

Functions in Detail

R/3™ System

Materials Management



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Materials Management

MM System Overview	1-1
Introduction	1-1
Enterprise Information Technology Trends	1-5
Advantages of the R/3 System: The De Facto Standard	1-5
Organizational Structures	2-1
Purchasing Organisation	2-1
Basic Data	3-1
Vendors	3-1
Material	3-3
Batches	3-6
Purchasing Info Records	3-7
Bill of Material	3-9
Classification	3-11
Conditions	3-13
Material Requirements Planning	4-1
Planning Procedures	4-2
Lot-Sizing Procedures	4-3
Material Forecast	4-5
Purchasing	5-1
Purchase Requisition	5-3
Request for Quotation (RFQ) and Quotation	5-4
Purchase Order	5-5
Outline Purchase Agreement	5-8
Sources of Supply	5-10
Vendor Evaluation	5-11
Reporting	5-13
Inventory Management	6-1
Goods Receipts for Purchase Orders	6-2
Reservations	6-3

Goods Issues	6-4
Transfer Postings and Stock Transfers	6-4
Goods Movements for Production Orders	6-5
Quality Inspection	6-6
Special Stock	6-6
Physical Inventory	6-7
Material Valuation	7-1
Valuation Structures	7-1
Valuation Procedure	7-2
Material Ledger	7-5
Balance Sheet Valuation	7-6
LIFO Valuation	7-6
FIFO Valuation	7-7
Calculating the FIFO Value	7-7
Invoice Verification	8-1
Entering Invoices	8-1
Taxes	8-3
Posting Gross/Net Amounts	8-3
Other Functions	8-4
Foreign Currency	8-4
Down Payments	8-5
Blocked Invoices	8-7
Evaluated Receipt Settlement (ERS)	8-8
Logistics Invoice Verification	8-8
Warehouse Management	9-1
Warehouse Structure	9-4
Goods Movements	9-7
Transfer Orders	9-7
Putaway and Picking Strategies	9-11
Inventory	9-13
Storage Unit Management	9-15
Decentralized Warehouse Management	9-16

Special Functions	10-1
Consignment Material	10-1
Returnable Transport Packaging	10-2
Pipeline Material	10-3
Subcontracting	10-3
Physical Stock Transfers Using Stock Transport Orders	10-5
Information Systems	11-1
Logistics Data Warehouse	11-1
Reporting	11-7
Communication and Optical Archiving	12-1

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Materials Management System Overview

Introduction

The SAPTM R/3TM System sets the pace for flexible business software. Using advanced development techniques, SAP has built a sophisticated, integrated system that provides you with IT solutions for all areas of your business.

The application components of the R/3 System are highly functional and take advantage of the latest technology. The high level of integration within the R/3 System guarantees data consistency throughout the system and throughout your company (see Figure 1-1).

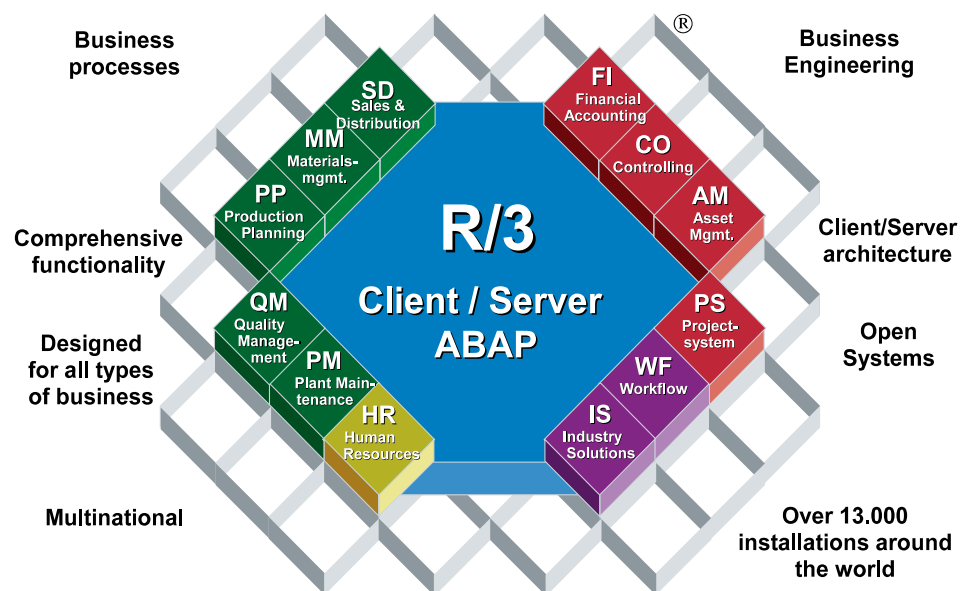


Fig. 1-1: The R/3 System

The Materials Management (MM) component supports materials management functions and processes in day-to-day business operations. No other field makes such wide-ranging and conflicting demands on business software. These demands come from:

- ☐ Industry-specific requirements
- ☐ Product-specific features
- ☐ Company policy
- ☐ Links and interfaces to other commercial applications

Materials Management Components

The Materials Management component includes the following transactions and functions:

- ☐ Material requirements planning
- ☐ Material procurement
- ☐ Inventory management
- ☐ Invoice verification
- ☐ Material valuation
- ☐ External services management



Fig. 1-2: Materials Management Functions

Material Requirement Planning

You can logically integrate the Materials Management component with other R/3 application components, including:

- ☐ Production Planning and Control (PP)
- ☐ Warehouse Management (WM)

Materials Management forms the basis for material requirements planning (MRP) through its integration with the R/3 System's Purchasing, Warehouse Management, and Inventory Management components.

Consumption-based MRP depends on usage data. You use this data to generate procurement proposals using forecasts or the reorder point principle. You record additional requirements as requisitions and allocate them to the responsible buyers in Purchasing. In the process, the system determines the appropriate order quantities and ensures an adequate level of service.

Purchasing

The system provides comprehensive purchasing functions that optimize work processes. These functions range from generating purchase requisitions to printing

purchase orders and long-term purchase agreements. Purchasing decides whether you can place orders using existing quotations or if you must first issue additional requests for quotations (RFQs). To a large extent, the system can automatically create purchase orders based on the strength of existing data. For example, if you allocate items to outline purchase agreements, the system can automatically create purchase orders. In addition, the system provides information for:

- ☐ Vendor evaluation
- ☐ Vendor selection
- ☐ Volumes (regarding a material or a vendor)
- ☐ Monitoring ordering activities

Buyers and material planners can obtain information on:

- ☐ Stock levels
- ☐ Stock availability (locations and time)
- ☐ Vendors
- ☐ Purchase order histories
- ☐ Delivery dates
- ☐ Open-order quantities

Materials Management handles transactions that lead to changes in stock levels. These include:

- ☐ Goods receipt
- ☐ Return deliveries
- ☐ Planned and unplanned stock withdrawals
- ☐ Stock transfers
- ☐ Reservations
- ☐ Stock adjustments

Using real-time entry, checking, and correction of goods movements, the system keeps data up-to-date and minimizes errors. This is an essential prerequisite for accurate and efficient materials planning and control.

At goods receipt, the system pulls all relevant data from the purchase order. The system tracks deliveries that contain less or more than the specified amount. With each material movement, the system updates the change in the quantity of stock on hand. It updates stock values using the automatic account determination function.

The Warehouse Management component allows you to define and administer complex warehouse structures. You can divide the structures into different physical or logical units, such as high-rack (or high-bay) and block storage areas. You can organize and administer them on a random basis or on the fixed storage bin principle. The system uses defined strategies that indicate where goods can be placed in storage, from which location they are to be taken, or where picking should take place.

The invoice verification (invoice matching or invoice clearance) function clearly demonstrates the degree of integration of the R/3 System. Information is available

Inventory Management

Goods Receipt

Warehouse Management

Invoice Verification

from the material master record, the purchase order, and goods receipts. Ideally, you only need to enter the total for the items on the purchase order. If the total matches the preplanned values, the system makes all postings and **releases**, or **clears**, all invoices for payment. If preset tolerances are exceeded (for example, quantity, price, and delivery date), the system blocks payment of the incoming invoice.

Procurement of External Services

The External Services Management subcomponent of Materials Management supports the entire cycle for procuring external services, from bid invitation, contract award or purchase order placement, and acceptance. The component is completely integrated within Purchasing. You create service specifications within the framework of the relevant purchasing documents. Requirements are transmitted to Purchasing from Plant Maintenance (PM) and Project System (PS) either automatically or manually.

You can procure **planned services**, which are services whose precise nature and scope are known at the time of ordering. You can also procure **unplanned services**, which are services that can only be specified at the time they are actually performed. Value limits help you control the budget for unplanned services.

You record services using **service entry sheets**. Like all purchasing documents, service entry sheets can be subject to an approval procedure. Accepted entry sheets are the basis for the invoice verification process.

Logistics Information System	The Logistics Information System supports both day-to-day and strategic decision making through variable analyses.
Standard System	The Materials Management component provides a wide range of common requirements. The experiences and suggestions of users from many different branches of industry -- and from around the world -- have shaped its development. The system is truly international in scope.
Ease of Use	You require no special knowledge to use the R/3 System. The graphical user interface and the logical structuring of components ensure ease of use. As a result, you quickly learn your way around the system.
Customizing	Using Customizing you can quickly, reliably, and economically implement and extend your R/3 System. Customizing tools help you adapt the system's standard functions to meet your specific requirements. Customizing also helps you control and document your R/3 projects.
Implementation Guide	To support implementation, SAP has developed the online Implementation Guide. It provides an overview of the various R/3 application component functions and information about configuration and standard system settings. You can branch directly to the configuration functions from within the Implementation Guide.
R/3 System Data Model	The SAP Enterprise Data Model describes the data architecture of the R/3 System from a business perspective. It transparently represents information and processes in the software and describes their interdependence. This helps you better understand the integration and interconnections of the R/3 System at a business level. The transparency of the Data Model helps you understand of the capabilities of the R/3 System. Consequently, it enables you to make optimal use of the R/3 System.

Enterprise Information Technology Trends

Marketplace pressures today drive companies to reduce costs and time to market, while improving product quality and capability -- all at the same time. Every organization struggles to reengineer itself, its production processes, and its products to meet these requirements.

As a result, tomorrow's successful businesses will be fundamentally different from the today's business leaders. These differences will extend to every aspect of the information systems these companies use. These differences -- ranging from real-time data access and ease of use to open systems and process integration -- are also the reasons why the R/3 System serves your needs better than any other solution.

Advantages of the R/3 System: The De Facto Standard

The R/3 System offers you a software solution that handles all the commercial processes and transactions that commonly occur in a company or group of companies. The data and functions of the R/3 System link all of these work processes.

The R/3 System has a uniform, user-friendly graphical user interface.

System-controlled customizing procedures allow you to create solutions from a wide variety of prepared application variants to satisfy your individual requirements.

From the accounting department to the warehouse to the factory floor, change is continual. All facets of your business must be able to adapt. The R/3 System's flexible structure and extensive integration helps make that easier.

The enterprise-wide R/3 System solutions meet the needs of constantly changing, continually evolving businesses. The R/3 System's application components are fully integrated. Transaction-related process chains trigger the next activity as needed from engineering to materials management to production planning to sales and distribution. The R/3 System's integration pulls your enterprise together, promoting data access, flexibility, and productivity. No other product or suite of products provides the R/3 System's functional links between processes that multiply the power of each person's work.

Functionality and
Integration

User Friendly

Individual Solutions

Flexible Structure

Enterprise-Wide Integration

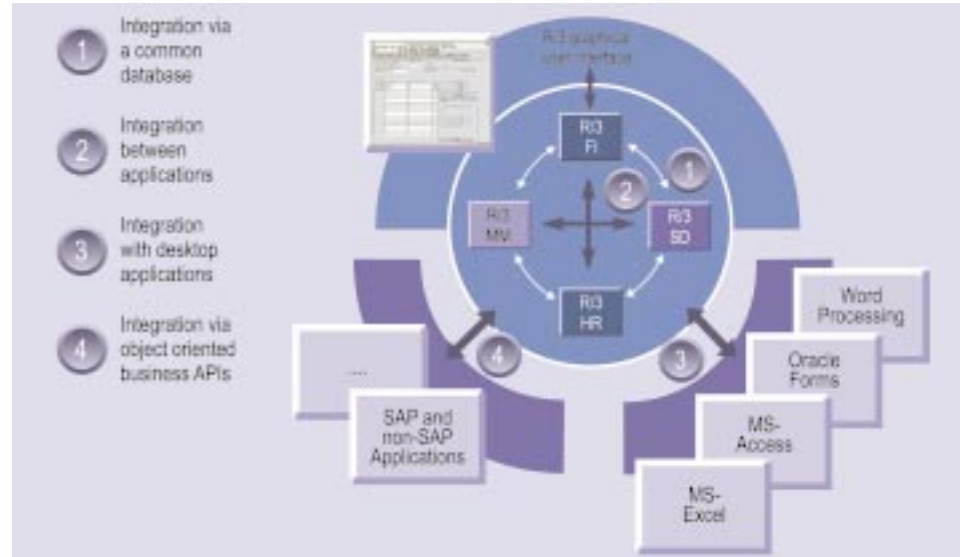


Fig. 1-3: Application Integration in the R/3 System

- Real-Time Information** The R/3 System's ability to drill down to whatever level of detail you need is legendary. More than any other product, the R/3 System provides up-to-the-minute, real-time information wherever and whenever you need it.
- Mission-Critical Business Processes** SAP has more than 20 years of experience designing sophisticated application software for backbone and mission-critical business processes. Nine of the top ten Fortune 500 companies use SAP software. SAP developed most of the R/3 System's functionality in close cooperation with these customers. Consequently, SAP has integrated the best business practices of the world's most successful companies into the R/3 System. The R/3 System's business processes are flexible, pragmatic, and well-documented. They form a widely acknowledged standard for business process reengineering (BPR).
- Best-of-Breed Software** Users want standard software as well as standard business processes and guidance on how to implement them successfully. With the R/3 System, you get best-of-breed software for all common business processes. You do not need to compromise on flexibility. And if you need or want to fine tune your R/3 System, you can.
- Enterprise-Wide, Three-Tier Architecture** The R/3 System remains the only enterprise-wide, three-tiered architecture. Its three-tiered client/server architecture separates the system into areas devoted to database tasks, application functions, and desktop presentation. This architecture gives you maximum flexibility, the freedom to choose the components you need, and the ability to change and add to the system as your organization grows.

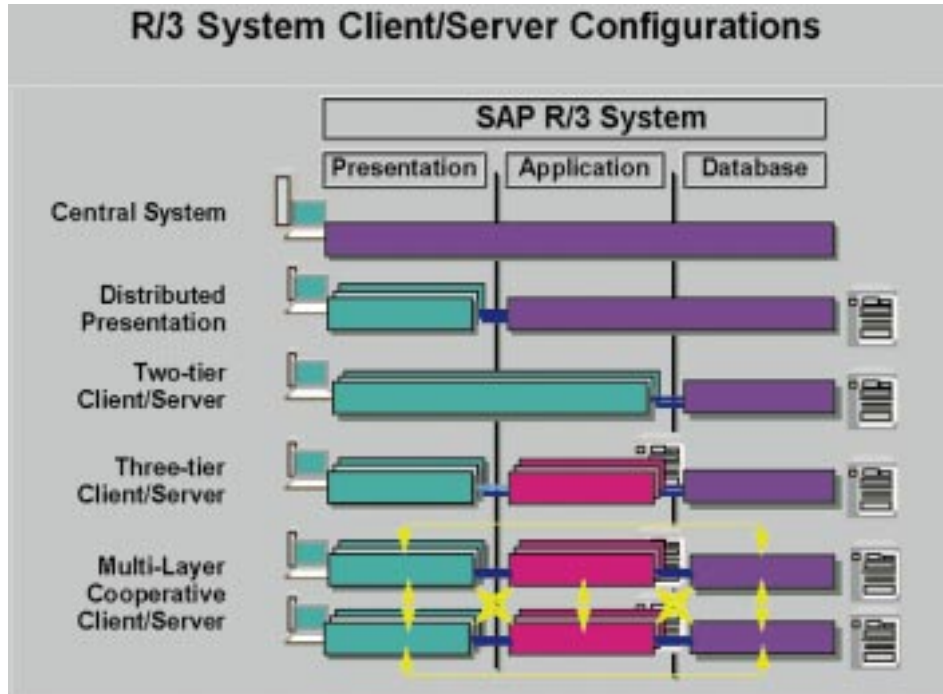


Fig. 1-4: Three-Tier, Multi-Layer Cooperative Client/Server R/3

The development of the Internet and the Word Wide Web promises to make dramatic changes in the way businesses and customers communicate. SAP is working with several partners to develop enhanced Internet extensions for the R/3 System. For additional information, see SAP's Web pages at <http://www.sap.com>.

The R/3 System's integrated structure helps your company make the transition to concurrent engineering. Concurrent engineering cuts time-to-market by stacking up business processes whenever functions can take place concurrently rather than consecutively. The R/3 System's flexibility and integration help you form the real-time workflow application links required for concurrent engineering.

Concurrent Engineering

The R/3 System's modular structure means you get a lean implementation of the software -- not bloat. By selecting key portions of the R/3 System for first-time implementation and minimizing customization, you can bring the full power of the R/3 System to bear on your business problems rapidly and at a reasonable cost. Once running, the R/3 System makes it easy to add more pieces of the system. Tools at various levels of the system help you fine-tune all your R/3 System components. Gradually adding functionality makes core solutions available sooner without sacrificing long-term application muscle.

Lean Implementation

Desktop integration in the R/3 System means that whenever you want data moved into a desktop PC application, it is a mouse click away. Download or export a file to your PC's hard drive and then open it in your favorite spreadsheet or word processor. No awkward or failure-prone communications between hardware or hinders your productivity.

Desktop Integration

SAP's R/3 System Reference Model helps you determine the opportunities in your organization for improving efficiency and productivity using business process reengineering. This way you can reorganize your business around event-driven process chains that are configured to meet your specific needs. This streamlines your organization to increase efficiency, customer satisfaction, and profitability.

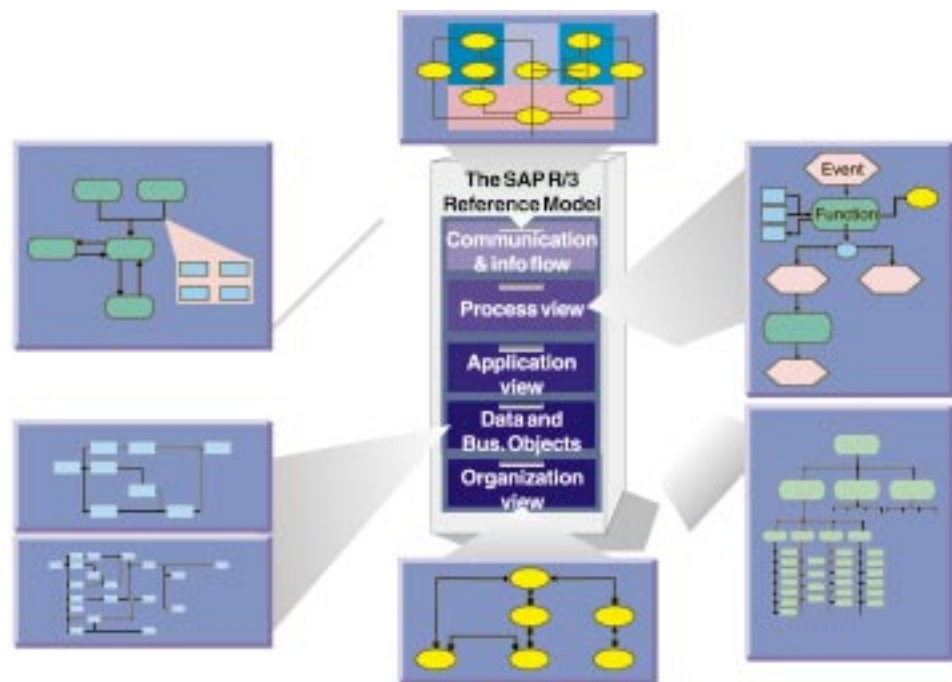


Fig. 1-5: The R/3 System Reference Model

Online Integrated Graphics

The R/3 System's online integrated graphics save you time and effort, while making your information more meaningful. You can instantly create full color 2-D or 3-D graphics from your data from most locations in the R/3 system. If you change any data, you can instantly see how it affect the graphics you have created. You can also use your mouse to change graphics manually.

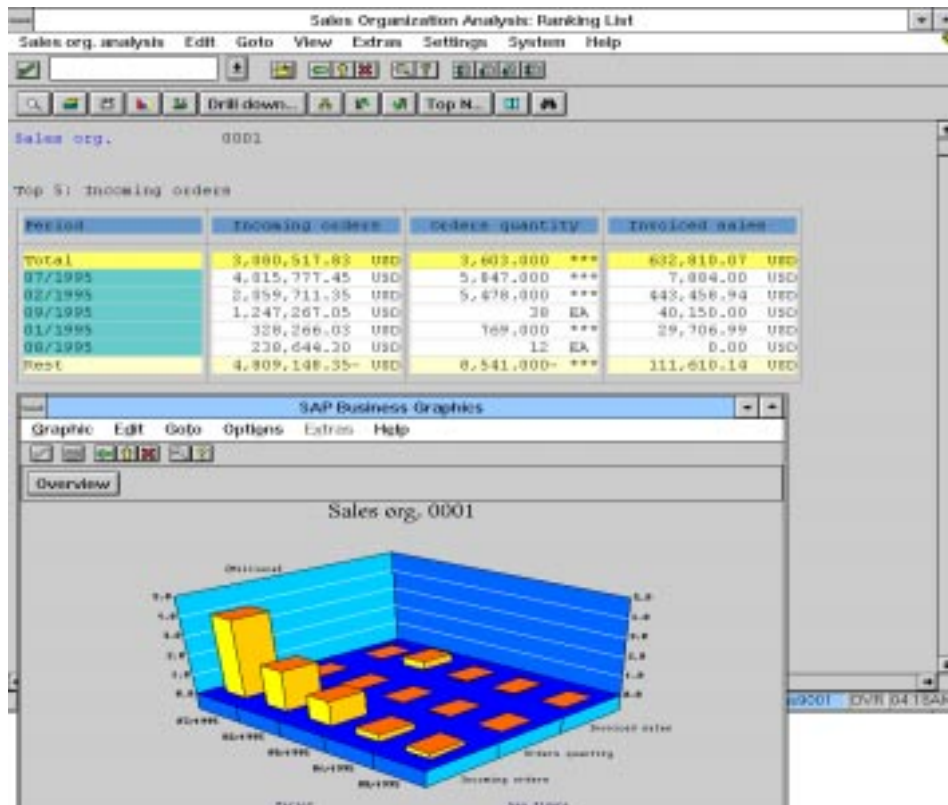


Fig. 1-6: Online Integrated Graphics

No matter how much you customize your R/3 System, you are never far away from the open systems standards that link you to the rest of the world. Your R/3 System's servers can run on a number of UNIX-based, open systems hardware platforms from vendors such as Bull Information Systems, Digital Equipment Corporation, Hewlett-Packard, IBM, SNI, and Compaq, as well as IBM's AS/400 midrange systems. Client desktop systems include PCs, Macintosh, and various Windows NT systems. Choose your central R/3 System relational database from Oracle™, Informix™, ADABAS™, DB2/6000™, or Microsoft™ SQL Server™, since all support ANSI-SQL queries. Graphical interface systems include Microsoft Windows™, OSF Motif™, Presentation Manager, and the Macintosh. The R/3 System also supports robust communications technologies including EDI, TCP/IP, CPI-C, OLE 2.0, and OSF/DCE/DME.

Open Systems Standards

Graphical User Interface The R/3 System's graphical user interface provides a number of functions at your fingertips -- all ready for instant use. You can easily navigate through the R/3 System using pull-down menus, icons, fast-path codes, drill-down buttons, and other features.

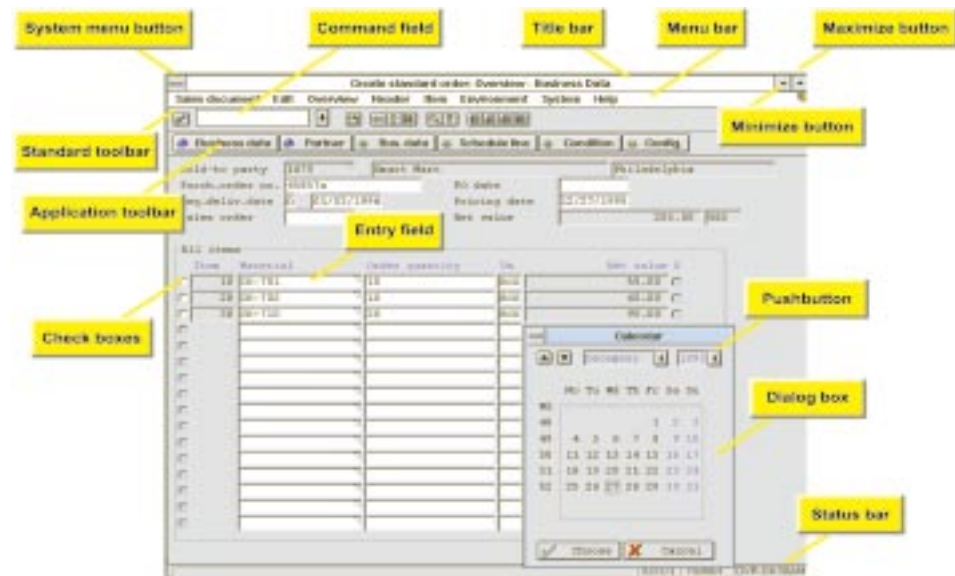


Fig. 1-7: R/3 Graphical User Interface

Organizational Structures

A company is made up of a variety of operational groups. These groups or organizational units include sales, purchasing, accounting, distribution, and so forth. The R/3 System is designed to support each of these groups. Different components in the R/3 System can be linked to these organization units to create a completely integrated company structure.

Flexible organizational units in the R/3 System let you represent your organization with a comprehensive structure. The combination and integration of organizational units form the legal and structural basis of a company. For example, organizational units can interface with Materials Management, Sales and Distribution, and Financial Accounting. Using organizational units, you can link different components in the R/3 System to create a completely integrated company structure.

