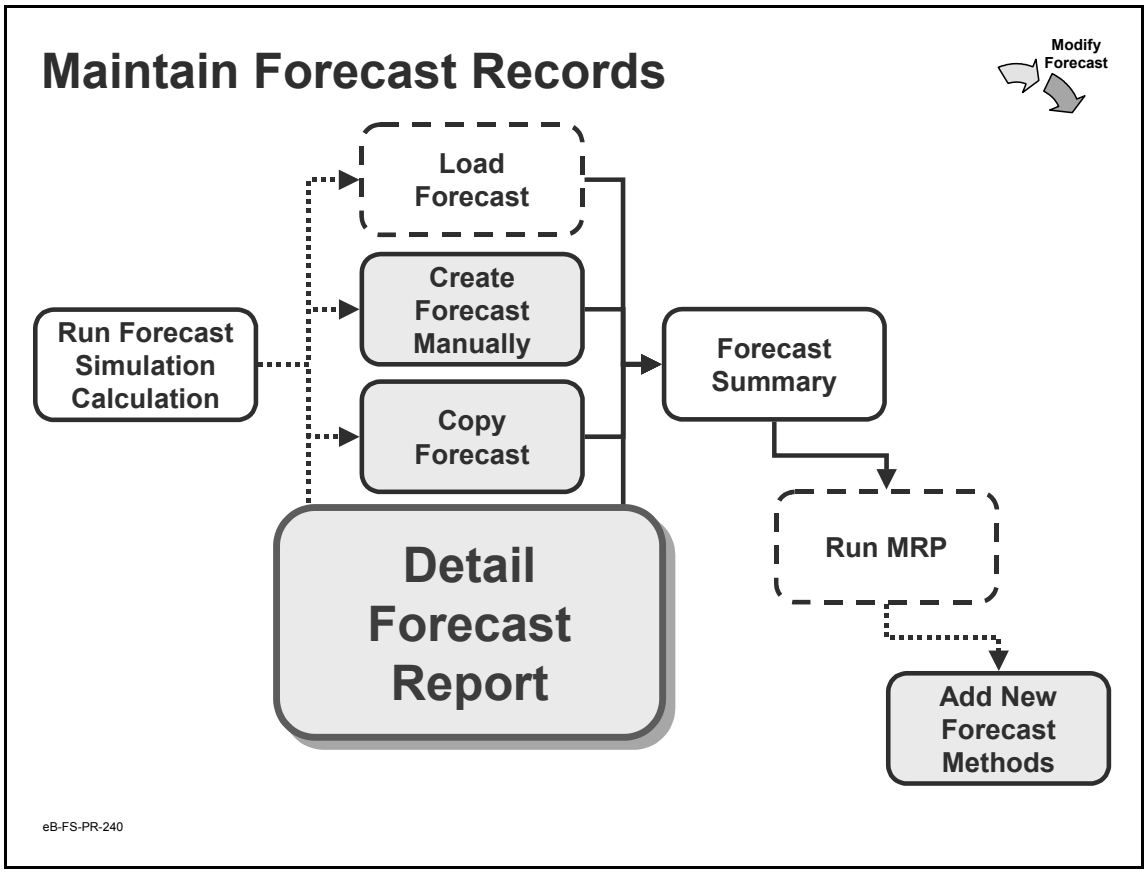
- During a Combine or Replace, the original target forecast record and criteria template is overwritten
  - The source record is not altered

Important This function should be password controlled.

Caution!

- Be cautious when copying/combining forecast results
  - From a statistical point of view, the result is not a valid forecast
  - You should aggregate/combine historical sales data before doing the forecast calculation
- Multipliers applied to the source quantity before replacing or adding to the target quantity

eB-FS-PR-230



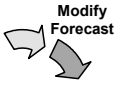
Maintain Forecast Records

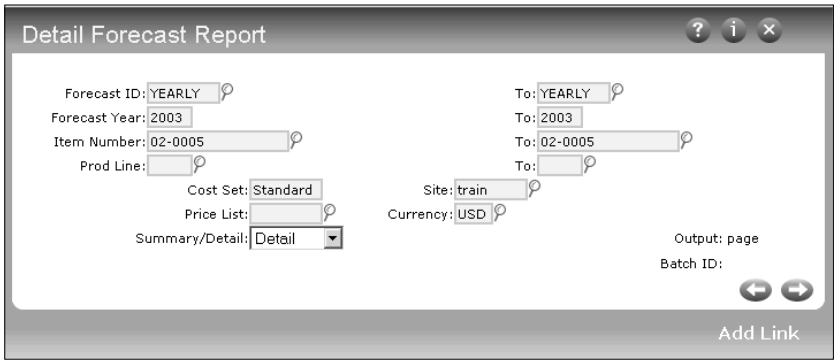
Forecast Reports

- Detail Forecast Report allows you to display:
  - Forecast quantity – units
  - Cost – general ledger (GL) cost-per-unit
  - Price – sales price-per-unit
  - Extended Cost – units times GL cost
  - Extended Price – units times sales price
  - Margin – Extended Price minus Extent Cost
- To display profit margin, both the cost and price must be in the same currency

