Manufacturing and Shop Floor Control

MFG- SFC-01

ERP LN

Chapter 0 – Getting Started

Version

Course Goals

- Define Item Data for Manufactured Items
- Create work centers and warehouses for manufacturing
- Define Bills of Material and Routings
- Calculate Cost Prices for items
- Define Calendars and Periods for use in Shop Floor Control
- Understand Unit Effectivity for Production Orders
- Create Production Orders and Process orders
- Apply Masks, Serialized Items, and Lot Control to Production Orders

Course Objective

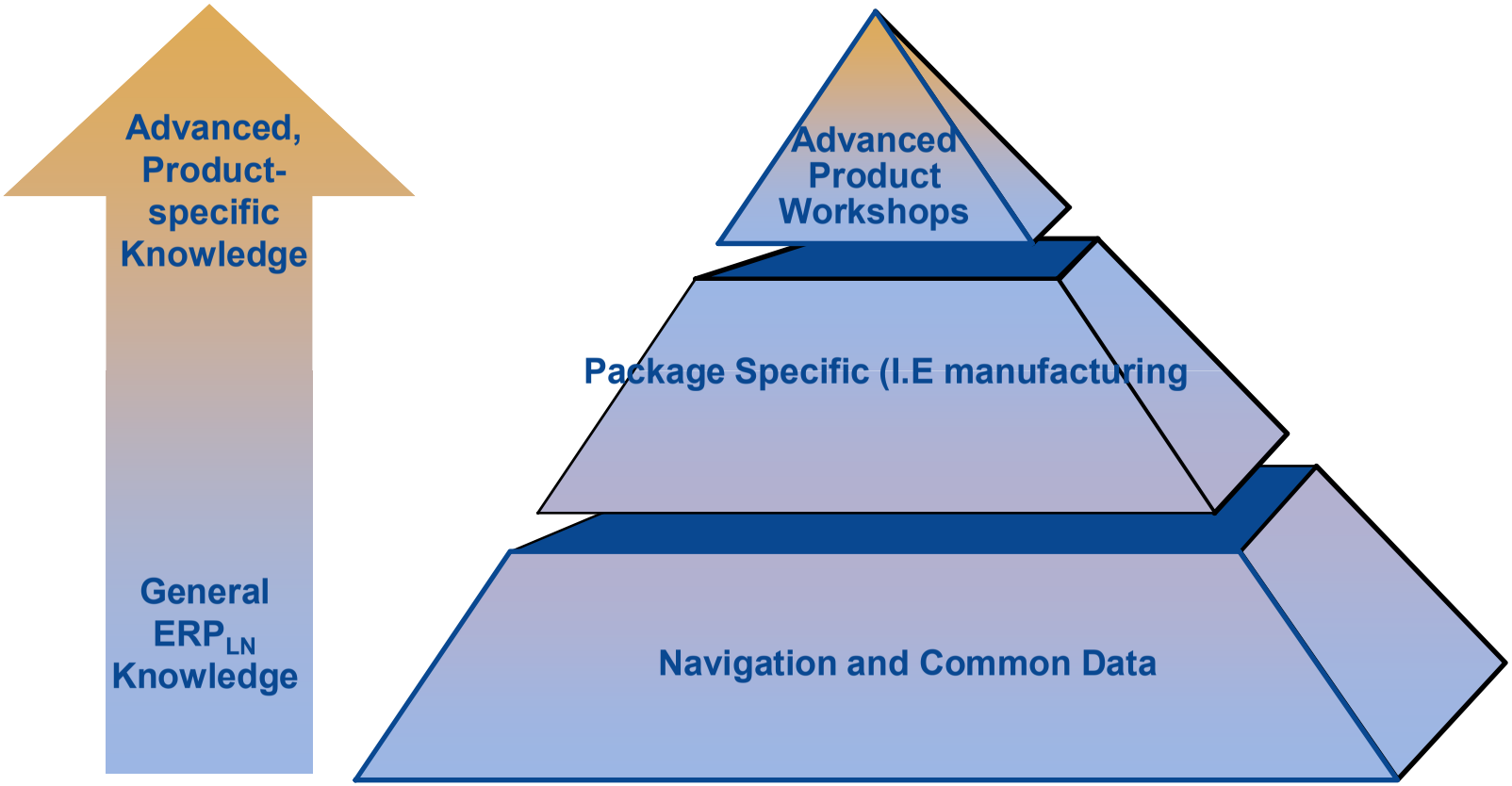
Provide an understanding of the application, functionality, and execution of the master data and production order process for the Manufacturing package.

Prerequisites

Before attending this course, participants should have completed:

- ERP_{LN} Webtop Navigation
- ERP_{LN} Common Data

Education Levels



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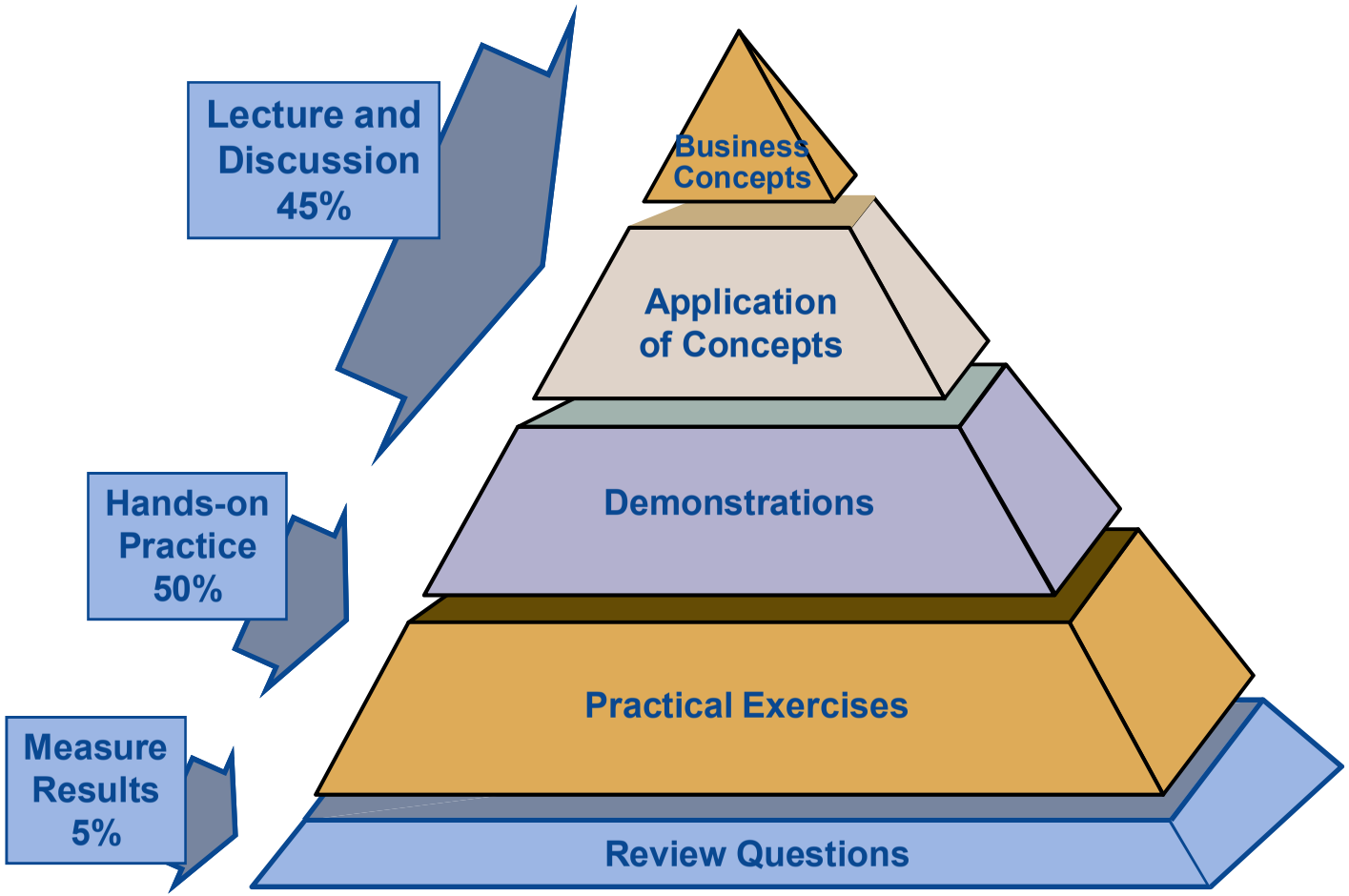
Course Methodology



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Manufacturing Master Data

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Objectives

- Define Item Data
- Create Entities for Manufacturing Module
- Define Bills of Material and Routings
- Define Calendars and Periods

Item Structures

- Item data
- Bill of Material
- Routing
- Cost Price Calculation

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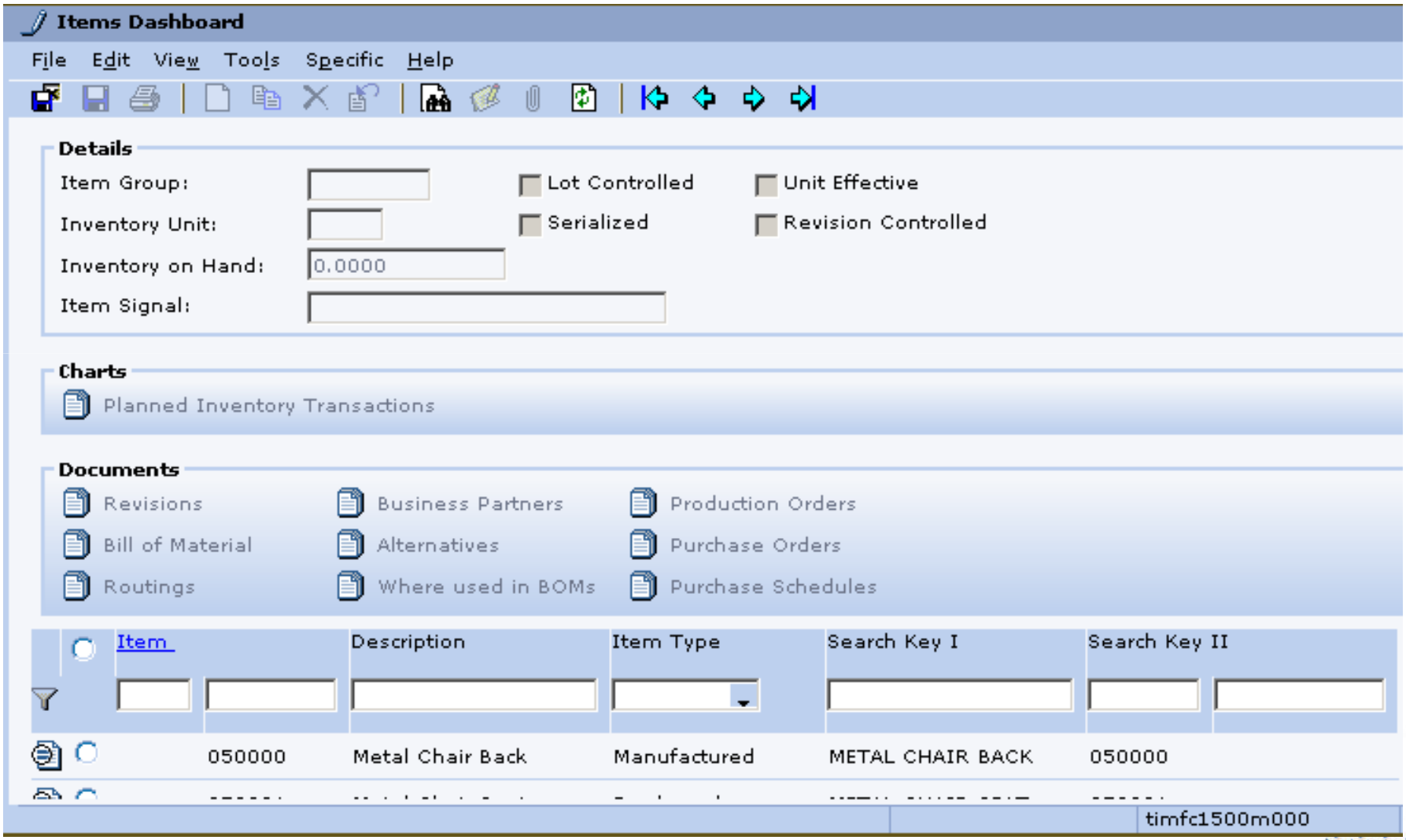
Plan item data

- General Data
  - Item or Product family
- Default supply source
  - production
  - purchase
  - distribution
- Planning horizon
  - Time fence
  - Forecast time fence
  - Planning Horizon
  - Order Horizon
- Master plan

Item Dashboard



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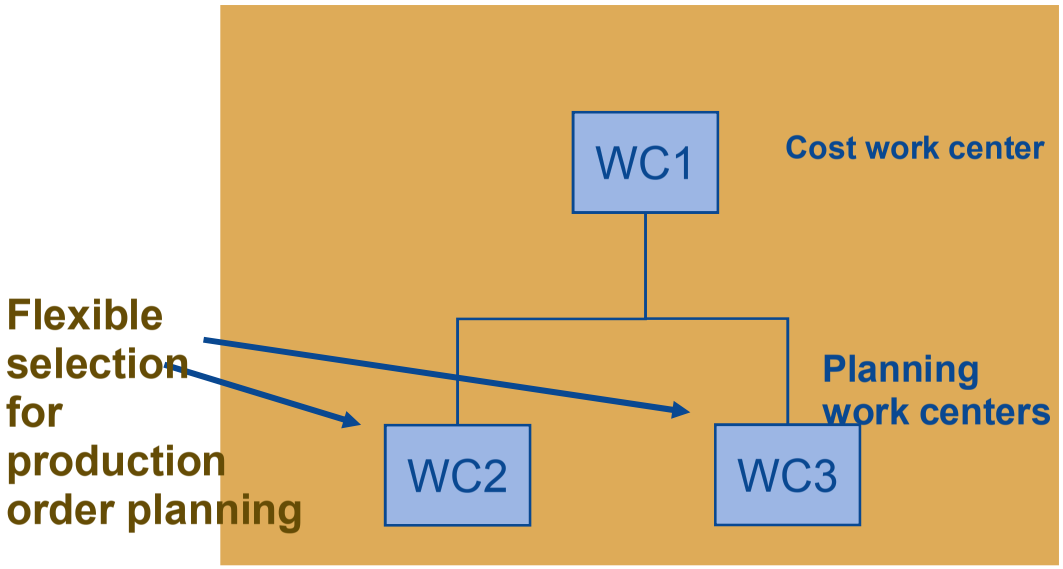
Costing & Planning work centers

- New work center type: cost work center
- Flexible work center selection after freezing estimates (also for ad hoc subcontracting)

• Costing workcenter collects costs related to operations

• Calculation Office collects costs, results, surcharges related to an production order



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Item structures
Item Production Data

- BOM Unit - The number of manufactured items which the BOM relates to.
- Scrap Factor - The percentage of an item expected to be lost during the manufacturing process.
- Scrap Quantity - The actual number of items expected to be lost during the manufacturing process.
- Routing Unit

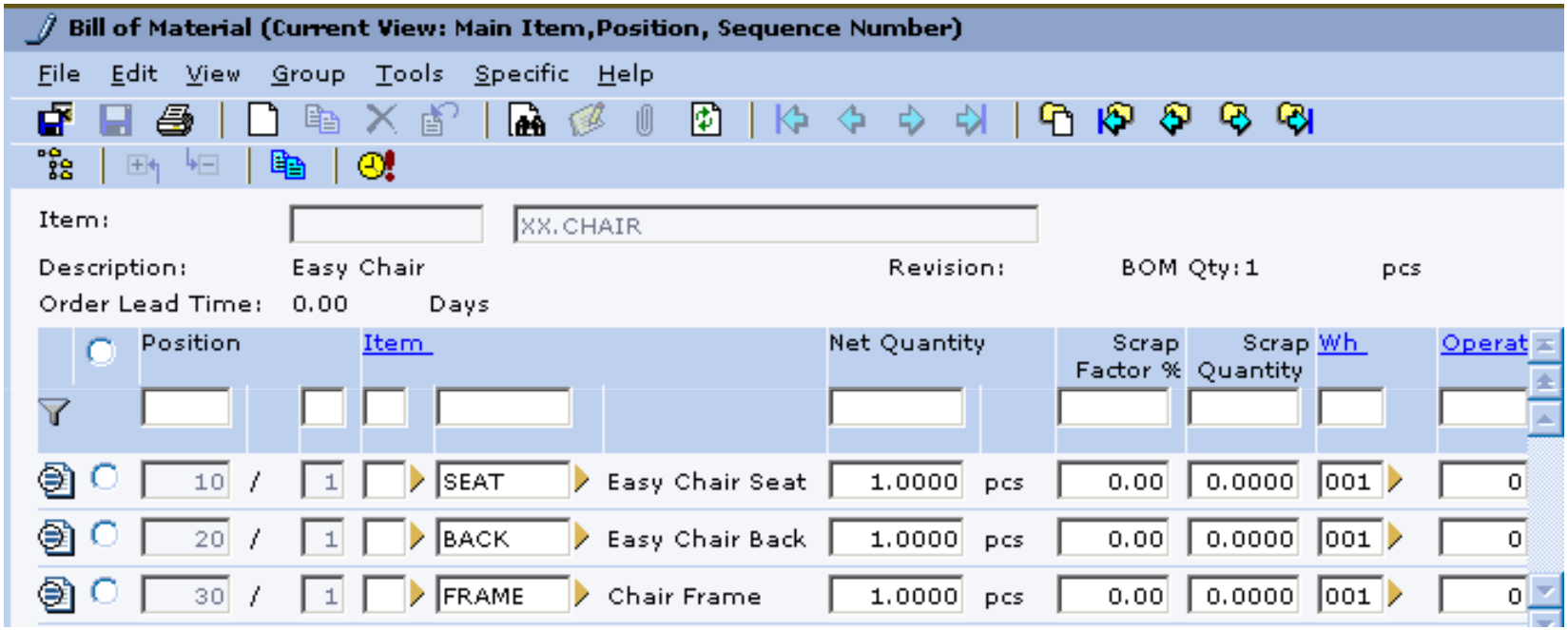
Bill of Material

Definition

A Bill of Material is a listing of all components and relevant data (sub-assemblies and raw materials) that comprise a manufactured item. The BOM establishes the parent-child relationship between a manufactured item and its components.