The highest organizational unit within the R/3 System is the **client**. A client could be a company with several subsidiaries that require the same business functionality. Subsidiaries within a client use the same database. For example, a vendor's address is entered at client level.

Client

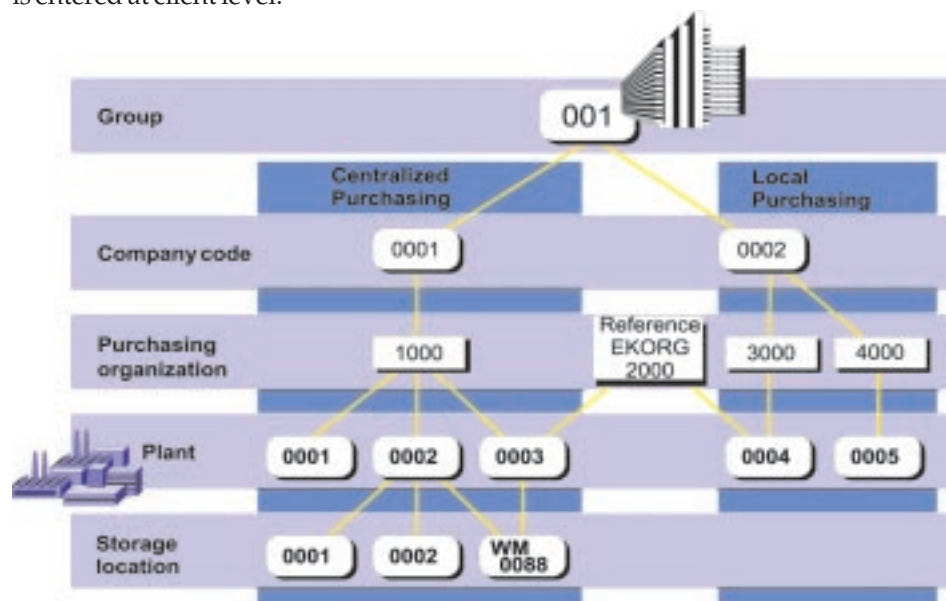


Fig. 2-1: Organizational Units in Materials Management

Purchasing Organization

A **purchasing organization** is an organizational unit that procures materials or services. It negotiates purchasing conditions for plants to which it has been assigned.

You can set up your purchasing system in several ways. For example, you can set up a scenario with centralized purchasing where a single purchasing organization is responsible for the different company codes and plants within a corporate group. The system also supports decentralized purchasing where different purchasing organizations are responsible for certain company codes and plants.

You can also use references between purchasing organizations to create a mixture of organizations and responsibilities. This allows certain purchasing organizations to access more advantageous terms and conditions.

Purchasing Group	A purchasing organization is divided into purchasing groups (groups of buyers) that are responsible for operational tasks. A purchasing group can also be responsible for several purchasing organizations.
Company Code	A company code is the smallest organizational unit for which a complete self-contained set of accounts can be drawn up for external reporting. This involves recording all relevant transactions and generating all supporting documents for the legally-required financial statements such as balance sheets and profit and loss statements.
Plant	A plant is an operating unit concerned with production and planning or a combination of locations (called storage locations) with material stocks. It is a central organizational unit in materials management. A storage location is the total of all storage bins in a plant that are managed together.

What are the advantages of the SAP organizational structure?

- ☐ It supports complex company structures with flexible organizational units.
- ☐ It gives you group and company structures with many different views.

Basic Data

The processes of materials management are based on various types of basic data. This can be data about vendors or data about materials and services. Vendor data includes addresses, agreements, conditions of delivery, and terms of payment. Examples of material or service data are descriptions, vendor identifications, and technical specification. This basic data is stored in master records. When processing business events and transactions, the system accesses master records and the data stored in them.

Basic Data Stored
in Master Records

Another type of basic data is purchasing information stored in purchasing info records. These create a link between the vendor and the material or service. For example, the vendor's pricing for material, including discounts and delivery costs, are stored in a purchasing info record.

Basic Data Stored
in Purchasing
Info Records

Bills of materials are another type of basic data. You can access these in production planning, purchasing, sales and distribution, or in the materials withdrawal process.

Bills of Materials

Data entry is facilitated by the ability to create a master record by referencing an existing master record.

Data Entry Tools

The system documents all changes to master records. In this way, you can see what changes were made to which master record, when and by whom.

History

Master records can contain many textual descriptions related to a material. You can also store text in several languages as well as reference a standard text. In this way, the master record acts as a central depository for text. Business documents reference text in the master record (for example, a part description in a purchase order). This process is defined by a set of modifiable rules.

Texts

You can find a master record by entering either its number or one of a number of search terms, known as matchcodes. You can find a vendor number through the name of that vendor, or a material number through the material description.

Matchcodes

Vendors

The same vendor record is maintained for both materials management and accounts payable. MM references the vendor master record to control communication with the vendor in purchasing instruments used in bidding, ordering, and invoicing. The same vendor records are also maintained for financial accounting which addresses entry, verification, and payment of invoices. Consequently, the requirements and interdependencies of these two applications can be accommodated without data redundancy. All vendor data is stored in a vendor master record. Each of these master records is identified by a unique number. The system accesses vendor master records when processing business transactions.

It is not necessary to create a separate master record for every vendor. For example, you may only need to order from a vendor once, and therefore do not need to maintain a vendor master record. For this reason, a master record containing data on all "one-time" vendors is available. This master record is accessed if business relations are established with particular vendors on a non-recurring basis.

One-time vendors

Structure of the Vendor Master

The structure of the vendor master record reflects the organizational structure of a company. Purchasing data, for example, is maintained at the purchasing organization level.

- ❑ General data includes details of the address and information facilitating communication with the vendor.
- ❑ Purchasing data includes information on pricing and delivery. It enables each purchasing organization to follow its own purchasing strategy concerning a certain vendor.
- ❑ Accounting data is managed at the company code level. This data includes details of the vendor's bank and information on payment transactions.

In purchasing and invoice verification, the vendor can assume a variety of roles. The term may apply to the actual supplier of the goods or to the parent company that may invoice the buying company for the goods supplied by its subsidiary. The various roles of a vendor — actual supplier of goods, invoicing party, head office, or payee — can all be reproduced in MM.

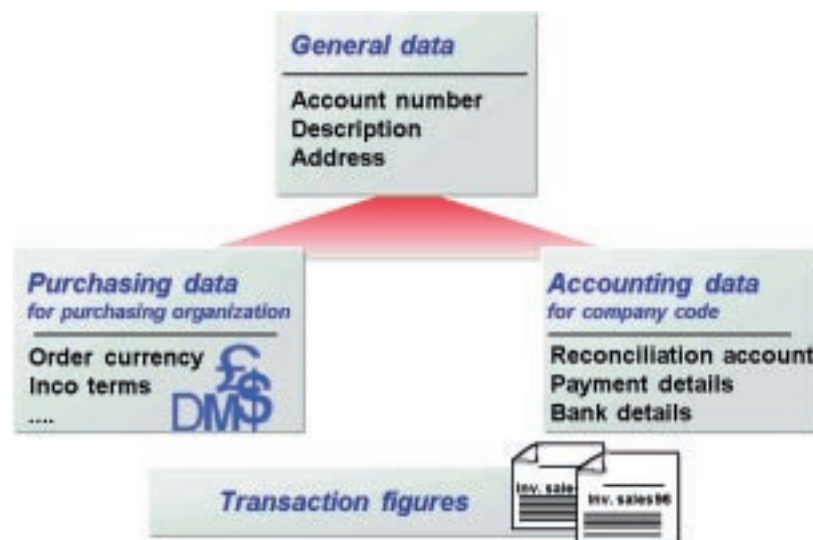


Fig. 3-1: Structure of a Vendor Master Record

Maintenance

Vendor master records can be maintained either centrally or by each department. For example, the purchasing department can maintain the vendor address and accounts payable can maintain the vendor's bank account number for automatic payments. Functions for creating, changing, and displaying vendor master records are also available.

Because the vendor master record contains sensitive information, the R/3 System performs stringent authorization checks.

A vendor is an external source from which materials and/or services are procured.

What are the features for vendors in the R/3 System?

- ☐ Common data basis for materials management and financial accounting
- ☐ Centralized and decentralized maintenance functions
- ☐ Different views for organization-specific data

Material

The material master is a central repository containing information on all the materials that a company procures, produces, stores, and sells. It is the company's central source for retrieving material-specific data. The material master is used by all the components in the SAP Logistics System.

The integration of all material data in a single database object eliminates redundant data storage. Areas such as Purchasing, Inventory Management, Material Requirements Planning (MRP), Invoice Verification, and so on, can all use the same data.

Configuration

The material master may contain huge numbers of different types of materials that are maintained by users in several different industry sectors. For this reason, you can configure the dialog for maintaining material master records according to the following criteria:

- ☐ User (s)
- ☐ Material type
- ☐ Industry sector

When configuring the material master, you can determine whether certain fields require an entry to be made or whether an entry is optional, or whether the field appears at all. You can do this not only for each plant, but also, for example, for each material type.

This allows you to model the material master very closely around your company's requirements and around the requirements of users or groups of users at your company.

Data Structure

The SAP R/3 System meets your individual requirements by allowing you to shape its organizational structure to reflect your own company's structure. In the data structure of the material master, this flexibility is provided through the ability to assign data to different organizational levels. Some typical organizational levels are listed below:

Material Master

- ❑ **Company code:** You maintain general data that applies to the whole company, such as material number, multilingual description, and classification data, at company code level.
- ❑ **Plant:** You maintain MRP and purchasing data at plant level.
- ❑ **Storage location:** You maintain stock data at storage location level.

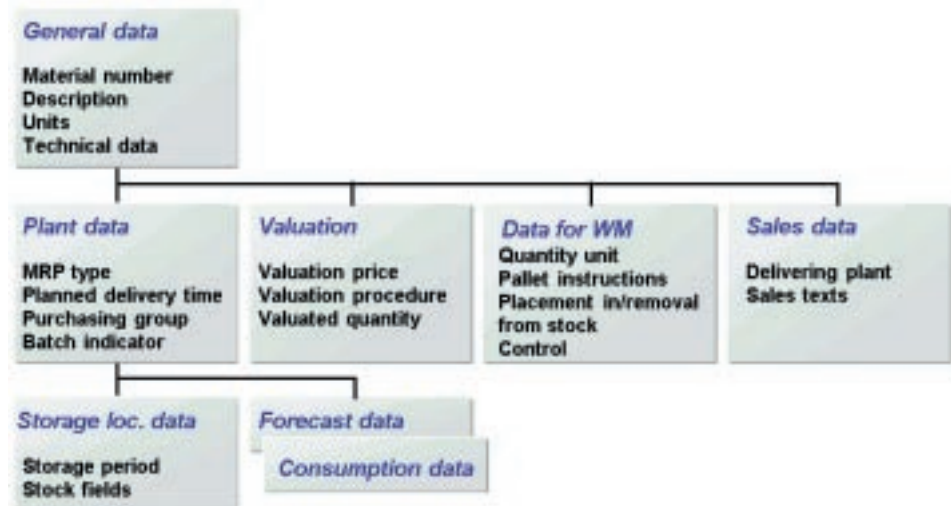


Fig. 3-2: Data Structure of a Material Master Record

Material Number

Each material master record is uniquely identified by a material number. You can set the length and store a template of the material number in Customizing.

User Departments

Since different departments in a company need different information on the same material, the data in a material master record is stored according to business function (for example, Purchasing or MRP).

Processing Selected Records

The system allows you to select those materials whose data has not yet been maintained by specific departments.

Material Types

Each material is assigned to a material type by its use in the company. For example, you can define a material as a raw material, a semifinished product, a finished product, or a service.

Control Functions

The material type is an influencing factor in configuring the material master and has the following control functions:

- ❑ Determines which user departments can maintain the material.
- ❑ Determines the procurement type.
- ❑ Helps determine automatic account determination. The stock account in

financial accounting is derived with reference to the material type.

- ❑ Determines the inventory management type in the relevant plants.

For example, you can define material types for which quantities are updated, but not values.

Widely used material types are predefined in the system. However, you can also add your own company-specific settings.

Industry Sector

By assigning a material to an industry sector, you can take industry-specific factors into account. The industry sector is an influencing factor in configuring the material master.

Units of measure

Besides the base unit of measure, in which the system manages stocks and performs all calculation, user departments can use separate units of measure. For example, Purchasing can use a different unit of measure than Sales or Warehouse Management.

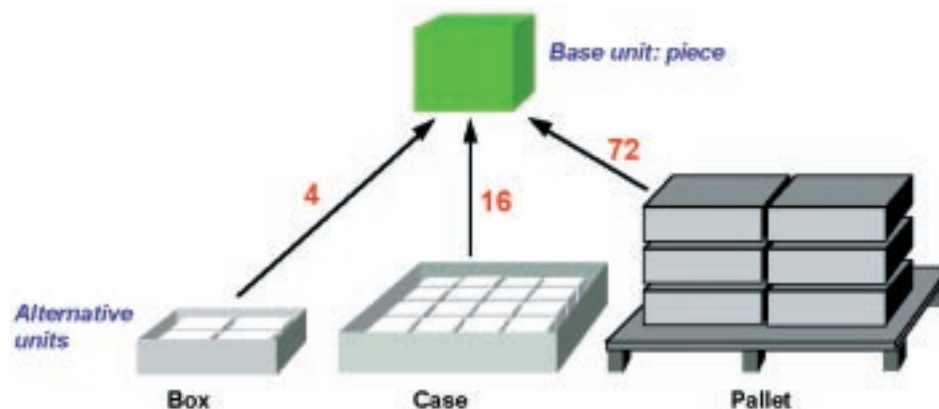


Fig. 3-3: Units of Measure

Alternative Units of Measure

In the SAP R/3 System, all units of measure other than the base unit are grouped together under the generic term "alternative unit of measure."

Batches and Special Stocks

Material stock is managed at storage location level. Additionally, you can sub-divide this into special stocks and/or batches.

A batch is a quantity of a material managed separately from other quantities of the same material (for example, production lots and delivery lots). Moreover, it can be identified through the batch number or characteristics.

- Special Stocks** You can assign special stocks to the following categories:
- ☐ Vendor special stocks (such as consignment material from the vendor)
 - ☐ Customer special stocks (such as empty containers with the customer)
 - ☐ Event-related special stocks (such as custom-ordered goods)

Processing

You maintain material master data for each user department.

Changes to material master records are recorded in change documents. You can make such changes with or without reference to a change number.

A change number identifies a change master record in engineering change management. This has the advantage that changes to different objects (material, bill of material, routing, document, and so on) can be grouped together under this number.

Furthermore, you can make changes to material master records immediately or schedule them for a particular date in the future. Here too, you can make such changes with or without reference to a change number.

- Access Authorization** Several authorization levels protect material master data against unauthorized access. As an example, authorizations can be assigned for each user for the following objects:

- ☐ Each organizational level and activity (create, change, display)
- ☐ Each user department and activity
- ☐ Each material type, material group, and activity

Batches

Batch management is a component of the R/3 System. It is integrated with all areas of logistics and can be used by all types of industries. However, it is mainly used by the chemical, pharmaceutical, food, cosmetic, and hygiene industries to manage subsets of stocks. A batch is the quantity of a material produced in one production process, a quantity that thus represents a unit with certain definite specifications.

- Fundamental Principles of Batch Management** Every batch features certain definite physical, technical, and chemical properties that can be used to describe it (for instance, pH value, viscosity, opacity). These batch specifications form the basis of batch management and are stored as characteristics in the R/3 classification system. The integration of the classification system with master data maintenance enables you to enhance master records according to your requirements. Apart from the above properties, you can also store as characteristics information such as the shelf life expiration date or usability.

- Batch Management Functions** Batch management provides the following functions:
- ☐ Unique number assignment
 - ☐ Batch determination

- ☐ Status management
- ☐ Tracking

Batch Determination

Batch determination helps you locate a specific batch that meet certain criteria. You can use batch determination to find batches for goods issues in inventory management as well as for transport orders in warehouse management. If the batches were already specified in a prior business process (for instance, during creation of a customer order, delivery or a process or production order), they cannot be changed in inventory or warehouse management.

Search strategies are the basis of batch determination. Search strategies contain information on the selection criteria for locating batches as well as on the continued use of the batches that the system finds (for instance, information on the maximum number of batches that can be used to cover the required quantity). You can define a strategy for every individual business process.

Batch Status Management

A batch is either usable or unusable. In the R/3 System, these conditions are represented by the status types “restricted” and “unrestricted.” Like all other batch specifications, you can also store the status of a batch as a characteristic value in the classification system and thus use it as selection criteria in batch determination.

Batch Tracking

Batch management uses the batch log and batch where-used list to track batches. A batch log contains all data on the production process of a batch. The batch where-used list traces the path of every batch from procurement through production, right to final delivery to your customer. Using the batch where-used list, you can display all steps in a production process in which a certain batch of a material was used (bottom-up analysis). The ability to display all materials and batches used to manufacture a batch already delivered to a customer (top-down analysis) is an important feature for sales and distribution. It enables you to quickly react to material allegations with a callback.

On what is batch management based?

- ☐ On the management of batch specifications
What are the main functions of batch management?
- ☐ Number assignment
- ☐ Status management
- ☐ Tracking using the batch where-used list and the batch log
- ☐ Determination

Purchasing Info Records

The purchasing info record is a source of information for purchasing. It represents the relationship between a vendor and a material or service. It enables the buyer to determine which materials a certain vendor has supplied or which vendors have supplied a certain material to date.

Additional information that you can access with purchasing info records includes the following:

- ☐ Current and future prices and conditions
- ☐ Number of the last purchase order
- ☐ Descriptive text on the material which is printed in the purchase order
- ☐ Ordering statistics on a material (for example, how much has been ordered from a vendor to date)
- ☐ Price history of a material in relation to different vendors
- ☐ How the vendor is rated by the vendor evaluation system

Central Control over Ordering Activities

Using the purchasing info record, important data such as the price of a material can be determined centrally for the vendor.

When purchase orders are created, the system checks whether a relevant info record exists. If so, it copies the data into the new PO.

Types of Info Records

There are two types of purchasing info records:

- ☐ With a material master record

This is a supply relationship between a material with a master record and a vendor with a master record.

- ☐ Without a material master record

This is a supply relationship between a material without a master record and a vendor with a master record. In this case, the info record relates to one or more materials belonging to a material group (for example, steel products). This means that a material master record is not an essential requirement for the info record.

Structure of the Info Record

The info record is subdivided into sections containing general data and organization data. The general data applies to all organizational levels of the info record (for example, order unit). The organization data includes information that applies to individual purchasing organizations or plants.

Among other things, this structure permits the maintenance of different conditions for each purchasing organization.

Creation of Info Records

Purchasing info records can be maintained manually or automatically (that is, by the system). With automatic maintenance, the info record is created or changed when a quotation is entered, or when a PO or longer-term purchasing agreement is created (see Figure 3-4).

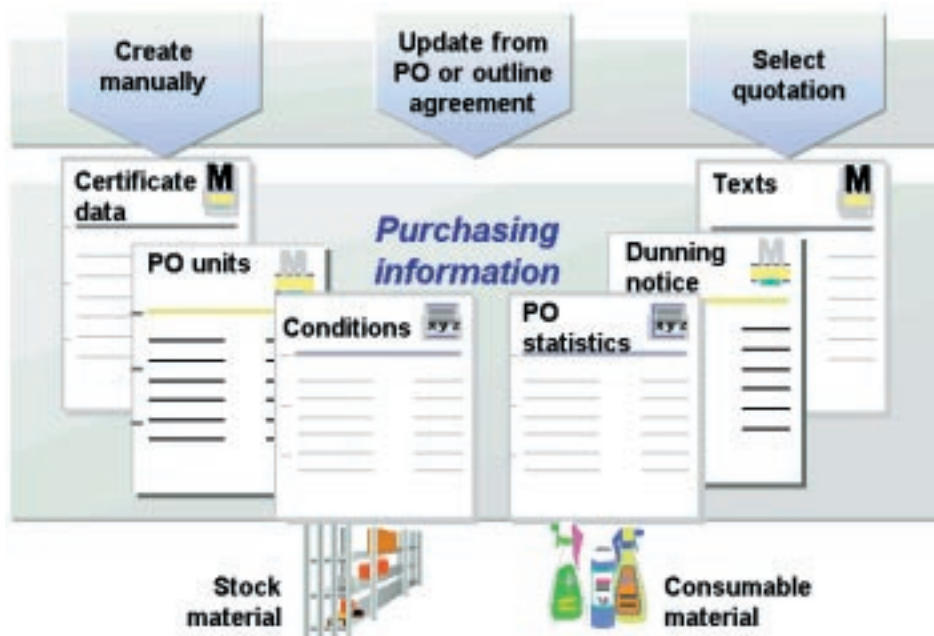


Fig. 3-4: Creating and Updating Info Records

Net Price Simulation

Buyers can use the purchasing info record to compare prices and conditions of various vendors for a material or material group or obtain an overview of a vendor's prices for all materials supplied by the vendor. The net price simulation permits analysis of hypothetical price scenarios.

Furthermore, buyers can simulate vendors' net regarding any order quantities and order data. Based on quantity and date, the system determines the vendor with the most favorable price.

The net price simulation can make allowance for any incidental costs of delivery incurred and applicable cash (prompt-payment) discounts when generating the simulated price. It can also consider any applicable price breaks based on price/quantity scales and the validity periods.

The purchasing information record represents the most important source of information on a certain material-vendor relationship.

What are the potential uses of purchasing info records?

- ☐ Representation of vendor-material relationships
- ☐ Analysis of sources
- ☐ Price simulations

Bill of Material

Bills of material (BOMs) provide a convenient way of allowing you to describe product structures. BOMs, in their various forms, are used in all situations where finished products are manufactured from a number of component parts or substances. (Depending on the industry in which they are used, a BOM may also be referred to as a recipe or list of ingredients.)

BOM Categories	BOMs describe different types of objects (such as materials or documents), for which object-specific data is managed. BOMs for materials (material BOMs) or sales order items (sales order BOMs) are especially relevant to Materials Management. Business transactions, such as ordering, may only reference the BOM if it is currently valid.
Validity Checking	<p>You define an area of validity and a validity period for each BOM. For example, you can create a material BOM in a specific plant and extend its area of validity by allocating the BOM to additional plants. However, you can also create a group BOM that is not valid for a specific plant. In this case, there is no plant-specific system check for the materials.</p> <p>The valid-from date and valid-to date determine the period in which the BOM is valid.</p> <p>You can use the engineering change management functionality to control changes to objects and record a change history. When you make changes with reference to a change master record, the header or item data you change is duplicated. You can then display the BOM both before and after the change.</p>

Technical Types of BOMs

When you first create a material BOM, you create a simple BOM for the material. If only a few of the components of your products are different, you can easily extend the existing BOM:

- ☐ Variant BOM
 - One BOM describes several similar materials.
- ☐ Multiple BOM
 - One BOM describes one material that is made up of different components or component quantities, depending on the manufacturing process used.

BOM Usage

Different business functions within a company (for example, production and MRP) require data that is specific to their activities. If these areas only want to see the data that is relevant to their work in the BOM explosion result, it is useful to maintain separate BOMs in different areas for one material. Each BOM represents a different view of the product.

You use the BOM usage to define to which area of the company the BOM is relevant. You maintain the item data required for the BOM usage concerned.

Structure of a BOM

BOM data is maintained on the following levels:

- ☐ BOM header

Here, you maintain the data that is relevant to the entire BOM. For example, you allocate the BOM to a plant or group, and define whether the BOM is released for production in its current form.

- ☐ BOM item

Here, you describe a component of the assembly. Different item categories are defined to allow you to enter specialized data that is relevant to the individual component.

The following item categories are relevant to Materials Management:

- ☐ Stock item

Items of this category are kept in stock.

- ☐ Non-stock item

Items of this category are procured directly and not kept in stock.

- ☐ Variable-size item

This item category allows you to enter sizes, which are used for calculating the required quantity of a variable-size component.

- ☐ Sub-item

A sub-item is a part quantity of an item that has a different installation point to the other part quantities of the item. Sub-items have no control functions in BOM maintenance.

You can easily extend the BOM header and BOM item by adding fields specific to your company.

BOM Reporting Functions

The different requirements of specific areas within a company are fulfilled by the flexible reporting functionality for BOMs.

The following reporting functions are supported by the R/3 System:

- ☐ BOM explosion

The “top-down” explosion of a BOM determines all the components on all levels of the BOM. You can use a range of selection criteria to define precisely which additional information is included or restrict what is displayed in the list.

These are some of the materials management applications where BOMs are exploded automatically:

- ☐ Creating a subcontract order

“Material provision” items are created automatically.

- ☐ Fast entry of reservations

Reservation items are displayed automatically.

❑ Where-used list

You use this function to find in which BOMs an object (material, document, or class) is used.

❑ BOM comparison

You use this function to compare two BOMs.

❑ Change documents

Changes that are made without reference to a change master are logged in change documents. You can display the old and new field values.

A product is referred to as an assembly. An assembly contains one or more components, and each component may also be an assembly. Accordingly, a product is represented in the SAP R/3 System through a hierarchy which uses single-level bills of material as a basis. This avoids data redundancy, since you can reproduce the data stored in this basic structure in other forms. This includes a multi-level bill of material (showing the structure of a product), or a summarized bill of material (showing the quantities of materials used).

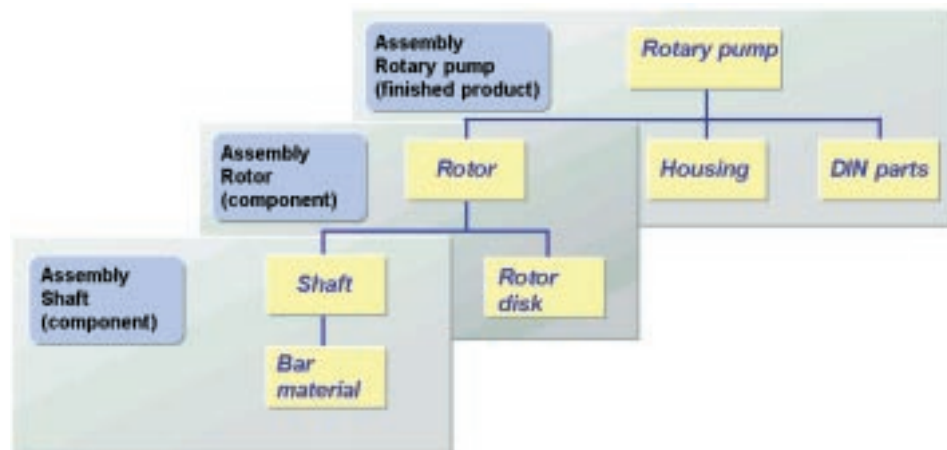


Fig. 3-5: Multi-Level Bill of Material

For more detailed information on bills of material functions, see the brochure PP Production Planning.