eB-FS-PR-250

Detail Forecast Report



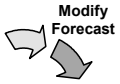


eB-FS-PR-260

Detail Forecast Report

- Sample report data on the next page

Detail Forecast Report



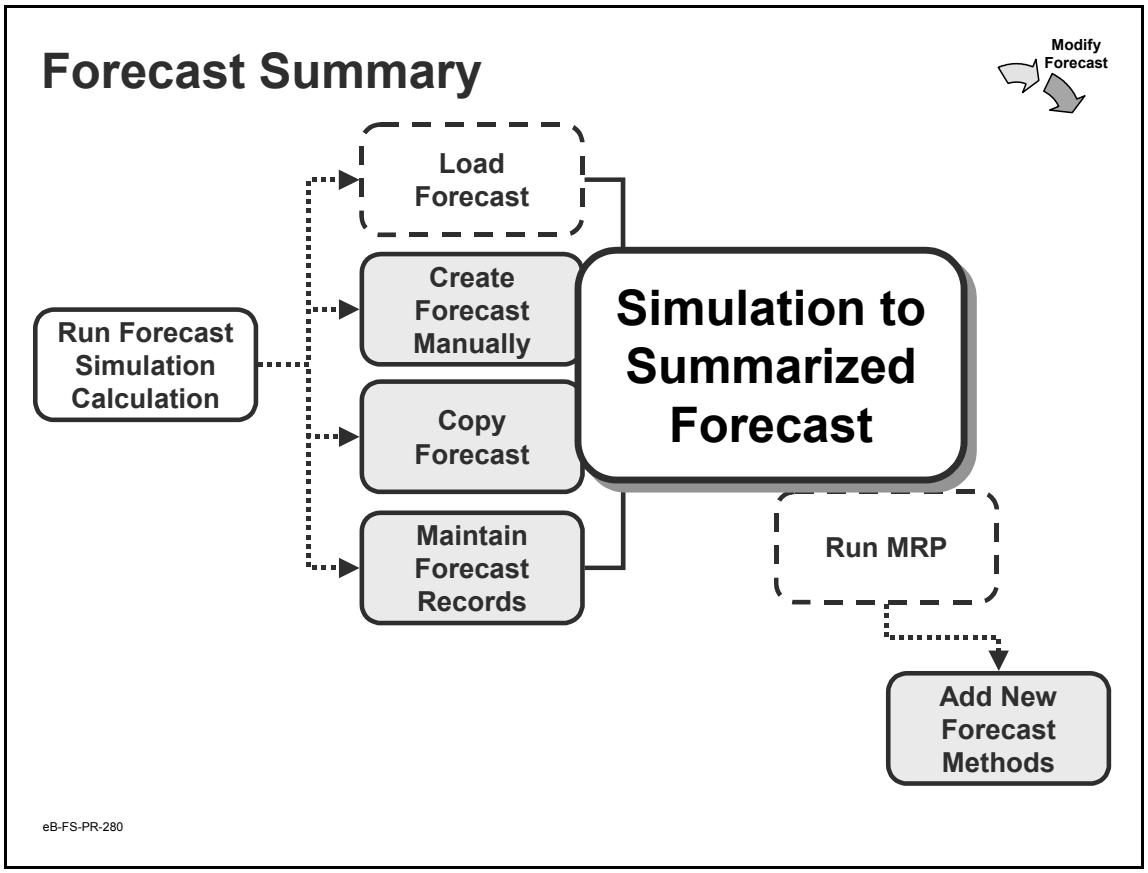
ffdfrp.p b+ — Detail Forecast Report — Date: 06/13/03
Page: 1 — MFG/PRO Training DB — Time: 16:56:59

Forecast	Year	Item Number	UM	Month	Units	Unit Cost	Cur	Price	Cur	Extended Cost	Extended Price	Margin
YEARLY	2003	02-0005	EA	January	1783	0.960	USD	2.50	USD	1711.69	4457.50	2745.81
				February	1829	0.960	USD	2.50	USD	1755.85	4572.50	2816.65
				March	1876	0.960	USD	2.50	USD	1800.97	4690.00	2889.03
				April	1922	0.960	USD	2.50	USD	1845.13	4805.00	2959.87
				May	1968	0.960	USD	2.50	USD	1889.29	4920.00	3030.71
				June	2014	0.960	USD	2.50	USD	1933.45	5035.00	3101.55
				July	2060	0.960	USD	2.50	USD	1977.61	5150.00	3172.39
				August	2106	0.960	USD	2.50	USD	2021.77	5265.00	3243.23
				September	2153	0.960	USD	2.50	USD	2066.89	5382.50	3315.61
				October	2199	0.960	USD	2.50	USD	2111.05	5497.50	3386.45
				November	2245	0.960	USD	2.50	USD	2155.21	5612.50	3457.29
				December	2291	0.960	USD	2.50	USD	2199.37	5727.50	3528.13
				Total	24446					23468.23	61115.00	37646.77
		Total Line1000								23468.23	61115.00	37646.77
		Total IDYEARLY								23468.23	61115.00	37646.77

End of Report

eB-FS-PR-270

- Sample report data



Forecast Summary

- The forecasted demand is used to drive MRP
- Simulation to Summarized Forecast loads forecast quantities to the summary forecast file used by MRP

Forecast Summary Driving MRP

- Detail records used to create the summary forecast file used by MRP
- Identify detail record by forecast ID, year, and item
  - Monthly buckets
- Identify summary forecast file by item, site, year
  - Enter a summarized site
  - Weekly buckets
- Various loading methods to go from monthly to weekly quantities

eB-FS-PR-290

Driving MRP

- All calculations have been run and modified, as necessary
- The detail records are summarized into one file for the MRP calculation

Loading Methods for Detail Records

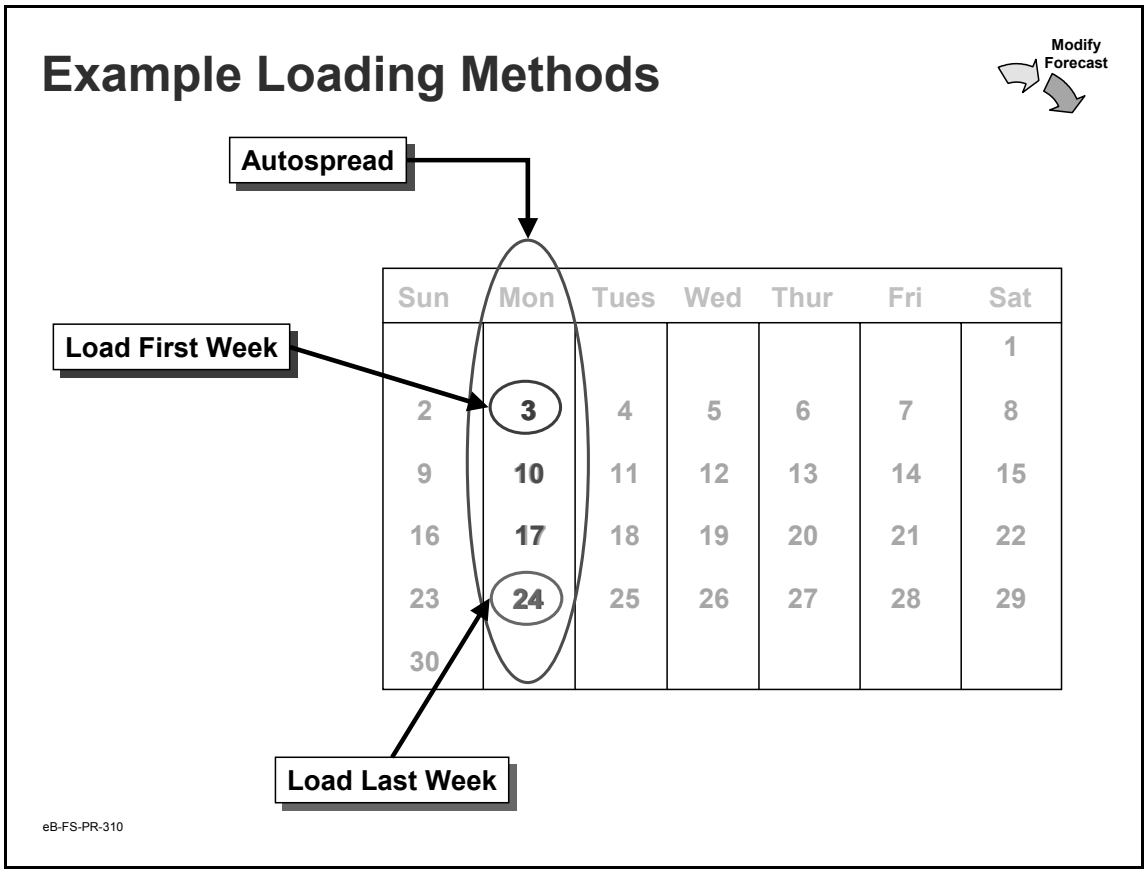
- Detail records are loaded to summary forecast files in terms of units
- Three loading methods to break the monthly forecast quantities into weekly quantities used by MRP:

1.	**Autospread** (default)	**Monthly forecast broken into daily averages and rolled into weekly buckets starting on Monday**
2.	**Load Last Week**	**Monthly forecast loaded into the last week of the month appearing on Monday**
3.	**Load First Week**	**Monthly forecast loaded into the first week of the month appearing on Monday**

eB-FS-PR-300

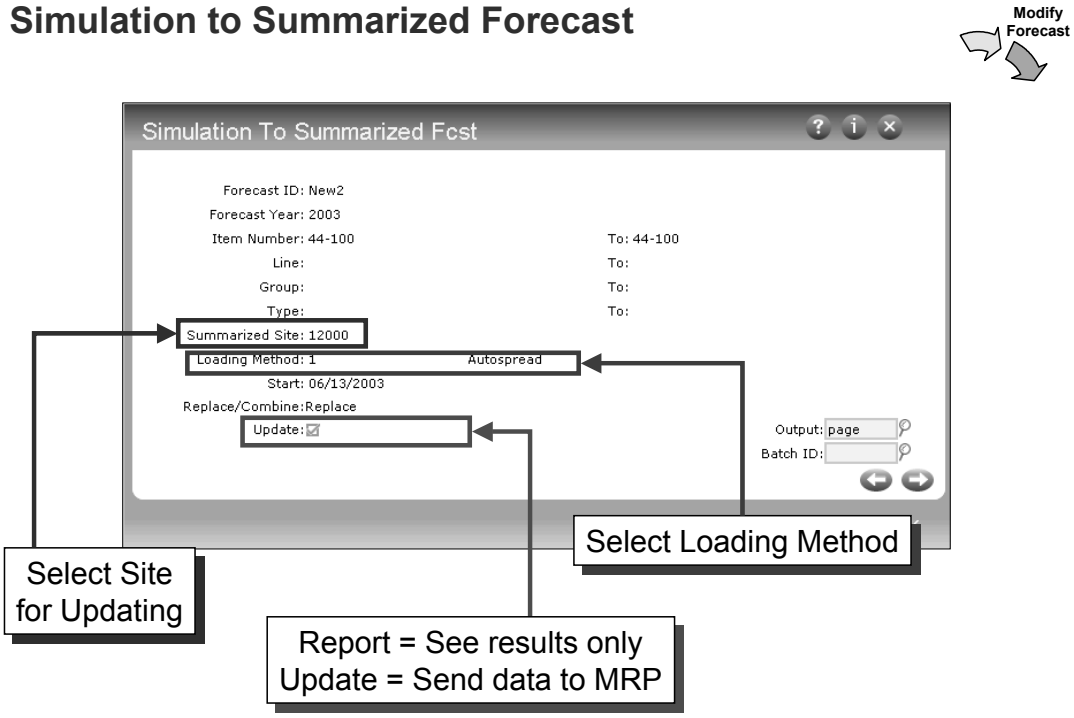
Loading Methods

- Monthly buckets are loaded as weekly buckets for the MRP calculation



- Autospread loads the monthly quantities equally across the weeks
- Load first week enters all quantities into the first week appearing on a Monday
- Load last week enters all quantities into the last week appearing on a Monday

Simulation to Summarized Forecast



eB-FS-PR-320

Simulation to Summarized Forecast

- Forecast detail records are used to create, replace, or combine summary forecast files
- Select a summarized site for updating

Note You can combine detail records into one summary forecast file, but this is not recommended. From a statistical viewpoint, the combined result is not a valid forecast.

- Updates to the summary forecast file are permanent and cannot be undone manually except by changing the file in Forecast Maintenance (a Master Scheduling task)

Forecast Maintenance

Forecast Maintenance

Item Number: 44-100 Site: 12000 Year: 2003

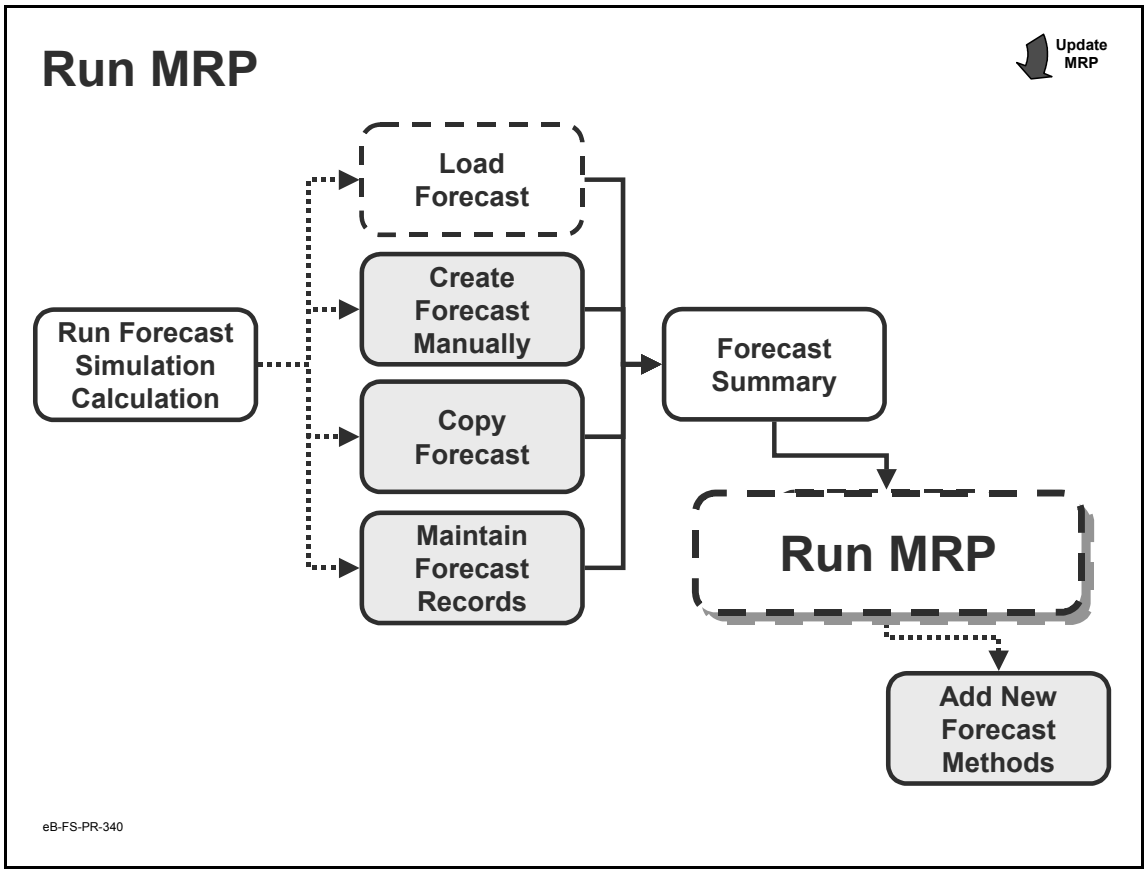
Week	Forecast	Week	Forecast	Week	Forecast	Week	Forecast
12/30/2002	0	03/31/2003	0	06/30/2003	107	09/29/2003	161
01/06/2003	0	04/07/2003	0	07/07/2003	102	10/06/2003	169
01/13/2003	0	04/14/2003	0	07/14/2003	101	10/13/2003	170
01/20/2003	0	04/21/2003	0	07/21/2003	102	10/20/2003	169
01/27/2003	0	04/28/2003	0	07/28/2003	106	10/27/2003	174
02/03/2003	0	05/05/2003	0	08/04/2003	113	11/03/2003	187
02/10/2003	0	05/12/2003	0	08/11/2003	113	11/10/2003	187
02/17/2003	0	05/19/2003	0	08/18/2003	113	11/17/2003	186
02/24/2003	0	05/26/2003	0	08/25/2003	113	11/24/2003	187
03/03/2003	0	06/02/2003	0	09/01/2003	140	12/01/2003	215
03/10/2003	0	06/09/2003	60	09/08/2003	140	12/08/2003	214
03/17/2003	0	06/16/2003	140	09/15/2003	140	12/15/2003	215
03/24/2003	0	06/23/2003	140	09/22/2003	140	12/22/2003	214
Total	0	Total	340	Total	1,530	Total	2,448