- List of components for the main item.
- Lists the quantity of each component required to build the main item.
- May be multi-level containing other manufactured items with BOM's

Bill of Material



- Position lists the components
- Defines Quantity required
- Zoom in and zoom out capability from Specific Menu

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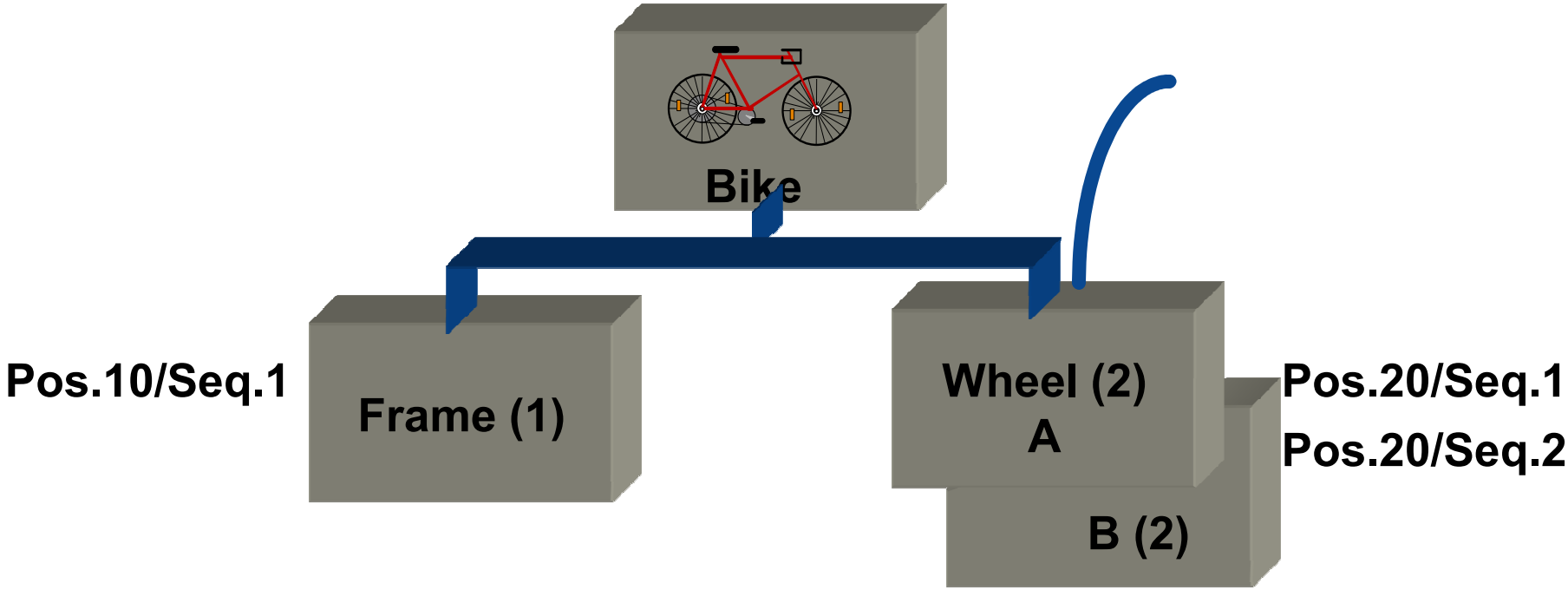
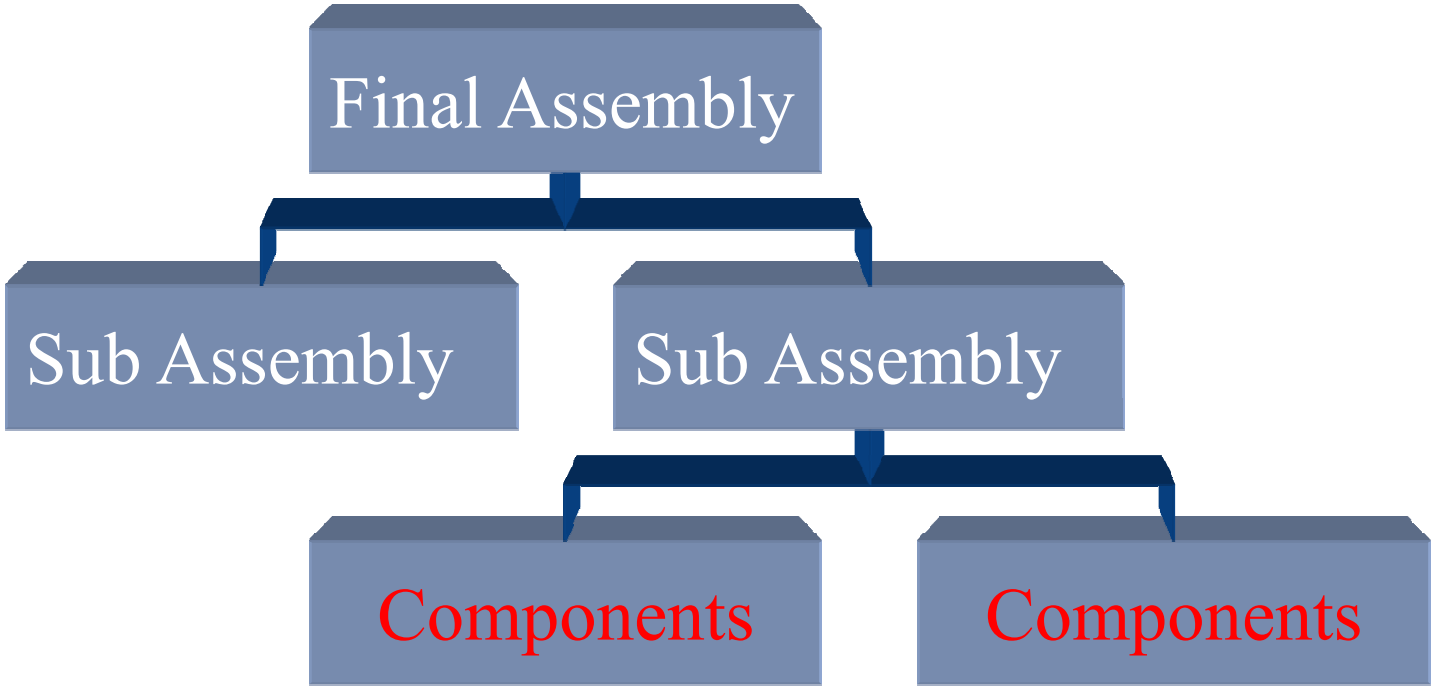
Bill of Material
Single Level



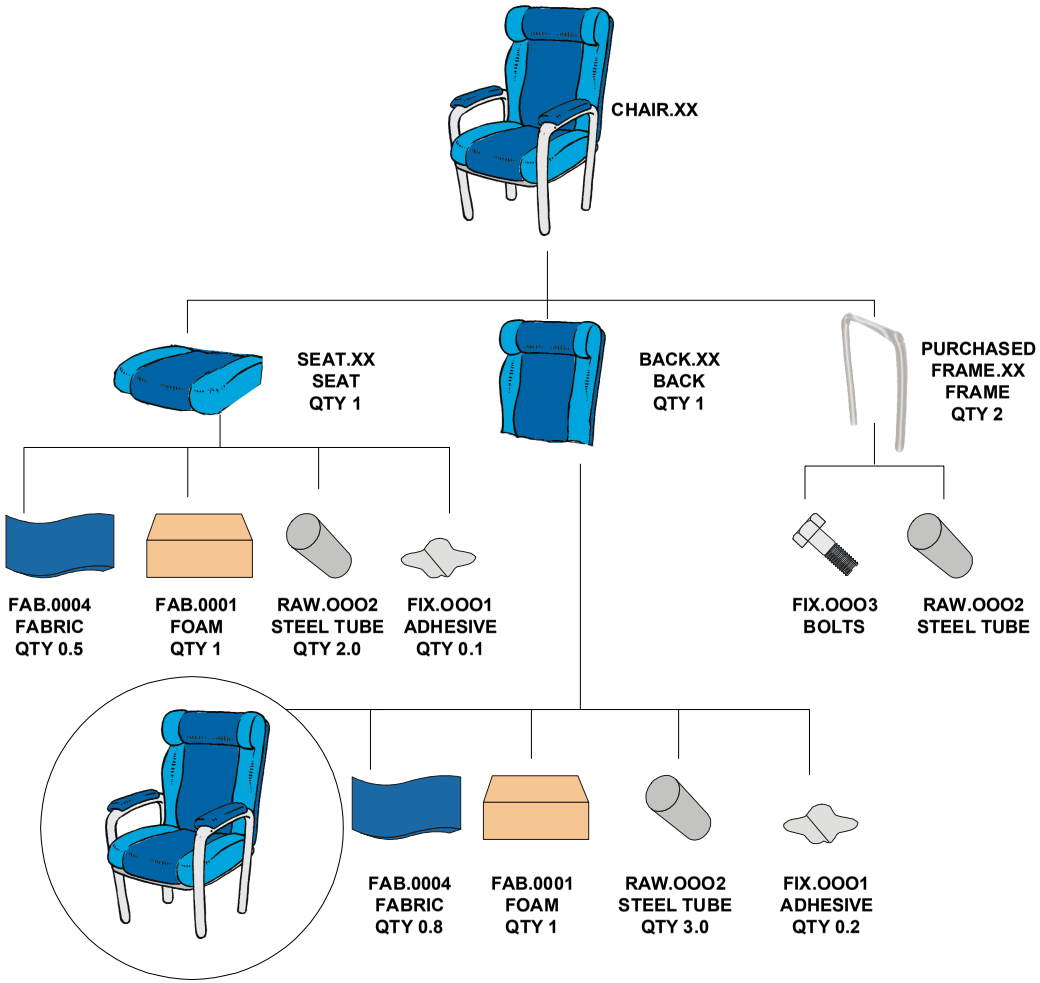
Bills Of Material multi-level



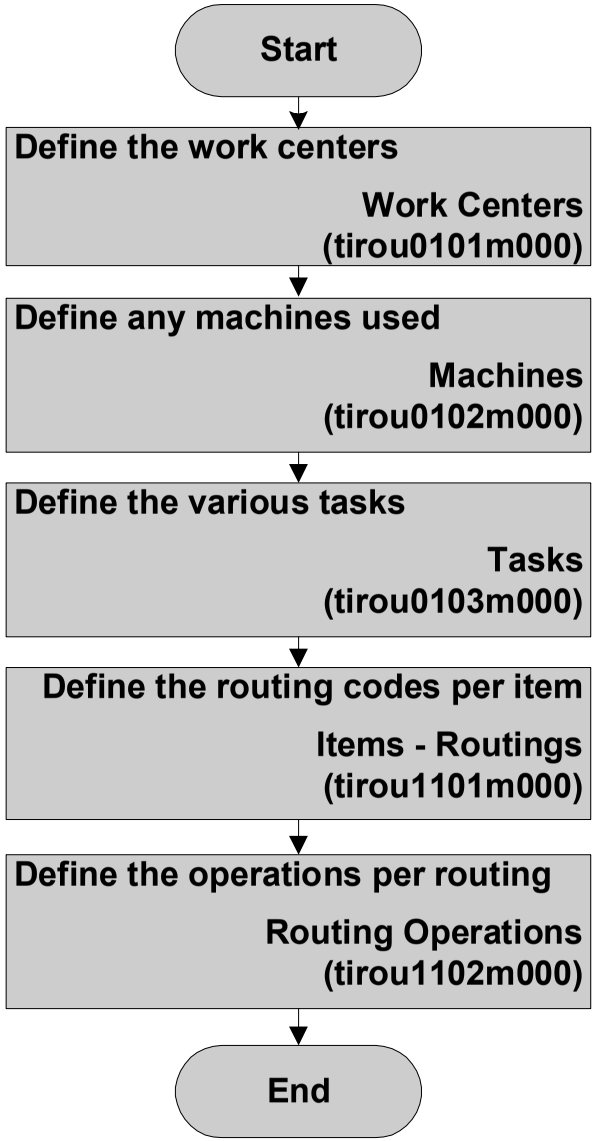
Level 1 - Sub Assemblies (Manufactured or Purchased)

Level 2 - Components (Purchased Only)

Loops in Production BOMs



Routings



Routings:

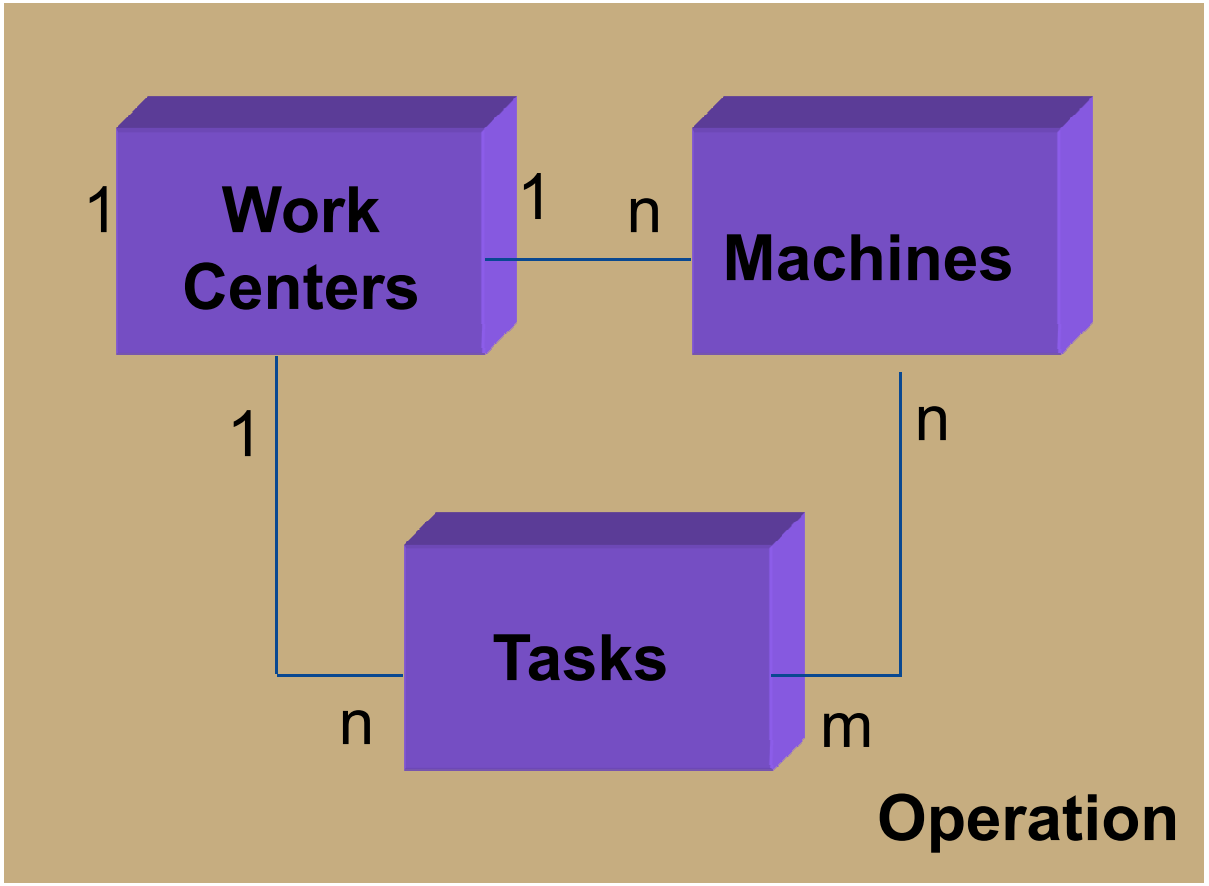
Determine how to build the main item

Define the required operations required to build the main item.