Classification

Materials R/3 classification allows you to categorize any type of master data records in the R/3 System. You can classify materials, routings and documents, as well as customers, vendors and batches.

In MM, classification helps the design engineer find similar parts. This reduces the range of parts used and minimizes redundancy of materials. In this way, the classification of materials helps to reduce both warehouse stocks and administrative tasks.

Classes and Characteristics

Classes can either be created on one level or in multi-level class hierarchies. You can assign catchwords to each class to make it easier to find suitable classes.

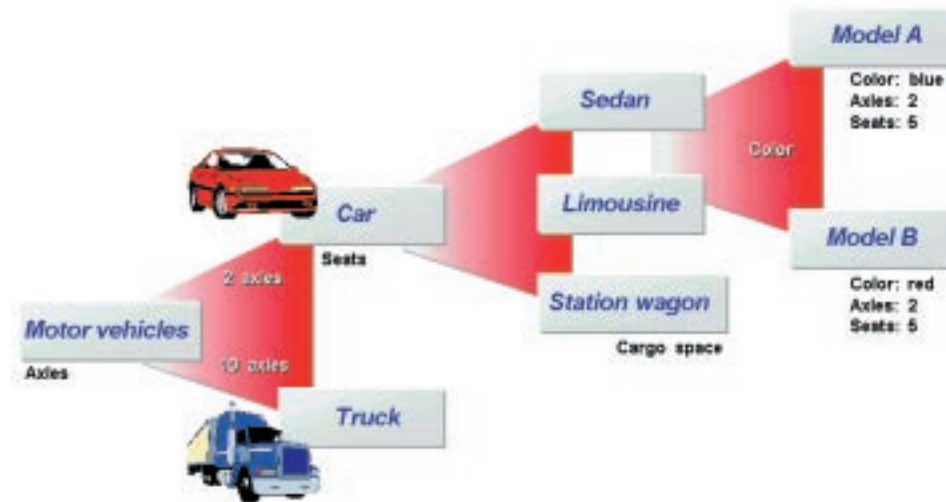


Fig. 3-6: Class Hierarchy

Characteristics are used to describe the features of classifiable objects. They are defined by you and can be assigned to classes. The classification process is made easier by assigning user-defined formats and valid value sets to characteristics.

The characteristics in a class hierarchy can be inherited across multiple levels of the hierarchy. This allows you to restrict valid value sets of a characteristic from level to level within the hierarchy.

Both texts and values for characteristics can be maintained in several languages. You can search for objects using any of the languages defined.

Multi-Lingual Functionality

Master records often contain a wide range of descriptive information that can be used for classification. Consequently, you can define a field in an object master record as a reference characteristic. The value of the characteristic is copied from the master record when you classify the object.

Reference Characteristics

Classifying Objects

You can classify objects either by maintaining the master record or by using the allocation functions of the classification system. The system uses the characteristics in a class for automatically generating a screen on which you can enter values for the characteristics.

When you classify an object, you can allocate it to one or more classes.

Finding Objects in Classes

Finding Classes

The purpose of classification is to let you find a particular master record quickly. To locate the master record, you need to find the class to which the object you require is allocated. You can search for a class:

- ☐ Using the class name
- ☐ Using a matchcode
- ☐ By exploding a BOM hierarchy
- ☐ Using characteristics
- ☐ Using classes without a superior class

Finding Objects

Organizational Areas

Once you have found the class, you find the object using characteristics. You can use individual values and value ranges to do this. To streamline the search, you can define sets of characteristics which are specific to individual departments. This means that you only see and assign values to the characteristics which are relevant to your organizational area.

How is classification used?

- ☐ R/3 classification lets you categorize master data, such as material master records, in a hierarchy, so you can find information faster.

Conditions

As used in the SAP system, the term “conditions” relates to prices, surcharges, and discounts. The condition technique is a flexible pricing instrument for purchasing, allowing the processing of both simple price structures and more complex interrelationships.

Conditions can be defined at a variety of levels. The levels most commonly encountered are pre-defined in the standard version of MM for determining prices, discounts, and surcharges (see Figure 3-7). Conditions can be stored for one or all the materials supplied by a vendor.



Fig. 3-7: Conditions

The pricing conditions pre-defined in the standard system covers discounts and surcharges (percentage or absolute amount), delivery costs, cash (prompt-payment) discount, and taxes. However, the standard version can be easily extended to support specific requirements for determining pricing automatically.

Conditions are applied in a certain sequence for determination purposes, according to a user-defined procedure. Price determination (sometimes referred to simply as pricing) means the automatic calculation of the final price of an order reflecting any quantity discounts, taxes, and so forth. Manual changes and additions are possible.

Price Determination

Purchasing can specify one procedure for each vendor or purchasing organization. The benefit of this feature is to allow for different vendor pricing between plants or subsidiaries.

Master conditions are conditions that are of prime significance for purchase orders. The process of price determination is carried out using master conditions.

Master Conditions

The conditions set out in info records are master conditions that apply to all POs for a material issued to a vendor. Master conditions are also stored in contracts.

However, master conditions can also depend on combinations of different criteria, such as:

- ☐ Purchasing organization
- ☐ Vendor or invoicing party (if the invoicing party differs from the actual supplier of the goods)
- ☐ Item-specific criteria such as material, material group, plant, or material type
- ☐ A specific contract item

Purchasing can maintain master conditions centrally, without having to change the conditions in each purchasing info record or contract relating to the vendor. Using this function, purchasing can quickly check a vendor's pricing strategy and quickly change prices and discount rates.

Central Maintenance of Master Conditions

You can determine a vendor's discounts and surcharges on a global basis. In this way, purchasing can define a global discount if the vendor grants a percentage or absolute discount on all POs placed with him.

Conditions are valid for a certain period. For example, a vendor's conditions can be defined for a specific year.

Validity Period

You can define conditions in advance. For example, you can store a vendor's price list for the next year in the system immediately. When the beginning of the validity period is reached, the new prices, discounts, and surcharges are automatically used in purchase price determination.

For each condition, you can specify whether and to what extent manual changes to the price, discount, or surcharge that has been determined are permitted. Limits can be set in both percentages and absolute amounts.

Upper and Lower Limits

Subsequent Settlement with Respect to Conditions

A vendor's price can be recalculated after the PO is invoiced. For this reason, a distinction is made between conditions that are effective immediately upon receipt of the invoice and conditions effective at a later date. For example, volume rebates can be calculated at the end of a month or year – long after the invoice has been paid. Invoices for POs can also be settled retroactively (subject to the total purchase volume)..

Settlement regarding the conditions can be performed periodically (for example, monthly), as a once-only final settlement (for example, at the end of the year), or as a combination of periodic and final settlement. The validity period of a rebate arrangement and the planned settlement dates are stored in a calendar. Existing rebate arrangements can easily be extended at any time.

If you are working with periodic settlement, the purchase volume to which conditions relate can be cumulated towards the end of the arrangement validity period. With the aid of this information, you can determine whether the next level of a rebate scale can be reached before the rebate arrangement expires, whether you should order more to get a higher rebate.

With MM Invoice Verification, a check is made to ensure that the vendor invoices you only for those articles that you ordered and were actually delivered. The verified invoices are released to the Accounts Department for payment and are the basis for updating the vendor business volumes as a precondition for final settlement.

At the end of the validity period of a rebate arrangement, the buyer and seller can compare their respective business volumes based on the total quantity and value maintained in the R/3 System. The R/3 System calculates the rebate amount and debits the vendor account automatically.

The features of the volume rebate arrangement include the following:

- ☐ They can be maintained as a form.
- ☐ They can apply to materials (that is, to all materials, a sub-range, a material group, or a certain material).
- ☐ They can apply to organizational units of an enterprise (for example, plant or warehouse/stores).
- ☐ They can be entered as a fixed amount (for example, in dollars), or as a percentage of business volume.
- ☐ Other indices, such as points totals, can also serve as the basis for settlement.
- ☐ You can specify a separate currency for each condition within a rebate arrangement. This is translated into the settlement currency on the due date.
- ☐ If a certain condition is to apply to different materials, the materials can be combined as one settlement group.

Material Requirements Planning

With its accurate and up-to-date inventory management and ordering functions, the Materials Management component can provide you with the ideal foundation for precise material requirements planning (MRP).

The main function of MRP is to monitor stocks and automatically generate order proposals for the purchasing department. It achieves this by implementing various requirements planning methods.

The planning run is usually done at the end of the day using the net change planning procedure. This procedure only plans those materials whose stock or requirements situation have undergone a change that affects the planning run and that have been flagged with the appropriate indicator in the planning file. Because the runtime is relatively short, you can repeat the net change planning procedure in short intervals. You can shorten the runtime even further by defining a planning horizon. This means that you always have current planning results. The system automatically generates information concerning important parts and exceptional situations, which relieves the MRP controller of routine monitoring procedures. To improve performance even more, you can use parallel processing.

Net Change Planning

During a planning run, the system performs the following steps:

Processing Steps

- ☐ Calculates net requirements
- ☐ Calculates lot size
- ☐ Creates a schedule
- ☐ Creates purchase order proposals
- ☐ Creates exception messages

Using interactive planning, you can adapt the MRP list that the system automatically created. Individual materials can be planned again online immediately.

Since MRP is always performed at the plant level, the planning run includes all stock that is available in the plant.

Planning at Plant Level

Storage location MRP enables you to exclude stock in individual storage locations from the planning run at the plant level, or you can plan this stock separately at the storage location level. Stock that is planned separately is not included in planning at the plant level.

Storage Location MRP

The procedures of consumption-based planning are simple and easy-to-use. Therefore, they are used in companies without in-house production or in production plants for planning B- and C-parts and operating supplies.

The Materials Management component also provides MRP without BOM explosion as a special function. In contrast to the consumption-based planning procedure, this function operates using existing sales orders and material reservations.

MRP

You can determine which MRP procedure should be used for each material and plant. You can also exclude materials from automatic requirements planning.

Order Proposals The type of order proposal that is automatically created by the planning run depends on the material's procurement type. The system automatically creates a planned order for materials produced in-house. For materials that are externally procured, the MRP controller can choose between a planned order, a purchase requisition, or a delivery schedule.

Planning Procedures

The procedures for consumption-based planning include:

- ☐ Reorder point planning
- ☐ Forecast-based planning
- ☐ Time-phased planning

Reorder Point Planning

In reorder point planning, the system compares available warehouse stock with the reorder level. If available stock falls below the reorder level, the system creates an order proposal. But if the purchasing department has already created a purchase order for the required quantity, the system will not create an order proposal.

Reorder Level The reorder level (sometimes called the reorder point) is calculated by adding the safety stock plus the expected average material consumption within the replenishment lead time. When determining the reorder level, you must consider safety stock, previous consumption values or future requirements, and the replenishment lead time.

Safety Stock Safety stock must be set at a level that covers both excess material consumption within the replenishment lead time and any additional requirements that may occur because of delivery delays. Therefore, you must consider previous consumption or future requirements, and vendor delivery / production timeliness when determining the safety stock level.

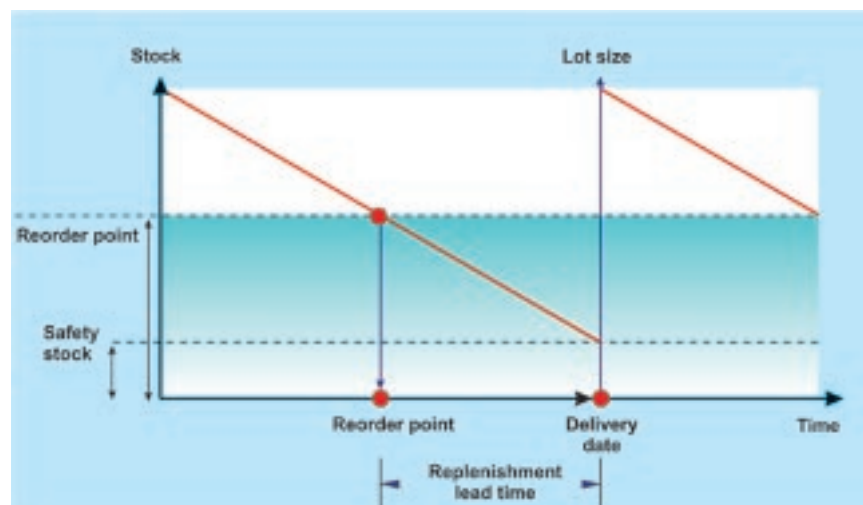


Fig. 4-1: Reorder Point Planning

Consequently, the reorder level and the safety stock level are key control parameters within reorder point planning. The system can determine them automatically, or you can determine them manually.

The advantage of automatic reorder point planning is that the system automatically adapts the reorder level and the safety stock level to the current consumption and delivery situation. This helps greatly to keep stock levels low.

Inventory Management continuously monitors available warehouse stock in reorder point planning. Every time a material is withdrawn from the warehouse, the system checks whether this has caused the stock level to fall below the reorder level. If this is the case, the system makes an entry in the planning file for the next planning run.

Forecast-Based Planning

Material consumption is also the key to forecast-based planning. As in the automatic reorder point planning procedure, the integrated forecasting program determines forecast values for future requirements. The main difference between reorder point planning and forecast-based planning is that these forecast values are actually used for planning in forecast-based planning.

You can combine time-phased planning with reorder point planning. In this case, the material is not only planned on the planning date, it is also planned if a goods issue causes the stock level to fall below the reorder point.

**Time-Phased Planning
and Reorder Point
Planning Combined**

Net Requirements Calculation

The planning run uses the requirement quantities forecast by the system, and the system makes the net requirements calculation. In this calculation, the system checks every period to ensure that forecast requirements are covered either by available warehouse stock or by firmed receipts from purchasing. If a forecast requirement is not covered by existing receipts, the system creates an order proposal.

By entering a range of coverage profile in the material master record, the system considers the ranges of coverage defined in Customizing for the net requirements calculation and creates a safety stock based on actual requirements.

**Days' Supply
(Range of Coverage)**

Lot-Sizing Procedures

The purpose of MRP is to generate an order proposal when the system calculates a requirements shortage in the planning run. The system calculates the lot size for the order proposal according to the lot size entered in the material master record.

The R/3 System supports the most modern lot-sizing procedures, but you can integrate your own specific formulas with relatively little effort. The procedures in the R/3 System for determining the lot size are divided into three groups: static, period, and optimum.

In static lot-sizing procedures, you calculate the lot size using only the quantity specifications entered in the material master record. You can calculate the lot size according to three different criteria:

- ☐ Lot-for-lot order quantity
- ☐ Fixed lot size
- ☐ Replenish to maximum stock level

**Static Lot-Sizing
Procedures**

Period Lot-Sizing Procedures	<p>In period lot-sizing procedures, the required quantities from one or several time periods are grouped together to form a lot. The R/3 System supports various periods. You can determine the number of periods to be grouped together in an order proposal. You have the following choices:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Daily lot size <input type="checkbox"/> Weekly lot size <input type="checkbox"/> Monthly lot size <input type="checkbox"/> Lot size according to periods that are based on accounting periods <input type="checkbox"/> Lot size according to a planning calendar (definable period)
Optimum Lot-Sizing	<p>In optimum lot-sizing procedures, the required quantities for several periods are grouped together to form a lot. An optimum cost ratio is determined between lot size, independent costs, and storage costs. The only difference between the various optimization procedures is the calculation of the minimum costs. The following optimum procedures are usually used:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Part period balancing <input type="checkbox"/> Least unit cost procedure <p>The following procedures are also available:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Dynamic lot size creation <input type="checkbox"/> Groff reorder procedure <p>You can influence the grouping of requirement quantities into a lot size using additional restrictions in the material master record:</p> <ul style="list-style-type: none"> <input type="checkbox"/> You can enter limit values (minimum lot size and maximum lot size) These limit values are considered during lot-size calculation. This means that the lot size is either rounded up to the minimum quantity or the system does not group required quantities that exceed the maximum lot size. <input type="checkbox"/> On the other hand, you can enter a rounding value or a profile This means that during the lot-size calculation, the lot size is rounded to a multiple of the defined value, if necessary, depending on defined threshold values.
Short and Long-Term Lot Size	<p>The long-term lot size splits the time axis for materials planning into a short-term and a long-term area. In these two areas, the system calculates the lot size using two different procedures. Consequently, you can instruct the system to group requirements over a larger period in the long-term area simply to produce a rough picture of the future master plan. In the short-term area, you can select a smaller, more precise lot size to suit your requirements.</p>

In consumption-based planning, the net requirements calculation usually does not include sales orders and reservations. However, you can set the system so that it considers these requirements in the planning run in reorder point planning and time-phased planning.

External Requirements

Quota Arrangements

If several sources of supply exist for a material (for example, several vendors or delivery schedules), you can define quota arrangements for set periods. The system considers these quota arrangements during the planning run.

MRP Result

The results of the planning run for a material are summarized in both the MRP list and in the stock/requirements list. You can display these lists in a period split of your choice.

The MRP list displays the stock/requirements situation as of the last planning run. It provides a working basis for the MRP controller and is available in printed form as well as online. You can easily select a particular MRP list by using various selection parameters. You can also create an overview of several MRP lists according to various selection criteria.

MRP List

The structure of the stock/requirements list corresponds to the MRP list. However, the stock/requirements list displays the most up-to-date stock/requirements situation and includes any manual changes you have made since the last planning run. You can immediately access all activities that are relevant to MRP, such as goods receipts or goods issues, so you have an accurate overview of material availability. You can also create an overview of several stock/requirements lists according to various selection criteria, such as product group, class, MRP controller, vendor or production line.

Stock/Requirements List

During a planning run, the system automatically recognizes conflict situations and records these as exception messages. Thus, you always are aware of exceptional situations that may require attention.

Exception Messages

Exception messages can refer to one of the following:

- ☐ Scheduling delay
- ☐ Rescheduling and cancellations
- ☐ Stock level falling below the safety stock level

Material Forecast

The forecast is a procedure that uses various mathematical models and historical data to determine future values. In consumption-based planning, the forecast is used to:

- ☐ Determine requirements
- ☐ Determine basic data for calculating the safety stock and reorder level

In general, the forecast is performed for all materials in the background mode. How-

ever, you can also perform forecasts for an individual material online.

Historical data is the basis for a forecast. Therefore, the accuracy of the forecast depends on the extent and the quality of your historical data. In the analysis of a series of consumption values, certain patterns can usually be detected from which the various forecast models are derived (see Figure 4-2).

Constant Model The **constant model** applies if consumption values remain constant over a long period of time, with little variation from a stable mean value. However, occasional fluctuations may occur.

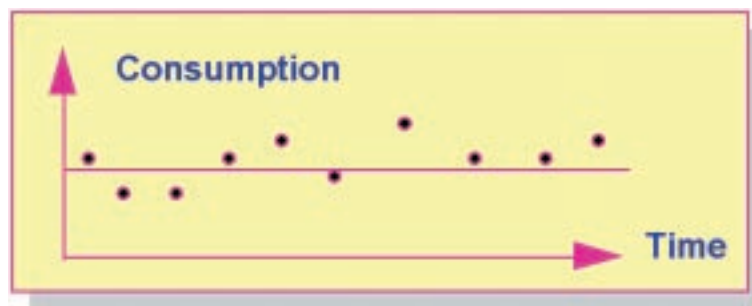


Fig. 4-2: Constant Model

Trend Model The trend model applies if consumption values rise or fall constantly over a long period of time. Occasional fluctuations may occur.



Fig. 4-3: Trend Model

The seasonal consumption model applies if the consumption values rise and fall significantly, deviating from a stable mean value.

Seasonal Model



Fig. 4-4: Seasonal Model

A seasonal trend consumption model is characterized by seasonal deviations and an increasing or decreasing mean value.

Season Trend Model



Fig. 4-5: Seasonal Trend Model

Before you make a forecast is made, you must analyze historical data to establish the appropriate model. You either define the forecast model yourself, or the system selects it automatically during initialization. The system continually monitors the selected model in subsequent forecasts, ensuring that the model remains valid.

Model Selection and
Model Monitoring

The system creates exception messages every time a forecast is made. These messages inform you of any exceptional situations (for example, problems concerning model monitoring). The exception messages are used later to reprocess the forecast result.

Reprocessing

Purchasing

Using the R/3 System is a major step toward optimizing the purchasing function. The system automatically handles all routine tasks – from entering requisitions to generating purchase orders – without significant user intervention. You only need to intervene in exceptional situations.

Because inventory management and other departments can all access existing data, the work involved in creating and processing purchase orders is minimized.

You can create purchasing documents, such as purchase requisitions, purchase orders, or contracts, by referencing data that already exists in the system. This simplifies the process considerably while also preventing errors by copying data that might otherwise require data entry.



Fig. 5-1: The Procurement Cycle

As Figure 5-1 shows, requirements for materials or services are determined within user departments or through MRP.

The system can automatically determine the supply source, or you can enter it manually. If no sources are immediately available, quotations are solicited throughout the RFQ-processing facility and the appropriate vendors are selected.

To a large extent, you can automatically generate purchase orders by referencing existing R/3 System documents, like purchase orders or contracts.

View-at-a-glance listings allow you to check on the status of purchase orders with a minimum of effort.

Reference to the purchase order also makes it easier to create goods receipts and invoice verifications, again saving time and effort.

Purchasing uses the following documents:

- ❑ Purchase requisition

- ☐ Request for quotation (RFQ)
- ☐ Quotation
- ☐ Purchase order
- ☐ Contract
- ☐ Delivery scheduling agreement

Document Structure

Purchasing documents are divided into two parts:

- ☐ The document header
- ☐ The space where individual items are listed

Each document consists of a header and one or more items (see Figure 5-2).

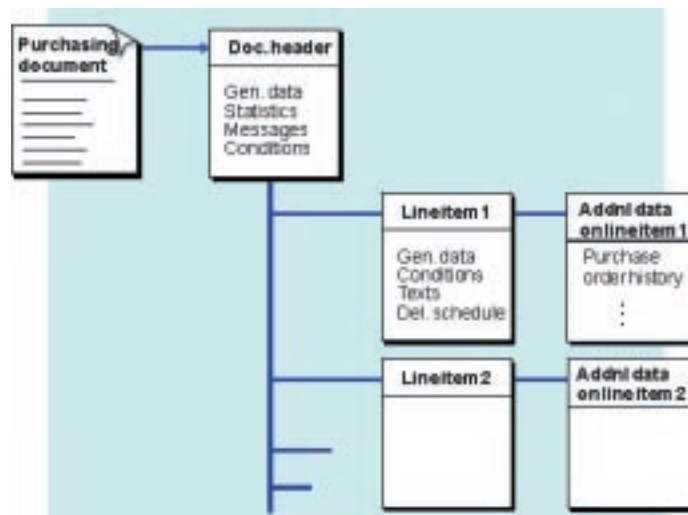


Fig. 5-2: Structure of a Purchasing Document

The document header contains the information that applies to the entire document; the items relate to the materials or services to be procured. In purchase orders, the header contains the document number and data relating to the vendor, and the individual items specify the material and the order quantity.

Release Procedure for Purchasing Documents

All purchase requisitions and other purchasing documents can be made subject to a release procedure.

When a document is created, the system automatically assigns a release strategy based on certain conditions, such as the value. The release strategy defines which release points are needed to release (or approve) the document and in which order. Release points are people, departments, or other organizational units. When all release points have released the document, processing can continue. This means you can convert a requisition into a purchase order or that a service entry sheet is considered accepted, allowing you to enter invoices against it.

This procedure replaces written authorization procedures with electronic signatures, while maintaining the dual control principle. The person responsible processes the relevant document in the system (thereby marking it with an electronic

signature) which legitimizes the document.

The link to Classification allows you to determine a release strategy for a document based on a large number of optional conditions, such as the total value of the document, material group, plant, and so forth. This makes for flexible release strategies.

With purchase requisitions, you can also work with R/3 Business Workflow™. The appearance of a work item in an employee's inbox alerts them that a document is awaiting release. Processing the work item releases it.

In addition, there is a procedure for purchase requisitions only. This works without classification and with a predefined number of conditions.

Purchase Requisition

A **purchase requisition** is a request or an instruction to the purchasing department to procure a certain quantity of a material or service on or by a certain date.

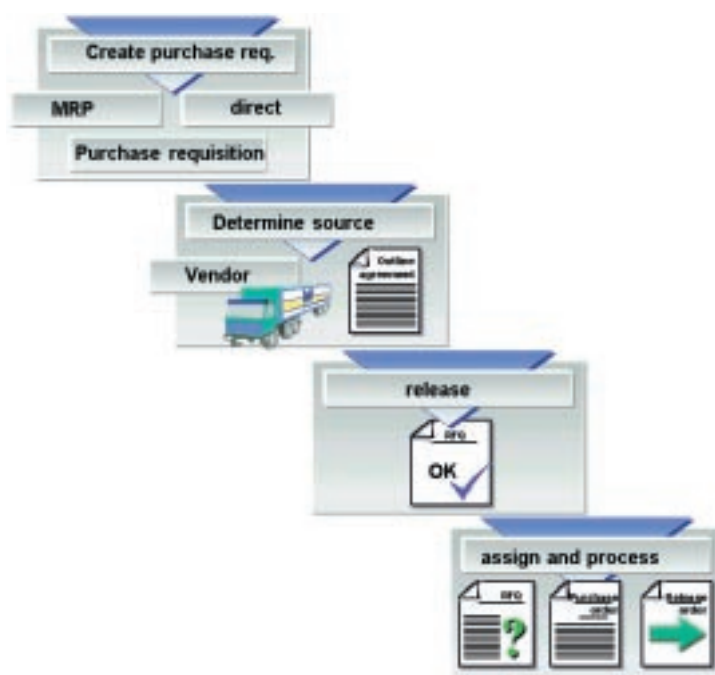


Fig. 5-3: Requisition Processing

The requesting department can enter purchase requisitions manually using reference documents, or MRP can generate them automatically (see Figure 5-3).