Monthly data from Forecast Summary is loaded into weekly buckets for MRP after Forecast Summary

eB-FS-PR-330

Results

- After running Simulation to Summarized Forecast with Update/Report set to Update, the data is loaded into Forecast Maintenance
- At this point, the simulation now affects MRP
  - Before data was loaded, the Forecast Simulation had no effect on MRP

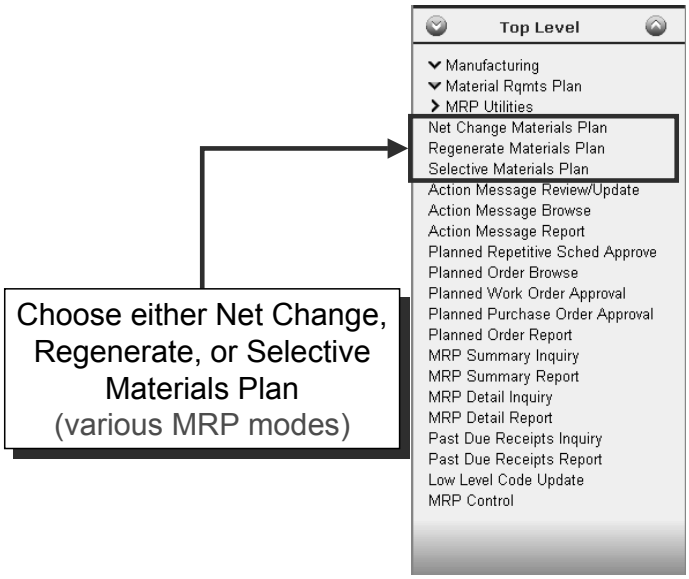


Run MRP

Three MRP calculations are available in MFG/PRO:

1. Net Change Materials Plan
2. Regenerate Materials Plan
3. Selective Materials Plan

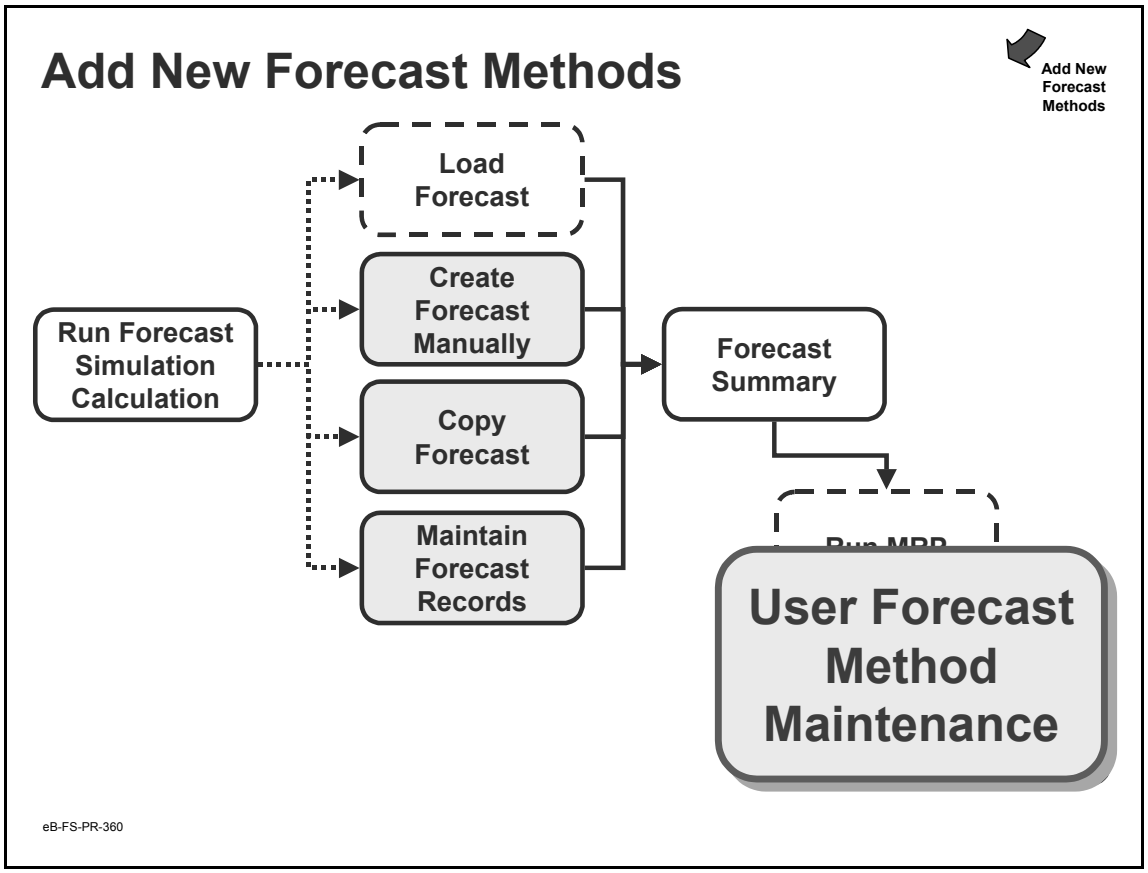
Materials Requirements Plan (MRP) Menu



eB-FS-PR-350

Run MRP

- Net Change Materials Plan
  - Only calculates changes since the last MRP calculation
- Regenerate Materials Plan
  - Complete recalculation of all demand and supply
  - Must be run the first time MRP is used
- Selective Materials Plan
  - Calculates only manually selective factors