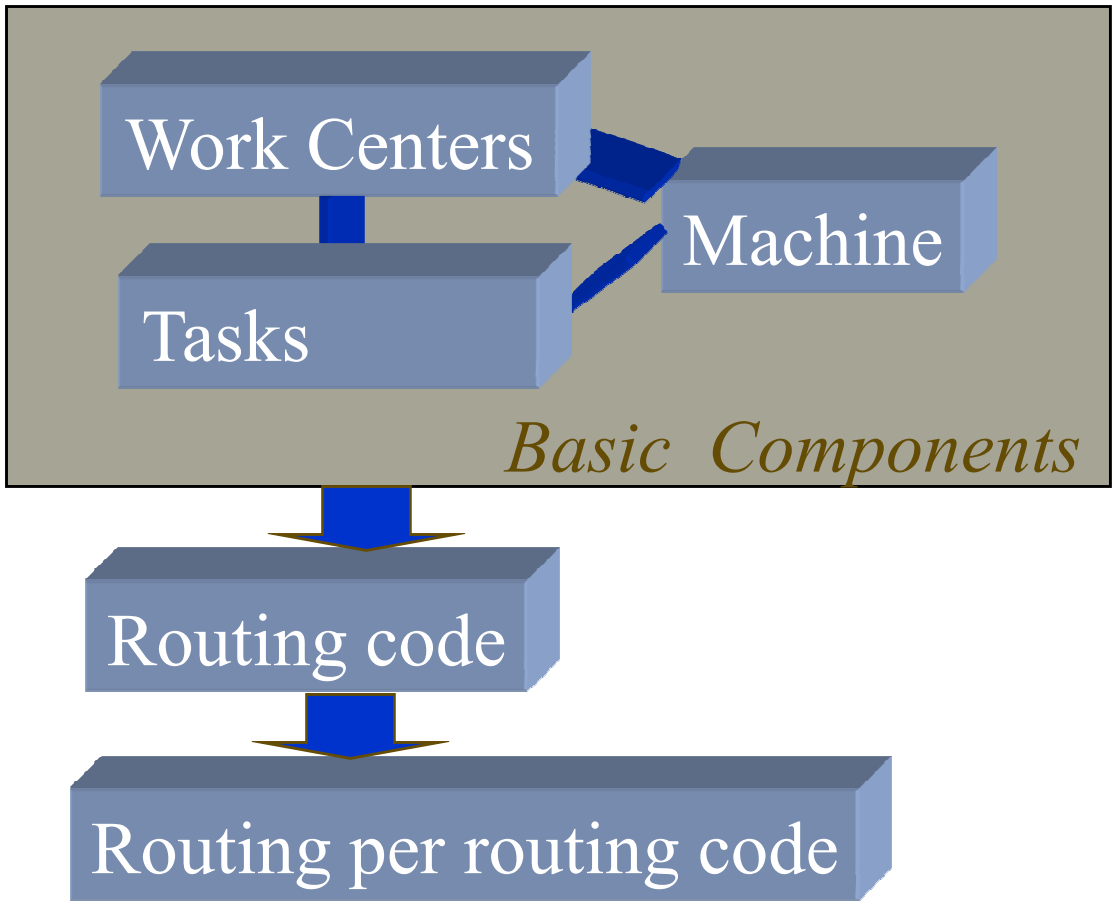
Define which work centers and which machines are involved with the manufacturing of the end item.

Indicate the time required to complete each operation.

