BaanERP 5.0c Manufacturing

Cost Price Calculation

Module Procedure   UP126A US

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Document information

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Table of contents

About this document

Read this document to get an overview of the Cost Price Calculation (CPR) module's functionality and to learn more about the functional procedures that are related to CPR.

You need no detailed knowledge of the BaanERP software to read this document. However, you are more likely to understand the contents if you are familiar with:

- The overall structure of packages, modules, and sessions within the BaanERP software.
- The general business procedures used in everyday business practice.
- The basic concepts of enterprise resource planning.

For detailed descriptions of the module's sessions, refer to BaanERP's comprehensive online Help.

To use this document

Read Chapter 1, The Cost Price Calculation (CPR) module in BaanERP, if you want to know more about:

- The module's functionality.
- The relationship of the module with other modules.
- The functionality of the module's business objects.

Read Chapter 2, The cost-price master-data procedure, if you want to know more about:

- The sessions in the procedure.
- The results of the procedure.
- The sessions that are related to the procedure.
- The optional procedures that are related to the procedure.
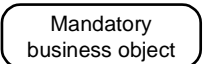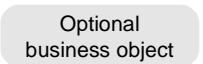
Read Chapter 3, The cost-calculation procedure, if you want to know more about:

- The sessions in the procedure.
- The results of the procedure.
- The sessions that are related to the procedure.
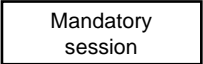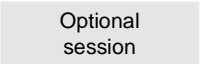- The optional procedures that are related to the procedure.

Acronyms used in this document

BOM	Bill of Material
CP	Constraint Planning
CPR	Cost Price Calculation
EDM	Engineering Data Management
EP	Enterprise Planning
FIFO	First In First Out
FTP	Fixed Transfer Price
GRT	Product Classification
HRA	Hours Accounting
IBD	Item Base Data
IPU	Item Purchase Data
LIFO	Last In First Out
MAUC	Moving Average Unit Cost
PCS	Project Control System
ROU	Routing
RPT	Repetitive Manufacturing
SFC	Shop Floor Control
SLS	Sales
TRP	Tools Requirement Planning
WH	BaanERP Warehousing

Legend

Mandatory session	Indicates a mandatory session
Optional session	Indicates an optional session
Mandatory business object	Indicates a mandatory business object
Optional business object	Indicates an optional business object
CF	Indicates a package
PCS	Indicates a module
PCS	Indicates a module that is described in the module procedure

1. The Cost Price Calculation (CPR) module in BaanERP

This chapter describes:

- The CPR concept as applied in BaanERP.
- CPR's functional procedures.
- The modules related to CPR .
- The functionality of CPR's business objects.

1.1 The CPR concept as applied in BaanERP

Costs play a very important role in every company. Cost prices and valuation prices that are correctly defined give a company clear insight into its profit and loss picture. Cost prices are also used to determine the origin of costs, although this can be very difficult in complex companies. Finally, cost prices can be used to determine sales prices.

Standard items

The Cost Price Calculation (CPR) module serves the following purposes:

- To calculate or simulate item cost prices for standard items.
- To calculate or simulate item sales prices for standard items.
- To calculate valuation prices for standard items.

The item cost price is the calculated sum of an item's material costs, operation costs, and surcharges. The calculation is based upon the Bill of Material (BOM) and the routing.

The valuation price is used for purposes other than the item cost price. The valuation price is a general term that denotes the actual price that is used in financial transactions that are performed on an item. For example:

- Cost price of goods sold.
- Inventory transfer.
- Issue to work-in-process value.

The valuation price that is calculated in CPR is used in the Fixed Transfer Pricing (FTP) method. The FTP method calculates the inventory value based upon calculated materials costs, operation costs, and warehouse surcharges.

In BaanERP, you can define to what extent you want to specify your cost price: on a very detailed level, a less detailed level, or a general level. You do this by defining the cost component structure.

Customized items

CPR is also used to calculate the estimated cost price of customized items. The calculation of the total project cost is performed in the Project Control System (PCS) module. The general project surcharges are stored in the PCS module.