Automatic Source Determination

If supply sources exist for the requested material within the system, R/3 can find them automatically and assign them to the appropriate purchase requisition. Purchasing can process the assigned requisitions more quickly because the source is already known. The R/3 System treats the following as sources of supply:

- ☐ Fixed vendor
- ☐ Outline (long-term) purchase agreement
- ☐ Purchasing info record

Assignment and Processing

You can generate your own lists of purchase requisitions. The next step is to choose the desired source and generate the relevant purchase orders, release orders, or vendor schedules.

If you can not allocate the requisition to a source, it can be selected for RFQ processing.

Automatic Generation of Purchase Orders

The system can automatically convert requisitions to which a source has already been assigned into purchase orders.

What central functions does the purchase requisition have?

- ☐ It defines the quantity and date for a material or service.
- ☐ It constitutes the basis for further processing (approval procedure, source determination, issue of POs).

Request for Quotation (RFQ) and Quotations

Quotations are solicited from vendors by issuing requests for quotations (RFQs). A quotation contains a vendor's prices and conditions for the specified materials or services. It may also include additional information.

The system can automatically generate RFQs from a requisition, or you can enter them manually. RFQs are sent to a number of different vendors. Data from incoming quotations is entered into the individual RFQs stored in the system. Consequently, an RFQ and quotation constitute a unit.



Fig. 5-4: Processing of RFQs and Quotations

You can perform a comparative analysis of quoted prices and conditions using the price comparison list -- a tool that determines the most favorable quotation. This data is automatically stored in a purchasing info record. The system generates rejection letters for vendors with unsatisfactory quotations.

What are the key features of the RFQ and quotation?

- ☐ Easy-to-use referencing functions allow you to generate RFQs directly from purchase requisitions.
- ☐ Data from the vendor's quotation is entered in the RFQ.
- ☐ Quotations form the basis for generating pricing rules.

Purchase Order

In the ordering phase, your goal is to process purchase orders with a minimum of time and effort. For this reason, when creating purchase orders, you reference data that already exists in the system. Referencing means that you copy an existing document, such as a purchase order, and then change it to create your new purchase order. Not only do you benefit from reduced data entry, but SAP referencing functions minimize the likelihood of errors and ensure data consistency.

When creating a purchase order, you can reference a requisition. You can select requisitions from a list and generate purchase order items. You can also reference existing purchase orders this way.

If a contract exists for the requested material, you can reference the contract item to create a release order. With a release order, you only need to enter the order quantity and delivery date. The system copies other details, such as texts, prices, and conditions, from the contract. Figure 5-5 shows the documents that can be referenced in creating purchase orders.

Referencing

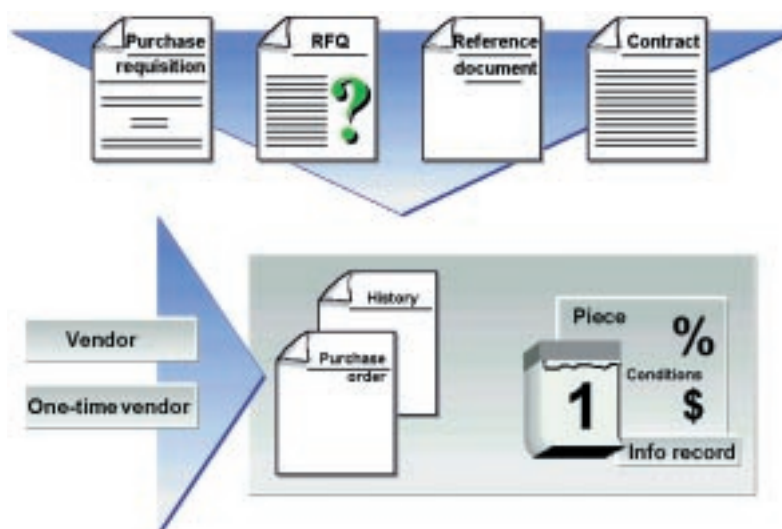


Fig. 5-5: Creation of Purchase Orders Using the Referencing Technique

Purchasing Info Record	<p>The purchasing info record establishes the relationship between a vendor and a material or service. It contains data, such as a vendor's material prices and conditions, and is an important source of information for purchasing.</p> <p>You can update the purchasing info record when you create a purchase order. When you create a PO item, the system copies data (such as valid conditions) from the info record. You only need to enter the material number, order quantity, and delivery date.</p>
Generating Purchase Orders	<p>The system can automatically generate purchase orders from the list of requisitions to be processed. You can also generate RFQs and delivery schedules this way.</p>
Fast Entry	<p>The item overview contains the most important data required to create a document item. This data includes the material number, PO quantity, and price as well as the plant and storage location. Consequently, you can enter many items very quickly on one screen.</p>
Creating a Purchase Order	<p>Materials Management provides a number of options for creating purchase orders:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Vendor known You choose this procedure if the vendor from whom materials are to be ordered is known. <input type="checkbox"/> Vendor unknown Use this procedure if you do not know from which vendor the materials are to be ordered. After you have entered the items to be ordered, the system determines and suggests possible vendors. The PO items only have to be assigned to the chosen vendors after which purchase orders can be generated. <input type="checkbox"/> Assigned purchase requisitions exist You can use this procedure to list all purchase requisitions for your purchasing group that have already been assigned to a source of supply. POs can be generated from this list.

If a source has already been assigned, the system can automatically convert requisitions into purchase orders.

Automatic Generation of Purchase Orders

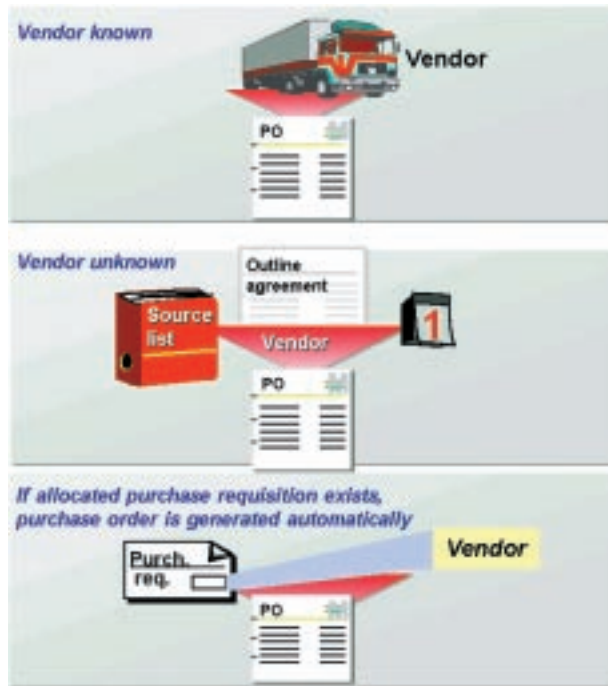


Fig. 5-6: Ways of creating a Purchase order

Account assignment is a term given to data that enables the system to automatically determine the accounts to be posted when the ordered goods are delivered. When you enter the account assignment, the system performs an internal check and proposes the account number.

Account Assignment

You may need to enter several account assignments for a PO item. An example is where it is necessary to apportion costs to different cost objects such as cost centers or projects. You can apportion the net order value to the individual cost objects on a percentage or quantity basis (for example, 10% to cost center 1 and 20% to cost center 2).

Multiple Account Assignment

You can also specify the account assignment in purchase requisitions or contracts. It is automatically copied into any purchase orders created by referencing these documents.

You can enter vendor confirmations (such as order acknowledgments or shipping notifications) against purchase orders. Within the period between the date of the PO and the desired delivery date, the vendor usually provides information regarding quantities of materials and the likely date of arrival. MRP uses this kind of up-to-date information to improve the precision of its planning data.

Confirmations

At the time of goods receipt, the system can use the quantity confirmed by the vendor in the shipping notification as the default goods receipt value.

What are the advantages of the purchase order processing functions?

- ☐ Referencing and fast-entry functions contribute to efficient purchasing operations.
- ☐ R/3 can automatically determine supply sources.
- ☐ The system automatically converts purchase requisitions already assigned to a source of supply into purchase orders.
- ☐ Within the PO item, the system can propose an account assignment, or you can enter one.

Outline Purchase Agreement

An **outline agreement** is a long-term purchasing arrangement with a vendor concerning the supply of materials or rendering of services subject to specified conditions. The conditions apply to:

- ☐ A defined period of time
- ☐ A defined total quantity
- ☐ A certain total value of goods or services to be supplied

You must specify the delivery date for materials or the deadline for services rendered in a separate process. You do this by issuing release orders or delivery schedules referring to the basic agreement. There are two types of outline agreement in the R/3 System -- contracts and scheduling agreements.

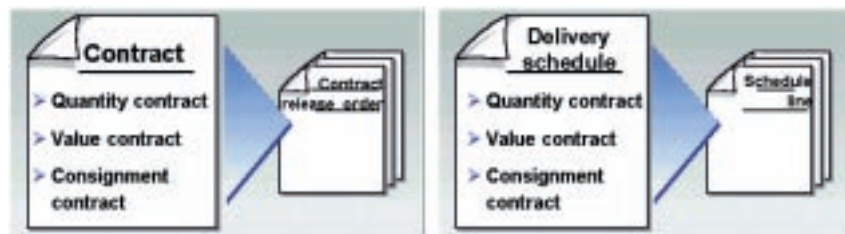


Fig. 5-7: Types of Outline Agreements

Contracts	Contracts can take one of two basic forms -- the value contract and the quantity contract. (Note that this concept is referred to by a wide variety of different terms in the literature and in practice, including blanket order, blanket contract, period contract, bulk contract, and master agreement/contract.)
Value Contract	In a value contract , the purchase of goods or services up to a certain total value is agreed upon.
Quantity Contract	In a quantity contract , the purchase of a certain total quantity of goods or services is agreed upon.
Scheduling Agreements	The scheduling agreement is a long-term purchasing arrangement made between a vendor and a customer. It involves the creation and regular updating of schedules for delivering materials specified in the agreement. The agreement specifies the total quantity to be supplied during the validity period of the agreement.

Where procurement is carried out based on scheduling agreements, the customer does not subsequently issue individual POs or release orders to the vendor. Instead, the vendor receives a delivery schedule, which is periodically updated. Each line of the delivery schedule represents an individual shipment, indicating the quantity to be delivered, the delivery date and, if required, the delivery time for just-in-time (JIT) deliveries. These lines are equivalent to orders that, in turn, can be regarded as firm, semi-firm or planned. This depends on whether the schedule line in question falls within the firm, trade-off, or planning zone of the delivery schedule.

Delivery Schedule (Vendor Schedule)

For each scheduling agreement item, you can generate forecast delivery schedules. Note that this concept corresponds roughly to the "planning schedule with release capability" (ANSI 830) and the "delivery schedule message" (EDIFACT DELFOR).

Forecast Delivery Schedule

A forecast delivery schedule records the status of the individual schedule lines in the delivery -- as a rule, the status that is transmitted to the vendor.

The release documentation indicates which schedule lines were transmitted to the vendor and on which date.

Release Documentation

Procurement based on scheduling agreements gives you these important advantages:

- ☐ **Reduced processing time and fewer paper transactions**
Delivery schedules can replace a large number of individual POs or release orders.
- ☐ **Stockless or near-stockless purchasing**
The option of specifying a precise delivery time facilitates the delivery of ordered goods or materials on the just-in-time principle.
- ☐ **Shorter vendor lead times for the individual shipments**
The vendor does not have to make the total order quantity set out in the agreement available in one go, but can deliver it bit by bit over a time as scheduled. The vendor is also better able to plan production resources.

What are the features of outline purchase agreements?

- ☐ Long-term supply arrangements based on specified conditions
- ☐ Definite purchase quantities or values over a specified period
- ☐ Definition of outline agreements as value or quantity contracts or as scheduling agreements
- ☐ Specific instructions to perform services or supply materials as release orders and delivery schedules

Sources of Supply

A supply source is a procurement option for a material and may be either an external source (a vendor) or an internal one (one of your company's own plants).

Purchasing can track internal and external sources of supply using the source list and quota arrangement. Source list records and quota arrangements are used in the process of source determination (that is, establishing who can supply a material).

Source List

The source list gives purchasing the opportunity to manage sources centrally. A **source list** is a list of available sources of supply for a material, indicating the periods during which procurement from such sources is possible. The source list makes it easier to determine the source (meaning a vendor, an internal plant, or an outline agreement item) that is applicable at a certain point in time.

The source list contains the preferred or allowed (or disallowed) sources for a material in a plant that are valid for a specified period of time. Each source is defined by a source list record in the source list.

The source list gives you the following options:

- ☐ Definition of a source as fixed (the relevant source is regarded as preferred over a specified period)
- ☐ Blocking a source, for example, when quality is poor
- ☐ Determination of effective sources (those that count as preferred sources at a certain point in time).

Figure 5-8 shows how the source list can be maintained.

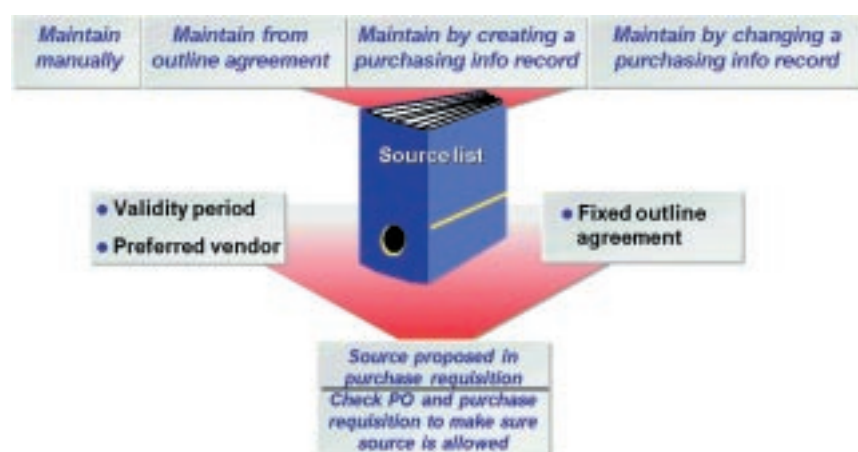


Fig. 5-8: Maintenance of Source List Records

It is a good idea to maintain source list records manually if you make numerous changes or new entries in the source list. You can use an existing source list as a reference for data entry.

You can also maintain the source list when an outline agreement is created or changed. In the process, the outline agreement item is copied in the source list.

You can maintain the source list from the purchasing info record. This means that the system automatically enters a vendor in the source list when you create or change a purchasing info record.

The system can also automatically generate the source list for a material. In this case, the system creates a source list for each info record that has been defined for the material or for each outline agreement item in which the material has been ordered.

The source list incorporates functions for the time-dependent allocation of sources.

Quota Arrangement

If a certain material is to be procured alternately from different sources, you can allocate a quota to each source. This indicates what share is to be procured from each source. If a quota arrangement exists for a material, it is considered during source determination.

A quota arrangement is set up for a specific period. For each source of supply, a quota arrangement item is created within the relevant period.

The quota arrangement permits the time-dependent apportionment of material requirements to different sources.

Which source management options are available to purchasing?

- ☐ Management of internal sources (plants from the same organizational structure) and external sources (vendors)
- ☐ Source list for the time-dependent definition of sources
- ☐ Quota arrangement for the apportionment of requirements to different sources

Vendor Evaluation

The Materials Management component's vendor evaluation feature optimizes procurement operations. It simplifies the process of selecting sources and lets you continuously track and review your existing supply relationships. It facilitates the selection of sources and the ongoing surveillance of existing supply relationships for both materials and services.

Using the vendor evaluation system ensures more objective ratings. All vendors are evaluated based on uniform criteria, and the system calculates their scores. Therefore, subjective impressions and judgments of individuals can be removed.

Materials Management uses a scoring system based on a scale of 1 to 100 points. The overall score gives the purchasing staff a general idea of how their vendors are performing and permits comparative vendor appraisal.

Scoring System

Main Evaluation Criteria

The main evaluation criteria in the standard system are:

- ☐ Price
- ☐ Quality
- ☐ Delivery
- ☐ Service

If required, you can define up to 99 main criteria. You can weigh the influence of the individual criteria on the overall score.

Subcriteria

Each main criterion can be divided into several subcriteria. This allows a more differentiated and detailed evaluation.

This standard system provides five subcriteria, which is generally sufficient for evaluation purposes. In addition, you can define up to 20 subcriteria of your own.

Calculating Scores for Subcriteria

The scores for subcriteria are calculated:

- ☐ Automatically
- ☐ Semi-automatically
- ☐ Manually

Automatic calculation means that scores are determined based on data that already exists in the system. Semi-automatic calculation means that buyers enter individual scores for important materials themselves and the system calculates the score from them. Manual input means that you enter a vendor's score for subcriteria on a global basis.

You can evaluate a vendor on a detailed basis, or you can opt for a simpler approach with less expenditure of time and effort.



Fig. 5-9: Function of Vendor Evaluation

Analyses

You can run reports to analyze the results of vendor evaluations. For example, you can generate lists that rank vendors based on their overall scores or you can rank vendors that supply a certain material.

Changes involving the evaluations are recorded in logs. You can print evaluation reports.

Change History

What are the tasks of vendor evaluation?

- ☐ Vendor evaluation allows you to rank vendors according to uniform criteria. Vendor evaluation can be performed both automatically and manually.
- ☐ These functions support purchasing through optimizing procurement operations by rationalizing and simplifying the selection of suitable sources of supply.

Reporting

Purchasing managers need to have an overview of their vendors and purchasing organizations at all times so they can react appropriately to market changes. They need to keep track of purchase orders easily and quickly.

Analyses in Material Management's Purchasing component provide you with a wide range of relevant information. It is presented in a manner that satisfies individual requirements. For example, you can generate the following information:

- ☐ Which purchase orders were issued to a certain vendor within a specified period
- ☐ How many purchase orders goods have already been received
- ☐ Whether a vendor has made full or only partial delivery of ordered goods
- ☐ Whether a vendor delivers on time
- ☐ Whether ordered goods have been received and correctly invoiced
- ☐ The average purchase order value for each purchasing organization or purchasing group

You can run different analyses of certain purchasing documents to determine various data. For example, you can determine the order value for a certain material over a specified period or which purchasing organization has the greatest share of the total order value.

General Analyses



Fig. 5-10: Analyses in Purchasing

You can also determine the layout of analyses.

Order Values Analysis of order values allows you to keep track of your purchase orders. This kind of analysis can take one of four forms:

☐ **Totals analysis**

The totals analysis affords an overview of the number and value of existing purchase orders.

☐ **ABC analysis**

ABC analysis allows you to determine which group of vendors accounts for the highest value of material purchases (A), the group that accounts for an average value of purchases (B), and the one from which the value of purchases is lowest (C).

☐ **Analysis with comparison period**

This analysis reveals changes in purchasing activities. It can, for instance, be used to determine how much and from which vendors a certain purchasing organization or group of buyers has ordered. It also determines to what extent the value has changed in contrast to the period of comparison.

☐ **Frequency analysis**

This analysis determines which net order values occur most frequently with which purchasing organization. It can serve as the basis for negotiation with a vendor. For instance, if you discover that numerous POs with a high order value have been placed with a vendor, an immediate percentage discount would be more favorable than the end-of-period volume rebate arrangement currently in place.

List Displays The list displays help you quickly find certain documents and master data among the large volumes of data in the system. A wide range of selection criteria can be entered as individual values or intervals. For example:

- ☐ All POs issued by a purchasing group during a certain week
- ☐ All purchase requisitions for a material ordered from two particular vendors
- ☐ All archived purchasing info records for a material in a certain plant

Furthermore, the system maintains statistics for each purchase order, documenting all transactions relating to the PO, such as goods receipts and invoice receipts. These statistics are referred to as the purchase order history. You can access the history from within a list display.

For further information on analyses in purchasing, refer to Chapter 11, Information Systems.

Which analyses are available to purchasing?

☐ General analysis

You can run a variety of general analyses.

☐ Analysis of order values

This analysis allows you to keep track of purchase orders. This type has four variants:

- Totals analysis
- ABC analysis
- Analysis with comparison period
- Frequency analysis (sources of supply)

☐ Analysis layout

You can determine the layout of the analyses individually.

Inventory Management

Inventory Management in the R/3 System supports the following tasks:

- ☐ Management of material stocks by quantity and value
- ☐ Planning, data entry, and documentation of all goods movements
- ☐ Physical inventory

All transactions that bring about a change in stock and the stock updates that result from those changes are entered in real time. This means that the physical stock shown is always accurate. You can obtain an overview of current stock levels of a particular material at any time.

Current data on any change in stock is immediately made available to any section of the company's organizational/production chain requiring the information. In this way, stock marked as *Available* in the current stock/requirements list is MRP-updated and, if applicable, the system creates a planning file entry for the material.

When a goods movement is posted, the system updates the stock value. This triggers updating of these values in other components:

- ☐ Automatic posting to the G/L accounts in Accounting
- ☐ Line items are created for the account assignments involved (for example, cost centers, orders, projects, assets)

The system determines the posted amounts from the data in the order, in the material master record, and so on. For this reason, anyone entering data on a goods movement only has to input the actual quantity being moved.

You can also post goods receipts without valuating them. In this case, valuation does not take place until receipt of invoice.

When goods movements are carried out, the system creates documents that form the basis for updating amounts and values. At the same time, they serve as proof of the goods movement (see Figure 6-1).

Managing Material
Stocks by Quantity

Managing Material
Stocks by Value

Planning, Data Entry
and Documentation of
All Goods Movements

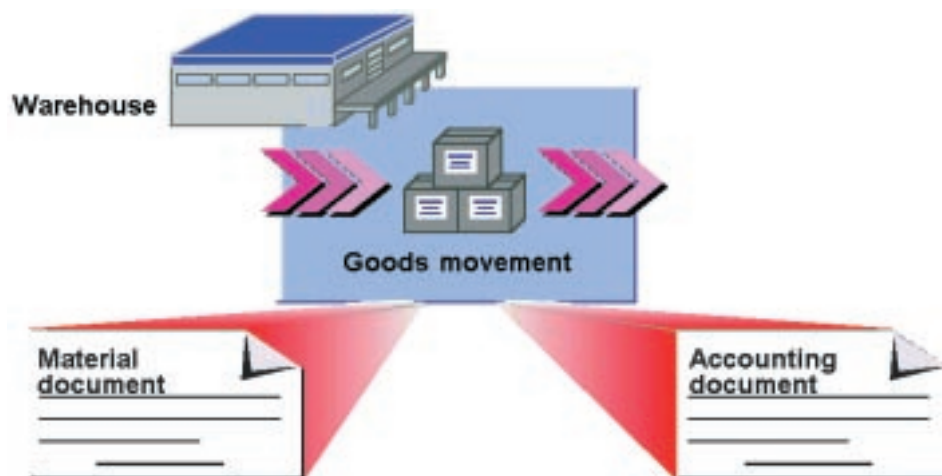


Fig. 6-1: Goods Movement Documents

You can plan goods movements using reservations.

You can print out the material document posted for a goods movement as a goods receipt/issue slip (with a bar code in some cases). You use this to carry out physical movements within the warehouse.

Inventory Support

You can compare stocks physically on hand with the book inventory balances using different physical inventory procedures, such as periodic inventory, continuous inventory, or sample-based inventory.

Link to Warehouse Management

Inventory Management can be supplemented by the Warehouse Management component, which manages storage bins in complex warehouse structures.

What are the functions of Inventory Management?

- ☐ Inventory Management allows you to manage material stocks by quantity and value.
- ☐ Planning and data entry of goods movements are recorded as documents.
- ☐ The physical inventory is used to compare physical stock with the book inventory balance.

Goods Receipts for Purchase Orders

When goods are delivered for a purchase order, data entry of the goods receipt is always related to the purchase order. This has the following advantages:

- ☐ When the goods receipt data is entered, the system proposes default data (such as materials ordered or quantities) from the purchase order. This simplifies data entry and makes it easier to monitor goods received for over or underdeliveries.
- ☐ If the vendor gave prior notification of the delivered quantity, you can enter the goods receipt with reference to the shipping notification. Using this process, you can use the quantity confirmed by the vendor as the default quantity for the goods receipt.
- ☐ The system updates the goods receipt data in both the purchase order history and the vendor evaluation. This allows Purchasing to trace the purchase order history and, in the event of nondelivery, institute the necessary reminder procedures. The goods receipt data also enables vendor evaluation to determine the vendor's reliability regarding adherence to delivery dates and the accuracy of quantities delivered.
- ☐ The vendor invoice is verified using the quantity ordered and delivered.
- ☐ Valuation of the goods receipt in the R/3 System is based on the price stated in the purchase order or invoice.

Reference to Purchase Order

If there is no purchase order number on the delivery note enclosed with the goods, you can look up the purchase order under either the material or vendor number.

You can enter goods receipts for several purchase orders in one transaction.

Reference to Shipping Notification

If a shipping notification relating to a purchase order exists, the goods receipt can reference the shipping notification. If you do not know the shipping notification number, you can search for it through the transport identification code (for example, the truck number).

If you enter the purchase order number or the shipping notification number, the system displays a collective entry screen that shows all open purchase order items in the plant or throughout all the plants. After verifying the data, you can either post the goods receipt document at once or call up detailed information on an item and enter additional data such as item text or the unloading point. In the case of goods receipts for purchase orders, the system proposes data from the purchase order for selection. It then updates the purchase order history.

**Data Entry of
Goods Receipts**

You can enter the goods receipt using different units of measure. The system copies the storage location and quality inspection indicator from the purchase order item, or you can or set them manually. The system automatically transfers the delivery costs planned for the purchase order, and it checks the tolerances for underdelivery and overdelivery.

You can enter several goods receipt items for one purchase order item, for example, when posting a partial quantity to quality inspection to another storage location or to goods receipt blocked stock.

If the goods go straight to consumption and not to storage, the system copies the account assignment (for example, cost center or order) in the purchase order data. For items with multiple account assignment, you can still assign the quantities delivered to the specific accounts after you enter the goods receipt.