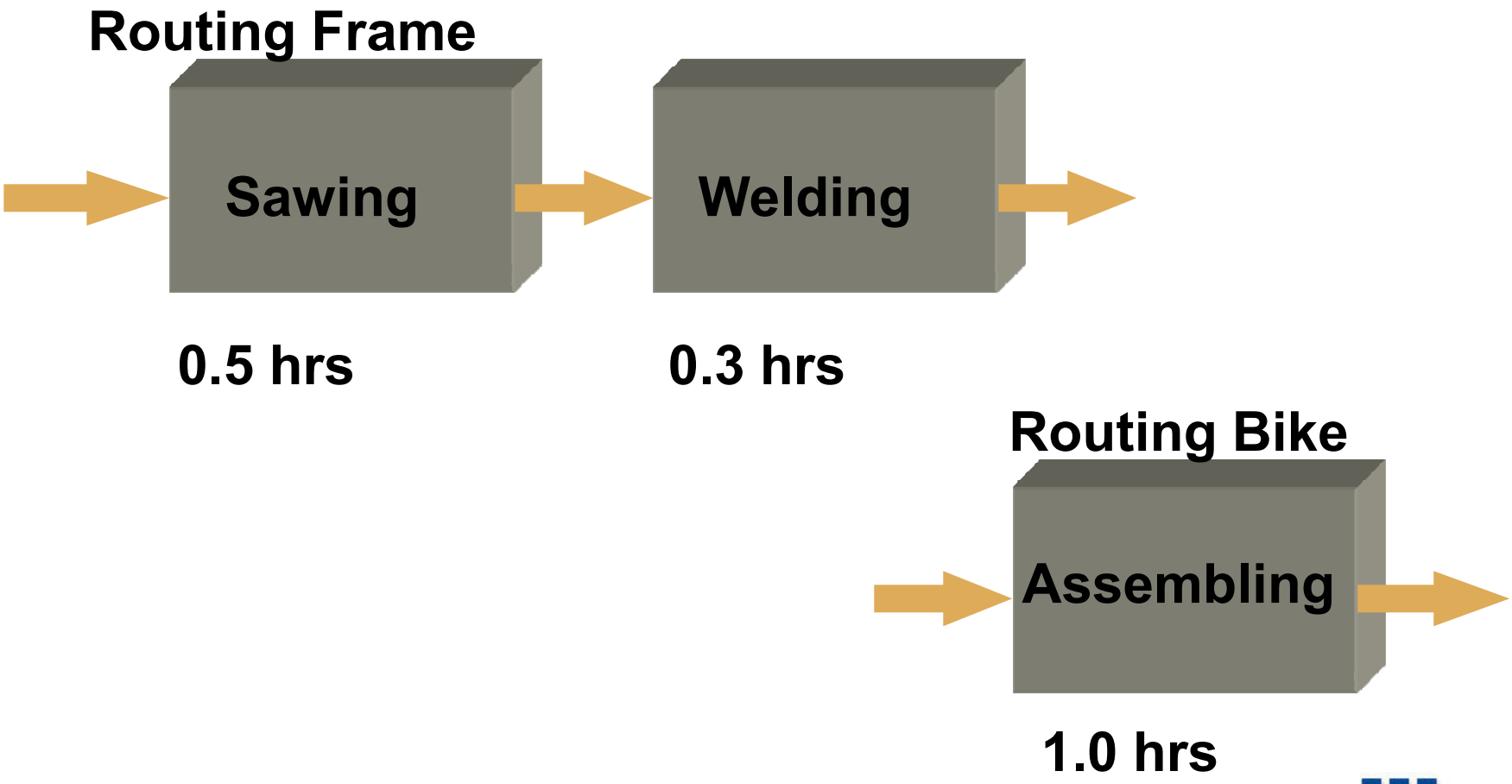
Routing
Components of an Operation



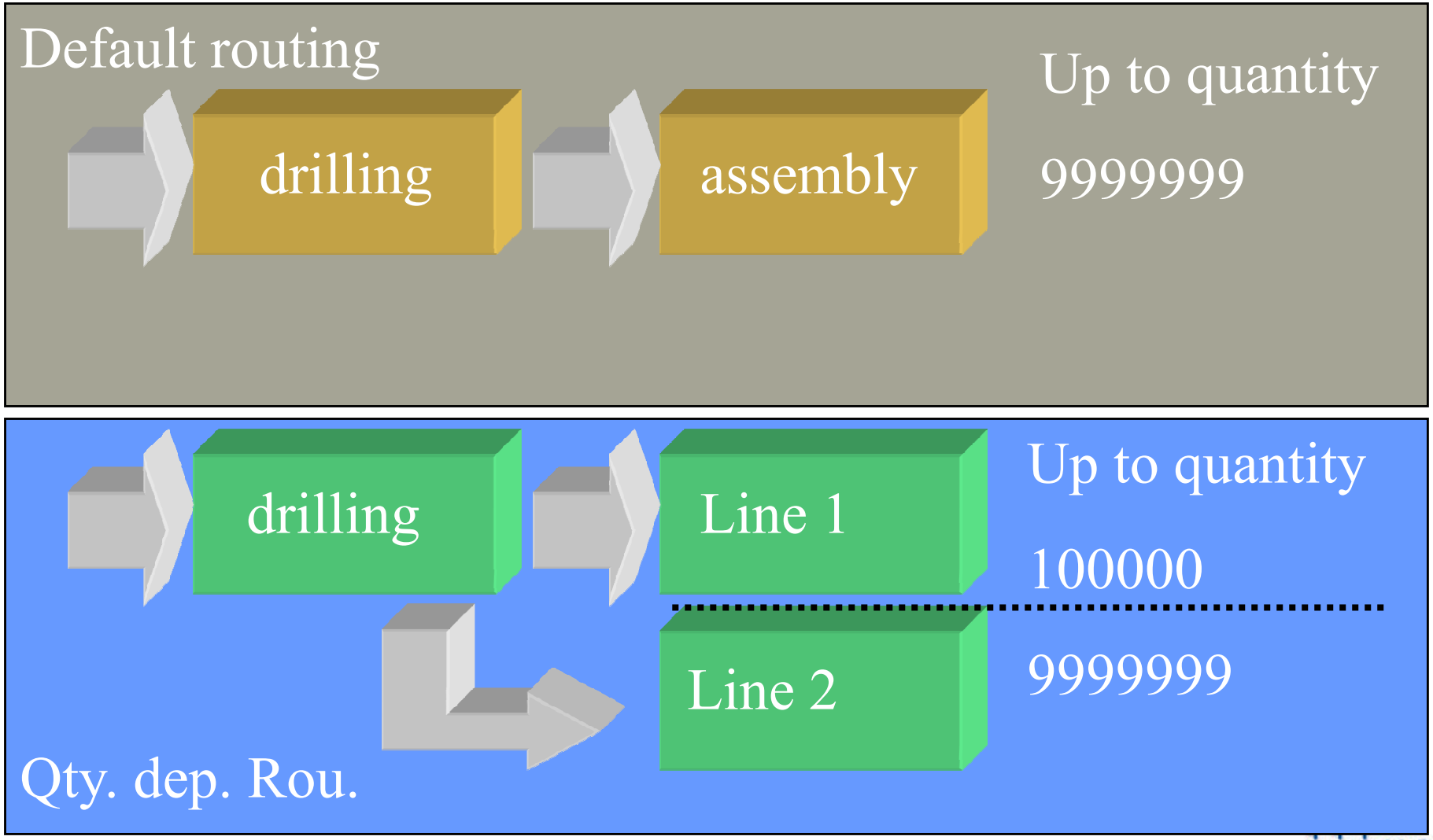
Routing Setup



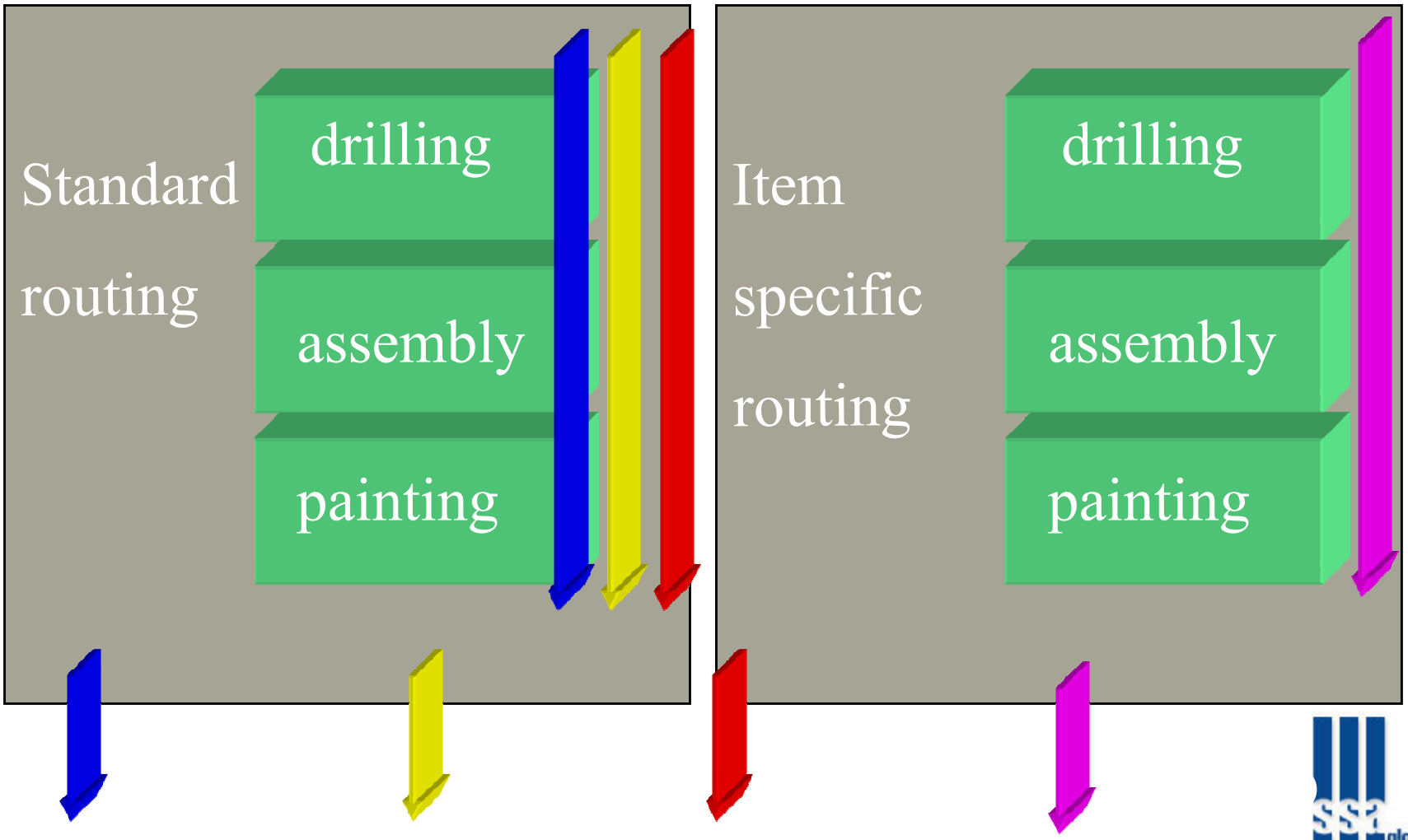
Routing Operations



Routing Types

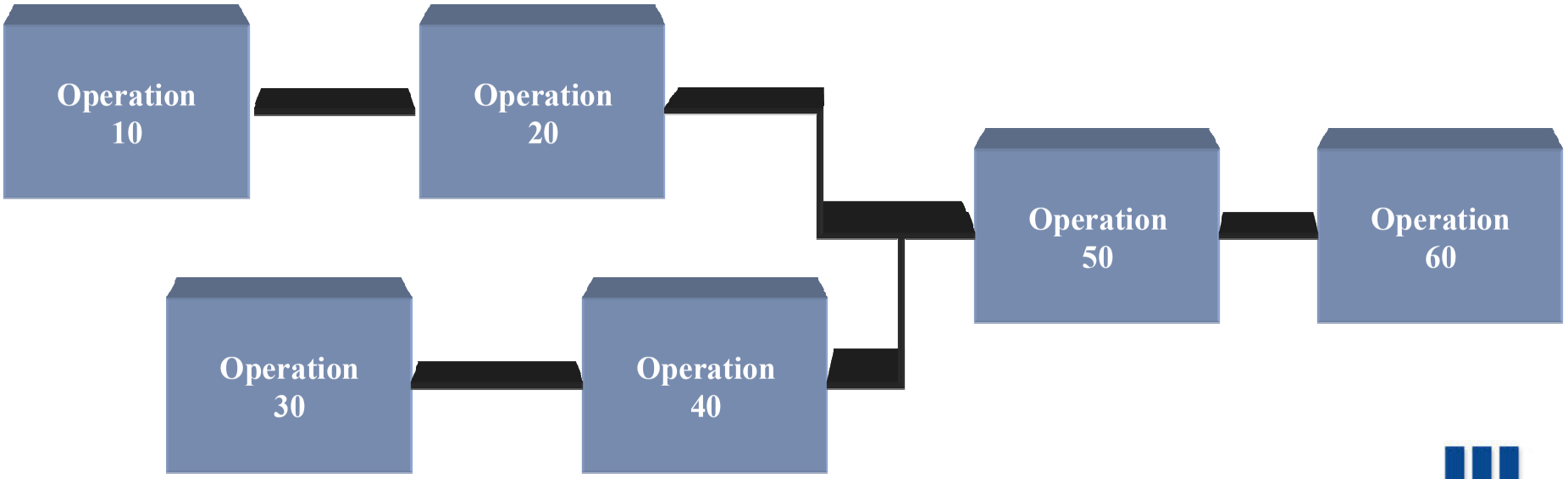


Routing Types

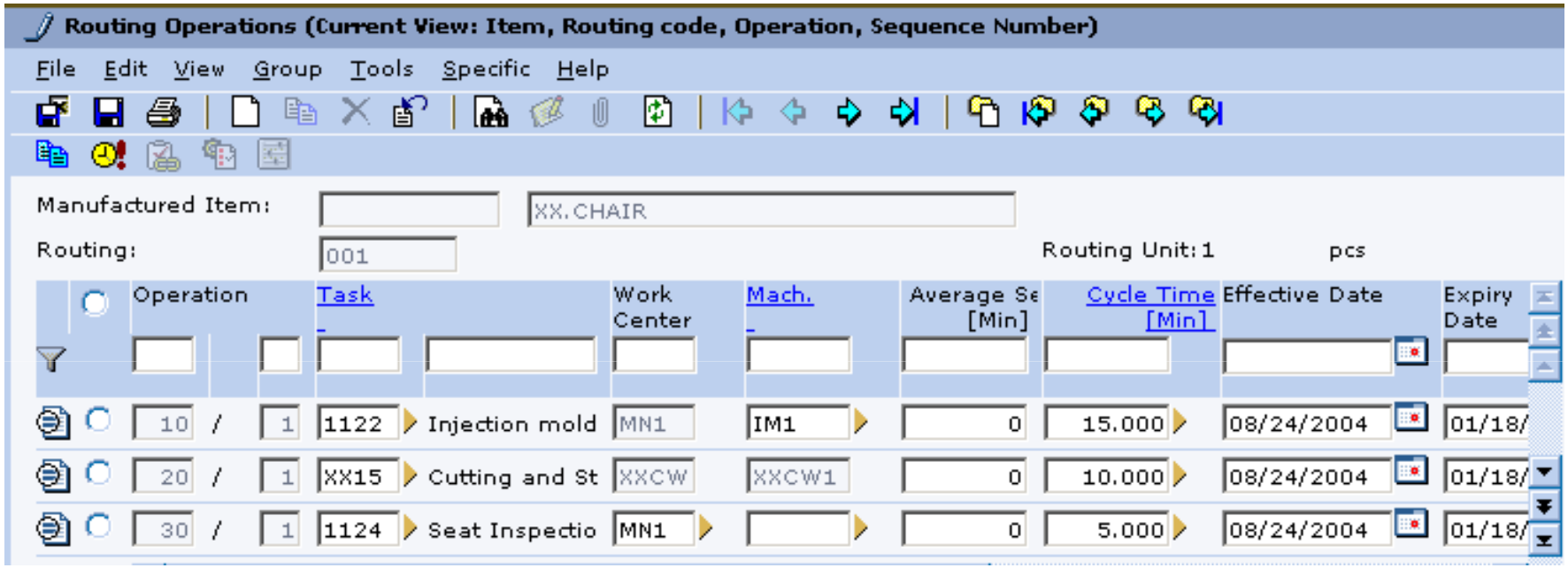


Routing Operations

- Operation Number
- Step size



Routing Operations



Routing Code and Item create a unique combination of operations.

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Calendars and Periods

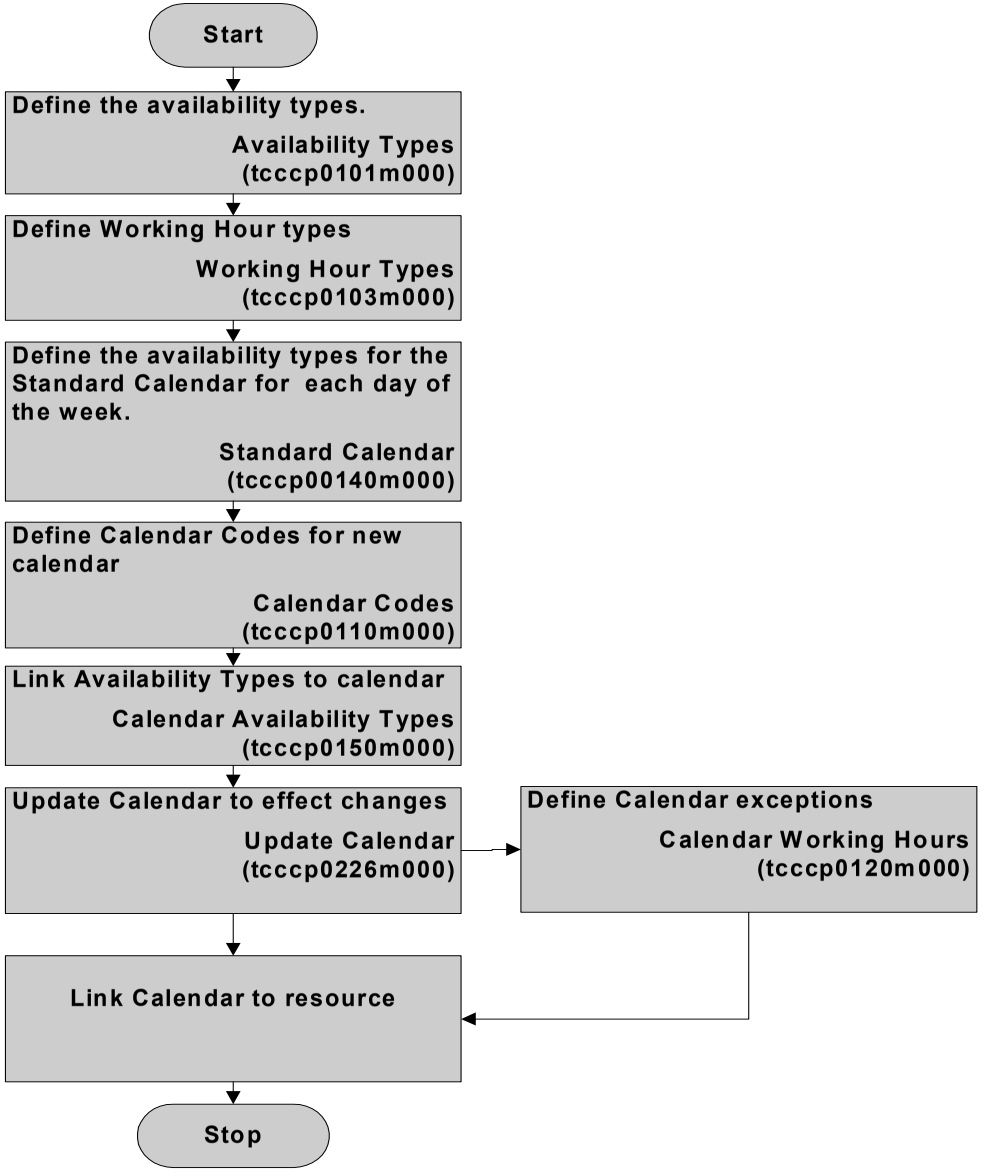
Calendar Hierarchy

Calendars are selected for use based on a prescribed hierarchy.

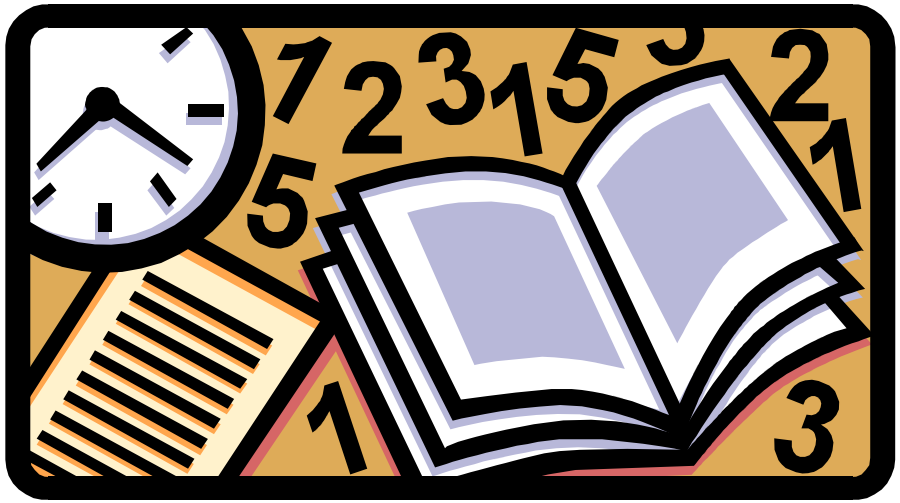
For the Work Center the order of searching for a valid calendar is:

- Calendar attached to the Department that equals the Work Center
- Calendar attached to the Enterprise Unit of the of Department
- Company Calendar (from the Companies session tcemm1170m000)

Calendar Flow



Review Questions and Answers



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Guided Task: <title>

- Step 1.
- Step 2.
- Etc.

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Lesson 2 – Item Control

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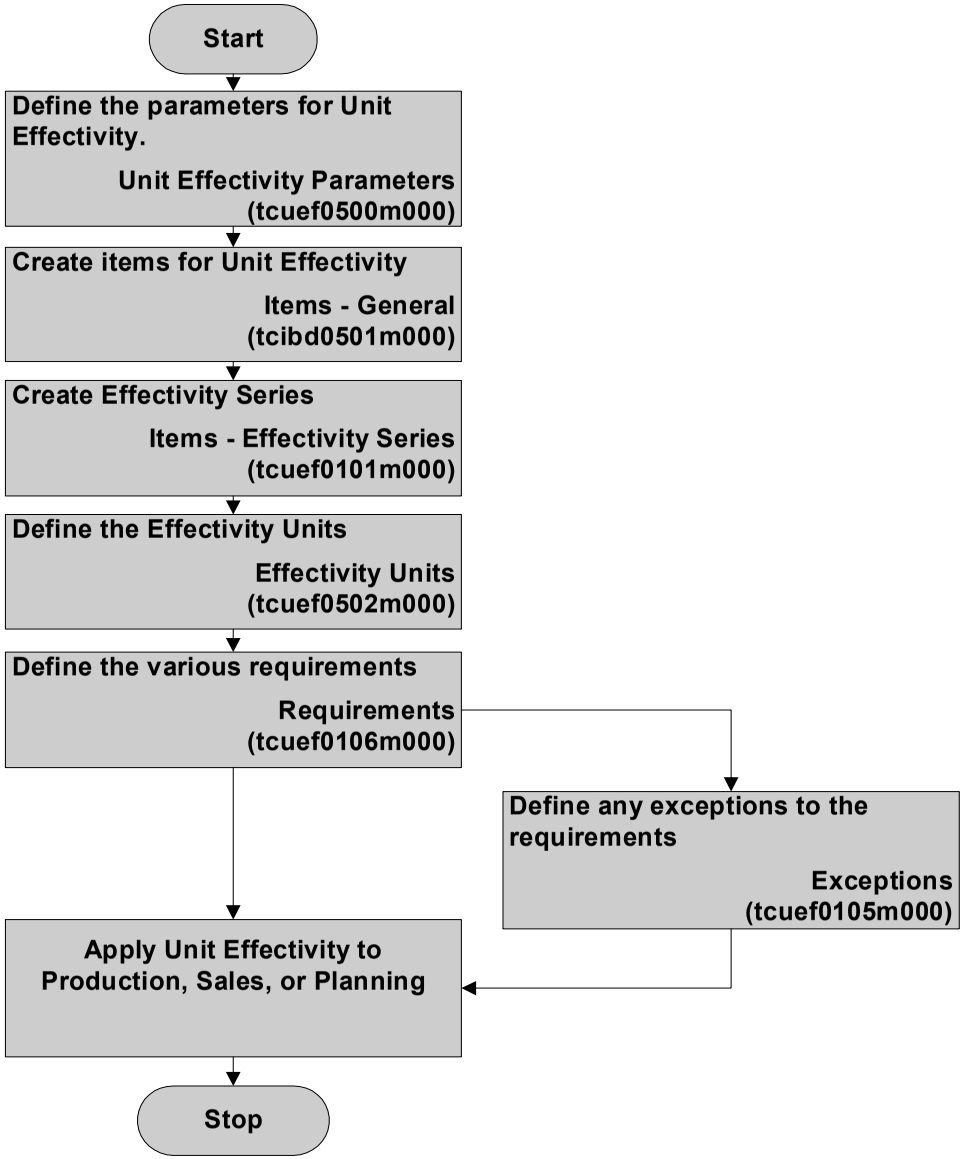
Objectives

After completing this lesson you will be able to:

- Identify Master Data and Parameters for Unit Effectivity
- Define effectivity Units
- Identify Item Effectivity Requirements
- Define Mask Data
- Create Serialized and Lot Control Items

Unit Effectivity



Unit Effectivity

Dealing with exceptions to the standard

Example
Product: Boeing 747
Customer KLM: additional power unit

Add a ‘Unit Effectivity’ to the sales order, and the system will recognize the KLM specific requirement throughout the business planning & execution process.