Figure 1 shows how CPR is positioned in BaanERP:
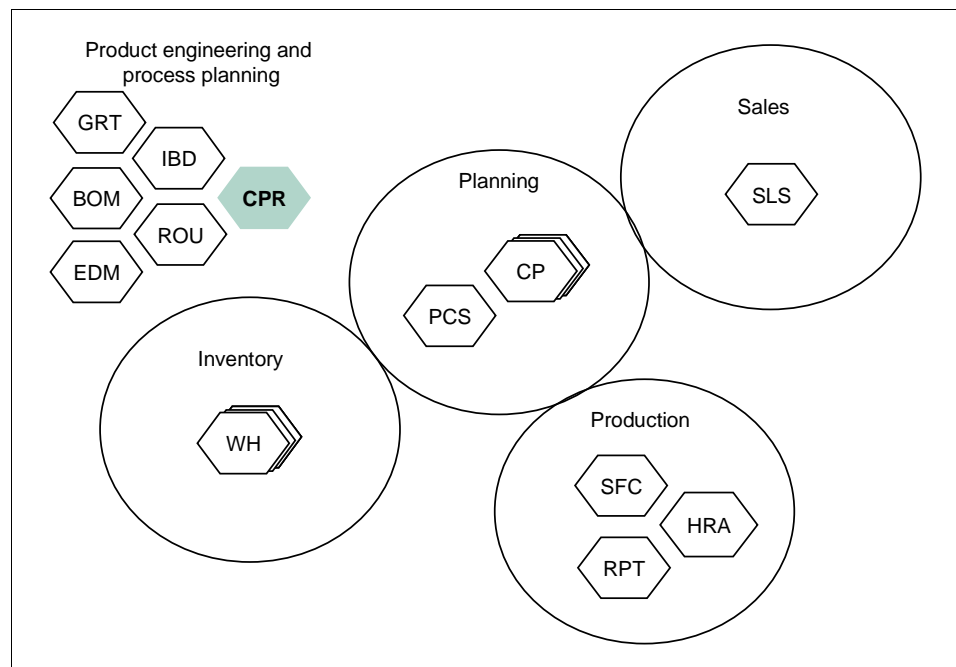
Figure 1 The CPR module within BaanERP

CPR is a basic data module. The data stored in the module is used by other modules as default data or as input data. Standard cost prices, valuation prices, and calculated sales prices are used where logistic flows and financial transactions come together.

1.2   CPR's functional procedures

1.2.1   The cost-price master-data procedure

CPR contains a main procedure that is used to record all data that is required to calculate costs: the cost-price master-data procedure. For more information, see Chapter 2.

In addition to the cost-price master-data procedure a parallel procedure exists: the procedure to define the cost-component structure. You must use this procedure to define the cost components that establish whether your cost price will be aggregated or detailed.

1.2.2   The cost-calculation procedure

The cost-calculation procedure is used to calculate the cost price, the valuation price, or the sales price of a standard item or an customized item after you have defined the master data. For more information, see Chapter 3.

1.3　　　　　The modules that are related to CPR

Figure 2 shows the modules that are related to CPR.
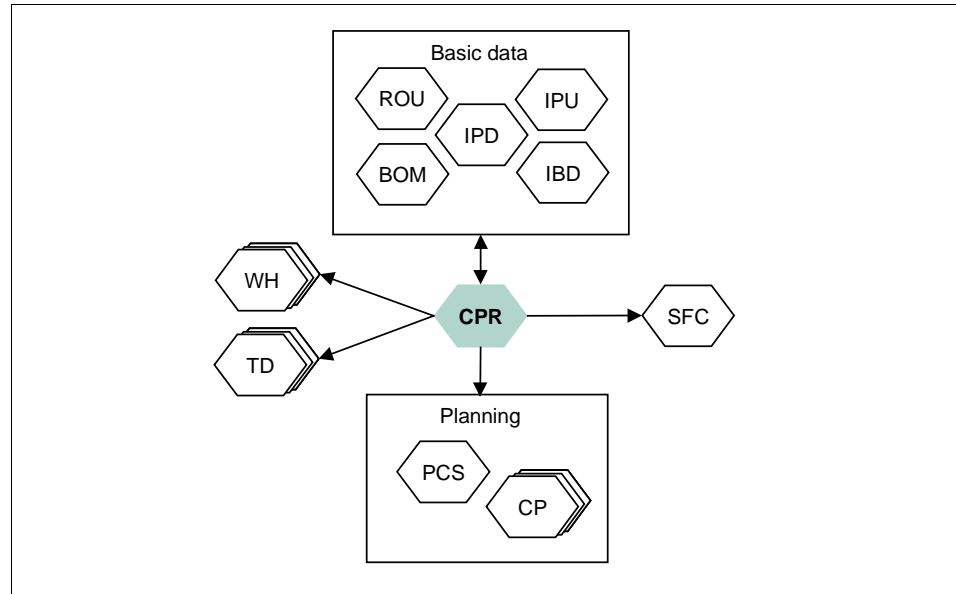
Figure 2　The modules that are related to CPR