**Goods Receipt to
Consumption**

Using SAPmail™, the system automatically notifies the appropriate employee in Purchasing of the goods receipt.

Notifying Procurement

If the material received represents a missing part, an e-mail message notifies the responsible MRP controller of this goods receipt, and the controller can switch directly from SAPmail to backlog processing.

Missing Parts Check

What are the features of goods receipts for purchase orders?

- ☐ Default data from the purchase order makes data entry easy
- ☐ Update of purchase order history
- ☐ Link to vendor evaluation
- ☐ Direct posting to consumption for purchase orders with account assignment

Reservations

Reservations are used to plan goods movements for specific dates. You can enter reservations manually, or the system can generate them automatically when you create an order, network, or project.

You can create a reservation for one or more types of material. Entering a reservation lists the material number or batch number, planned quantity, scheduled delivery date, and use.

The system runs a dynamic availability check whenever you enter a reservation to verify that the material is not reserved for another purpose.

**Dynamic Availability
Check**

The reserved quantity reduces the available stock in MRP planning and is shown under the reserved stock for the material.

What is the main function of reservations?

Reservations allow goods movements to be planned in advance.

Goods Issues

Planned/Unplanned Withdrawals

Postings of material withdrawals reduces the quantity and value of warehouse stock. The system treats all transactions as planned or unplanned withdrawals. Accordingly, the system updates planned and unplanned consumption separately in the consumption statistics.

If the goods issue relates to a reservation, the system proposes the withdrawal quantity and account assignment given in the reservation. To specify the destination, you must enter a goods recipient. This is printed out on the withdrawal slip.

Storage Location/ Batch Selection List

When you enter a goods issue, you can display all the storage locations of a given material. With materials subject to batch management, the system displays all batches in the selection list.

Negative Stocks

If organizational situations require you to post goods issues before the corresponding goods receipts, you can allow negative stock balances for standard price materials. When you enter the relevant goods receipts, the system eliminates the negative stocks.

What effects do goods issues have?

- ☐ Reductions in warehouse stock
- ☐ Consumption statistics updates

Transfer Postings and Stock Transfers

Stock Transfers

Depending on how your company is organized (for example, decentralized storage) or what sales and distribution policy is used, goods movements may involve more than the receipt and issue of goods. Stock transfers within the company may also be necessary.

Stock transfers can take place on three levels:

- ☐ Storage location to storage location
- ☐ Plant to plant
- ☐ Company code to company code

One- Step and Two-Step Procedures

You can post a stock transfer in one or two steps. In the two-step procedure, you remove a specified quantity of stock from storage and place it in transfer stock. It does not become unrestricted-use stock until it is placed in storage at the receiving point. You can use two-step stock transfers by using stock transport orders.

Transfer Postings

You can also enter transfer postings in the R/3 System. The difference between transfer postings and stock transfers is that transfer postings do not normally involve a physical goods movement. Instead, a transfer posting alters the stock type, the batch number, or the material number.

The following are examples of transfer postings :

- ☐ Batch-to-batch transfer posting
- ☐ Material-to-material transfer posting
- ☐ Release from stock in quality inspection
- ☐ Transfer from consignment material to company stock

How do stock transfers differ from transfer postings?

- ☐ Stock transfers are physical movements within an organizational structure.
- ☐ Transfer postings cause a change in the batch number. They are not accompanied by physical movements.

Goods Movements for Production Orders

Inventory Management is very closely linked to production. On the one hand, it ensures that material components are available for production orders. On the other hand, the receipt of the finished products in the warehouse is posted in Inventory Management (see Figure 6-1).

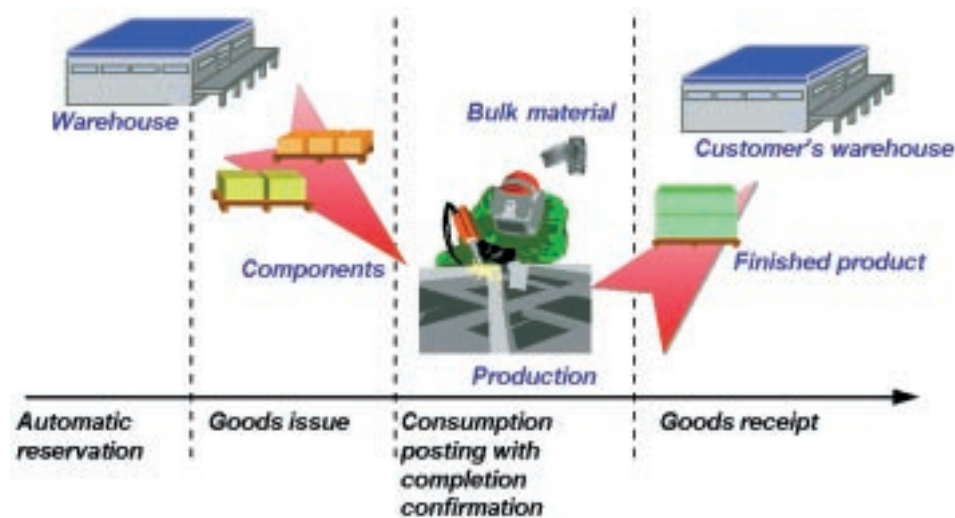


Fig. 6-2: Goods Movements for Production Orders

The system automatically reserves the components planned for a production order. In addition, you can also make unplanned withdrawals during production. The components are withdrawn with reference to the production order.

Automatic Reservations

Notification of the quantity of bulk materials used occurs at the same time as completion confirmation of the production order. You can also plan the receipt of by-products.

Bulk Materials

What are the characteristics of goods movements for production orders?

- ☐ Planned components are reserved automatically.
- ☐ All movements are posted with reference to the production order.

Quality Inspection

Material from a vendor, production, or warehouse that undergoes quality inspection is first posted to stock in quality inspection. Samples from this stock are then used for the inspection.

If inspection shows that the material can be used, it is transferred from stock in quality inspection to unrestricted-use stock.

Integration with Quality Management

If you use the Quality Management component, goods receipt and issues can trigger the inspection procedures.

How is quality inspection integrated into Inventory Management?

- ☐ By the management of stock in quality inspection
- ☐ By inspection procedures that are triggered automatically at goods receipts and issues

Special Stock

Besides the normal stocks of any given material, you may need to manage other stocks separately because of ownership or location. These could be the company's own stocks that are located at vendor or customer sites, or conversely, stocks belonging to vendors or customers that are stored with your company.

Types of Special Stock

Materials Management recognizes the following types of special stock:

- ☐ Vendor special stock
 - Consignment material belonging to the vendor and stored on your premises
 - Returnable packaging belonging to the vendor and stored on your premises
 - Material that you provide to the vendor
- ☐ Customer special stock
 - Consignment material (your company's) at the customer's location
 - Returnable packaging (your company's) at the customer's location
 - Sales order stock
 - Project stock

The system manages these stocks separately for each vendor, customer, sales order, or project. The data entered for goods movements involving special stock always include the vendor, the customer, the sales order, or the work breakdown structure (WBS) element.

You can find additional information on vendor special stock in the section on special business transactions. For additional information on customer special stock, please consult the Functions in Details brochure for Sales and Distribution.

What is the purpose of creating special stock?

- ☐ Identification of stock that belongs to or is stored with the vendor or customer
- ☐ Assignment of goods movements to this stock

Physical Inventory

Every company must physically inventory warehouse stock at least once during a business year for the balance sheet. You can use various procedures to do this.

Materials Management supports the following physical inventory procedures:

- ☐ Periodic inventory
- ☐ Continuous inventory
- ☐ Cycle counting
- ☐ Inventory sampling

Physical Inventory
Procedures

Using Materials Management you can inventory unrestricted-use stock, stock in quality inspection, and blocked stock. The component also handles physical inventories of the company's own stock and special stock.

Types of Stock that
can be Inventoried

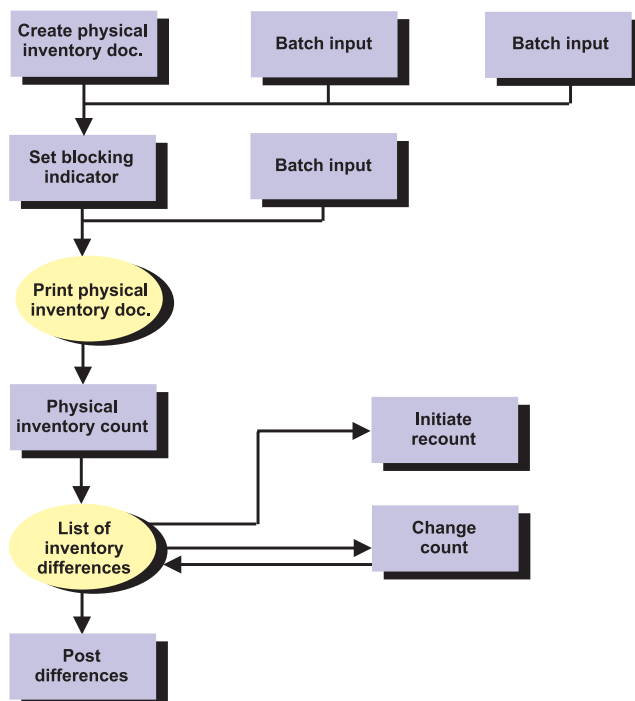


Fig. 6-3: Standard Physical Inventory Sequence

Materials Management offers a wide range of easy-to-use functions for performing physical inventories. These include:

- ☐ Creation of physical inventory documents
- ☐ Printout of warehouse inventory lists
- ☐ Blocks on stock movements of materials being inventoried

Help for Inventories

- ☐ Data entry of the count results with reference to the physical inventory documents
- ☐ Automatic setting of zero count
- ☐ Transfer of inventory count data recorded with portable data capture devices into the R/3 System
- ☐ Lists of inventory differences
- ☐ Posting of differences with reference to the physical inventory documents
- ☐ Creation of recount documents for differences
- ☐ Recording of every physical inventory of stock over any number of years

Inventory Sampling

The more stock management units a company has in its warehouse, the more complicated a physical inventory of the entire stock becomes. You can reduce the time and cost by determining the stock of select materials, then using the count results to make a projection for all stock management units. The inventory sampling method is based on this principle. You can use this procedure in the Inventory Management and Warehouse Management components.

Cycle Counting

Cycle counting is a method of physical inventory in which you count inventory at regular intervals during a fiscal year. These intervals (or cycles) depend on the cycle counting indicator set for the materials. Cycle counting allows you to count fast-moving items more frequently than slow-moving items.

The Inventory Management component offers functions designed for the sole purpose of carrying out physical inventories. The procedures it supports are periodic inventory, continuous inventory, inventory sampling, and cycle counting.

How is the physical inventory process supported?

- ☐ By all current physical inventory procedures
- ☐ By functions designed purely for processing physical inventories
- ☐ By integration with Materials Management (material master, stock quantities)
- ☐ By a link to Financial Accounting (posting of difference values)

Material Valuation

Materials Management automatically values materials on an ongoing basis, but you can manually adjust valuations. Valuation data is stored in the material master record.

You can use LIFO valuation, FIFO valuation, and lowest value determination to value materials for balance sheet purposes. The FIFO (first in first out) valuation method values material stocks as realistically as possible. With the FIFO method, the oldest stocks of a material are considered to be the first ones used. The value of the stock is therefore based on the most recent stock received. With LIFO (last in, first out), valuation is based on the principle that the stocks that were received last are to be used first.

Valuation Structures

You can value stocks at the valuation area level. A valuation area can be defined as follows:

Valuation Level

- ☐ Valuation area = company code
For each material, all stocks in this company code are valued uniformly.
- ☐ Valuation area = plant
For each material, stocks at each plant are valued separately.

You can perform valuation at the company code level or at the plant level.

When you create a master record for a material, you can determine the criteria for valuating the material:

Valuation Control

- ☐ If you do not want to manage separate stock accounts for each material, you can group different materials with similar characteristics into valuation classes. The system determines the stock account for accounting through the valuation class.
- ☐ The system allows you to value material stocks according to different criteria, such as procurement, origin, or status. The valuation category determines the criteria.
- ☐ Valuation types are defined for each valuation category. Valuation types represent the characteristics of a valuation category. For example, the valuation category *Origin* has the valuation types *Domestic*, *Other EC*, *USA*, and *Other foreign country*.
- ☐ The price control determines whether the material is always valued at the same standard price or whether postings to the material changes the price (moving average price).

The data for valuation control is defined in the material master record. To determine an account for a material, it must have a valuation class. Valuation categories and valuation types are used in split valuation of material stocks.

Material Valuation The following system transactions, entered with reference to a material, can change stock quantity and stock value:

- ☐ Goods receipts
- ☐ Transfer postings
- ☐ Goods issues
- ☐ Invoices
- ☐ Physical inventory differences
- ☐ Revaluations

The system bases the value postings it makes in Materials Management on Financial Accounting documents that result from goods movement transactions. The type of postings generated depend on the material's price control.

In a company or group, it is often necessary to make cross-company transactions (debits/credit memos). When you enter a document, the system automatically makes postings to clearing accounts.

As a result of goods movements, the system automatically makes value postings, depending on price control (standard price or moving average price) and other factors.

Valuation Procedure

Price Control There are two types of price control with the following characteristics:

- ☐ **Standard price**
 - All inventory postings are carried out with the standard price.
 - Variances are posted to price difference accounts.
 - Price changes can be monitored.
 - The moving average price is displayed for statistical purposes.
- ☐ **Moving average price**
 - All goods receipts are posted with the goods receipt value.
 - The price in the material master record is adjusted to delivered prices.
 - Price differences occur only in exceptional cases, such as stock shortages.
 - Manual price changes are usually unnecessary but they are possible.

Posting Procedure The price control for a material affects the posting procedure for goods receipt and invoice receipt. When you post a goods receipt, the quantity and net order price are multiplied and the amount is posted to the goods receipt/invoice receipt clearing account. When you value a material with standard price, the system values the quantity entered at the standard price.

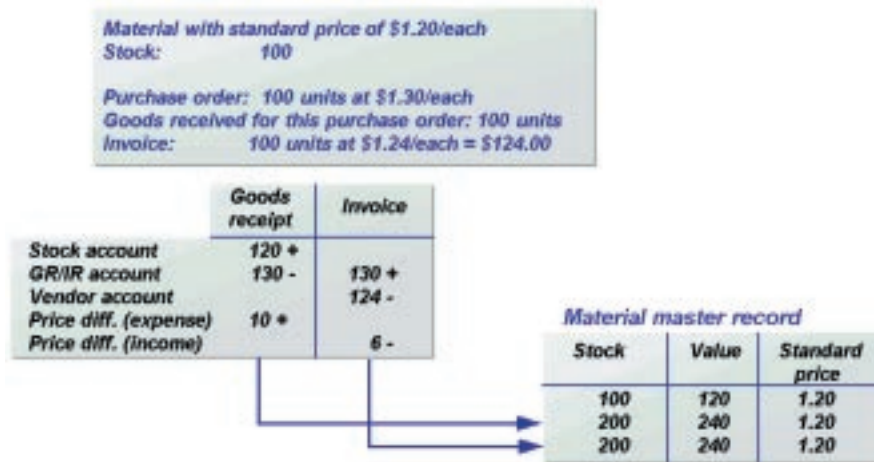


Fig. 7-1: Posting Procedure: Material with Standard Price

If the net order price differs from the standard price, you post the difference to the price difference account. When you enter the invoice, the system clears the goods receipts/invoice receipt account. If the invoice price differs from the net order price, the system posts this difference to the price difference account.

Material with Moving
Average Price

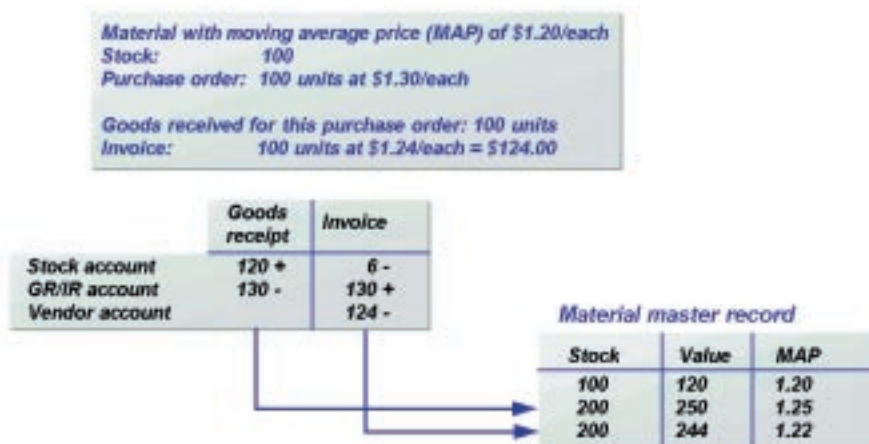


Fig. 7-2: Posting Procedure: Material with Moving Average Price (MAP)

When you post a goods receipt, the system multiplies the quantity and net order price and posts the amount to the goods receipt/invoice receipt clearing account. It also makes the offsetting entry to the stock account. When you enter the invoice, the system clears the goods receipt/invoice receipt account. If the invoice price differs from the net order price, the system posts the difference to the stock account.

Both goods receipt postings and invoice postings can change the material price.

There are two types of price control: standard price and moving average price. The price control influences the posting procedure.

- Delivery Costs** You can enter delivery costs in the purchase order. Planned delivery costs are included in the goods receipt posting. They are posted to a freight or customs clearing account. The system makes an offsetting entry to the stock account or price difference account, depending on the price control.
- Delivery costs can cause either a higher valuation price or a price difference posting, depending on the price control.
- Cash Discount** You can include agreed-on payment terms in the purchase order in material valuation. You can make a net posting for both the goods receipt and invoice receipt. In this case, the stock posting for materials with moving average price is reduced by the relevant cash discount amount. The offsetting entry is made to a cash discount clearing account that is cleared at payment.
- Cash discount amounts can result in changes to the valuation price or price differences, depending on the price control.
- Split Valuation** If a material is subject to split valuation, you can manage different stocks of the same material separately. Each substock is valued separately. The valuation category determines the criteria for valuation.
- Each substock is defined by a valuation type. The following options are available:
- ☐ You can determine all the possible valuation types when you create a material master record. For example, with the *Origin* valuation category, you can specify the different countries as valuation types.
 - ☐ You can create a new valuation type for each goods receipt (for example, in the case of materials managed in batches).
- You value each substock separately. Each valuation category has a valuation header record in which the quantities and values of the corresponding valuation types are stored.
- You can value substocks of a material separately according to certain criteria using valuation types.
- Revaluation** You can manually change a material valuation using the following functions:
- ☐ **Material price change**
The material price can be changed, effective immediately, or from a certain date.
 - ☐ **Material debit/credit**
You can make a debit or credit posting for every material. However, these postings only change the valuation of materials with moving average price.
- As a result of a price change or material debit/credit, the material stock is revaluated.
- What functions have an effect on material valuation?

- ☐ Various posting procedures, depending on the price control
- ☐ Delivery costs and cash discount can result in changes to valuation
- ☐ Split valuation of material stocks (valuation types)
- ☐ Material price change, material debit/credit can result in revaluation postings

Material Ledger

The Material Ledger is a new type of material subledger that allows you to manage stock:

- ❑ At a periodic unit price
- ❑ In up to three currencies

The system automatically stores data from all transactions relevant to valuation in the Material Ledger's master data. The system uses this data to calculate the valuation price of a material in the three different currencies.

When the Material Ledger is active in material valuation, you can continue to value materials using a standard price or a moving price (referred to as the periodic unit price). You can also define exactly when new prices are to be calculated and how the system should do this.

Periodic Unit Price

The Material Ledger allows you to keep the periodic unit price of a material constant over a certain period of time -- say, a day, a week, or a month. It is calculated using all the transactions (such as invoice receipts) that lead to a change in the value of the stock of a material. These transactions are collected automatically in the Material Ledger. Only when you close the Material Ledger (that is, when the new periodic unit price is calculated) does the system change the price of the material in line with the transactions contained within the ledger.

The periodic unit price has all the advantages of both standard price control and moving average price control. Like the standard price, the periodic unit price can be kept constant over a specific period. (Like the moving average price, it is calculated using the actual values contained in the R/3 System.) An additional advantage of the Material Ledger is its posting logic. This allows you to post price differences and revaluations to material stock accounts instead of remaining on price difference or revaluation accounts.

To ensure clarity, the Material Ledger also provides detailed information on the postings that were made for the material. This information includes how new prices were calculated, and which transactions led to the calculation of the new prices.

Management of Multiple Currencies

The Material Ledger lets you manage the stock of a material using the valuation method defined for it (standard price or periodic unit price) in three currencies.

When you calculate new periodic unit prices, the system does not simply translate a new price from one currency to another. Instead, prices are calculated independently of each other in the individual currencies at historical exchange rates. If, for example, an invoice leads to a price change, the system uses the exchange rate valid at the time at which the invoice was posted in the system.

You can configure the system so that the currencies managed in the Material Ledger are the same as those managed in Financial Accounting. When this is the case, the system generates accounting documents for material movements and invoices in three different currencies. The material stock accounts in the three different currencies correspond to the stock values managed in the Material Ledger.

Configuring your currencies consistently ensures that information can be passed between Materials Management, Financial Accounting, and Controlling.

Balance Sheet Valuation

You can use the following components for balance sheet valuation:

- ☐ LIFO valuation
- ☐ FIFO valuation
- ☐ Lowest value determination

The results of these valuations form the basis for valuation adjustment postings for tax and commercial purposes.

LIFO Valuation

LIFO valuation is a valuation method that allows you to value stocks using an assumed sequence of consumption. In LIFO valuation, material received last is sold or consumed first. Older stock does not change in value when new stock is received or consumed. This means you avoid fictitious profits in an inflationary market because you use the lower costs of the stocks procured first for balance sheet valuation purposes.

You can make a LIFO valuation for an individual material or for a pool (or group of materials). You can group together similar materials or materials with the same function and value them together.

Materials Management supports two procedures for LIFO valuation:

- ☐ Quantity LIFO procedure
- ☐ Index LIFO procedure

Quantity LIFO Procedure

The quantity LIFO procedure is based on the increases or decreases determined in the total quantity of stock at the end of the fiscal year. If the quantities received exceed the quantities issued in a fiscal year, the system creates a layer that records the increase in the total quantity and value of the stock. If the quantities issued exceed the quantities received in a fiscal year, the system reduces the preceding layers accordingly, starting with the most recent layer.

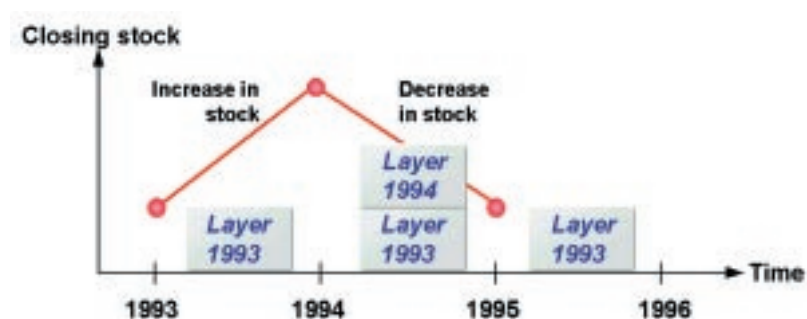


Fig. 7-3: LIFO Valuation

In Materials Management you have the following options for valuating a layer:

- ☐ Valuation with the moving average price (from material master record)
- ☐ Valuation with the moving average price for goods receipts in the reporting year for:
 - All posting periods (price for total year)
 - The first n posting period (price for partial year)
 - Individual posting periods starting at the beginning of the year and replenishing until the layer stock is reached

With the index LIFO procedure, you can manage pool layers by value only. The value of the pool at the end of the fiscal year is recalculated using the price level of the base year with reference to a price index. It is compared with the base value of existing layers. If the value calculated is greater than the base value of existing layers, the system creates a layer for this fiscal year. If the value calculated is less than the base value of existing layers, the system reduces the previous layers, beginning with the most recent.

Index LIFO Procedure

Lowest Value Determination

After completing LIFO valuation, you can use the values in the layers in lowest value determination. These values are gross values, which Materials Management can automatically devalue according to the lowest value principle. You can update the results of the lowest value determination in the material master record in the tax and commercial price fields.

FIFO Valuation

FIFO valuation is a method of valuating stocks of a material at their most current value. FIFO is based on the assumption that the oldest stocks of a material are used before any other stocks. The stock value is therefore based on the last receipts.

Calculating the FIFO Value

The FIFO value is calculated using FIFO-relevant receipts. The system works backwards by adding up the cumulated monthly receipts of a material until the current stock level of the material is reached. The total value of these receipts is the FIFO value. You can update the FIFO value of a material in the material master record.

Lowest Value Determination

You can combine the FIFO value calculation with the lowest value determination. Once you determine the lowest value, the FIFO value calculated from the receipts is devaluated if the lowest value determined is not the FIFO value.

The lowest value principle states that the lower of two possible values must be used (strict principle) or may be used (moderate principle). For example, you can use delivered and production costs or commodity exchange or market prices for valua-

Lowest Value Determination

tion purposes. The lowest of the two values forms the upper value limit according to the strict lowest value principle.

In Materials Management, the following procedures are available for determining the lowest value for externally procured materials:

☐ Lowest value determination according to market prices

To determine the lowest price, you can include the following price sources:

- Purchase orders
- Contracts
- Purchasing info records
- Receipts for purchase orders

☐ Lowest value determination according to range of coverage

The range of coverage can be determined in two ways:

- Based on past consumption
- Based on forecast values

The range of coverage is calculated in months (a percentage discount is determined depending on the months).

☐ Lowest value determination according to movement rate

A material's movement rate is determined using receipts and issues of the material. The movement rate for a material specifies the percentage calculated from the units of measure received and issued in relation to material stock. If the material is classified as slow or unmoving, you set a devaluation indicator. The system determines a percentage reduction based on the devaluation indicator.

Multiple Levels

Materials Management supports a link between the individual procedures. For example, you can determine the lowest value according to market prices and then you can devalue the lowest price according to range of coverage or movement rate.

Results

The results of the lowest value determination process can be updated in the material master record in the tax and commercial price fields.