Unit Effectivity

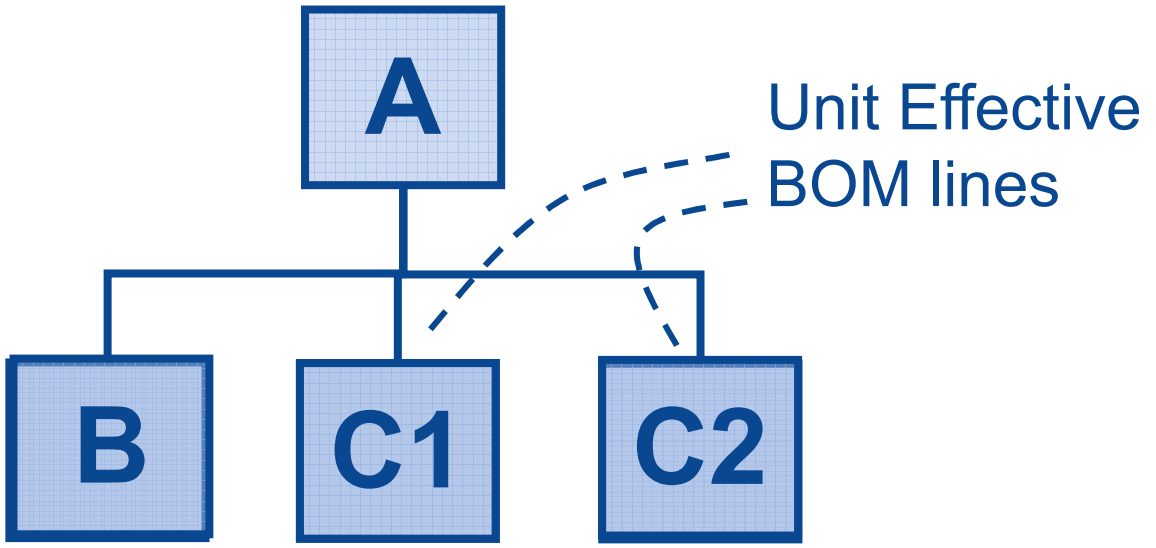
- What does Unit Effectivity offer ?
  - Model & Use modifications and variations in E-BOM, P-BOM, ROU, Sourcing Strategies, Item Purchase Data. (a Lean Configurator of the production process)
  - Pegging all Materials to Sales Orders

Unit Effectivity Concepts

- Effectivity Unit (number)
  - An ID for a specific model / variation of an end Item (used for configuring the product structure)
  - A peg to a sales order line (used for tracking and tracing of materials)
- Exception
  - Linked to an ‘object’ (= record in BOM, ROU, Sourcing Strategy, etc table)
  - Defines if BOM-line, etc. is valid or not for a specific EU
  - Is used to ‘customize’ processes like BOM-explosion, Selection of Sourcing Strategy

(‘explode BOM of item B for Effectivity Unit 10’)

Bill of Material (1)

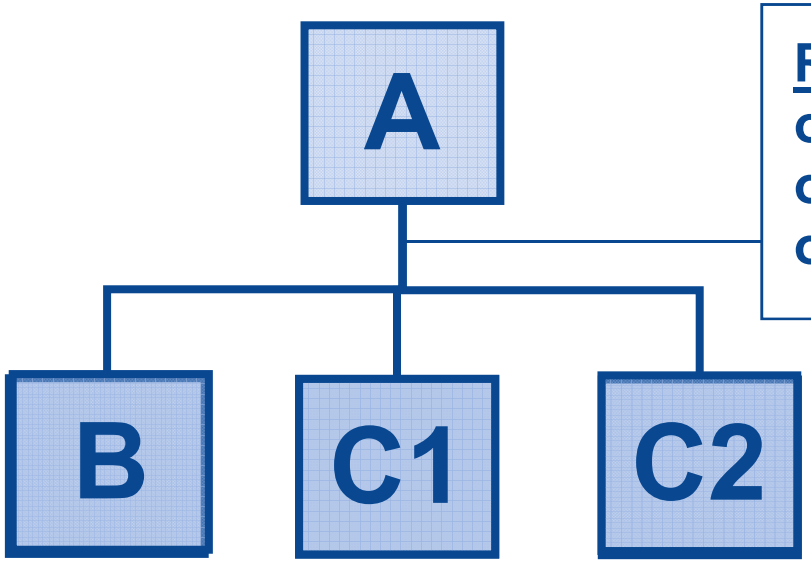


Standard production of item A (without effectivity unit) : use components B and C1

Specific production of item A (for effectivity unit 'xxx') : use components B and C2

Specific production of item A (for effectivity unit 'yyy') : use components B, C1 and C2

Routing and Operations (2)



Routing 001:
operation 10 (assembly)
operation 20 (finishing)
operation 30 (paint red)

Standard production of A (without effectivity unit) : **use operations 10 & 20**

Specific production of A (for effectivity unit 'xxx') : **use operations 10, 20 and 30**

The routing (instead of the individual operations) can be unit effective

Unit Effectivity and Lot Control

- Lot Controlled Items
  - can be tracked to Production Orders (Materials and End Items).
  - Can Not be tracked to Sales Order Line (not all levels in BOM)
- UEF
  - All levels in BOM can be pegged to SOL (via Eff.Unit)
  - In ticst: also not lot-controlled materials are pegged

NB. End Item (on Sales Order Line) must be Lot Controlled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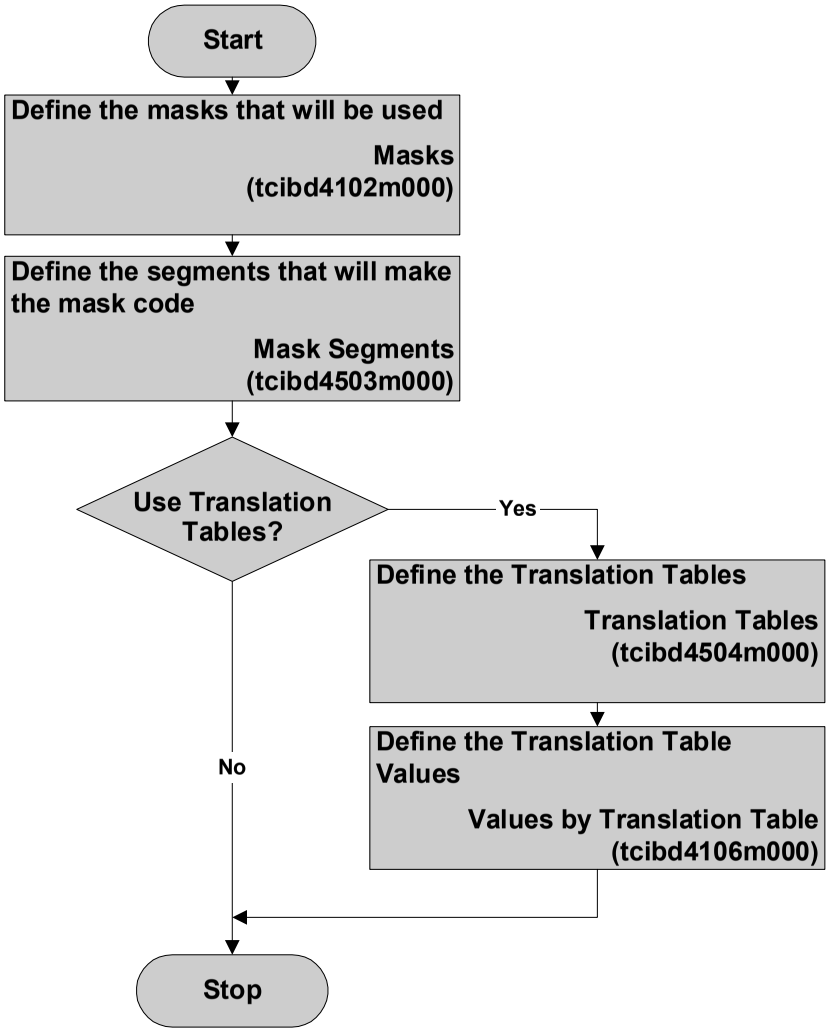
Masks



Serialized items concept

- Serialized items replace lot by unit of SSA Baan IV (or SSA SSA ERP 5.0c)
- A serialized item is a physical occurrence of a standard item that is given a unique lifetime serial number
- Enables you to track the individual item throughout its lifetime
  ….for example, through the design, production, testing, installation, and maintenance phases

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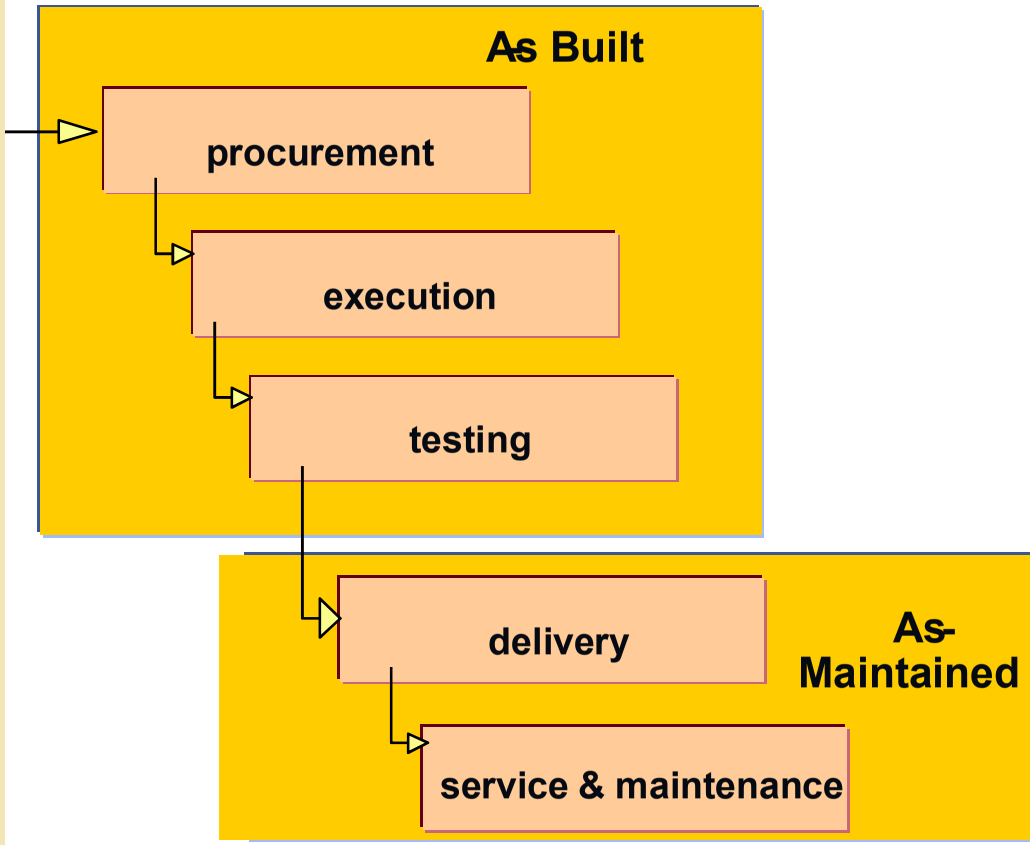
Serials in business processes



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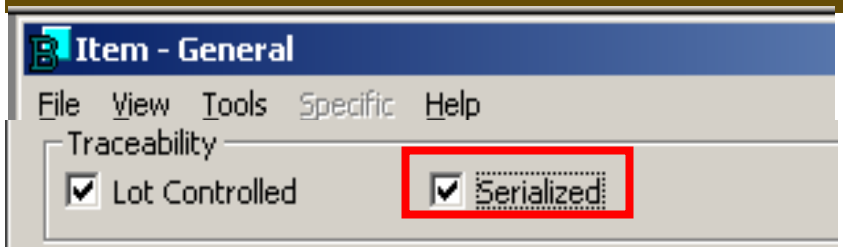
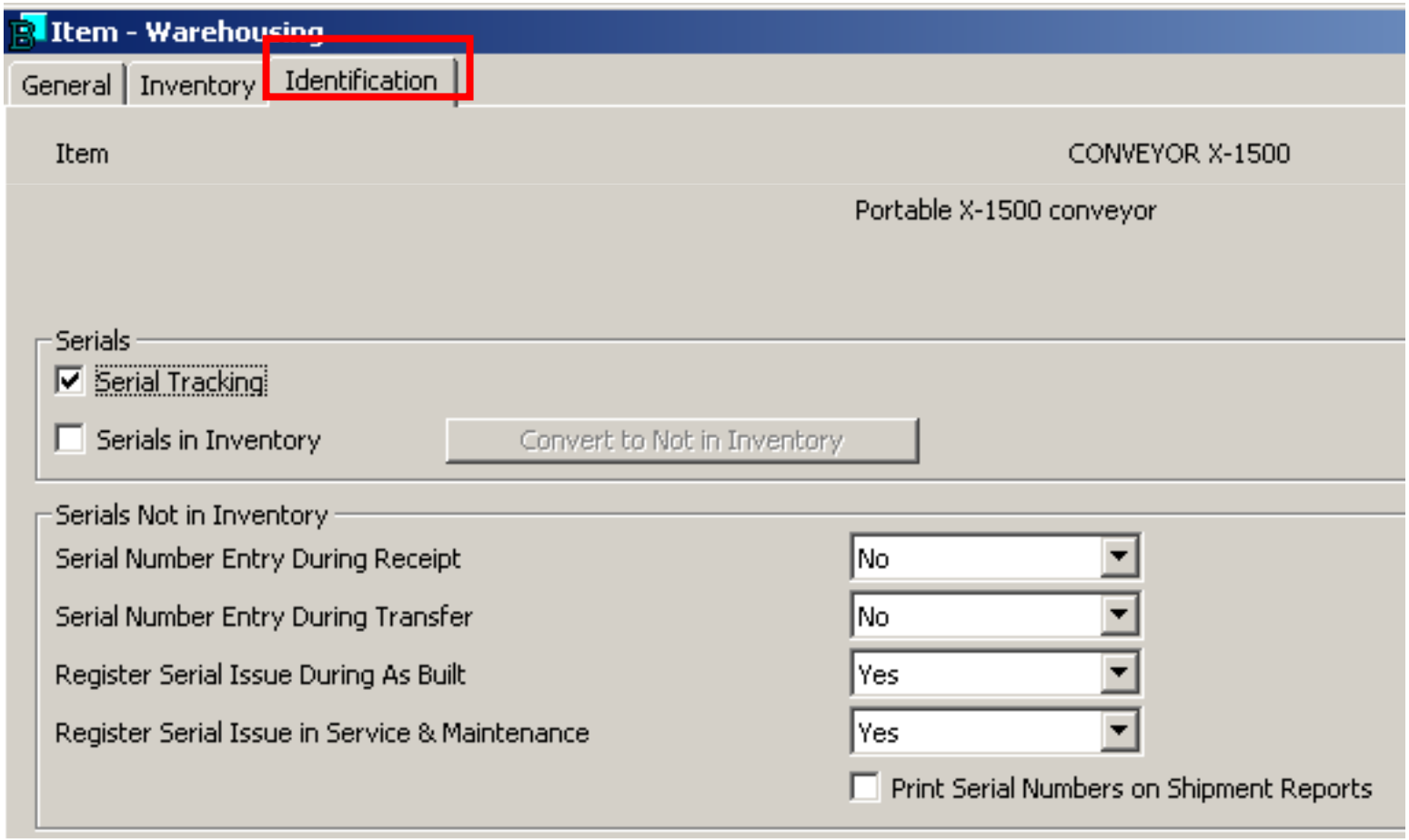
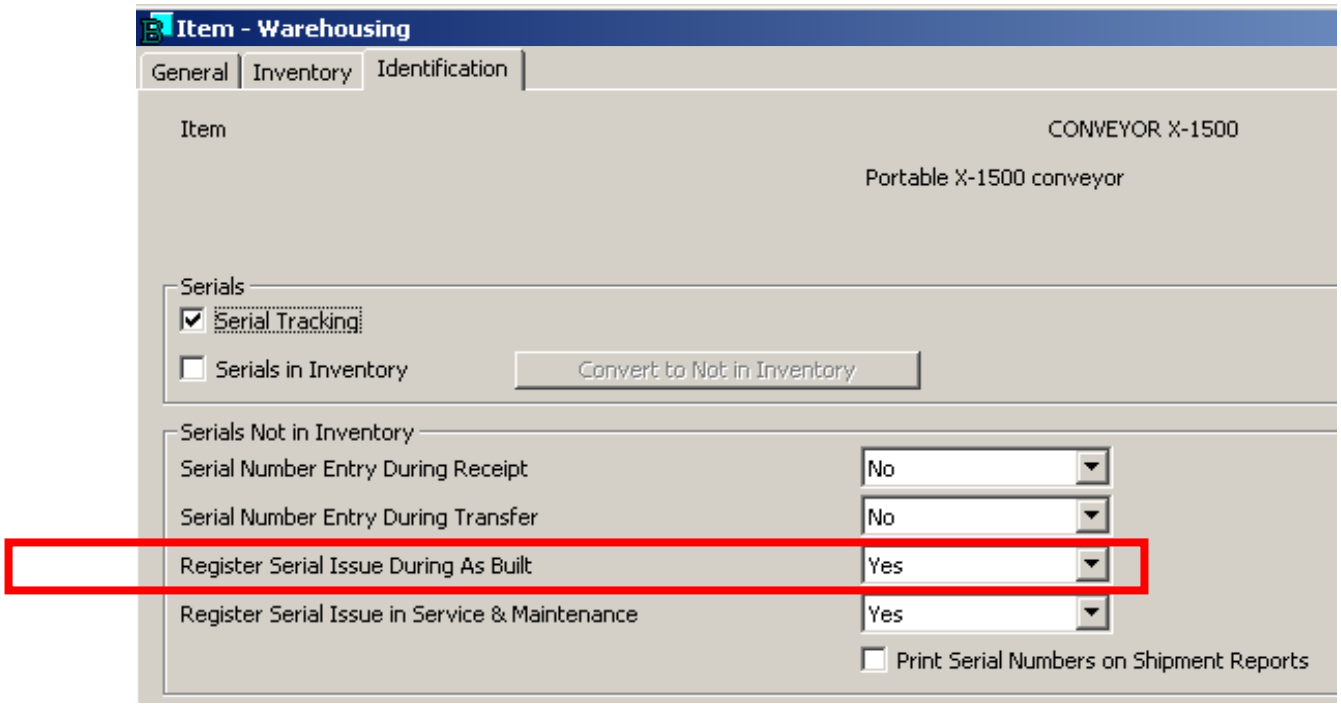
Serialized items parameters





Register Serials during As built (1)

- If value is Yes, the registration of the serial numbers used in production is carried out only in the ***Serial End Item - As-Built Components*** session – it is regarded as part of the manufacturing process.
- If the value of this field is No, the serial numbers are recorded the moment the components are **issued** from the warehouse.