CPR uses data from the following modules:

- IBD
  The Item Base Data (IBD) module provides information on items, item groups, and the default warehouse. You must also define the cost component structure in the IBD module.

- BOM
  The Bill of Material (BOM) module provides information on the component items, and the material scrap percentage/quantity.

- ROU
  The Routing (ROU) module provides information on work centers, machines, tasks, operations, operation scrap quantities, and yield percentages.

- IPU
  The Item Purchase Data (IPU) module provides information on the item's latest purchase price, the average purchase price, and the current purchase price.

CPR data is used in the following modules and packages:

- WH
  In the Baan Warehousing (WH) package you can analyze the financial consequences of inventory movements, and a warehouse's inventory value. When an FTP calculation is carried out in CPR, the item inventory is revalued in WH.

- TD
  In the Baan Order Management (TD) package you can determine the sales margins.

- CP
  In the Baan Enterprise Planning (CP) package you can analyze financially the capacities and the planned materials.

- PCS
  In the Project Control System (PCS) module you can perform what-if analyses, and consider their financial consequences in projects.

- SFC
  In the Shop Floor Control (SFC) module you can calculate the order results of produced goods.

1.4 The functionality of CPR's business objects

CPR contains the following business objects:

Cost Price Master Data

The Cost Price Master Data business object contains all information that you need to calculate cost prices. This includes price calculation codes, simulated purchase prices, operation rates, subcontracting rates, and surcharges for both standard items and customized items. The general project surcharges are stored in the Project Control System (PCS) module.

Cost Price Calculation

In the Cost Price Calculation business object, the price calculation for standard items and customized items are performed. You can calculate the cost prices and valuation prices for standard items based on the rates for labor, material, and surcharges that are defined in the Cost Price Master Data business object. For standard items you can calculate both the full cost price and the variable cost price. The full cost price includes both the variable costs and the fixed costs. The variable cost price does not include the fixed costs. After calculation, you can update the cost price by item in the Item Base Data (IBD) module, as long as there is no inventory

You can calculate the estimated item price for customized items by using project specific rates and surcharges, or the standard rates and surcharges. When you use fixed surcharges and rates, a full estimated price can be calculated. When you use variable surcharges and rates, a variable estimated price can be calculated. The prices are stored in the Project Control System (PCS) module as well as in the CPR module. A customized item cost price is also calculated in the PCS module.

Sales Price Calculation

In the Sales Price Calculation business object you can calculate the sales prices and the suggested retail prices for standard items and budgeted items by means of the cost-plus method. A sales price is calculated on the basis of price surcharges that have been defined for a price calculation code of the type **Sales Price**. After calculation, you can update the sales price of standard items in the Item Sales Data (ISA) module.