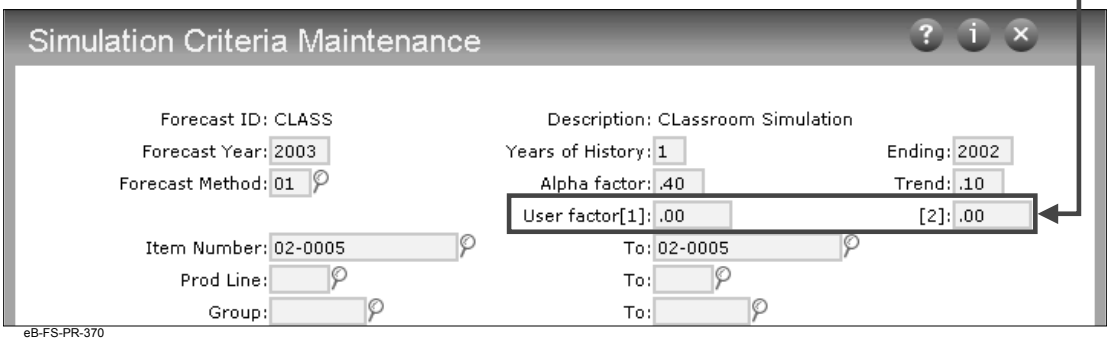


Add New Forecast Methods

- You can create specialized forecast methods for the system to use in producing forecast quantities
- Add your custom forecast methods to the current forecast methods

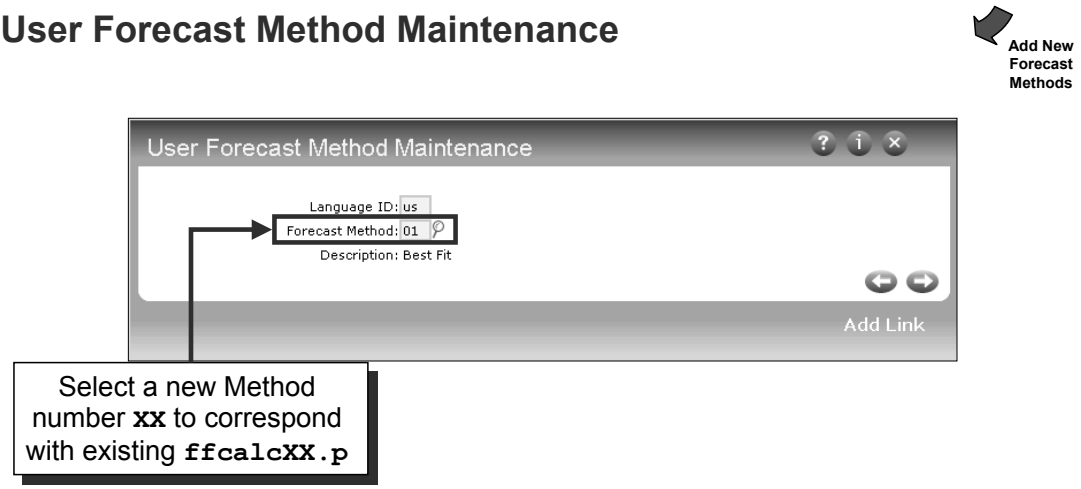
Add New Forecast Methods

- Allows you to incorporate your own expertise into the system
- User Forecast Method Maintenance
  - You supply PROGRESS program
  - Provide a method number
- User factors (1) and (2) are reserved for your forecast methods