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Lesson 3 – Cost Price Data

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Cost Price Calculation

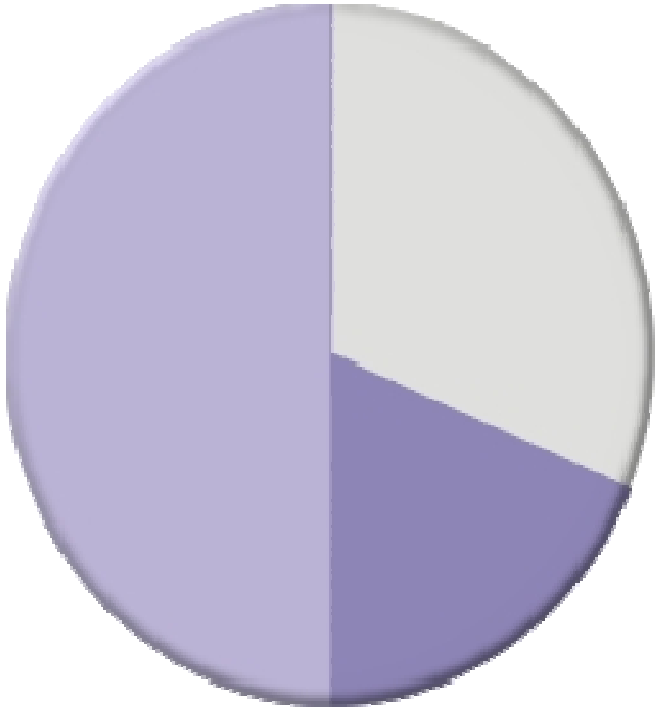
Lesson Objectives

After completing this lesson, you will be able to:

- Set up cost prices.
- View cost price parameters.
- Define cost components.
- Create operation rate codes.
- Define price calculation codes.
- Define cost price calculation data.
- Define an operation rate.
- Add an item surcharge.
- Define subcontracting rates.
- Define item surcharges for an item.
- Simulate a purchase price for an item.
- Calculate the cost and the valuation price for an item.

Cost Breakdown to Produce Item

Material = $60
(based on
Bill of Material
and item data



Labor = $50
(based on
Bill of Material
and Routing

Overhead = $10
(based on
Item data, Routing
and Bill of Material

Total Item Cost = $120

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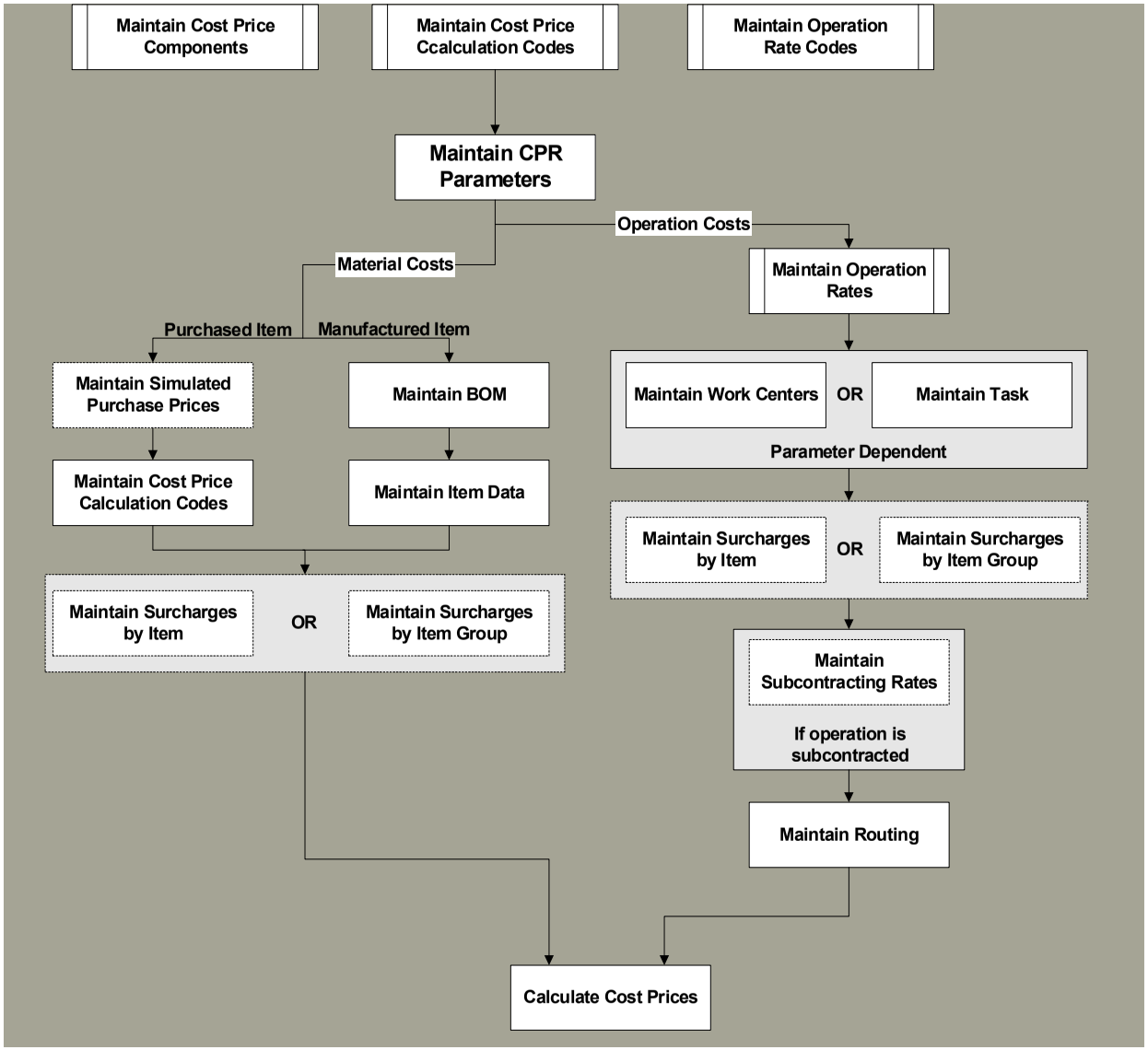
Entering Required Information



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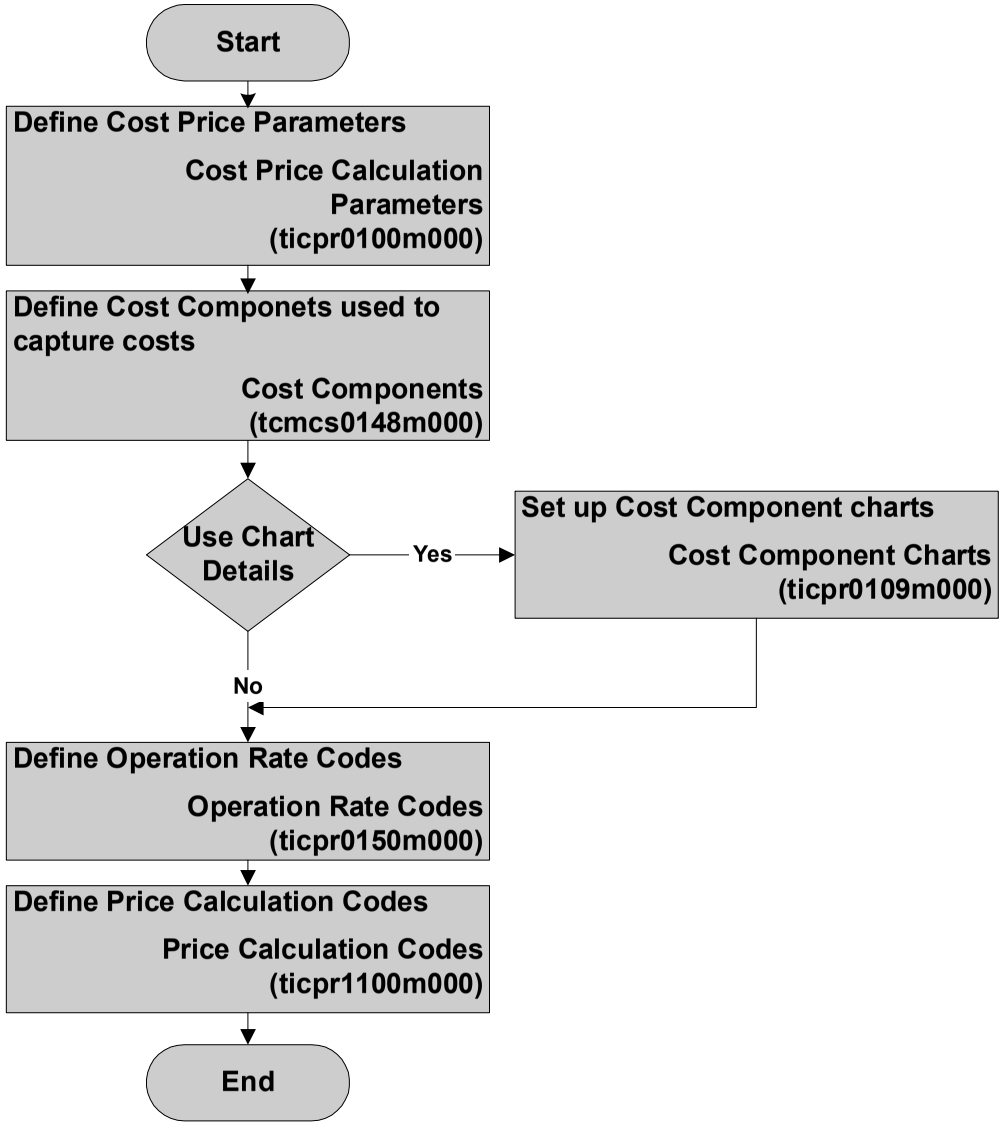
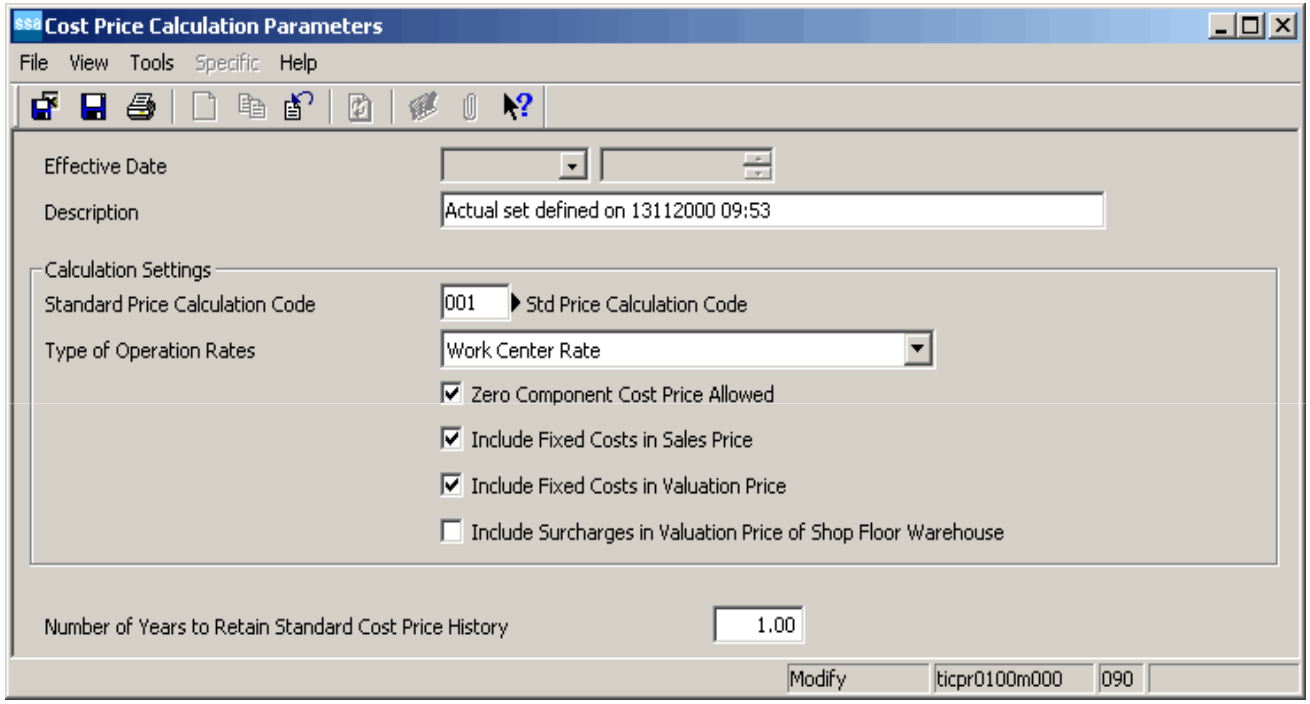
Cost Price Master Data



CPR Parameters



- Define the Standard Price Calculation Code.
- Determine if Fixed Costs are applied.

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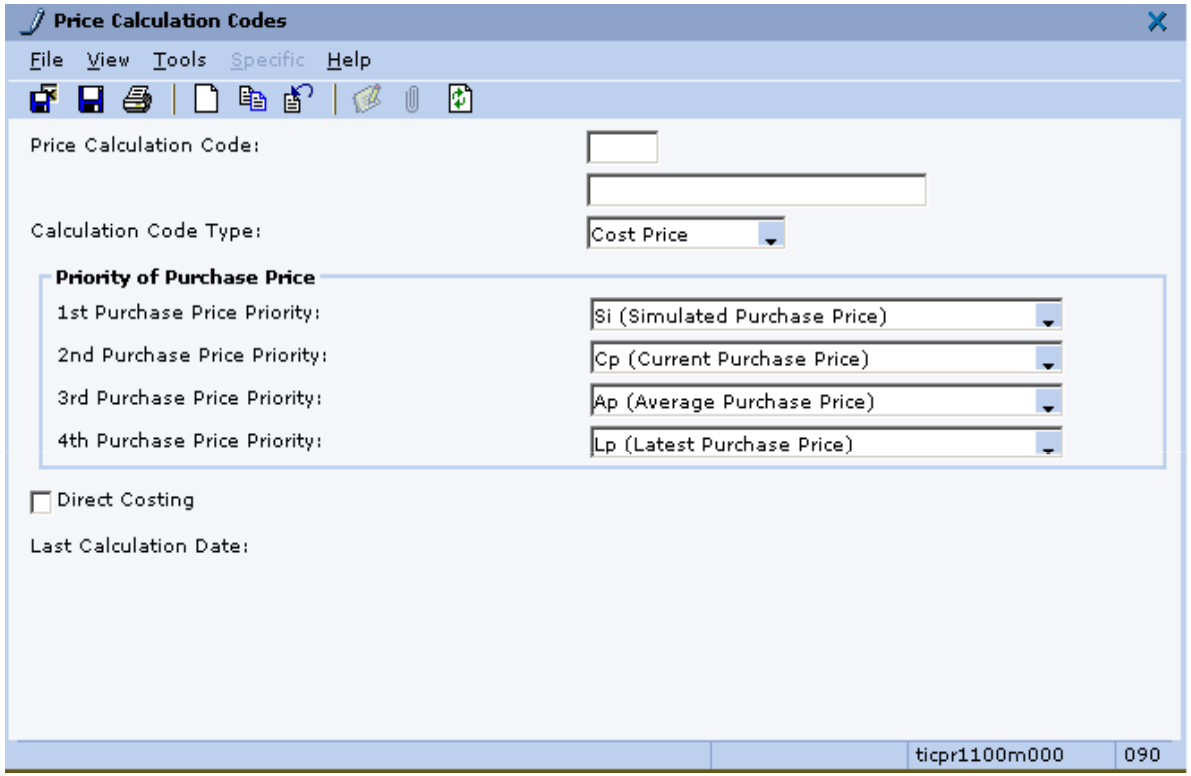
Cost Price Terms

- *Cost Components:* Used to categorize production costs into specific groups called cost types.
- *Operation rate codes:* Used to categorize labor, machine, overhead, and subcontracting costs associated with the production of an item.
- *Price calculation codes:* Used to define how a cost or sales price is calculated. One is used for costing purposed and all others are simulation codes.

Price Calculation Codes



Determines the priority of the purchase price calculation for purchased items.