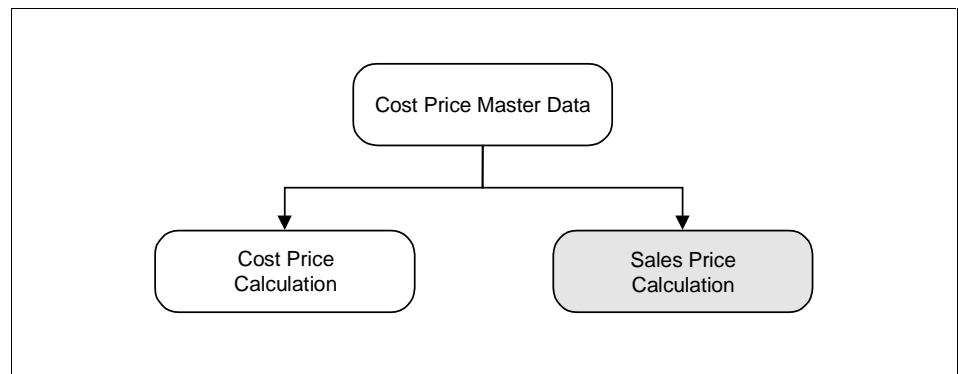Figure 3 shows the main flow between the business objects.

Figure 3 The main flow between the business objects in CPR

2.   The cost-price master-data procedure

This chapter describes:

- The main cost-price master-data procedure.
- The sessions that are related to the main procedure.

2.1   The cost-price master-data procedure

The cost-price master-data procedure defines the master data that is used to calculate the cost price, the sales price and the valuation price of standard items and customized items. The cost price calculation's building blocks are:

- Price calculation code.
  This is a code that is used to store the data that you need to calculate a cost price, valuation price, or sales price.

- Cost component.
  Cost components are used to break down a product's cost price into components that are meaningful to the user. For example, operation costs or material costs.

- Operation rate.
  Operation rates represent the average cost per hour for the manufacturing process. An operation rate can be one of the following types:
  – Labor.
  – Machine.
  – Overhead on man hours.
  – Overhead on machine hours.

- Subcontracting rate.
  The rate for a task or an operation that is outsourced to a supplier. The subcontracting rates can be defined by supplier, by subcontracting item, and for customized items by project.

- Surcharges are estimates for the coverage of indirect costs. Indirect costs are, for example, order intake costs, inspection costs, and management costs. Surcharges are entered under a specific price calculation code. Surcharges are linked to cost components of the surcharges on materials type and the surcharges on operations type.
  Surcharges are used:
  – To calculate the standard or simulated cost price.
  – To determine the valuation price.
  – To determine the actual inventory value.
  – To determine the cost of goods sold.
  – To determine transfer prices and the issued value.
  – In production-order costing.
  – In all warehouse-related transactions.

- Simulated purchase prices.
  Purchase prices can be used when you calculate a cost price. A simulated purchase price is used in what-if scenarios.

The cost-price master-data procedure's results

If you have set up the cost-price master-data as well as the routing and the BOM for an item, you can calculate the following prices:

- An standard item's cost price, or estimated cost price.
- An standard item's sales price.
- The valuation price.
- An customized item's estimated cost price.

Figure 4 shows the steps in the cost-price master-data procedure.
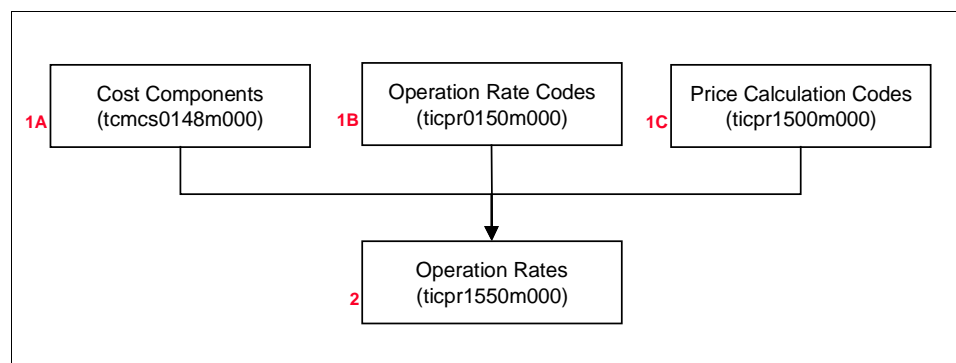
Figure 4 The cost-price master-data procedure

The cost-price master-data procedure consists of the steps that are described below. The sessions in step 1A, step 1B, and step 1C are independent of each other. The data in all three sessions is used in the Operation Rates (ticpr1550m000) session (in other words, step 2).