To determine the value of your material stock according to tax or commercial price, you can generate a list that proposes which transfer postings you could make to devalue your individual stock accounts.

In lowest value determination, the lower value is always selected.

How can you value material stocks for balance sheet purposes?

- ☐ LIFO valuation allows you to stock using an assumed regnence consumption.
- ☐ Lowest value determination allows you to value material stocks using the lowest value.

Invoice Verification

The Invoice Verification subcomponent of Materials Management illustrates the high degree of integration within the R/3 System. It provides the link between the Materials Management and Financial Accounting, Controlling, and Fixed Assets Management components. Invoice Verification accesses data from Purchasing and goods receipt in Materials Management. When you post an invoice, the system transmits the information in the document to the Accounting components.

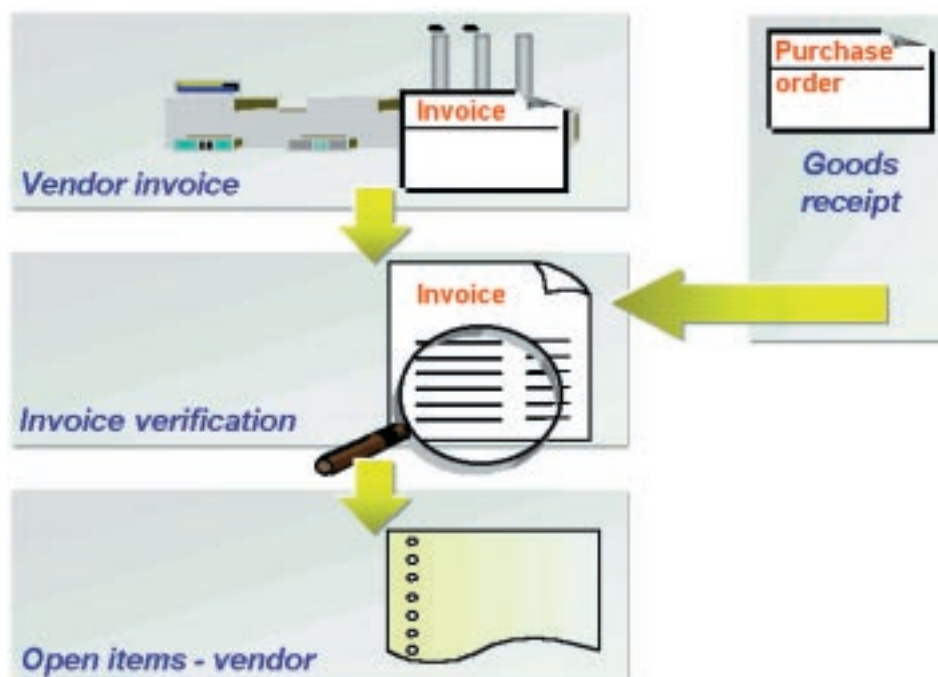


Fig. 8-1: Invoice Verification Procedure

Invoice Verification checks invoices for content, price, and calculation accuracy. It is important to reference a purchase order or a goods receipt. When an invoice is posted, the system creates an open item in the vendor account that is cleared by Financial Accounting on payment. In Customizing for Invoice Verification, you can define the maximum invoice amount each user can post.

Entering Invoices

For an invoice with reference to a purchase order, you are only required to enter the order number. The system automatically proposes tax rate, terms of cash discount, and the individual quantities and values. You can change all these defaults because the invoice can display variances.

When you enter an invoice, the system informs you of variances through system messages. You can set tolerance limits for variances in the individual invoice items. If the variances are within the limits, the system accepts them. If they exceed the limits, you receive a message indicating that they must be corrected. If the upper

Invoices with
Order Reference

limit is exceeded, the document can be posted but it is blocked for payment. The blocked invoice can only be settled by Financial Accounting once you have released the document in a separate transaction.

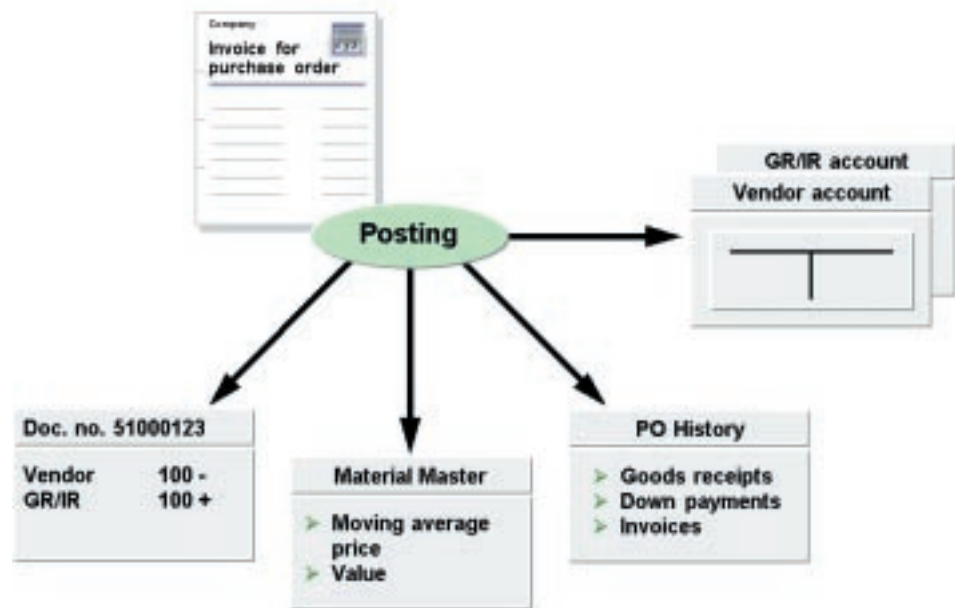


Fig. 8-2: Posting an Invoice

When you post an invoice, the system creates a document and posts the amounts to the relevant accounts. The accounts are determined automatically. In addition, the price history is updated for invoices with purchase order reference. If the material is valued with the moving average price, the price and value of the material are updated in the material master record.

Goods Receipt Reference

Invoices referencing goods receipts are a special form of order-based invoices. The accounts payable clerk enters the delivery slip number or the document number for the goods receipt. The system proposes the required data. Individual deliveries can be settled this way. In goods receipt-based invoice verification, you can also enter the purchase order.

If you enter a purchase order, the system creates an invoice item for each order item for each goods receipt. You assign an invoice to a goods receipt in this way.

Invoices Without Order Reference

Using the Invoice Verification component you can also process invoices that do not have a reference document in the system (for example, a bill for expenses). First, you create a vendor item, then you create a document item for each invoice item. You can post the document to a material account, G/L account, or a fixed asset account.

Functions for Entering Invoices

When entering an invoice, you can use a range of functions. Some of the most important functions are displayed below:

Search for Purchase Order

- ☐ To determine which invoice is allocated to which purchase order, you can generate a list of all the purchase orders for a material or for a vendor:
- ☐ Multiple selection

If an invoice contains items that refer to different purchase orders, you can select

the items to be processed in one step.

☐ Document adjustment

Before you post an invoice, you can adjust each document item as many times as you want.

☐ Document simulation

When you enter an invoice, you can simulate the account movements that will be made and the balance for the document.

☐ Access to information

When you enter an invoice, you can access various additional information (for example, purchase order, order history, material data, or vendor data).

Which functions are available for processing invoices?

- ☐ Entry options with purchase order or goods receipt with reference or without reference
- ☐ Simulation of postings in Financial Accounting
- ☐ Access to additional information

Taxes

Materials Management contains all valid deductible and nondeductible tax types for your country and other countries.

When you enter an invoice, you also enter the tax record and the tax amount, if it is contained in the invoice. The system checks if the invoice amount, tax record, and tax amount are correct. If there are variances, you receive a warning message from the system, but you can still post the invoice.

If an invoice does not contain a tax amount, the system can calculate it.

If the invoice items have different tax records, the tax is processed individually for each invoice item.

When you post an invoice, tax items are created automatically.

What are the main characteristics of tax processing in Invoice Verification?

- ☐ Deductible and nondeductible tax types
- ☐ Entry of tax record or tax amount
- ☐ Automatic tax postings

Posting Gross/Net Amounts

When you enter an invoice, you can enter the terms of payment. The system proposes conditions from the purchase order or from the vendor data. The terms of payment can be defined, for example, as 3% cash discount applies within 10 days, 2% cash discount within 20 days, and a net payment within 30 days. You can also enter

Cash Discount

a fixed cash discount amount. There are two ways of posting the cash discount amounts:

- ☐ Gross posting
- ☐ Net posting

When you enter an invoice, you specify the way in which cash discount is posted.

Gross Posting If you post the gross amount of an invoice, the system ignores the cash discount amount when you enter the invoice data. The system posts a cash discount amount to a separate income account only later when payment is made. In this way, the cash discount posting does not have an effect on the stock or cost account.

Net Posting If you post the net amount of an invoice, the cash discount amount is credited directly to the account to which the costs are posted. For example, if you post an amount to a cost center, only the invoice amount minus the cash discount amount is posted to the cost center.

Invoice Item Without Cash Discount You can exclude some items in an invoice from cash discount settlement. You can select them as *Without cash discount* items.

What functions are there in Invoice Verification that include cash discount amounts?

- ☐ **Gross posting**
The system calculates only the cash discount and posts it once payment is made.
- ☐ **Net posting**
The system credits the cash discount amount and posts it in the Invoice Verification component.

Other Functions

Preliminary Posting

You can park an invoice document in Invoice Verification. This allows you to enter the information contained in an invoice into the system and save it without making any postings. A parked document does not have to be complete, and you can change it as much as you like. Only when you have posted the parked document are the account postings made. Parked documents are indicated as such in the purchase order history. You can include the taxes contained in parked documents in declarations to the tax authorities.

Foreign Currency

You enter invoices in foreign currency into the system in the same way you enter invoices in local currency. However, the system must convert the amounts, since the accounts can only be posted in local currency. There are various methods available:

- Exchange Rate**
- ☐ A fixed exchange rate is defined in the purchase order.
 - ☐ The exchange rate is based on the value day and the middle rate stored in the system.

- ❑ An exchange rate can be entered directly in Invoice Verification

When you post an invoice, the system creates the invoice document both in your local currency and in the foreign currency.

When you enter an invoice in a foreign currency, the system automatically converts the invoice value into the local currency.

Account Assignments

Services and materials that are not procured for stock must contain account assignment details in the order item. You can distribute an item to different account assignments. If a valuated goods receipt is made for an account-assigned purchase order, the account assignment in the purchase order is binding for Invoice Verification. With a nonvaluated goods receipt, the accounts payable clerk can change the account assignment.

Subsequent Debit/Credit

A subsequent debit/credit applies if a transaction has already been cleared and additional costs are incurred. It is posted directly to the material or cost account. The system updates the new value in the order history. The quantity remains the same.

Credit Memos

In Invoice Verification, you can also post credit memos. Credit memos can refer to purchase orders or goods receipts. The system interprets a credit memo with reference to a purchase order or goods receipt as a cancellation of the invoice receipt.

Down Payments

Down payments can be agreed with vendors in the purchase order. Down payments refer to the whole purchase order or to individual order items. If down payments have been posted for a purchase order, you receive a message from the system when you enter an invoice. This also applies to down payments made without reference to a particular transaction. The relevant transfer posting can then be made in a separate step.

Delivery Costs

Planned delivery costs can be divided into several types -- freight, customs duty, insurance, packaging, and so forth. For each type, you can determine whether the costs are fixed, quantity-dependent, or are a percentage value of goods delivered.

Planned Delivery Costs

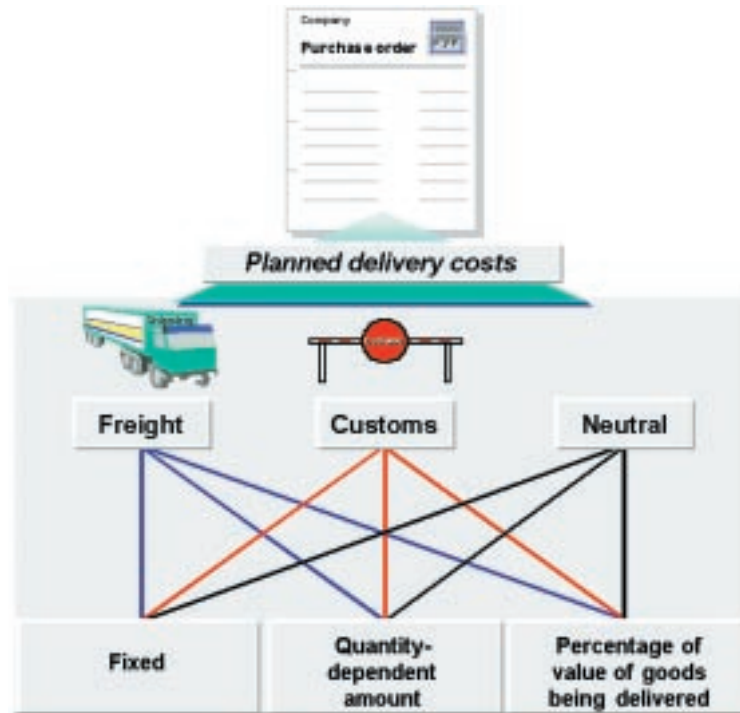


Fig. 8-3: Planned Delivery Costs

You enter planned delivery costs in the purchase order for each order item. The relevant amount for planned delivery costs is posted to the material or cost account at goods receipt. The offsetting entry is posted to a special clearing account (for example, a freight clearing account). In Invoice Verification, you can list all the delivery costs for a purchase order, a delivery slip, or a vendor to correctly allocate the delivery costs in the invoice. The system updates planned delivery costs in the order history.

Unplanned Delivery Costs

You enter unplanned delivery costs when you enter the invoice. The system automatically distributes them to the individual items in proportion to the entire value invoiced. If required, you can manually enter a different distribution of costs. Unplanned delivery costs are posted directly to the material or cost account.

In Invoice Verification, you can process delivery costs that are planned in a purchase order or delivery costs that are unplanned.

Which other functions are available in invoice processing?

- ☐ Preliminary posting
- ☐ Foreign currency processing
- ☐ Account assignment
- ☐ Subsequent debiting and crediting
- ☐ Creation of credit memos
- ☐ Reference to down payments
- ☐ Delivery cost processing

Blocked Invoices

If the invoice amounts vary from the purchase order or goods receipt amounts, you must overwrite the proposed quantities and values. The following variances may exist:

- ☐ Quantity variance
- ☐ Quality variance
- ☐ Price variance
- ☐ Schedule variance

You can also block invoice items of a specific amount. This is useful for invoices that do not refer to a purchase order since the system cannot check the amount entered against a default value.

Materials Management also supports random blocking of invoices (referred to as stochastic blocking). The system randomly blocks invoices that do not actually warrant blocking so that you can check them again before paying them.

You can define tolerances for individual variances. If a variance is within a tolerance limit, the system accepts it. If it is above or below the limit, you receive a message. In each case, you can post the invoice. However, if the upper limit is exceeded, the whole invoice is blocked for payment and relevant blocking reasons are set. The blocking reasons explain how the variances have arisen. The invoice can only be settled after you have released it in a separate step.

Tolerances

You can generate a list of blocked invoices for processing. Based on this list, you can:

Releasing Blocked Invoices

- ☐ **Cancel individual blocking reasons**

This is useful, for example, if investigations prove that a price variance is justified, but a quantity variance still exists for this invoice item.

- ☐ **Release an invoice**

Financial Accounting can pay released invoices. Since searching for reasons for the variance can take several days, you might have to change the date from when the terms of payment are valid. This way, you can include a cash discount despite the invoice block.

If an invoice was blocked due to quantity or schedule variance, the blocking reason may no longer be valid if the goods have been delivered or if the date has passed. The invoice then must be released for payment. An automatic release function releases all invoices with blocking reasons that are no longer valid.

Automatic Release

How are blocked invoices processed?

- ☐ By determining variances using tolerance limits
- ☐ By setting blocking reasons in the document item and payment block
- ☐ By releasing invoices

Evaluated Receipt Settlement (ERS)

To reduce the time and effort involved in Invoice Verification and to prevent errors in processing, you can arrange with a vendor not to send any invoices. The invoice is generated instead by the R/3 System. It is based on information contained in the purchase order and the goods receipts posted for the purchase order. This prevents any variances existing in the invoice. You can either settle all transactions for a particular vendor together or only settle specific purchase orders or goods receipts. The system generates a log of the invoices so you can inform the vendor of the transactions that were settled automatically.

Logistics Invoice Verification

Logistics Invoice Verification is a special form of Invoice Verification. It concentrates on the Materials Management side of the system and does not have any accounting functions. This lets you run Invoice Verification and Financial accounting on different systems.

It has the following advantages over the conventional Invoice Verification described above:

- ☐ Invoices can be entered easier and faster on two screens. This is a key advantage when processing large invoices with massive amounts of data.
- ☐ You can use more selection criteria to linking the invoice to other documents in the system.

Warehouse Management

Computer support for organizing and managing warehouses has become imperative for timely, efficient processing of logistics. The Warehouse Management (WM) component within Materials Management provides flexible automated support that lets you:

- ❑ Manage highly complex warehouse structures and a multiplicity of warehousing facilities, including:
 - Automatic warehouses
 - Custom-designed storage areas
 - High rack storage
 - Bulk storage
 - Fixed-bin storage
 - All other commonly used storage areas
- ❑ Define and adapt a limitless variety of storage bins for use in your specific warehousing complex
- ❑ Process all relevant warehousing activities, such as:
 - Goods receipts and goods issues
 - Deliveries
 - Internal and external stock transfers
 - Automatic replenishment of fixed bins
 - Material staging to production areas
 - Stock difference handling
- ❑ Use random slotting for multiple owners of goods in a fully integrated warehouse
- ❑ Optimize capacity and material flow using storage units in the warehouse
- ❑ Monitor and display stocks on hand and summary evaluations of all goods movements using warehouse controlling tasks
- ❑ Implement a variety of putaway and picking strategies, including self-designed strategies
- ❑ Support the storage and retrieval of hazardous materials and all other goods that require special handling
- ❑ Process multiple goods movements simultaneously with transfer requirements papers and delivery documents
- ❑ Maintain up-to-the-minute inventory records at the storage bin level with the aid of stock transfer verification
- ❑ Archive records of all goods movements and inventory activity
- ❑ Support the use of bar code scanners, RF technology, AS/RS, and automated forklift systems for all stock movements through an automated warehouse control interface

- ❑ Interface to an SAP R/2 host system using the R/3 System's user-friendly screens and menus
- ❑ Fully integrate your Warehouse Management component for instantaneous interaction with other R/3 application components, including Inventory Management (IM), Production Planning and Control (PP), Quality Management (QM), and Sales and Distribution (SD)
- ❑ Set up forward pick areas and production supply areas with automatic continuous replenishment from case, kanban, or reserve storage when stock quantities reach a certain threshold

Beginning with the planning phase, Warehouse Management makes stock availability checks whenever transactions are initiated in each of the respective system components. Although you can print material documents for each separate transaction in the warehouse, Warehouse Management facilitates automatic flow using warehousing tasks that are virtually paperless.

Integration with Other R/3 System Components

Integration makes the Warehouse Management component stand above the competition.



Fig. 9-1: Integration of Warehouse Management with Other R/3 Components

Warehouse Management is fully integrated into the R/3 System. While quality assurance is an overall issue, transactions initiated in other components result in corresponding open tasks in the Warehouse Management component that start the actual physical transfers within the warehouse.

A few of these activities include:

- ☐ Material movements and changes in material status, such as releasing goods from inspection
- ☐ Material staging to production supply areas
- ☐ Shipping goods for sales orders

Here are three examples:

1. When goods that are to be inspected arrive at the warehouse, the Quality Management interface to Warehouse Management lets you track and process inspection lots stored anywhere in the warehousing complex, both before and after they have been released from quality inspection.
2. When you process a sales order in the Shipping subcomponent of Sales and Distribution, an open order to pick the required materials appears in Warehouse Management.
3. When you initiate a request for component items required in the manufacturing process using Production Planning, the Warehouse Management component performs the tasks that are necessary to move the needed components to the production supply area. Once the materials have been delivered and used in production, the material usage posting in Production Planning balances the stock figures automatically in both Warehouse Management and Inventory Management. At the same time, the system calculates all accounting figures and records them in the appropriate systems.

The Warehouse Management component is integrated with the SAP Logistics Information System (LIS) so you can analyze workload in the warehouse. Warehouse Controlling evaluates and reduces extensive information from Warehouse Management to a few essential performance measurements. Consequently, you can analyze weak areas using graphics. Evaluations for Warehouse Controlling are integrated with the Inventory Controlling menu as standard analyses. These analyses are based on statistical databases in Warehouse Controlling – called information structures – into which important, up-to-date performance measures are written directly from the warehousing components. You can use this data for performance planning.

Warehouse Controlling

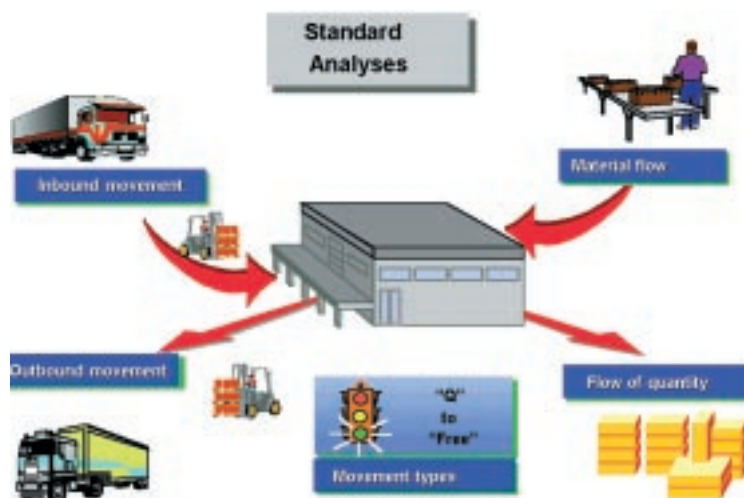


Fig. 9-2 Analysis of Material Flow in the Logistics Information System (LIS)

Inventory Controlling provides five standard analyses for Warehouse Management:

- ❑ **Stock placements and removals**
For this analysis, the system displays the total weight and quantities of goods that were stored, picked, or returned.
- ❑ **Quantity flow**
This analysis displays the quantities and weights of goods that moved in the warehouse. It also includes information about frequency and average time expired between transfer requirements or delivery creation and transfer order creation.
- ❑ **Material placement and removal**
This analysis is based on storage and picking of a specific material or range of materials. It includes quantity and weight information for a given period.
- ❑ **Material flow**
Quantity, weight, and time required for material movements are considered in this analysis.
- ❑ **Movement types**
This analysis is based on movement type and the types of storage areas into or from which stock is placed or removed.

Warehouse Structure

You can design the warehouse structure to match your individual requirements. The physical storage facilities of a company may exist in one or more physical buildings. It can consist of several types of storage (for example, high rack storage, bulk storage, or picking areas). It can also include other areas within the warehousing complex, such as interim staging areas for inbound and outbound movements.

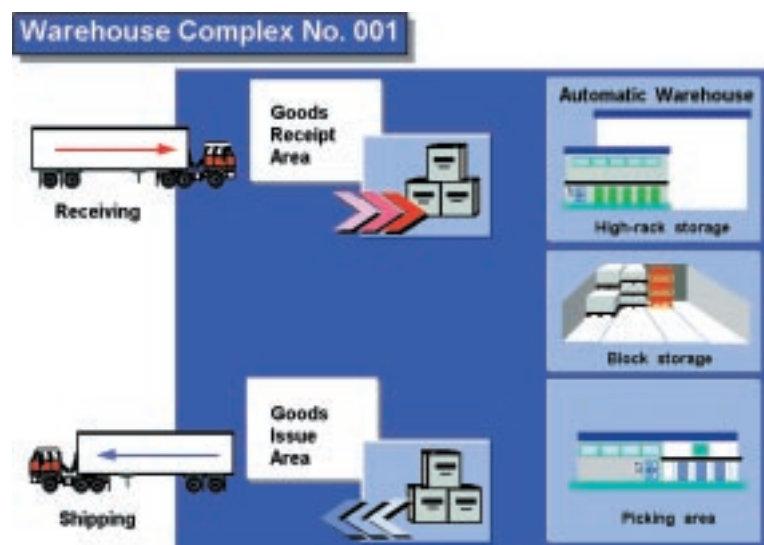


Fig. 9-3: Physical Structure of a Warehouse

You can define an entire physical warehousing complex in the Warehouse Management component using a single warehouse number.

Each of the storage facilities or areas that make up the warehousing complex can be defined as a type of storage area or storage type by its spatial, technical, and organizational factors.

Each storage type can be divided into storage sections. A storage section generally includes all bins that have certain characteristics in common, such as bins for fast-moving items near a goods issue area. You can set your criteria for grouping bins into a storage section.

Each storage type and section consists of several storage spaces or slots. These are called storage bins in the Warehouse Management component and are the smallest addressable unit of space in a storage type. Storage bins are identified by coordinates that refer to the exact position where goods can be stored in the warehouse.

Warehouse Complex

Storage Type

Storage Section

Storage Bin

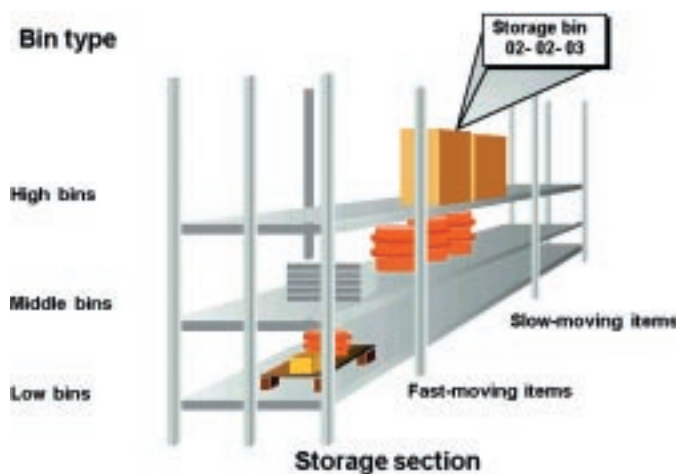


Fig. 9-4: Bin Type and Storage Section

The bin type identifies the shape and size of a storage bin and is used in the storage bin search when the system implements storage placement and picking strategies.