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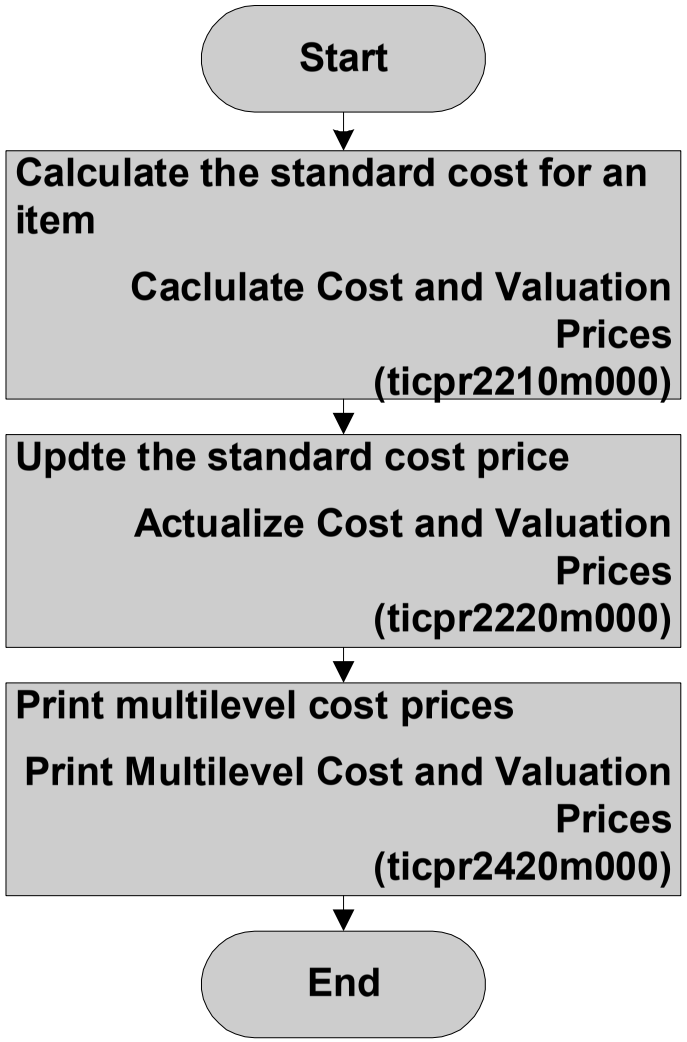
Price Calculation Codes

- **Si (Simulated Purch. Pr.)**: A price calculation code can be created and used to simulate a purchase price. These prices are for a unique item and cost price calculation code in the Simulated Purchase Prices (ticpr1570m000) session.
- **Cp (Current Purch. Price)**: The current purchase price is manually entered in the Item Purchase Data (tdipu0101s000) session.
- **Ap (Average Purch. Price)**: The average purchase price is automatically calculated by the system based on all previous purchase receipts, when the receipts are matched and approved in the Finance Package.

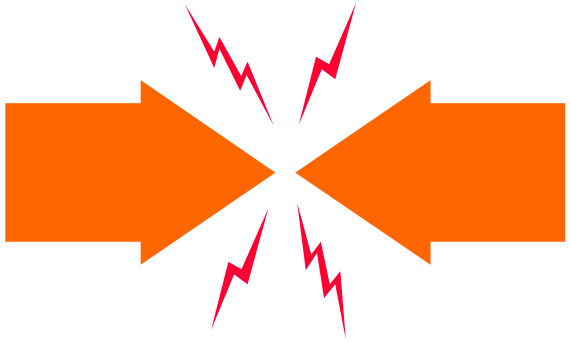
Lp (Latest Purch. Price): The latest purchase price is calculated based on the most recent purchase receipt, after the receipts are matched and approved in the Finance package.

Cost Price Calculation



Cost Price vs Valuation Price

Cost Price



Valuation Price

- By price calculation code
- Based on the structure information
- Situation independent: by logistic company
- Simulation/Analysis purposes

- Five valuation methods
- Based on actual purchase or production cost
- Situation dependent: inventory value, issue, receipt, transfer
- Inventory valuation & financial accounting

Valuation methods

Last in First out (LIFO)
First in First out (FIFO)
Moving average unit cost (MAUC)
Lot costing

} Actual valuation methods

Fixed transfer price (FTP)

Estimated inventory value Baan 4

Lesson 4- Shop Floor Control

Manufacturing and Shop Floor Control
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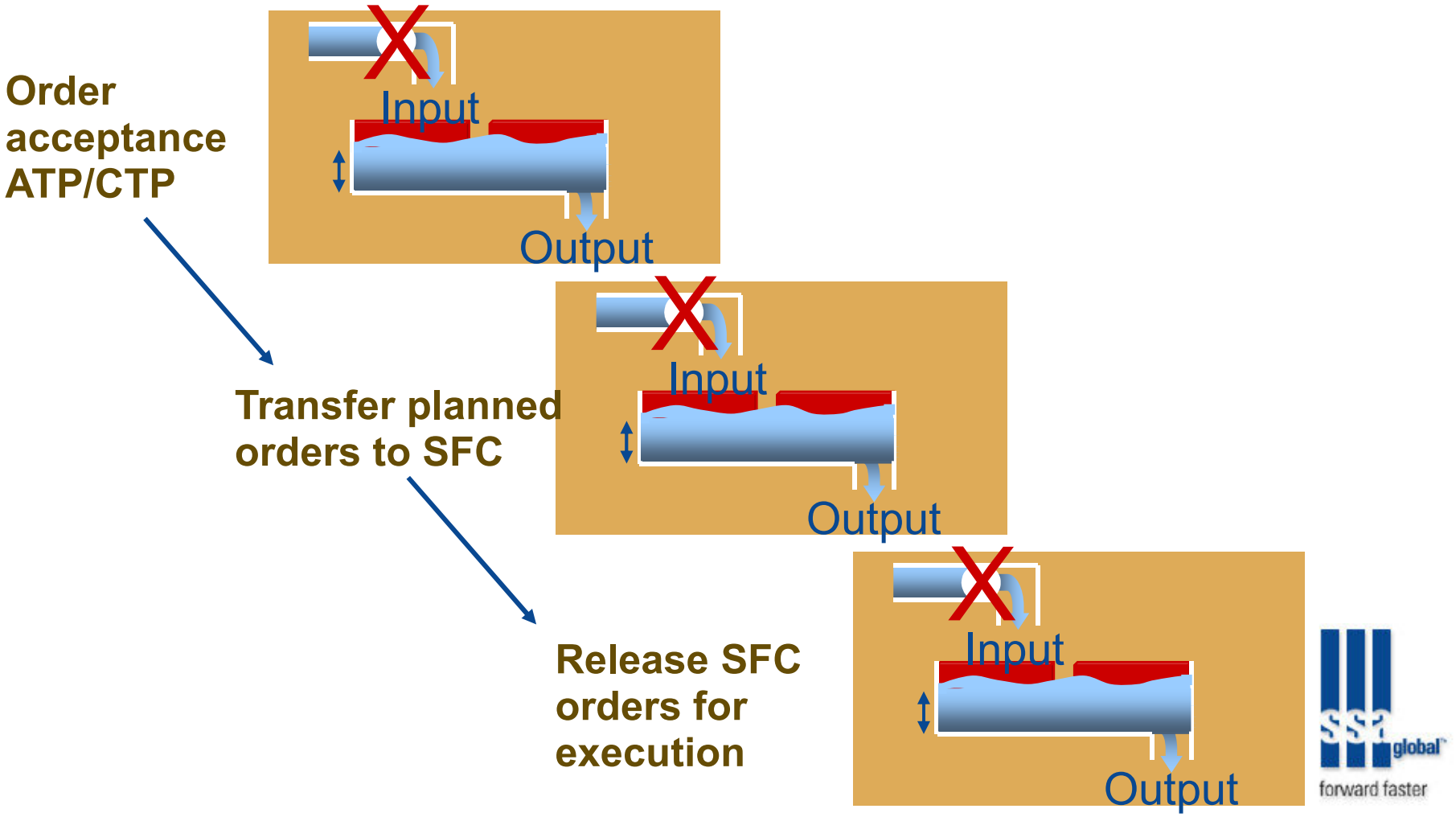
Shop Floor Control
Input/Output Control

- Part of Work Load Control concept



Objectives

Lesson Objectives

After completing this lesson, you will be able to:

- Define Default Production Order Data
- Define Production Order date
- Create Production Orders
- Issue Production Order Materials
- Process Production Orders
- Understand Production Order Costing
- Create and Process Unit Effective Orders
- Process Subcontract Production orders

Production Order Status

The status of the production order determines the actions that can be performed on the production order. The available production order status's are:

- **Planned**
- **Documents Printed**
- **Released**
- **Active**
- **To Be Completed**
- **Completed**
- **Closed**
- **Archived**

Shop Floor Control

Order Grouping

Activities by Order Group:

SFC

- Print Production Order Documents
- Release Production Orders
- Report Orders Completed Globally
- Backflush Materials and Hours
- Cancel Production Orders
- Print Inventory by Production Order
- Print Shortages by Production Order
- Utilization Reports
- Update Physical Location
- Report Operations Complete Globally

Warehousing

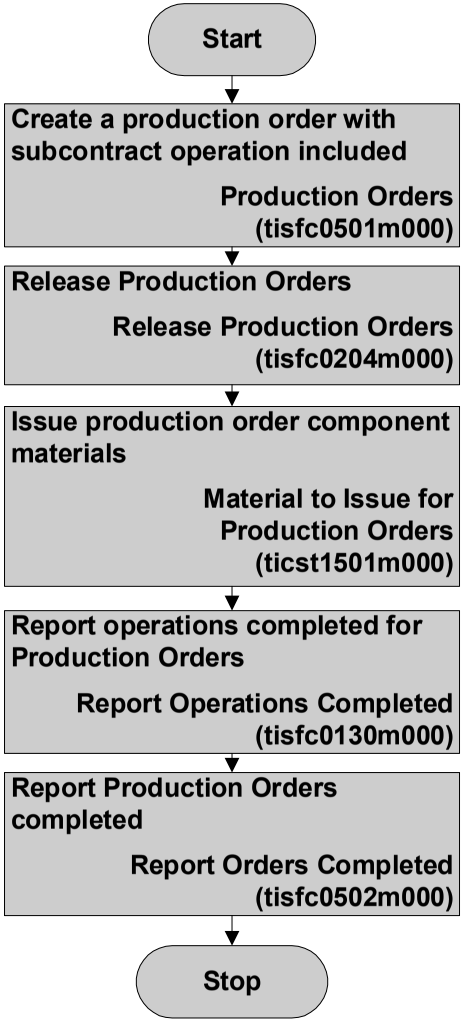
- Process Outbound Advice
- Generate Outbound Advice
- Release Outbound Advice
- Generate Picking List

Enterprise Planning

- Confirm planned production orders
- transfer planned production orders

Several Reporting Sessions

Basic Production Order Flow



Basic Process for Production Orders

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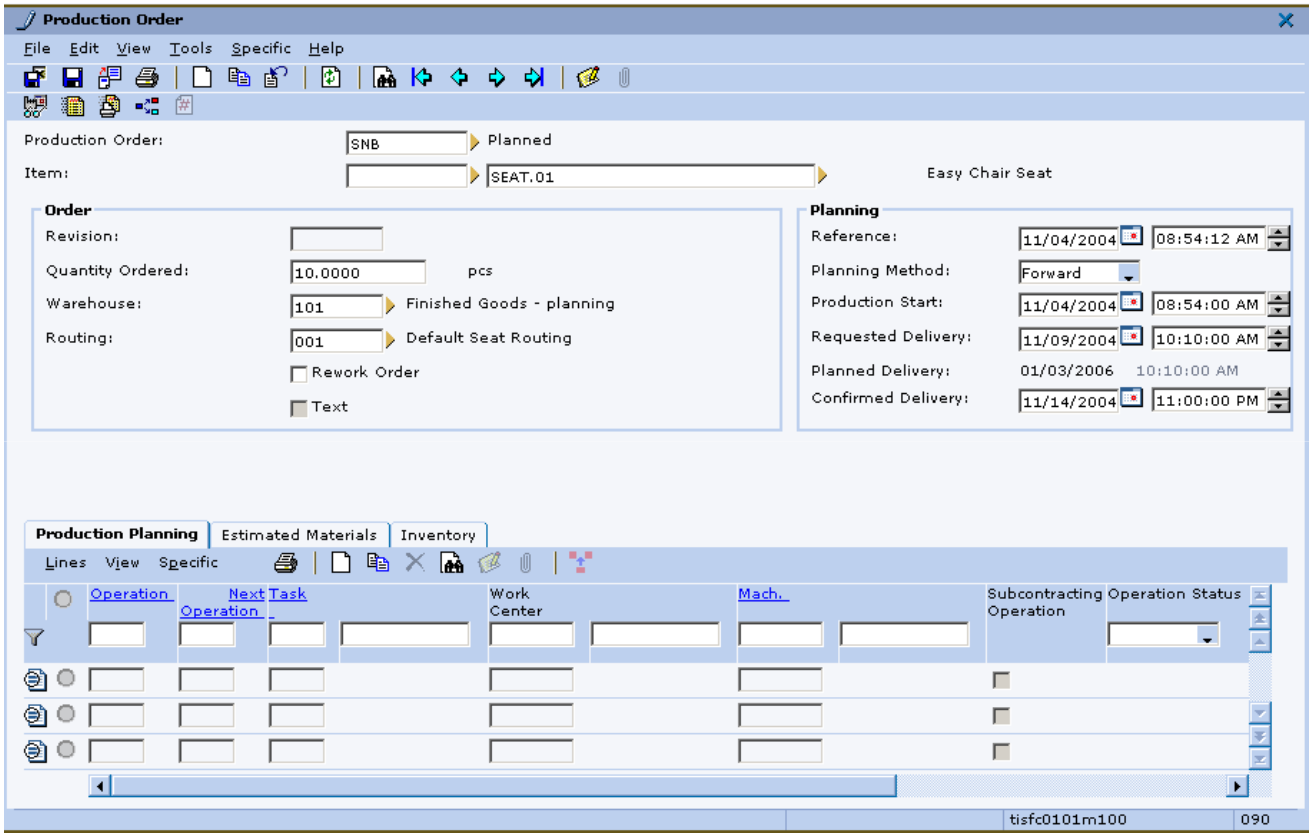
Production Orders



Can enter orders manually, or view orders that have been transferred to Shop Floor Control

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Release Production Orders

When you release a production order, the system performs the following actions:

•Warehousing orders are created in Warehouse Management. Through these warehousing orders, the issue of materials and receipt into inventory of end products are handled.

•Allocations of materials are moved to the shop floor warehouse.

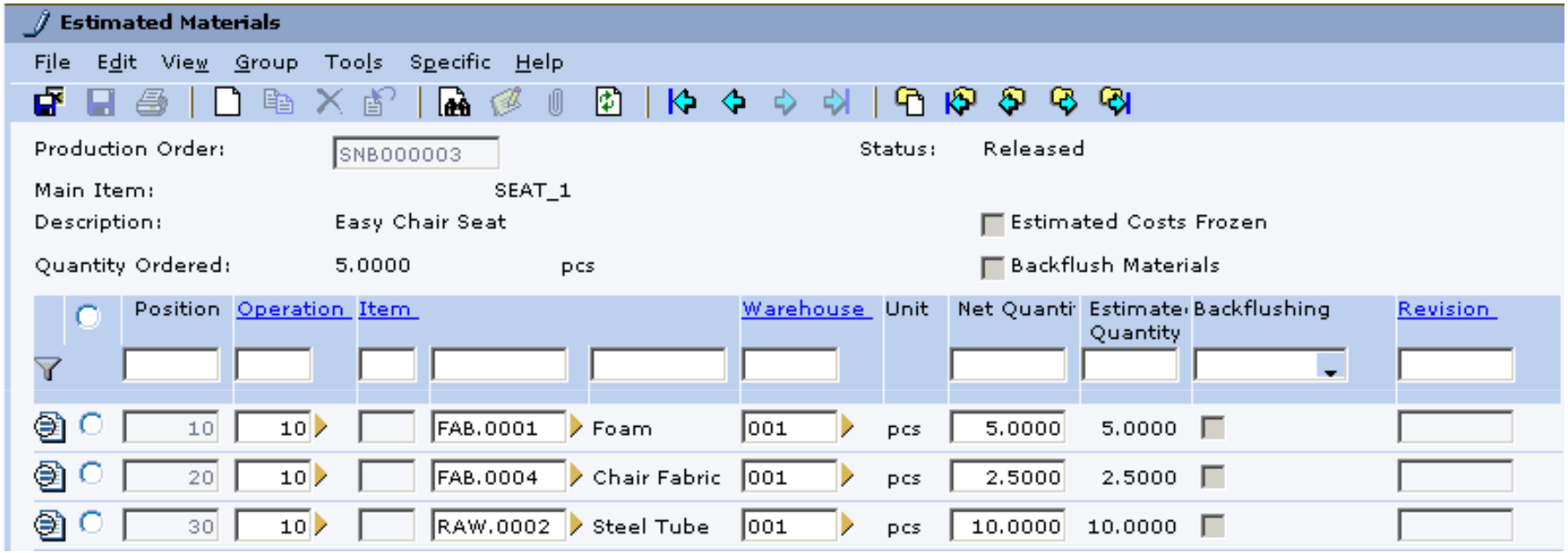
•Inspection orders are created in Quality Management if applicable.