Step 1A   Cost Components (tcmcs0148m000)

Cost price information is stored by cost price component. You can use the Cost Components (tcmcs0148m000) session to define cost components. A cost component can be of the following cost type:

- Operation costs.
- Material costs.
- Surcharge on operation.
- Surcharge on material.
- WIP transfer costs.
- General costs.
- Not applicable.

The cost price by cost component is expressed in order to establish how the cost price is composed. For example, an item's cost price can comprise labor costs, material costs, and surcharges for overhead costs, based on labor costs or material costs.

Step 1B   Operation Rate Codes (ticpr0150m000)

You can use the Operation Rate Codes (ticpr0150m000) session to define operation rate codes. In the Operation Rates (ticpr1150s000) details session you can link operation rates for tasks or work centers to the operation rate codes. In the CPR Parameters (ticpr0100s000) session you can determine whether the task rate or work center rate is used to calculate the cost price:

- Work center rate.
  This is the operation rate that you must enter in the Work Centers (tirou0101s000) details session.

- Task rate.
  This is the operation rate that you must enter in the Tasks (tirou0103s000) details session.

- Task/Work center rate.
  BaanERP first checks in the Tasks (tirou0103s000) details session whether the operation rate of the task is filled. If it is filled, that rate is used. If the operation rate of the task is empty, BaanERP uses the operation rate of the work center.

The defined operation rate codes can only be used to calculate costs for operations, not for material.

Step 1C   Price Calculation Codes (ticpr1500m000)

You can use the Price Calculation Codes (ticpr1500m000) session to define price calculation codes. A cost price calculation code is a unique identification code for a specific cost price calculation. A sales price calculation code is a unique identification code for a specific sales price calculation.

A standard price calculation code used to calculate the standard cost price of an item is entered in the CPR Parameters (ticpr0100s000) session. All other price calculation codes are used for simulation purposes. For example, to estimate the impact of increased labor costs or purchase price. The price calculation code for customized items is defined in the Project Control System (PCS) module.

BaanERP uses the purchase price of the item to calculate the cost price of a purchased item. The purchase price can be of different types:

- Simulated purchase price.
- Current purchase price.
- Average purchase price.
- Latest purchase price.

In the Price Calculation Codes (ticpr1500m000) session you can determine which purchase price BaanERP must use to calculate the cost price.

If you select the **Direct Costing** check box in the Price Calculation Codes (ticpr1100s000) details session, the overhead costs are not included in the cost price/valuation calculation.

Step 2   **Operation Rates (ticpr1550m000)**

You can use the Operation Rates (ticpr1550m000) session to link an operation rate for standard and project-related operation costs to a combination of a price-calculation code, an operation rate code, and (if desired) a project.

The operation rate of the work center or the task can represent one of the following cost types:

- Labor.
- Machine.
- Overhead on man hours.
- Overhead on machine hours.

An operation rate is registered with a cost component of the **Operation Costs** type (defined in the Cost Components (tcmcs0148m000) session).

2.2   The sessions that are related to the main procedure

Subcontracting Rates (ticpr1560m000)

In some cases a specific task or operation is subcontracted to a third party. You can use the Subcontracting Rates (ticpr1560m000) session to specify subcontracting rates by supplier for a specific cost price calculation code.

The subcontracting cost calculation method determines how the subcontracting costs are calculated, and how the subcontracting rate must be interpreted. Four calculation methods are available:

- Fixed amount per product.
- Operation rate.
- Man-hours rate.
- Machine-hours rate.

Item Surcharges (ticpr1510m000)

Surcharges are used to estimate the coverage of extra costs. For example, order intake costs, or inspection costs. You can use the Item Surcharges (ticpr1510m000) session to define surcharges.

You can define surcharges for items (or item groups) and warehouses, or for combinations of an item (group) and a warehouse:

- Item surcharges.
  - Surcharges by item group.
  - Surcharges by item.

- Warehouse surcharges.
  - Surcharges by warehouse.
  - Surcharges by item group by warehouse.
  - Surcharges by item by warehouse.