Note You must supply the PROGRESS program

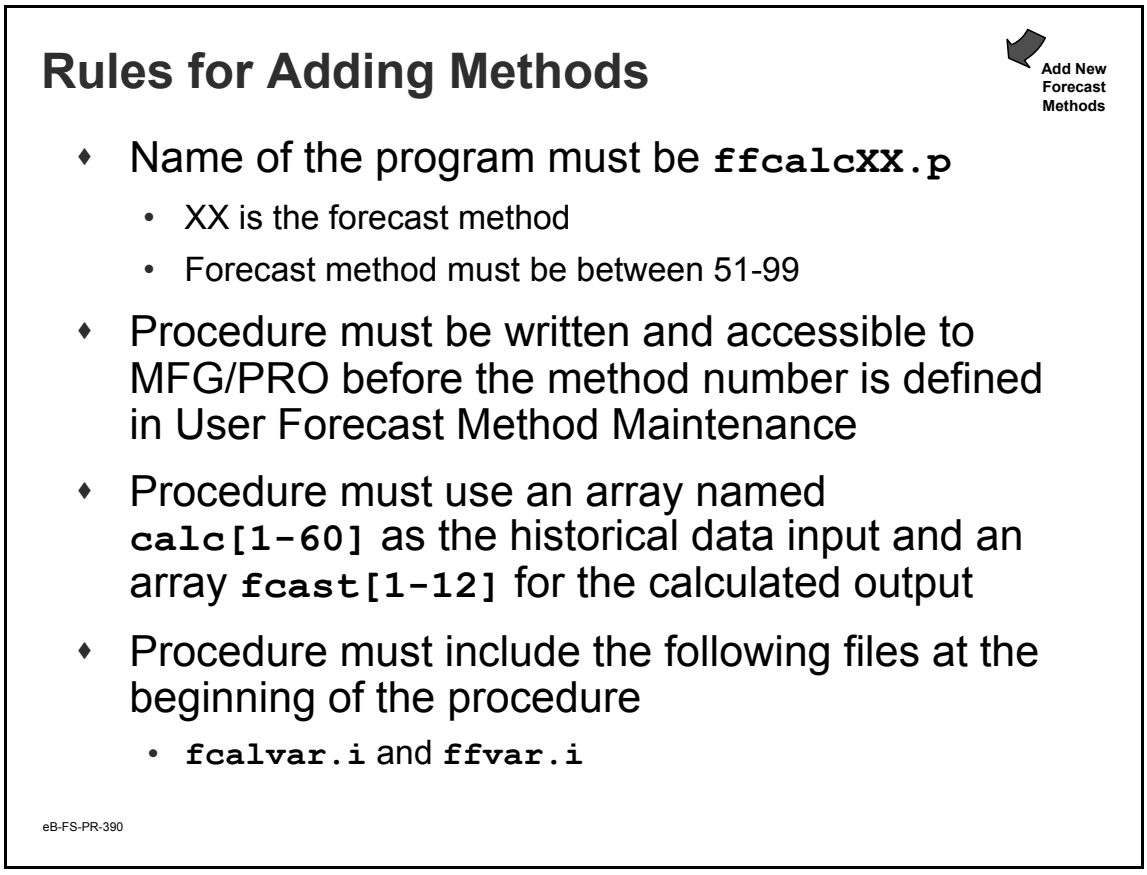
User Forecast Method Maintenance



eB-FS-PR-380

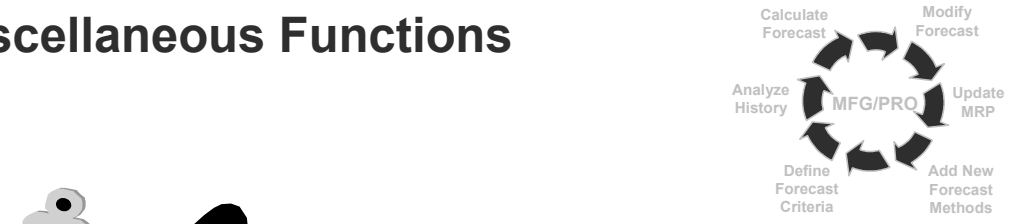
User Forecast Method Maintenance

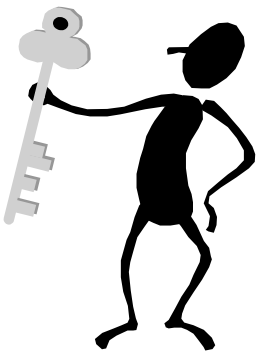
- Required if you want to use other statistical methods in a forecast calculation
- Your user-supplied PROGRESS program must be named `ffcalcXX.p`
  - `XX` is the forecast method and must be between `51-99`



Rules for Adding Methods

Miscellaneous Functions





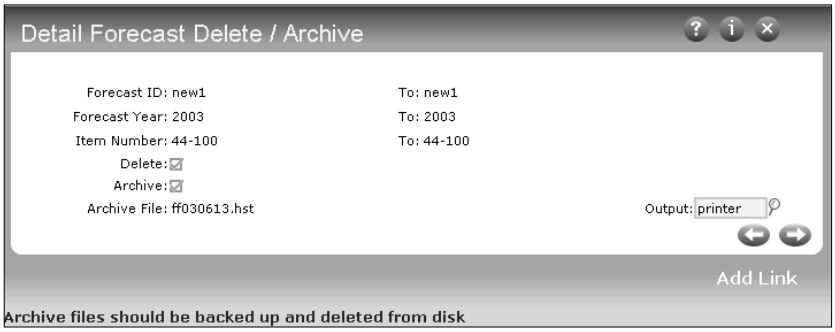
- Detail Forecast Delete/Archive

eB-FS-PR-400

Miscellaneous Functions

- Used to delete or archive forecast records or criteria templates into a file
- Run Detail Forecast Delete/Archive twice
  - First with Delete set to No to review the record
  - Then run again with Delete Yes
- If Delete and Archive are Yes, deleted data is copied to an ASCII file
- The file can be reloaded using Archive Reload File