Production orders can be released by using the Release Production Orders tisfc0204m000) session.

Material Issue for Production Orders

- The Direct Process Warehouse Order Line check box in the Items – Production (tiipd0101m000) session determines whether the warehouse procedure is bypassed when you issue materials. If the warehouse procedure is bypassed, the materials are shipped directly. If the warehouse procedure is not bypassed, the quantity to issue is added to the To Issue by Warehousing field in the Estimated vs. Actual Material Costs (ticst0501m000) session. You must carry out the rest of the warehouse procedure manually.
- The Backflush Materials check box in the Items – Production (tiipd0101m000) session determines whether the material is issued using backflushing.
- The Floor Stock check box in the Items – Warehousing (whwmd4500m000) session determines whether the material is floor stock and kept on the shop floor as a point of use item.
- The manual issuing check box in the Shop Floor Control Parameters (tisfc0100s000) session determines whether materials are issued with a manual action.

Estimated Materials



Before a production order is released the Estimated Materials (ticst0101m000) session can be used to view the quantities that are estimated to complete the production order.

Use this session to list the estimated quantities of the materials used in a production order and to view or maintain the materials needed to carry out a production order.

Issuing Materials

You can only change the quantity if the production order has one of the following statuses:

- Released
- Active
- To be Completed
- Completed

Backflushing

Backflushing

Backflushing

Subcontract Production Orders

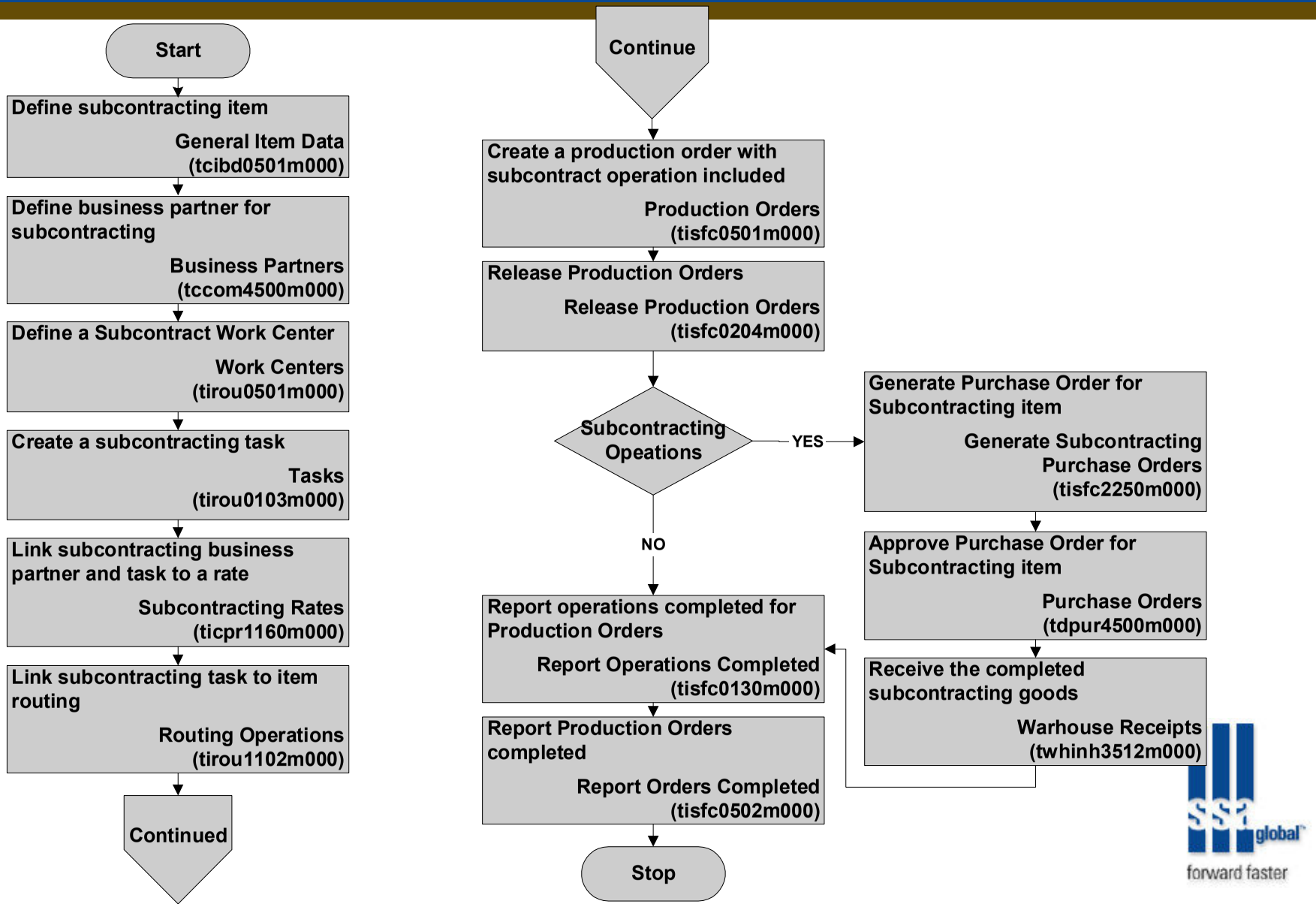
Subcontracting is the use of outside business partners to complete specific operations or services for your production process that you may not be able to cover from a capacity standpoint or are not capable of executing in house.

Two types of subcontracting can be performed.

- Unplanned subcontracting: Operations of a production order are subcontracted in the Subcontract Operations session. The subcontracting costs are part of the estimated and/or actual production order costs.

- Planned subcontracting: Work centers of the Subcontract Work Center type are attached to the item routing and include a Subcontracting Rate and task. The expected subcontracting costs are part of the standard cost price.

Subcontracting Order Flow

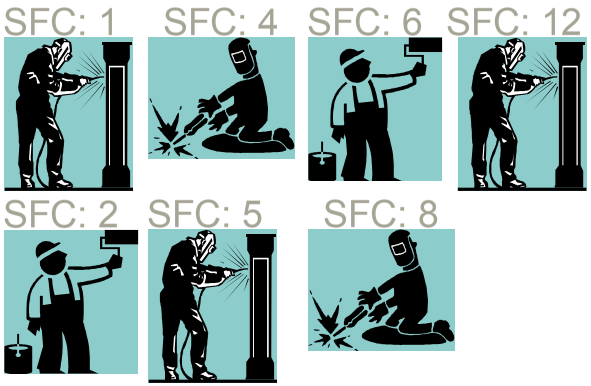


Backflushing

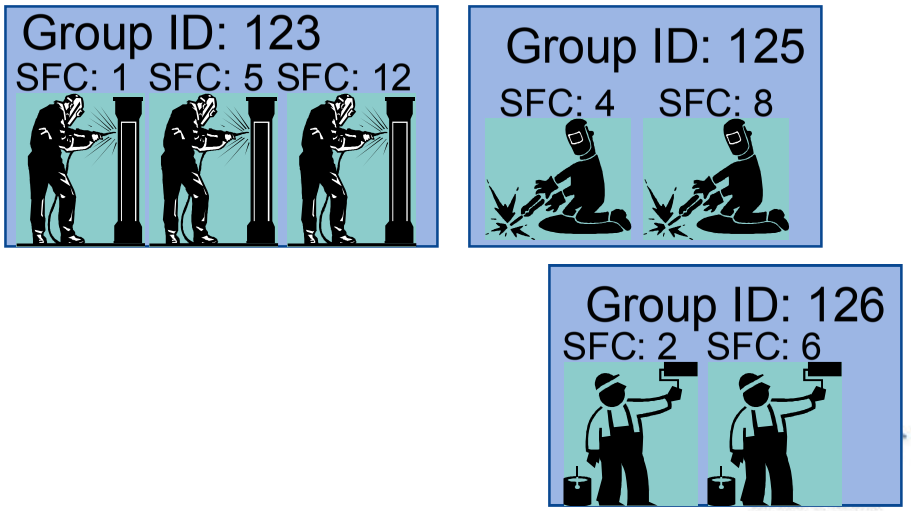
Shop efficiency
Order Grouping

- Layer on production orders (SFC), which groups production orders based on characteristics
- Execute business procedures by Order Group
  - Reduction in process time for operations/orders reporting complete

SFC Orders



Grouped SFC Orders



Shop Floor Control

Order Grouping

Activities by Order Group:

SFC

- Print Production Order Documents
- Release Production Orders
- Report Orders Completed Globally
- Backflush Materials and Hours
- Cancel Production Orders
- Print Inventory by Production Order
- Print Shortages by Production Order
- Utilization Reports
- Update Physical Location
- Report Operations Complete Globally

Warehousing

- Process Outbound Advice
- Generate Outbound Advice
- Release Outbound Advice
- Generate Picking List

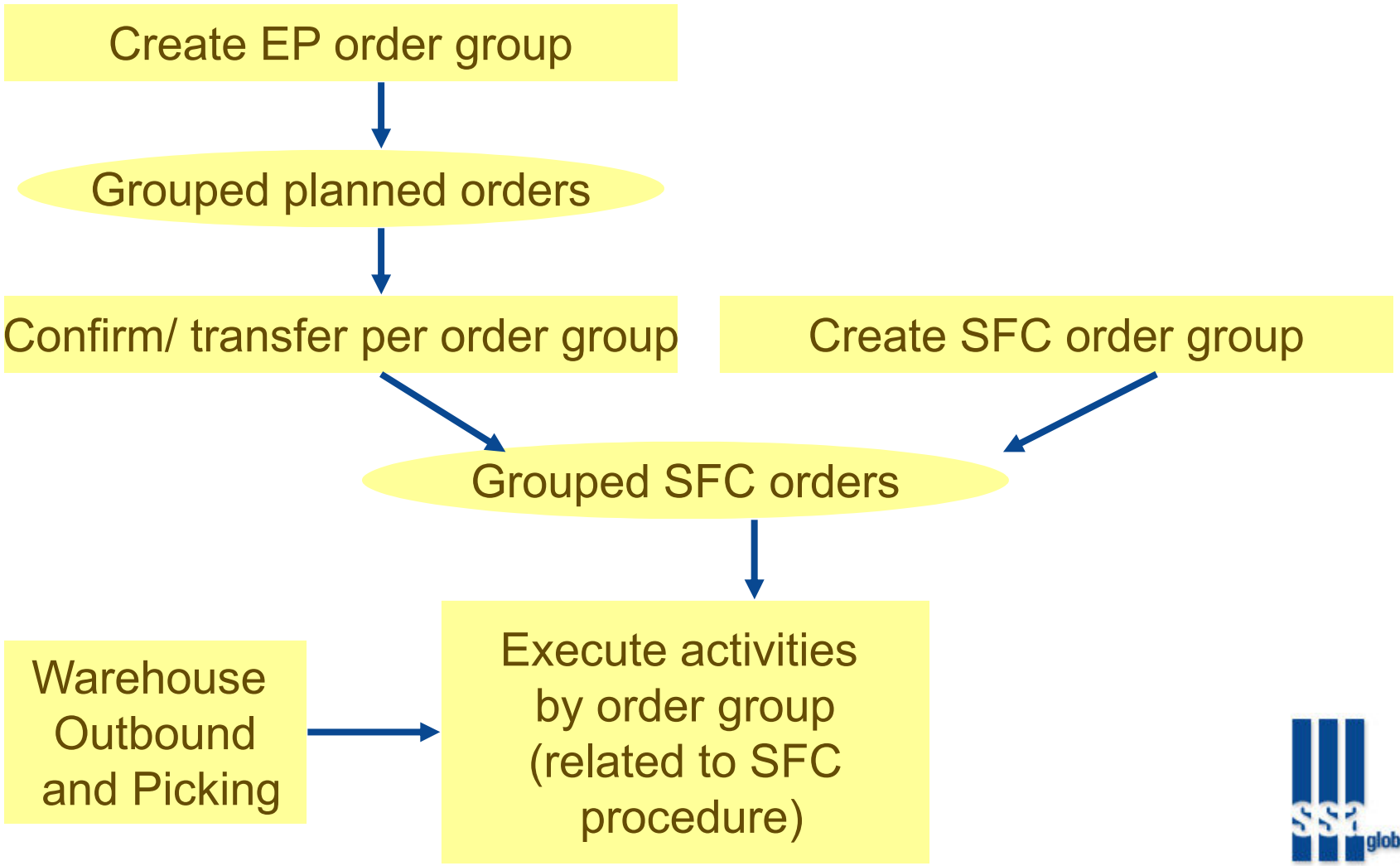
Enterprise Planning

- Confirm planned production orders
- transfer planned production orders

Several Reporting Sessions

Shop Floor Control

Order Grouping

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sample bullet slide

Sample subhead

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Instructor Demonstration: <title>

- Step 1.
- Step 2.
- Etc.

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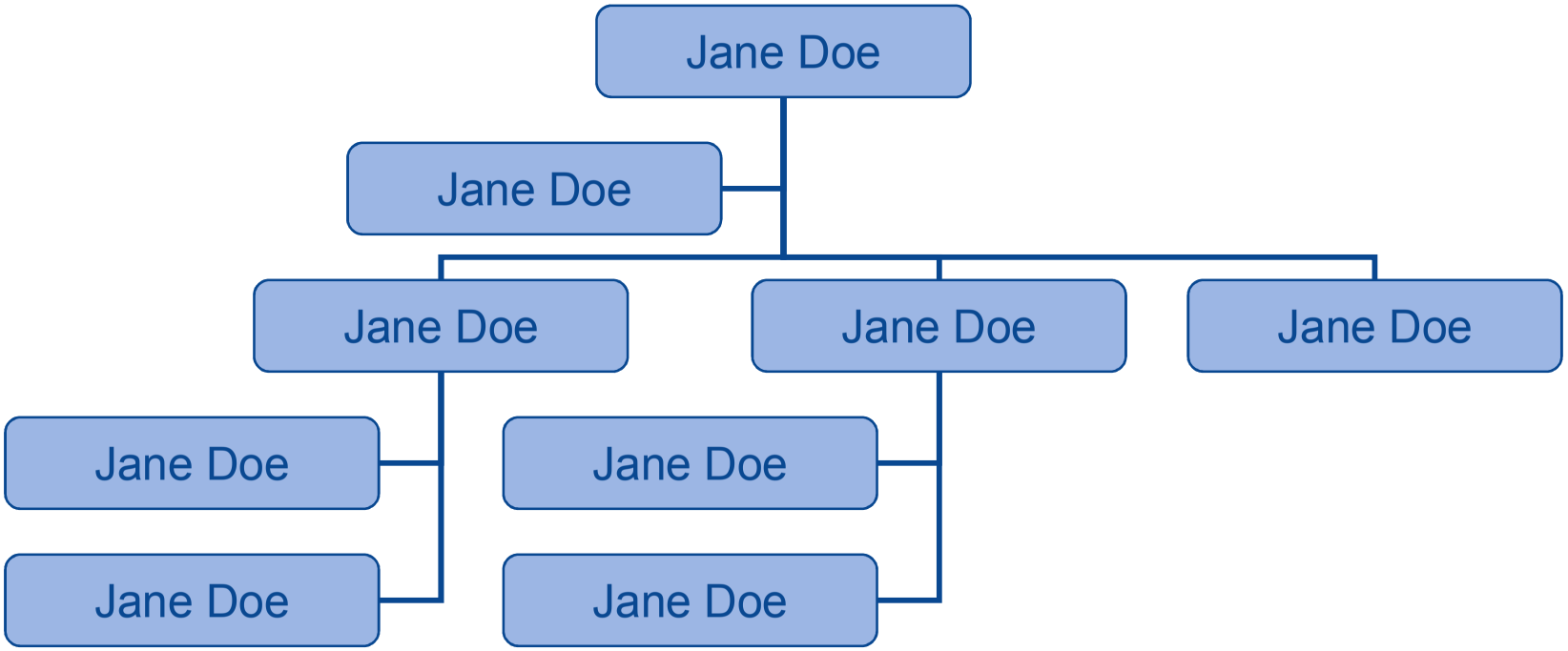
Production Orders

- Definition, Planning and Release of Production Orders
- Production Order Materials and Back flushing
- Subcontracting of Production Order (Operations)
- Production Order Costing (Materials, Operations): Actual vs. Planned
- New:
  - Buy/Make settings (Date Eff. Item Type)
  - Shared work centers
  - Input/output control
  - Order grouping
  - Micro routing

sample organization chart



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Section introduction

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