You can define in the Item Surcharges (ticpr1510m000) session when a surcharge is added to an item's valuation price:

- When the item is received in the warehouse.
- When the item is issued to work-in-process or as material on a service order.

You can define in the the Item Surcharges (ticpr1510m000) session which surcharge method is used:

- A fixed amount.
- A percentage of the total costs or the added costs.

Simulated Purchase Prices (ticpr1570m000)

You can use the Simulated Purchase Prices (ticpr1570m000) session to store simulated purchase prices under a price calculation code. Simulated purchase prices can be used to:

- Experiment with different purchase prices.
- Calculate the cost price in the Calculate Cost and Valuation Prices (ticpr2210m000) session.

2.3 The procedure to define the cost-component structure

You can determine in BaanERP whether your cost prices must be reported in a detailed way, or in a more general way. If you choose to report your cost prices in a general way it means that the cost components of the cost price are aggegregated to three cost components that are defined in the Item Costing Data (tcibd0507m000) session:

- The aggregated material cost-component.
- The aggregated operation cost-component.
- The aggregated surcharge cost-component.

If you prefer a more detailed way of reporting your cost prices, you must define the detailed cost component(s) that you want to report in the Cost Component Details (tcibd0110m000) session.

Figure 5 shows the steps in the procedure that defines the cost-component structure.
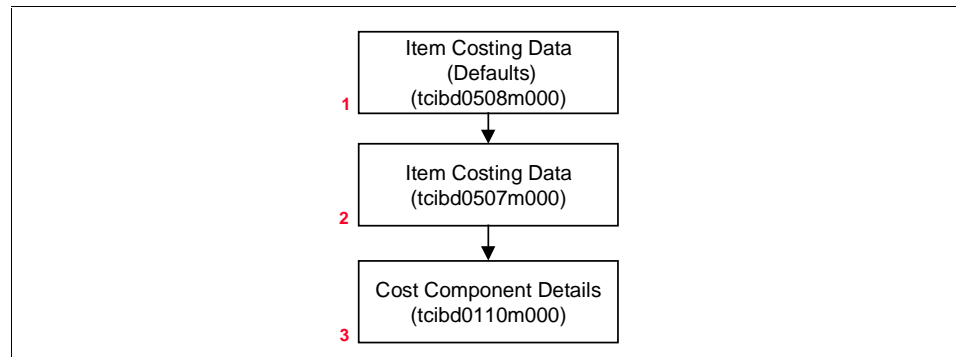

Figure 5 Procedure to define the cost-component structure

Item Costing Data (Defaults) (tcibd0508m000)

You must use the Item Costing Data (Defaults) (tcibd0508m000) session to define the default costing data for items of a specific item type, which are part of a specific item group.

The cost components for the following aggregated costs are defined in this session:

- Aggregated material cost component.
- Aggregated operation cost component.
- Aggregated surcharge cost component.

If the **Cost Component Details** check box is cleared, only the aggregated cost components for a cost price are specified. If the **Cost Component Details** check box is selected, the detailed costs are also specified.

Item Costing Data (tcibd0507m000)

Use the Item Costing Data (tcibd0507m000) session to define the costing data for an item. This process is in contrast with the Item Costing Data (Defaults) (tcibd0508m000) session in which you define the default costing data for a whole group of items.

If you want to create orders for an item you must click **Calculate Cost Price** on the **Specific** menu. Without an item cost price, you cannot create orders. You can also use the Calculate Cost and Valuation Prices (ticpr2210m000) session to determine the cost price. If no BOM and routing exist for the item, the cost price is 0 (zero).

From this session, you can click the following commands:

- **Cost Prices by Cost Type** to view the cost-price details.

- **Detailed Cost Components** to view the item's detailed cost components. If no detailed cost components are defined for the item, the company's detailed cost components are displayed.

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- **Effective Cost Components** to view the cost-component structure for the item.

Cost Component Details (tcibd0110m000)

You can use the Cost Component Details (tcibd0110m000) session to maintain detailed cost components. The detailed cost components that you define in this session are reported in the effective cost-component structure.