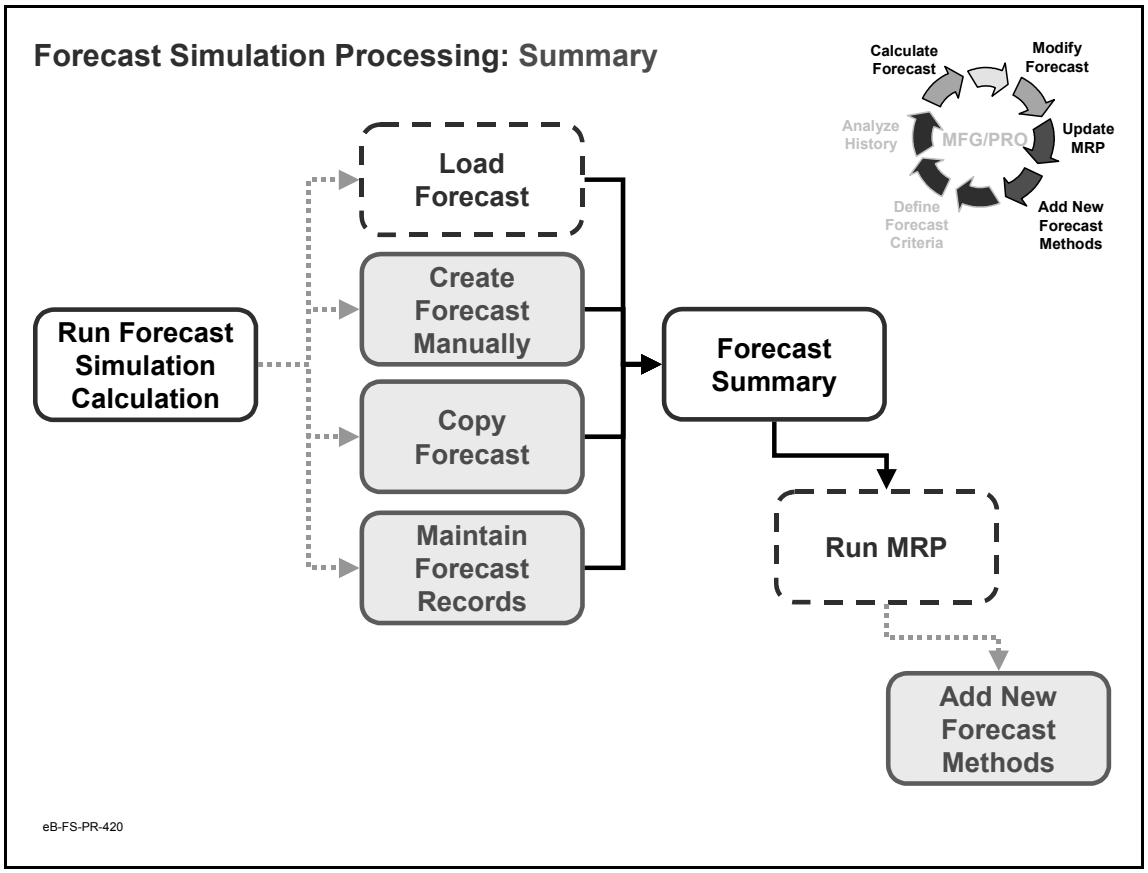
Detail Forecast Delete/Archive



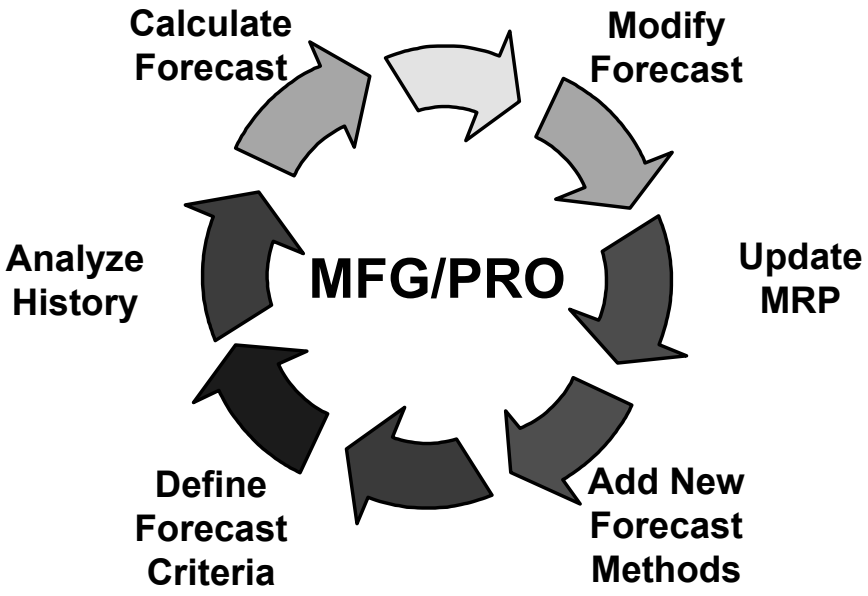
eB-FS-PR-410

Detail Forecast Delete/Archive

- With Delete = Yes, forecast records satisfying the selection criteria are deleted from the database
- With Archive also Yes, deleted data is stored in a file name `ffYYMMDD.hst`
  - `ff` indicates this is a simulated forecast record and `YYMMDD` is the date you ran Delete/Archive
  - If the file exists, the archived record is appended to the existing file
- You cannot recover a deleted forecast record. Archived files can be retrieved using Archive Reload File
- Keep record of the contents of the archive file—there is no record within the file
- This function should be password controlled



Forecast Simulation Loop System: Summary



eB-FS-PR-430

Processing Exercises

Important The data used in these exercises may not be the same as the data shown in the screen captures in this lesson.

Create Sales History

Instruction: In this activity you will create a sales history for the manufacturing planning and scheduling training exercises.

1 Using Customer Maintenance for customer 001, set Site to TRAIN and the credit limit to USD $2,000,000.

2 Enter the following information into Sales Order Control:

Sales Order Header Comments:	No
Ln Format S/M:	Multi
Sales Order Prefix:	SO
Next Sales Order:	20001
Invoice Prefix:	IV
Next Invoice:	20001
Integrate with SA:	Yes
Calculate Freight by Site:	No
Consume Fwd:	1
Consume Back:	2

3 Using Receipts - Unplanned, receive the following item with the specified quantities in the specified site and location:

Item:	02-0005
Qty:	20,000
Site:	TRAIN
Location:	200

Accept all other defaults.

4 Create pending invoices, using Pending Invoice Maintenance, for the following:

Item:	02-0005
Site:	TRAIN
Customer:	001

Sales Order Number	Due Date	Calc., Display Freight	Quantity to Invoice	Invoice Number	Ready to Invoice	Invoiced
SO20001	01/15/02	No	1000	IV20001	No	Yes
SO20002	02/15/02	No	1200	IV20002	No	Yes
SO20003	03/15/02	No	1400	IV20003	No	Yes
SO20004	04/15/02	No	1500	IV20004	No	Yes
SO20005	05/15/02	No	1600	IV20005	No	Yes
SO20006	06/15/02	No	1400	IV20006	No	Yes
SO20007	07/15/02	No	1500	IV20007	No	Yes
SO20008	08/15/02	No	1800	IV20008	No	Yes
SO20009	09/15/02	No	1700	IV20009	No	Yes
SO20010	10/15/02	No	1400	IV20010	No	Yes
SO20011	11/15/02	No	1500	IV20011	No	Yes
SO20012	12/15/02	No	1800	IV20012	No	Yes
SO20013	01/15/03	No	2000	IV20013	No	Yes

5 Post the Invoice (to Page) for each of the Pending Invoices in the month that they were due, setting the G/L effective date to that particular month. This will require thirteen separate passes through this function. Use Invoice Post.

6 Using Sales by Customer Report, review your Sales History using the Customer field for the range of desired data. Accept the default settings, except the Ending Fiscal year should be the last year and the ending period should equal 12. Print to Page.

Create Forecasts Using the Forecast Simulation Menu

Instruction: In this activity, you will create the necessary data for forecasting in MFG/PRO.

1 Use forecast Simulation Criteria Maintenance to create forecast simulation criteria to calculate a rolling forecast for item 02-0005 beginning in the current month.

Note Ending year equals forecast year.

Forecast ID:	Rolling
Description:	Rolling Forecast (current year)
Forecast Year:	Current Year
Years of History:	1
Ending:	Current Year
Method:	01 (Best Fit)
Item number (From and To):	02-0005
Order Line Site (From and To):	Train
Customer (From and To):	001

2 Calculate the Simulated Forecast for item 02-0005 based on the Criteria set up in the previous step. Use Simulated Forecast Calculation

Note If you go back to forecast Simulation Criteria Maintenance, you will be unable to revise any of the forecast simulation criteria.

3 Enter your Forecast ID into Simulation To Summarized Forecast.

a Use Loading Method 1, (autospread) starting Monday of next week.

b Set Update to No before printing to Page.

Note Because this was run as a report, Forecast Worksheet Maintenance was not updated.

c Review your forecast data. Notice that it is now distributed into weekly buckets.

4 Using forecast Simulation Criteria Maintenance, create a second forecast to calculate a yearly forecast for item 02-0005 beginning in the current month.

Note The ending year equals the forecast year.

Use the following data:

Forecast ID:	Yearly
Description:	Yearly Forecast (current year)
Forecast Year:	Current Year
Years of History:	1
Ending:	Last Year
Method:	01 (Best Fit)

a Set Range on Item number 02-0005.

5 Use Simulated Forecast Calculation for item 02-0005 based on the criteria set up in the previous step.

Note If you go back to forecast Simulation Criteria Maintenance, you will be unable to revise any of the forecast simulation criteria.

6 Enter your second Forecast ID into Simulation To Summarized Forecast.

a Use Loading Method 1, autospread, starting Monday of next week.

b Set Update to Yes before printing to Page.

Note Because this was run with Update = Yes, Forecast Worksheet Maintenance now has your current year forecast distributed into weekly buckets. This is the Master Production Schedule – input to Material Requirements Planning (MRP).