In the Materials Management component, you can define several different units of measure (stock keeping units) for each material that are all considered in the Warehouse Management component.

The base unit of measure is the basis for inventory management and evaluation. Alternative units of measure, such as the order unit, issue unit or Warehouse Management unit of measure, are used to identify packages or containers for smaller units of measure such as cartons, boxes, bottles, barrels, or pallets. Quantities in alternative units of measure are always converted to the base unit of measure using a conversion factor.

The system recognizes all related units of measure for processing. For example, if the weight of a particular material is managed in kilograms, the system can make calculations based on the input of weight measures such as grams, ounces, pounds, or tons.

Storage Bin Type

Units of Measure

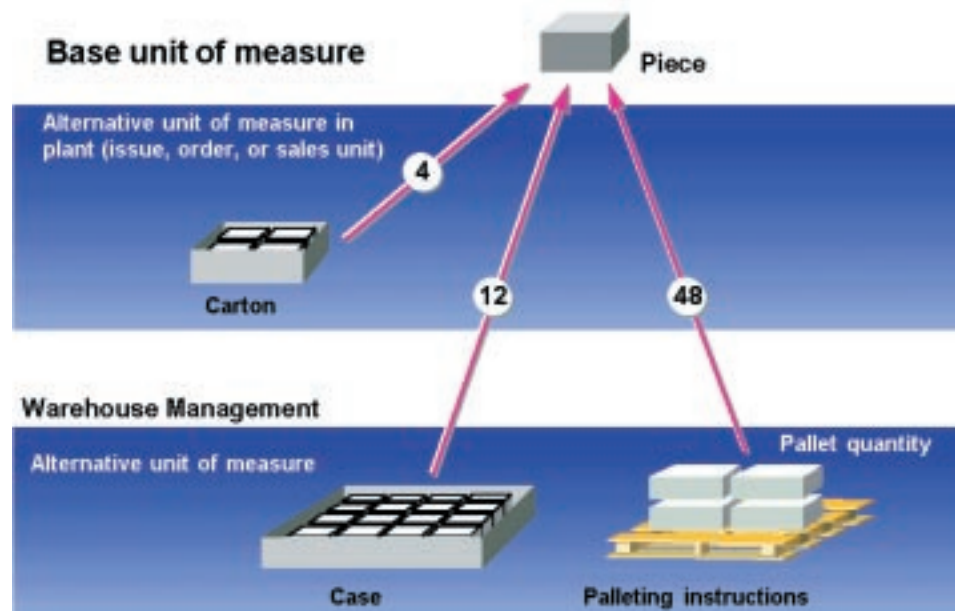


Figure 9-5: Units of Measure in the Warehouse Management System

Integration of WM and MM

Figure 9-6 shows an example of how you can integrate the structure of the Warehouse Management component into the structure of Materials Management. You can set up this structure to match your company's needs.

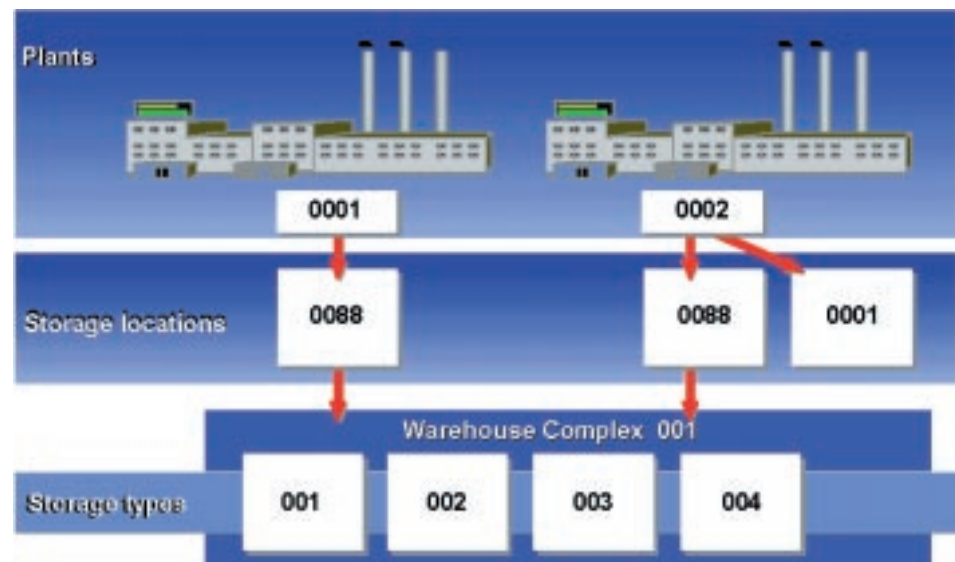


Fig. 9-6: MM-WM Integration Structure

How is the warehouse structure defined in the R/3 System?

- ☐ A complex warehouse is defined as a single warehouse number and subdivided into storage types, storage sections, and storage bins (for example, depending on the warehouse technique). A storage bin is the smallest addressable unit of space in a warehouse.
- ☐ Warehouse movements are controlled by table entries.

Goods Movements

Transfer requirements and orders are the means by which all goods movements are planned and carried out in the Warehouse Management component.

Transfer requirements provide an intermediate step of control in the goods movement process and are used to plan and initiate stock movements. They represent an existing requirement to move a specific quantity of material into the warehouse, out of the warehouse or from one storage bin to another within the warehouse.

Using transfer requirements as planning documents, the system creates transfer orders that are used to execute physical stock movements. The distinction between the planning (creating a transfer requirement) and the execution of a stock movement (creating and confirming a transfer order) lets you find out whether a stock transfer should occur, has already started, or is finished. A transfer requirement can answer several important questions about a planned stock movement:

- ☐ What should be moved?
- ☐ How much should be moved?
- ☐ Who or what caused the movement?
- ☐ How much stock has already been transferred?

Transfer requirements are normally created automatically as a result of a transaction in another R/3 component. This can be:

- ☐ Processing of a goods receipt for a purchase order in Materials Management
- ☐ Release of a production order in Production Planning
- ☐ Automatic replenishment of fixed bins in a forward picking area

Depending on the type of movement, you can set up the system to process transfer requirements automatically. This way, only the transfer requirements that you want to control will be available for manual processing in Warehouse Management.

Transfer Orders

In Warehouse Management, transfer orders are move orders that contain all the information needed to carry out the physical movement of goods from one place to another in the warehouse.

Transfer orders contain the following information:

Transfer Requirements

- ☐ Material number or designator
- ☐ Quantity to be moved
- ☐ Source and destination storage bins

Warehouse Management can create transfer orders automatically for both transfer requirements and deliveries so that warehouse managers do not need to intervene.

Confirmation and Cancellation

When you confirm a transfer order, you inform the system that it has been processed and that the goods have arrived at the intended destination. Depending on the movement type, not all transfer orders must be confirmed. If necessary, you can cancel transfer orders that have been created but not confirmed in Warehouse Management.

Inbound Movements

Figure 9-7 shows a possible scenario for an inbound movement (goods receipt) with a transfer order.

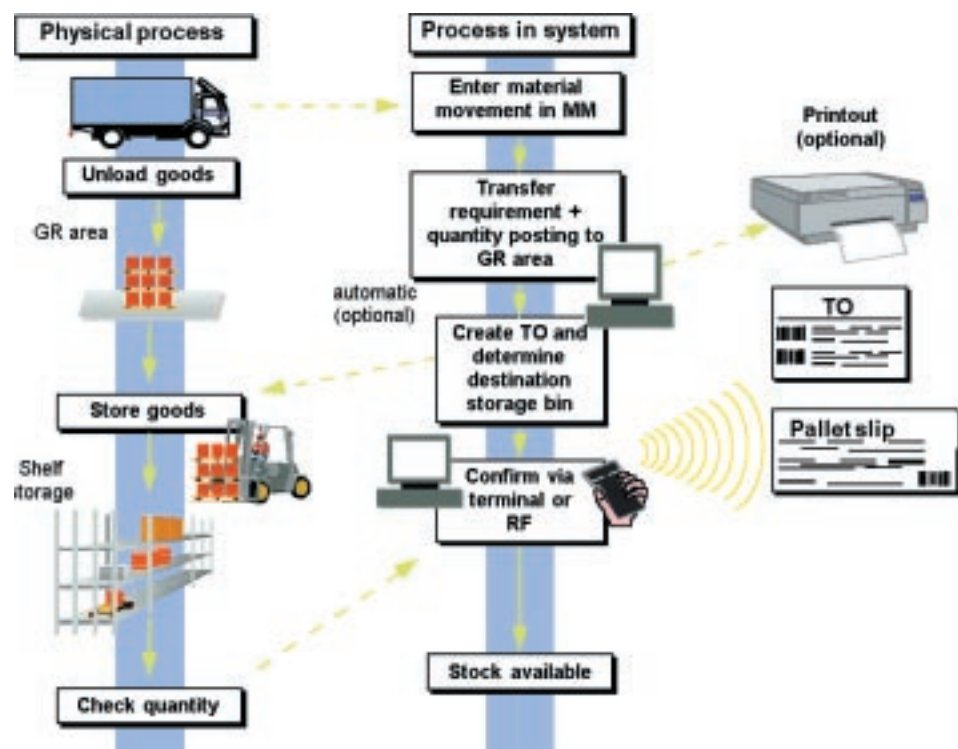


Fig. 9-7: Processing Goods Receipts

Outbound Movements

Examples of outbound movements (goods issues) include:

- ☐ Issues to a cost center, project, and so on
- ☐ Material staging for production
- ☐ Delivery of goods to customers

Depending upon entries in the material master record and the way you configure the movement types and picking strategies in Warehouse Management, you can

streamline and optimize picking in your warehouse. In conjunction with the configuration of other R/3 components that are interfaced to Warehouse Management, several options can initiate automatic processing for goods issues in Warehouse Management.

Sales and Distribution's Shipping component can initiate the picking of goods in Warehouse Management when you create a delivery. In randomly organized warehouses, the system creates one or more transfer order items for each delivery item. The system automatically transfers data about picking and its status into the delivery. The picked quantities are then reflected in the delivery items in Sales and Distribution when the transfer order is confirmed in Warehouse Management.

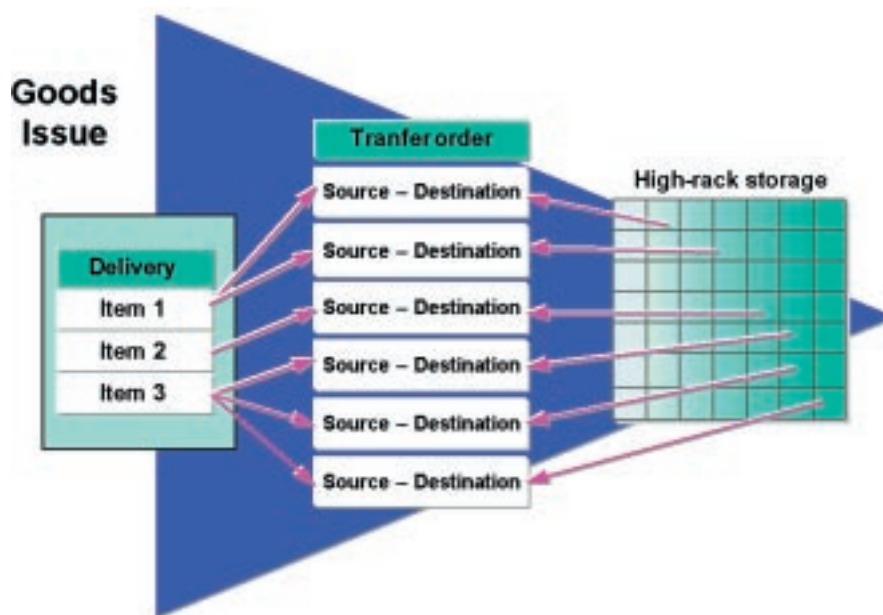


Fig. 9-8: Picking with Sales and Distribution and Warehouse Management

Sometimes, changes in material status must be reflected in Warehouse Management and occasionally require physical stock movements. Posting changes are made for several reasons:

- ☐ Release stock from inspection into available stock
- ☐ Convert blocked stock to inspection stock
- ☐ Designate available material as inspection stock
- ☐ Convert special stock, such as consignment stock or returned stock, into the company's own stock
- ☐ Change ownership of stock in the same warehouse from one plant to another

Posting Changes

Warehouse Management processes internal stock transfers to:

- ☐ Replenish fixed bins in picking areas or production supply bins
- ☐ Renovate or repair storage bins containing stock
- ☐ Optimize warehouse capacity by combining materials from two or more partial pallets

Internal Stock Transfers

Rapid replenishment is vitally important to the effectiveness of a warehouse. Warehouse Management is designed to implement automatic, continuous replenishment and manually operated RF techniques to replenish storage bins in production supply areas and fixed-bin picking areas.

Differences

When goods movements are processed, differences are sometimes determined (for example, when a storage bin does not contain the stock that is on the books or if part of the goods are damaged during the transfer). If the actual quantity transferred is not the same as the planned quantity when you confirm the transfer order, a pop-up dialog window appears that allows warehouse workers to immediately enter the difference. The Warehouse Management component updates the total stock figures in the appropriate system components.

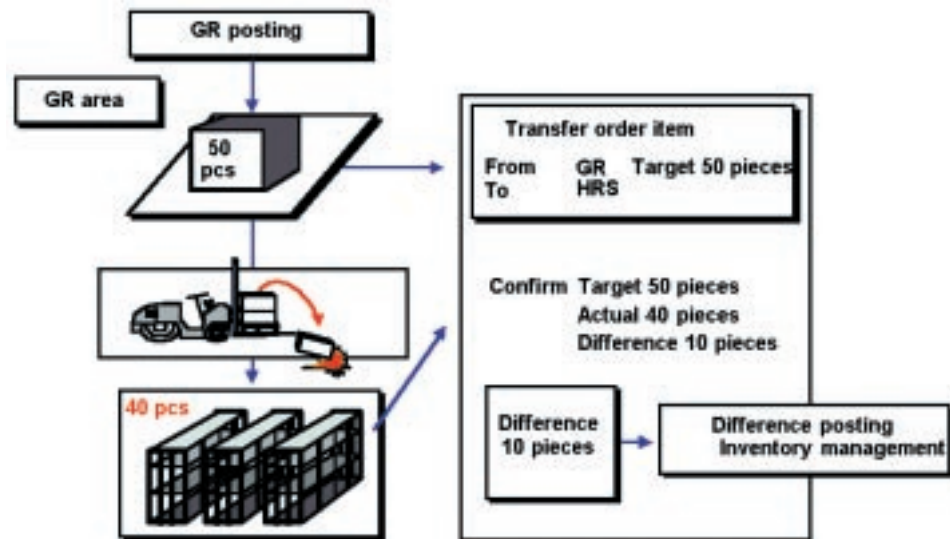


Fig. 9-9: Differences Determined During a Stock Placement

Print Control

Even though today's electronic warehouses are becoming increasingly paperless, extensive print control functions in the standard Warehouse Management component enable you to define where and when to print warehouse documents.

The Warehouse Management component provides the capability to print several variations of the following material documents:

- ☐ Transfer orders and pick lists
- ☐ Storage unit contents documents
- ☐ Container or pallet slips
- ☐ Multiple picking lists
- ☐ Warehouse inventory lists

Stock Placement			
TO Number 0000003976 0001		Repeat print	
		Date 10/21/1996	
			
00-0000 3976 0001 0001			
Material	AJ578-1015	0001	Apple juice, 100% pure w/o sugar
Receipt date	10/21/1996	GR number	4980906528
From	902 001	GR area	850 gal.
To	007 001	02-04-14	850 gal.

Fig. 9-10: Example of a Simple Printout of a Single Transfer Order

What are the functions of transfer requirements and transfer orders in Warehouse Management?

- ☐ Transfer requirements constitute a to do list and are used to plan and initiate goods movements in Warehouse Management.
- ☐ They contain information about the quantity of the goods to be transferred and the reason.
- ☐ The transfer order is the primary means of controlling stock movements in the warehouse.
- ☐ It contains all the information needed to physically move stock.
- ☐ The confirmation of a transfer order verifies that the transaction has been completed.

Putaway and Picking Strategies

In the Warehouse Management component, you use the system's stock placement and removal strategies to search for storage bins quickly. For inbound movements, in conjunction with controls entered in the material master record, these strategies use the available warehouse capacity and automatically assign optimum locations for goods received in the warehouse. For outbound movements, the system uses user-defined controls to execute the appropriate stock removal strategy. The system assigns the best picking location while simultaneously maintaining lot control and shelf life expiration date integrity. If you decide to manually process certain stock movements, you can change source and destination storage bins that are automatically proposed by the system.

Storage Type Search	You can specify into which type of storage each material is to be placed. For example, you can set up the system to store raw materials in high rack storage area one and bottled gas in special storage area two.
Storage Section Search	For each material, you can specify a storage section indicator in the material master record that directs goods to a particular section of a storage type. For example, based on the section indicator, the system stores fast-moving items in storage section one and slow-moving items in storage section two.
Bin Type Search	In one storage type, you may have storage bins with different characteristics. When the system places goods into storage, it can search for a storage bin that will accommodate a specific storage unit type (that is, standard pallet or wire basket). The system then only selects bins that match the storage unit or pallet type for putaway.
Putaway Strategies	<p>Warehouse Management uses the following stock placement strategies to optimize the placement of materials into available storage bins:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Next empty bin The system searches for a suitable empty bin. <input type="checkbox"/> Fixed bin A fixed bin is assigned to the material. <input type="checkbox"/> Manual entry If you want to manually select the location for certain materials, such as extremely flammable liquids or radioactive materials the system waits for your input. <input type="checkbox"/> Addition to existing stock The system searches for a partially filled storage bin that already contains the material to be stored and attempts to add the stock to this bin. If there is no partially filled bin with sufficient capacity, the system searches for the next empty bin. <input type="checkbox"/> Bulk storage The system uses this strategy to store materials in blocks or rows (for example, large quantities of bottled beverages or tires) that would otherwise take up too much space in the warehouse. <input type="checkbox"/> Open storage The system uses this strategy to find storage bins in an open storage area. Open storage is a type of warehouse organization in which you define a single storage bin for a storage section. <input type="checkbox"/> Storage unit (pallet or container) type Some warehouses are set up in such a way so that each storage section can take on different types of containers or pallets, depending on the container characteristics (for example, three European pallets or two industrial pallets). This strategy stores goods in storage bins based on the characteristics of the containers or pallets used. <input type="checkbox"/> Customer-defined strategy In case the strategies already available in Warehouse Management do not completely satisfy the needs of the customer, you can define your own strategies using the customer exit function.

The Warehouse Management component uses the following stock removal strategies to find goods that are stored in the warehouse:

Picking Strategies

- ☐ **FIFO (first in first out)**
This strategy removes materials with the oldest goods receipt date first.
- ☐ **LIFO (last in first out)**
This strategy removes materials with the most recent goods receipt date first.
- ☐ **SLED (shelf life expiration date)**
Using this stock removal strategy, the system ensures that materials with the shortest remaining time before the expiration date is picked first.
- ☐ **Partial quantities**
If a storage type has storage bins with both full pallets and partial pallets (or other containers with partial quantities), the system searches for a bin that contains partial quantities first.
- ☐ **Large/small quantities**
This strategy is based on whether the quantity required is large or small. The system decides whether it is dealing with a small quantity or a large quantity, based on a control quantity entered in the material master record. It picks the quantity from the appropriate storage area accordingly.

What is the purpose of putaway and picking strategies in Warehouse Management?

- ☐ Putaway strategies store inbound goods consistently in preferred storage bins.
- ☐ Picking strategies quickly find required goods in the warehouse.
- ☐ Putaway and picking strategies optimize storage capacity and material flow in the warehouse.

Physical Inventory

The practice of taking an annual inventory count at the end of the fiscal year often requires an enormous effort for large warehousing complexes. The costs to a company are high and the physical counting process in the warehouse is labor intensive. In many companies, an annual inventory count would result in a significant loss of productivity because of the effort required. Therefore, under certain circumstances, the law in most countries allows several variations to the conventional annual inventory count.

The Warehouse Management component uses real-time continuous inventory techniques to attain accuracy rates approaching 100%. The component continually checks inventory at the storage bin level. It is regarded as completed if an inventory has been taken for every storage bin in the warehouse at least once during the fiscal year. You can define the inventory procedure individually for each storage type, which lets you consider specific technical and organizational aspects of the storage facilities.

The following inventory procedures are supported by the system:

- ☐ Annual inventory count

- ☐ Continuous inventory
- ☐ Continuous inventory during stock placement
- ☐ Continuous inventory based on zero stock check
- ☐ Inventory based on sampling procedures
- ☐ Cycle counting

The inventory results are recorded in the system as follows:

Inventory Indicator	The inventoried storage bin is marked with an inventory indicator that serves as a record of the inventory procedure that was used. This indicator also serves as proof that inventory was taken.
Differences	Any differences between the book amount and the counted amount are automatically posted to an interim storage area for clearing. The Inventory Management component can access to this interim storage record and can also clear differences in the system.
Inventory History	The Warehouse Management component creates an inventory history for each storage bin. To facilitate auditing, you can access this record as long as necessary.
System Inventory Record	<p>Inventory counts are supported by using the system inventory records that are automatically generated by the system.</p> <p>The Warehouse Management component provides you with the required functions to do the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Plan the inventory by selecting the storage bins individually or a range of bins for which you want to take inventory <input type="checkbox"/> Create and activate the system inventory record <input type="checkbox"/> Print the warehouse inventory list <input type="checkbox"/> Enter the counted results <input type="checkbox"/> Initiate a recount <input type="checkbox"/> Investigate differences in inventory amounts <input type="checkbox"/> Clear the inventory differences from the WM application component and record them in Inventory Management

Additionally, the Warehouse Management component provides the capability to use batch input to process inventory count results.

What are the features of the Warehouse Management inventory procedure?

- ☐ Inventory is taken at the storage bin level.
- ☐ The inventory procedure is defined for each storage type.
- ☐ Besides standard inventory procedures, several automatic, continuous inventory techniques are supported.

Storage Unit Management

Storage unit management in Warehouse Management helps you optimize warehouse capacity and control material flow using storage units within the warehouse.

A storage unit, sometimes called a **unit load**, is a logical grouping of one or several amounts of material including the pallet or container that can be managed within a warehouse as a unit that belongs together. Storage units can be either homogeneous (containing one material) or mixed (containing two or more product items).

All storage units, whether the materials are stored on standard pallets, in wire baskets, or in other containers, are assigned an identifying number that the system maintains as the storage unit number. Consequently, at any given time, you know where each storage unit is located in the warehouse complex, the amount of material contained in it, and which operations have been processed or planned for it.

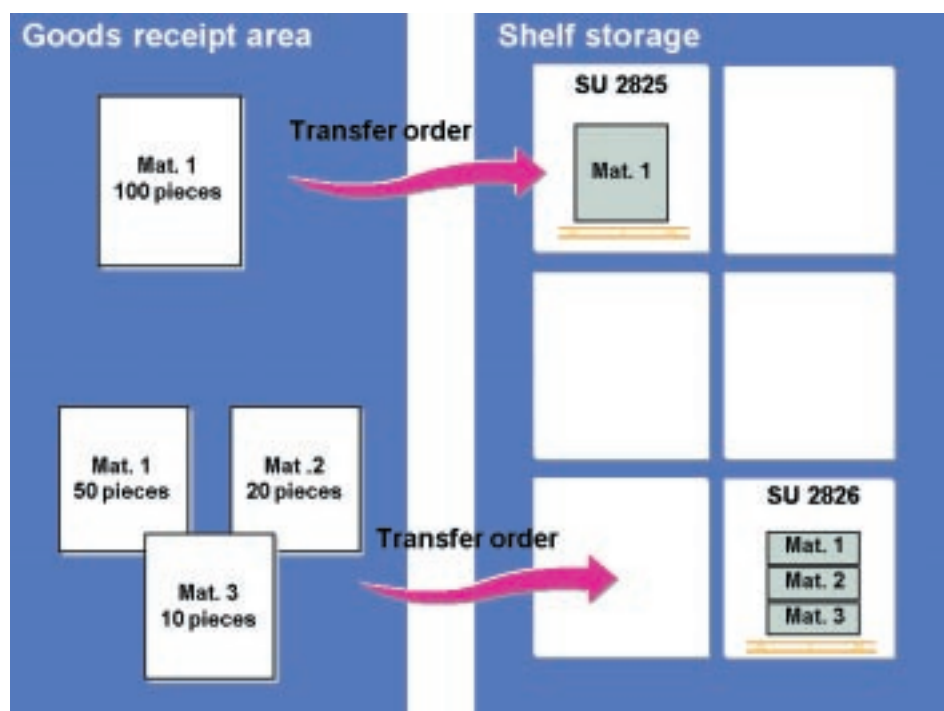


Fig. 9-11: Introducing Storage Unit Management in a Warehouse Complex

Using storage unit management management, you can:

- ☐ Create homogeneous and mixed storage units
- ☐ Place materials into storage using an identification point
- ☐ Create transfer orders and confirm stock movements for storage units
- ☐ Transfer whole storage units internally

- ☐ Add stock to existing storage units
- ☐ Print documents to accompany the storage unit
- ☐ Plan goods issues (for example, to stage materials in replenishment storage bins in production)
- ☐ Interface to automated storage and retrieval systems without maintaining material data in the external systems

What is the task of storage unit management?

- ☐ The primary task is to control material flow using storage units within the warehouse.
- ☐ Storage unit management identifies material quantities using a storage unit number.
- ☐ You can manage and transfer several product items as a unit with a single identification number.

Decentralized Warehouse Management

For customers who already have an R/2 host system, decentralized Warehouse Management can manage all warehousing activities using the R/3 System user interface. With this interface to the R/2 host, the Warehouse Management component can be used as a standalone system. You can transmit data updated in the R/3 System's user interface to the R/2 host later.