The effective cost-component structure reflects the cost structure and the cost price/valuation price of an item for a certain date. You can view the effective cost-component structure after you used the Actualize Cost and Valuation Prices (ticpr2220m000) session.

All other costs that you defined for an item, and that are not displayed in this session, are aggregated. The aggregated cost components that are reported in the effective cost-component structure are defined in the Item Costing Data (tcibd0507m000) session.

3.   The cost-calculation procedure

This chapter describes:

- The main cost-calculation procedure.
- The sessions that are related to the main procedure.
- The sales price calculation procedure.

3.1   The cost-calculation procedure

In the cost-calculation procedure you can calculate the following prices:

- The cost price for standard items (see section 3.1.1).
- The valuation price for standard items (see section 3.1.1).
- The estimated cost price for customized items (see section 3.1.2).
- The valuation price for customized items (see section 3.1.2).
- The sales price for budgeted items (see 3.2).

The valuation price is the actual price of an item that is used in all financial transactions in which the item is involved, for example:

- The cost price of goods sold.
- Inventory transfer.
- The issue to work-in-process value.

The valuation price must be distinguished from the cost price. The cost price is based on standard information: the BOM, the routing, and the CPR master data. It is calculated for simulation and estimation purposes. The following table shows the main differences between the cost price and the valuation price of an item.

The differences between cost price and valuation price	
Cost price	**Valuation price**
Calculation by price calculation code	Calculation by four valuation methods
Situation independent: by logistic company	Situation and transaction dependent: inventory value, issue, receipt, transfer
Calculated based on standard structures and standard data	Calculated based upon economic value
Simulation, estimation, and analysis purposes	Financial transactions and accounting

Note   The following four valuation methods exist in BaanERP:

- MAUC (Moving Average Unit Cost).
- LIFO (Last In First Out).
- FIFO (First In First Out).
- FTP (Fixed Transfer Price).

Only the FTP valuation price is calculated in CPR. The other methods are used to calculate valuation prices in BaanERP Warehousing.

The cost calculation procedure's result

The cost calculation procedure's result is the calculation of cost prices, valuation prices, and sales prices. An item must have a standard cost price before any orders can be generated for that item.

3.1.1 The cost-calculation procedure for standard items
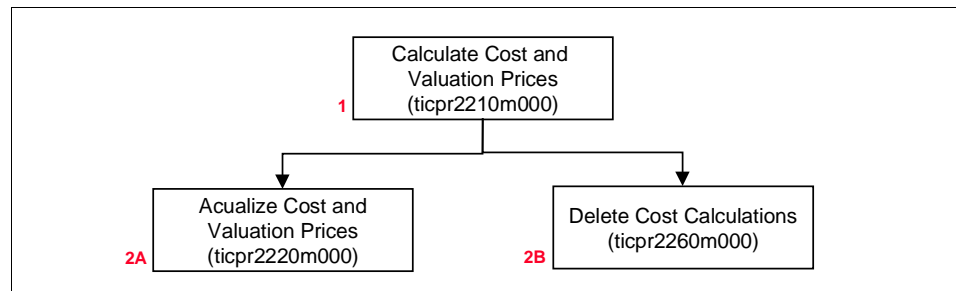
Figure 6 shows the steps in the cost-calculation procedure.

Figure 6 The cost-calculation procedure

The cost-calculation procedure consists of the following steps:

Step 1 **Calculate Cost and Valuation Prices (ticpr2210m000)**

You can use the Calculate Cost and Valuation Prices (ticpr2210m000) session to calculate cost prices and valuation prices for standard items. If you enter the standard price calculation code (as you defined it in the CPR Parameters (ticpr0100s000) session) in the **Price Calculation Code** field, the item's standard cost price is calculated. Other price calculation codes yield simulated cost prices.

The calculation method that you specify in the Calculate Cost and Valuation Prices (ticpr2210m000) session determines how the production structure of an item is analyzed, and as a result how the cost price and valuation price is calculated. The following methods are available:

- Top-Down.
- Bottom-Up.
- Single Level.

Based on the selected range of items, the method determines which items are updated, and in which order. The method also determines if the cost prices of the components and/or the parent items are updated in the process.