7 Use Detail Forecast Maintenance to create two separate forecasts that you will combine for next year using the following data:

	Forecast ID:	NEW1	Forecast ID:	NEW2
	Forecast Year:	Current Year	Forecast Year:	Current Year
	Item Number:	44-100	Item Number:	44-100
January	300.0		50.0	
February	325.0		75.0	
March	390.0		35.0	
April	310.0		90.0	
May	450.0		100.0	
June	475.0		125.0	
July	375.0		75.0	
August	375.0		125.0	
September	400.0		200.0	
October	500.0		250.0	
November	600.0		200.0	
December	700.0		250.0	
Total	5200.0		1575.0	

8 Enter the Forecast ID, NEW1, into Simulation To Summarized Forecast with the following settings:

Summarized Site:	12000
Loading Method:	1
Start:	Default
Replace/Combine:	Replace
Update:	No

a Print the forecast to Page.

b Make note of the values at the beginning and ending periods. Beg _____ End _____

9 Enter the Forecast ID, NEW2, into Simulation To Summarized Forecast with the following settings:

Summarized Site:	12000
Loading Method:	1
Start:	Default
Replace/Combine:	Replace
Update:	No

a Print the forecast to Page.

b Make note of the values at the beginning and ending periods. Beg _____ End _____

10 Enter the Forecast NEW1 in the first field of Simulation To Simulation Copy.

a Accept the defaults until you get to Target Forecast ID.

b Enter the following values:

Forecast ID:	NEW2
Forecast Year:	Current Year
Replace/Combine:	Combine

c Press the Go key and respond Yes to the Question: Continue with Copy?

11 Enter the NEW2 Forecast ID into Simulation To Summarized Forecast with the following settings:

Summarized Site:	12000
Loading Method:	1
Start:	Default
Replace/Combine:	Replace
Update:	Yes

12 Review the forecast data in Forecast Worksheet Maintenance.

Did the weekly forecast values in the beginning and ending periods combine?

Course Overview

- ✓ Introduction to Forecast Simulation
- ✓ Business Considerations
- ✓ Set up Forecast Simulation
- ✓ Use Forecast Simulation

eB-FS-PR-450

APPENDIX A

Study Questions

Setup/Implementation

Study Questions for Forecast Simulation Setup

1 In MFG/PRO, the Forecast Simulation calculation can use data other than sales history information.

True False

2 What do you need to set for the shipment history to post to `chp_hist`? Where do you set this field?

Menu Name:
Field and Setting:

3 For what size buckets/periods are simulated forecasts calculated?

4 Describe forecast consumption and how it affects production, when you use consume forward or consume backward. What menu name/menu number would you use to set this?

Menu Name:
Field and Setting:

Effects of consume forward and consume backward on production:

5 Unconfirmed sales orders can consume forecast demand.

True False

6 Once a forecasting criteria template has been used for a calculation, it can no longer be modified.

True False

7 Which ending year is used for a Yearly Forecast and which ending year is used for a Rolling Forecast?

Ending Year is the same as the Forecast Year = _____ Forecast

Ending Year is before the Forecast Year = _____ Forecast

8 How many years, maximum, of sales history can the forecast calculation examine?

9 Describe the four common sales history patterns, and give an example of a typical product that has that type of sales history.

a Trend

b Seasonal

c Horizontal

d Cyclical

Processing

Study Questions for Forecast Processing

1 What menu name and menu number would you use to run the system calculation for forecast simulation?

Menu Name:

2 Describe how the system shows forecast quantities for items that have no sales history.

3 Memo items and drop shipments are included in forecast calculations.

True False

4 You cannot produce a rolling forecast manually. Only yearly forecasts can be done manually.

True False

5 If you had a new item likely to have a similar sales history to an existing item, what function would you use to create forecast results for the new item? There are two possible answers.

a Menu Name:

b Menu Name:

6 Why should you archive the original forecast or copy to another forecast ID before modifying forecast detail records?

7 When performing a Simulation to Simulation copy, if the item ranges of target and source are different, what happens to the target? What happens to the source?

8 Forecast simulation records are in monthly buckets. MRP calculations use weekly buckets. What three ways can Simulation to Summarized Forecast load the detail records into the MRP summarized records?

a

b

c

Answers to Study Questions

Setup Forecast Simulation

1 False. In MFG/PRO, Forecast Simulation can only use data from sales history information

2 To post sales history to the `cph_hist` field, you must set:

Menu Name:	Sales Order Control
Field and Setting;	Integrate with SA = Yes

3 Forecasts are calculated for monthly buckets or periods. However, Master Scheduling quantities are in weekly buckets. This difference between Master Scheduling and Forecast Simulation should be noted.

4 Forecast consume forward and consume backward help smooth production. When sales order demand exceeds forecast demand for a week, you produce enough to meet the greater sales demand. When forecast demand exceeds sales orders, you overproduce to meet the forecasted demand, but product remains in excess after the sales orders are shipped. Consume forward and backward takes the excess sales order demand of one week and applies it to the unused portion of the forecasted demand of either the period(s) before or after. It continues to search backward and forward until the specified number of previous and future periods have been examined, or the entire sales order quantity has been applied.

Menu Name:	Sales Order Control
Field and Setting;	Consume Fwd = number of periods to search for future demand Consume Back = number of periods to search for previous demand

5 False. Only confirmed sales orders consume the forecast.

6 True. The template can only be modified until it has been used for a calculation.

7 Ending Year is the same as the Forecast Year = Rolling Forecast

Ending Year is before the Forecast Year = Yearly Forecast

8 The system can use up to five years of sales history.

9 Trend: A steady growth of demand. Typically a new product.

Seasonal: A cycle of greater and lesser demand, usually within a single year. Typically products like soft drinks and frozen desserts, which have increased demand during hotter months.

Horizontal: A steady demand for a product, with very little variation. Typically a stable, well-established product.

Cyclical: Similar to seasonal demand, with greater and lesser demand, but follows a business cycle over several years. Difficult to predict. Typically real estate.

Process Forecast Simulation

1 Simulated Forecast Calculation.

2 At least one sales record is required to produce nonzero forecast quantity. When insufficient history exists to create a valid forecast, the detailed forecast record is created with quantities of zero and the item is printed out as insufficient.

3 False. Memo items and drop shipments are excluded from any forecast calculations.

4 True. You cannot produce a rolling forecast manually, only yearly forecasts. The rolling forecast requires forecasting for the next twelve monthly periods. Manual forecasts can only be created for January through December.

5 Run a forecast calculation for the first item, then use one of the two copy features to copy the results to the second forecast template.

- **a** Menu Name: Single Item Simulation Copy
- **b** Menu Name: Simulation to Simulation Copy

6 To obtain the original forecast quantities, you need to run the original calculation again. After the calculation is run, the template and detail records are updated. Previous templates and records are deleted. This makes it important to archive the original forecast or copy to another forecast ID before modifying forecast detail records.

7 When performing a Simulation to Simulation copy, if the item ranges of target and source are different, the target range is expanded. Targets are changed/overwritten, source remains unchanged.

8 Forecast simulation records are in monthly buckets. MRP calculations use weekly buckets. Simulation to Summarized Forecast can load the detail records into the MRP summarized records by:

- **a** Autospread (default)—calculating daily averages, rolling these into weekly buckets, distributing weekly averaged totals throughout the month
- **b** Load first week
- **c** Load last week

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