To display cost prices and valuation prices

After you have calculated the cost prices and valuation prices for standard items you can view the prices in the following sessions:

- Cost Price Details by Item (ticpr2505m000) session.
  Displays how the cost price for standard items or customized items is broken down in terms of detailed cost components.

- Cost Prices by Item (ticpr2500m000) session.
  Displays how the cost price for standard items or customized items is broken down in terms of effective cost components.

- Calculated Valuation Prices (ticpr2540m000) session.
  Displays how the valuation price for items in a warehouse is broken down in terms of detailed cost components.

Step 2A   **Actualize Cost and Valuation Prices (ticpr2220m000)**

You can use the Actualize Cost and Valuation Prices (ticpr2220m000) session to actualize the cost prices and valuation prices for standard items. You cannot actualize the cost prices and valuation prices for customized items. If you actualize the cost prices and valuation prices, BaanERP:

- Revalues inventory on hand.
- Creates the effective cost component structure.
- Updates the following fields in the Item Costing Data (tcibd0107s000) details session:
  - **Estimated Cost Price** field.
  - **Estimated Material Cost** field.
  - **Estimated Operational Cost** field.
  - **Last Calculation Date** field.

To display cost prices and valuation prices

After you have actualized the cost prices and valuation prices for standard items, you can view the prices in the following sessions:

- Standard Cost Price Details by Item (ticpr3505m000) session.
  Displays the actualized standard cost prices by item. The cost prices are broken down in terms of detailed cost components.

- Standard Cost Prices by Item (ticpr3500m000) session.
  Displays the actualized standard cost prices by item. The prices are broken down in terms of effective cost components.

- Standard Valuation Prices (ticpr3540m000) session.
  Displays the actualized valuation price by item or warehouse. The price is broken down in terms of effective cost components.

Step 2B   **Delete Cost Calculations (ticpr2260m000)**

You can use the Delete Cost Calculations (ticpr2260m000) session to delete cost calculation data. You can delete:

- Price-calculation codes.
- Item surcharges.
- Operation rates.
- Subcontracting rates.
- Simulated purchase prices.

You cannot delete:

- The standard price-calculation code that is stored in the CPR Parameters (ticpr0100s000) session.

- The price-calculation code that is linked to a project.

3.1.2   The cost-calculation procedure for customized items

The procedure used to calculate cost prices and valuation prices that is described in section 3.1.1 applies to standard items. If you want to calculate cost prices and valuation prices for customized items, you must use the following session:

Calculate Estimated Cost and Valuation Prices by Project (ticpr2211m000)

You can use the Calculate Estimated Cost and Valuation Prices by Project (ticpr2211m000) session to simulate cost prices and valuation prices for customized items. In the Calculate Cost Prices by Project (tipcs3250m000) session you can change the simulated price into an actual price.

For the calculation of estimated prices for customized items all items in the project are calculated. As a result, the cost price is always calculated according to the top-down method. The order quantities for the components are derived from the end item quantity.

To display cost prices and valuation prices

The calculated estimated cost prices and valuation prices can be viewed in the sessions that are mentioned in Section 3.1.1, step 1.

3.2   The sales price calculation procedure

In CPR you can calculate the sales price for standard items.

Calculate Sales Prices by Item (ticpr2250m000)

You can use the Calculate Sales Prices by Item (ticpr2250m000) session to calculate sales prices for standard items. You can only calculate the sales price for an item if the cost price is calculated.

The sales price is based upon the cost plus method. The basis is a cost calculation according to a specified price-calculation code. On top of the calculation code you must enter a sales price calculation code. This is the code under which specific sales price surcharges are stored. As a result, the cost price is added to the sales price surcharges.

You can actualize the sales price in the Item Sales Data (tdisa0101s000) details session. In this session simulated retail prices and simulated sales prices for standard items are stored. These prices can be used to establish a customer sales price or a retail price.

You can use the Calculate Item Sales Prices by Project (tipcs2241m000) session to calculate the sales prices for budgeted items. A budgeted item is a customized item that is in a project of the **Budget** type.