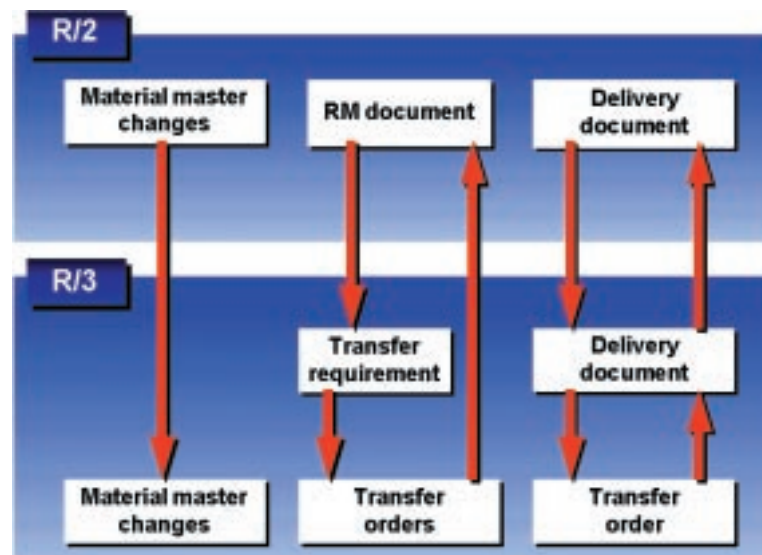


Fig. 9-12: Overview of Decentralized Warehouse Management

An asynchronous communication link ensure close integration with the R/2 System applications in Materials Management and Sales and Distribution.

For customers using the R/2 System, the advantages of implementing the decentralized Warehouse Management component include:

- ❑ **24-hour availability**
During normal operating hours, you can shut down the host system but most operations in the Warehouse Management component can continue.
- ❑ **Reduction of system load in the host**
The host system is relieved of all warehousing functions, which improves system performance.
- ❑ **Independence from the host system**
Breakdowns or unavailability of the R/2 host do not affect operations that are being performed in the decentralized Warehouse Management component.
- ❑ **R/3 user interface**
The decentralized Warehouse Management component offers the same user-friendly menus that are used in the integrated version Warehouse Management.
- ❑ **Ability to work with two systems simultaneously**
You can log onto both the R/2 and R/3 Systems and work with both systems simultaneously on one monitor screen.

The decentralized Warehouse Management component is linked to the Inventory Management component and Sales and Distribution's Shipping component so it can perform all normal warehousing transactions. If the host system is not available, any discrepancies or goods receipts from the production department are entered in the decentralized system. The posting is executed in the host system when it is active again.

What is meant by decentralized Warehouse Management?

- ❑ You can use the user-friendly menus of the R/3 Warehouse Management component as a decentralized system linked to an R/2 host system.
- ❑ All transactions available in the integrated R/3 System can be carried out to meet all electronic warehousing requirements.

Special Functions

The Materials Management component provides certain special functions. These functions can influence all areas within Materials Management, including MRP, Purchasing, Inventory Management, and Invoice Verification. The functions outlined below clearly demonstrate the flexibility and diverse uses of the Materials Management component.

Consignment Material

Consignment material is material belonging to a vendor that is stored on the prospective buying company's own premises. It is not valued at the vendor's defined selling price by the buying company until it is withdrawn from consignment stores or transferred to the company's own stock. Nor does it create liabilities or accounts payable. Material not withdrawn from consignment stores can be returned to the vendor. Settlement of amounts due to the vendor is usually effected on a periodic basis (for example, monthly or quarterly).

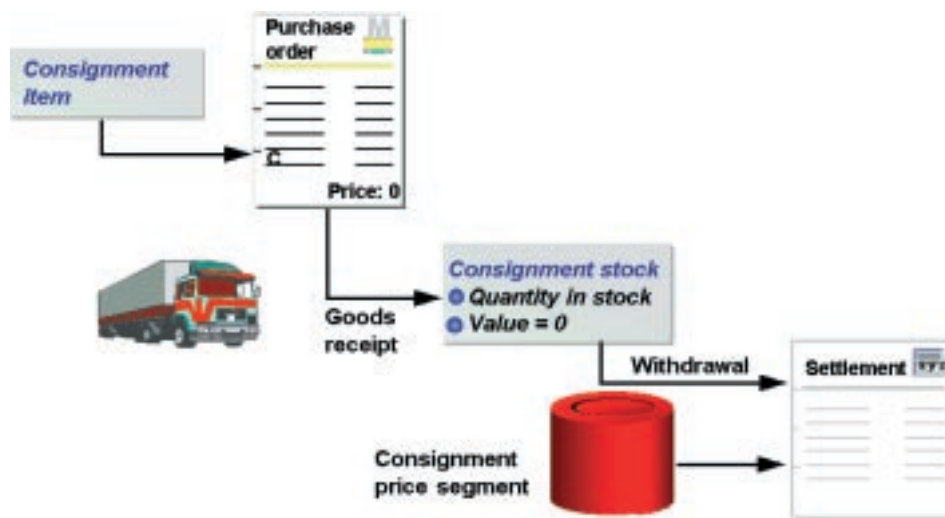


Fig. 10-1: Consignment Processing

You can manage stocks of consignment material under the same material number as stocks of your own company's material, being treated as special stocks. You manage the relevant quantities separately within a storage location, according to vendor. Purchase prices are recorded on a vendor-specific basis. At valuation level, the system calculates a moving average price.

Materials Management posts receipts relating to consignment order items, or consignment scheduling agreements to unrestricted-use stock, goods receipt blocked stock, or stock in quality inspection stock fields using the appropriate special stock indicator.

If the consignment material is subject to management in batches and if the batch status management facility is active, the system can also post goods receipts to restricted-use stock or general blocked stock. The movements described in

Special Stocks

Material Movements

Chapter 6 (Inventory Management) can also be effected for consignment materials. An example is the withdrawal of a random sample from consignment stock for a quality inspection. You can plan the withdrawals of consignment material using reservations.

All movements involving consignment material are clearly identified at the time of posting by setting the special stock indicator.

Contractual stipulations may provide for transferring consignment material from the vendor's stocks to a company's own stocks. For example, you may have an agreement with the vendor that any consignment stocks left over at the end of the fiscal year should be handled this way. You can periodically replenish your own stocks using transfers of this kind. Individual withdrawals are then posted against its own stock as the need arises.

What are the features of consignment processing?

- ☐ Vendor-specific special stocks for the management of consignment material
- ☐ Separate management of quantities according to vendor
- ☐ Movements of consignment material handled in the same way as conventional movements

Returnable Transport Packaging

Returnable transport packaging (RTP) is a type of packaging, such as pallets or containers, in which goods can be transported more than once. Returnable transport packaging from a vendor that is stored at a location on your premises is managed as special stock and is clearly designated as belonging to the vendor. Since it belongs to the vendor, it is not a part of your valued stock.

You can enter the receipt of returnable transport packaging from the vendor either as a separate transaction or in conjunction with the goods receipt for the purchase order.

To obtain an overview of the current RTP stocks of a given vendor, you can display a stock overview.

Returnable transport packaging is returned to the vendor without reference to the purchase order.

What are the characteristics of returnable transport packaging (RTP) from the vendor?

- ☐ Vendor-related special stocks
- ☐ Posting of RTP receipt with or without reference to a purchase order

Pipeline Material

A **pipeline material** is a material that flows directly into the production process from a pipeline (like oil), from a pipe (like tap water), or from another similar source (like electricity). In the R/3 System, pipeline withdrawals reflect the consumption of such materials.

Depending on the system configuration, a material can be withdrawn only from the pipeline or along with the pipeline, normal stocks of the material can also be managed.

A material from the pipeline is always available. It can be withdrawn from the pipeline at any time and in any quantity. You can enter a pipeline withdrawal for an order, a cost center, or a network. The withdrawal is valued at the price defined in the pipeline info record.

The pipeline withdrawal results in a vendor liability that must be settled periodically in a way similar to the management of consignment stocks. The system keeps consumption statistics.

The pipeline withdrawal has no effect on existing warehouse stock or on the availability of the material.

What are the characteristics of a pipeline material?

- ☐ Availability
- ☐ Liability towards the vendor in the case of withdrawals
- ☐ Parallel management of normal stocks

Subcontracting

The subcontracting or outsourcing of processes (such as subassembly) can be handled based on subcontract orders. Materials Management's subcontracting functions let you:

- ☐ Make order in the outsourcing of production activities and services
- ☐ Provide components to the subcontractor for production or assembly
- ☐ Issue material to the subcontractor from your own plant stock or order delivery of such materials by a third-party vendor
- ☐ Post materials produced or services performed by the subcontractor as goods receipts
- ☐ Post receipt of by-products at the same time as the goods receipt posting
- ☐ Post consumption or material usage provided to the subcontractor at the time receipts of the ordered material are posted

If you maintain stocks of materials provided to the subcontractor on the subcontractor's premises, Materials Management treats these as vendor special stocks. The reason is that although it belongs to the providing company, they are no longer available and not included in total plant stock.

Stocks

Provision of Component

The stock of material provided is managed without purchase order reference. However, you can initiate material provision using existing purchase orders. The components can be supplied from the company's own plant stock or from a third-party vendor.

Batch Requirement

If material to be provided comes from several batches, the system identifies the relevant deliveries. This permits any subsequent return deliveries or reversals. It also permits the consumption of this kind of material, which is posted under the appropriate batch number.

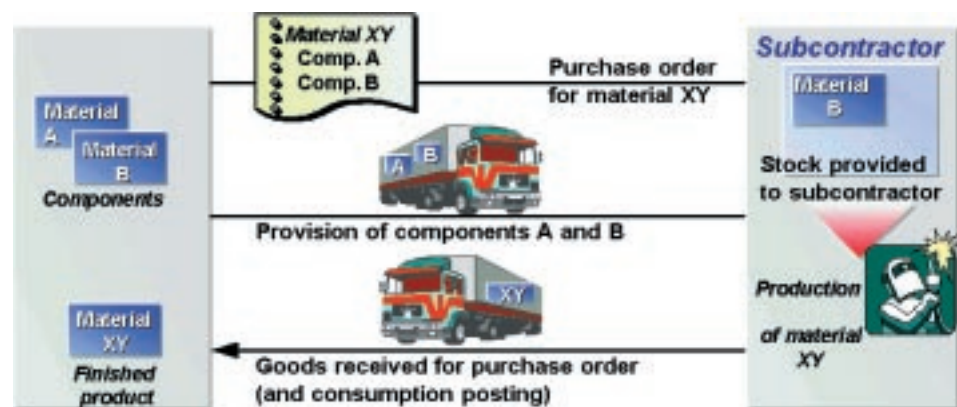


Fig. 10-2: Special Stock with the Subcontractor

Goods Receipt

On receipt of material produced by a subcontractor, the quantities and values of the input materials are posted out of stock. This occurs at the valuation price in the material master record. The system includes the relevant quantities are included in the consumption statistics. The goods receipt value of the material produced by the subcontractor equals the net purchase order value plus the value of the input materials to be posted out of stock.

With materials managed in batches, the system generates a separate goods issue for each batch that goes to the subcontractor. The quantities of input materials that are to be posted out of stock and sent to the subcontractor appear as default values in the ratio of goods receipt quantity to purchase order.

Subsequent Adjustment

If necessary, when you receive the invoice, you can correct the amount of materials the subcontractor used if more or less material was used than you anticipated.

How is subcontracting supported in Materials Management?

- ☐ Stocks with subcontractors count as special stocks.
- ☐ Automatic consumption postings for input materials provided to the subcontractor at goods receipt of the ordered material are posted.

Physical Stock Transfers Using Stock Transport Orders

You can use stock transport orders to transfer stock from plant to plant. This improves material requirements planning and allows you to plan for delivery costs. The procurement price applied to incoming transferred stock reflects the valuation within the issuing plant or the issuing company code, plus any incidental costs of delivery. With materials that are subject to moving average price control, the moving average price changes after each receipt.

Plant-to-Plant Transfers

With stock transport orders, the receiving plant orders the material from the issuing plant and plans the delivery costs (freight, duty, and so on) in the order item. The issuing plant posts the goods issue with reference to the stock transport order. The goods issue can either be entered as a goods movement in Inventory Management or through an R/3 Sales and Distribution delivery. The quantity withdrawn from stock at the issuing plant is listed as stock in transit at the receiving plant.

Goods Receipt

The receiving plant posts the goods receipt with reference to the stock transport order. The goods receipt reduces stock in transit and the open purchase order quantity at the receiving plant.

Cross-Company-Code Stock Transfer

Even if the plants involved belong to different company codes, you can enter stock transfers using one of the following functions:

- ☐ Stock transfer from plant to plant in one step or two steps
- ☐ Stock transport order with or without SD delivery

In these transactions, the stock transfer is posted at the material's valuation price that is valid in the issuing plant.

In addition, you can use stock transfers in conjunction with a delivery and billing document. This means representing the sales of goods at a particular price from the issuing plant A to plant B. In this transaction, the plants involved must belong to different company codes.

In the receiving plant, a standard purchase order is entered for the vendor assigned to the issuing plant.

The issuing plant creates a delivery for the stock transport order and a billing document. This billing document is used for intercompany billing, a process where normal price determination can take place. Using IDoc, this intercompany billing can be posted through electronic data interchange (EDI) as an incoming invoice with reference to the purchase order. Financial Accounting posts it as receivables in the issuing company code.

Upon receipt of the goods, the receiving plant posts the goods receipt at the price defined in the purchase order. Invoice verification is made with reference to the purchase order.

What is the purpose of stock transport orders?

- ☐ They facilitate the physical transfer of stock from plant to plant (involving transport over longer distances).
- ☐ They are significant in terms of material requirements planning. They also control and permit the person ordering to make advance allowance for any delivery costs that are liable to be incurred.

Information Systems

Information systems provide decision makers with tools for making timely strategic and operative decisions accurately. Tools distill vast amounts of information down to the key facts and tailor information to your specific requirements.

Materials Management is one of the R/3 System Logistics application components, which share information system resources. The information systems in Logistics are flexible tools for collecting, aggregating, and evaluating information from the components you are running.

The following information components are part of the Logistics Information System (LIS):

- ☐ Inventory Controlling
- ☐ Purchasing Information System
- ☐ Shop Floor Information System
- ☐ Plant Maintenance Information System
- ☐ Quality Management Information System
- ☐ Sales Information System

Of the information systems listed above, Inventory Controlling (INVCO) and the Purchasing Information System (PURCHIS) belong to Materials Management.

LIS has a modular structure. All information systems have a standardized user interface and use central techniques. These include:

- ☐ Flexible aggregation
- ☐ Standard reporting
- ☐ Flexible reporting
- ☐ Planning tools
- ☐ Analysis tools
- ☐ Archiving tools

Logistics Data Warehouse

The Logistics Data Warehouse is a key component of the Logistics Information System. It is integrated in all information systems belonging to LIS, and it is a prerequisite for implementing and using all other components of these systems.

The Logistics Data Warehouse enables you to create a your own data warehouse for logistics and tailor it to your requirements. You can define variable data structures to satisfy the different information needs of various user groups and applications. The key element in this process is the self-defined information structure. A wide range of flexible tools can be used to fill these information structures with customer-specific data (including external data).

Furthermore, the Logistics Data Warehouse contains functions that enable you to

define the way in which the statistical data flows from the operating component to the information system. Update groups and update rules help you to influence this process.

Information Structures

Information structures contain the data from the component that is considered relevant for aggregation and subsequent analysis purposes.

An information structure contains three basic types of information:

☐ Characteristics

Characteristics are business criteria that are suitable for aggregation.

☐ Key figures

Key figures are values that provide meaningful information of particular business relevance. This information is then aggregated around the characteristics.

☐ Period unit

The key figure values can be collected at regular intervals. Aggregation can take place on a daily, weekly, or monthly basis. It can also be collected employing a variable period unit that is determined using the fiscal year variant.

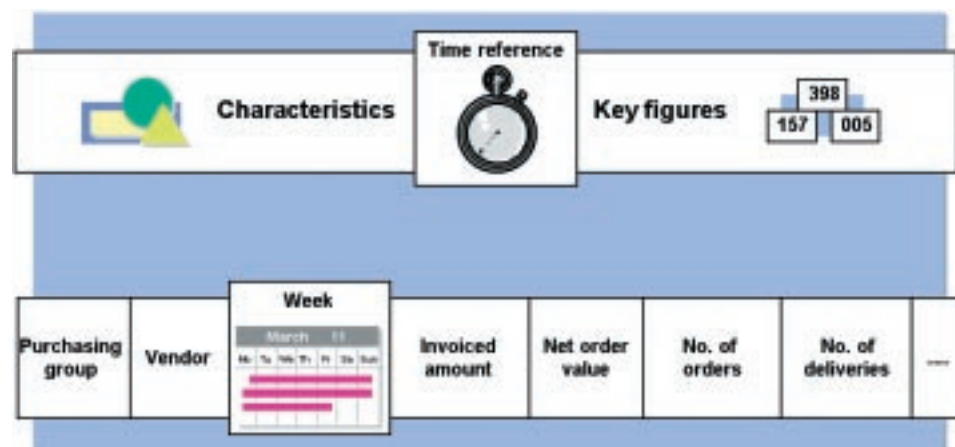


Fig. 11-1: Typical Information Structure

The standard information structures and self-defined information structures are the basis for all subsequent functions in the information system, such as analyses, planning.

Standard Information Structures

The standard version of the R/3 System includes information structures for each information system. These structures logically group related key figures of particular business significance for all relevant analyses in the appropriate component.

Self-Defined Information Structures

Data aggregation is vital in an information system so that you can gain a clear overview of important co-dependencies and interrelationships. Data aggregation requirements are determined by a large number of different user groups. Consequently, a rigid definition of data aggregation (as is the case for the standard

information structures) is insufficient. Experience shows that different user groups require different views on aggregated data. Self-defined information structures let you map these different views.

The Logistics Data WarehouseExtensive provides extensive tools and functions:

Tools

❑ LIS inbound interface for external data

The LIS inbound interface for external data enables you to make data available to the Logistics Information System that cannot reach it directly through updating. This means you can use all LIS functions to manipulate this data.

The functions of this interface overlap those of Copy Management in certain respects. The relevant documentation helps you choose the more suitable tool. For instance, if you need to transfer data continuously, then you should use the LIS inbound interface.

❑ Setup of statistical data

The statistical setup ensures that information structures are filled with consistent and complete data. This means that multiple information structures can be statistically set up in one setup run.

You need to perform a statistical setup in the following situations if:

- You have created a new information structure using the Logistics Data Warehouse
- You have updated information structures after documents designated for the statistics were already available in the system
- The statistics update has been changed in Customizing
- The statistical data is inconsistent

❑ Distribution of statistical data

Application Link Enabling (ALE) lets you set up and operate distributed applications in one integrated system so you can exchange data between a central application and several distributed applications running on various logical systems. ALE allows for an exchange of messages controlled by the business and consistent data retention in loosely linked components.

The individual applications run autonomously. That means each distributed application has its own database, which leads to redundant data retention. The data must therefore be distributed and synchronized in the overall system. The different distribution capabilities are integrated into the individual R/3 System components. The component initiates the distribution of the data using an asynchronous communication tool called Intermediate Documents (IDocs). IDocs have a neutral data structure. For that reason, different R/2 and R/3 systems can communicate using IDocs, and non-SAP systems can communicate with SAP systems. ALE also enables communication between different release levels.

ALE can support distribution scenarios to provide both cross-system Inventory Controlling and Purchasing Information Systems.

You can use ALE to distribute the statistical data from these information systems in such a way that detailed statistical data is saved in the decentralized systems. This detailed data can then be consolidated and made available at any

time in aggregated form in a centralized system. You can even save consolidated statistics when different R/3 systems have performed different business transactions. You can update statistics in the decentralized systems and in a centralized system.

Using ALE in LIS brings particular performance benefits since LIS can run independently of the components on a separate system that has more capacity.

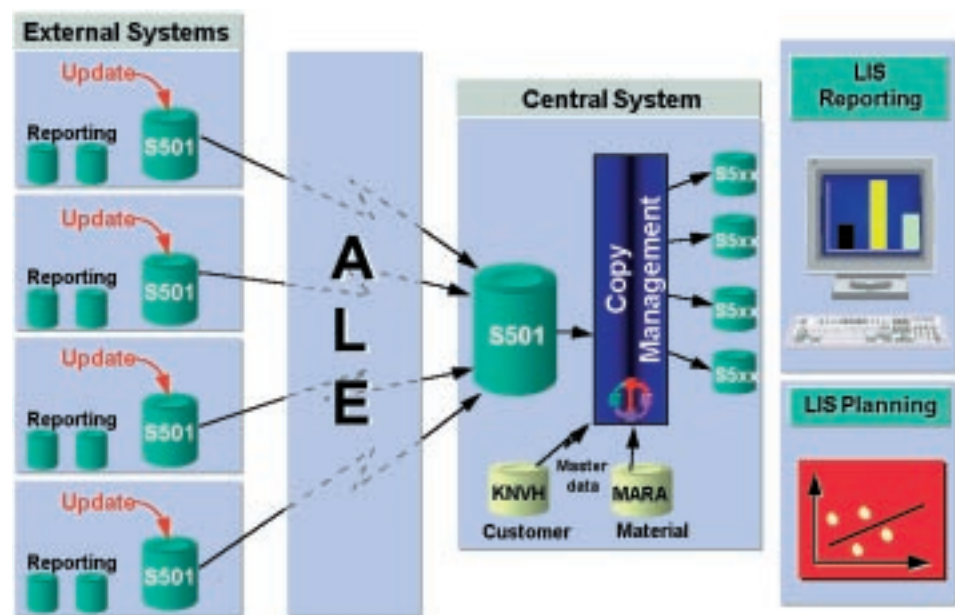


Fig. 11-2: LIS as a Central System

□ Copy Management

You can use the Logistics Data Warehouse to tailor the Logistics Information System to meet your requirements. The design of the information structures guarantees a high level of performance for updating and reporting. It also ensures that the statistical data is up-to-date and consistent.

To achieve these goals, Copy Management:

- Reduces the system load by reducing the number of information structures to update
- Improves reporting performance by providing highly aggregated information structures
- Enhancement of statistical data with information that is not provided by the normal updating function.

- Reorganizes historical statistical data
- Simulates the effects of reorganizing data
- Prepares statistical data to satisfy special requirements (for example, in accordance with planning requirements)
- Imports external statistical data to the LIS information structures
- Distributes statistical data over one or more information structures
- Copies statistical data
- Provides a simple procedure for deleting specific statistical data

You can perform complex statistical data transformations by using **methods**. SAP provides several transformation scenarios to help you create methods. Each scenario consists of both detailed business descriptions and one or more template methods that the system automatically adapts to the information structure that you have chosen. It copies it to the clipboard so that they can then be used when you create a method.

The Copy Management functionality overlaps with the LIS inbound interface in certain respects. The relevant documentation, however, provides you with recommendations to help you choose the more suitable tool. For instance, when you need to perform a once-only data transfer, then you should use Copy Management.

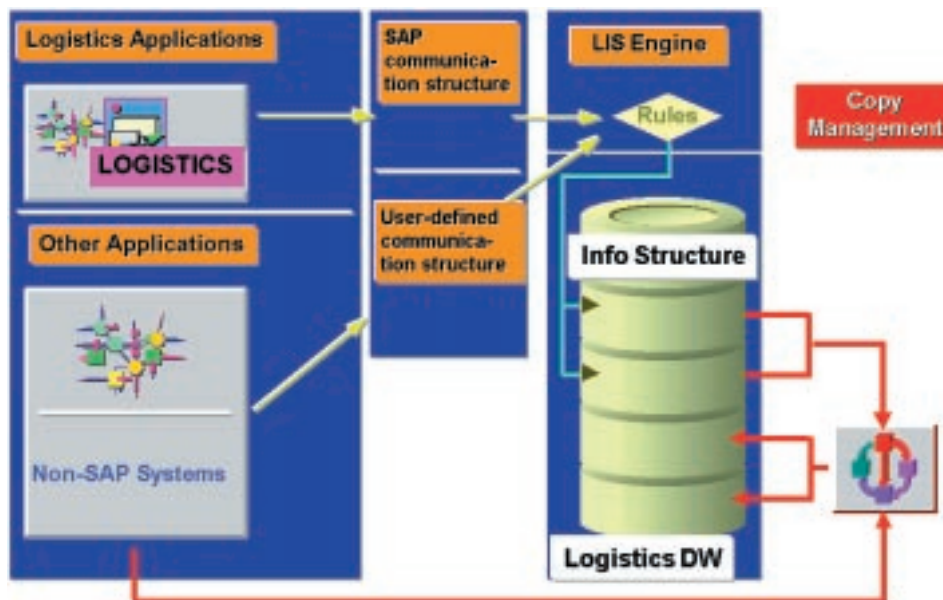


Fig. 11-3: Enhancement of Standard Updating

As part of the standardization of the information systems in Logistics, the following components in Inventory Controlling and the Purchasing Information System have been enhanced:

- ☐ Planning
- ☐ Early Warning System
- ☐ Logistics Information Library (LIL)

Planning

In Inventory Controlling and the Purchasing Information System, you conduct planning with the aid of a flexible planning tool. Planning is based on **information structures**. You can plan both standard information structures and self-defined information structures. You can plan on every aggregation level. This means that you can plan both product groups or planning hierarchies at a high level as well as planning finished products at a detailed level. In addition, you can create sales and operations plans and plan for additional data, such as key figures of an information structure. You can also compare and level material resources, production tools/resources, and costs to guarantee that your resources are sufficient for your objectives.

You make plans with a user-friendly planning table that resembles a spreadsheet.

Here you can define macros and events and compare planned and actual data. The information systems can therefore be used as an instrument for monitoring, controlling, and planning your business.

Early Warning System

The Early Warning System is based on the key figures of the Logistics Information System. It supports the decision-making process by helping you to target and monitor weak points in logistics. The Early Warning System allows you to search for exceptional situations to detect and rectify potential problems at an early stage.

You define the exceptional situations yourself by creating exceptions. You can also define the follow-up processing of exceptions. To define an exception, you need to specify characteristics or characteristic values and requirements. Here you can choose between the following requirements:

- ☐ Threshold value analysis
- ☐ Trend analysis
- ☐ Planned/actual comparison

In the threshold value analysis and the planned/actual comparison, you can make a forecast that is based on historical data.

You can check for exceptional situations by using one of the following analysis techniques:

- ☐ Standard analysis
- ☐ Periodic analysis
- ☐ Exception analysis

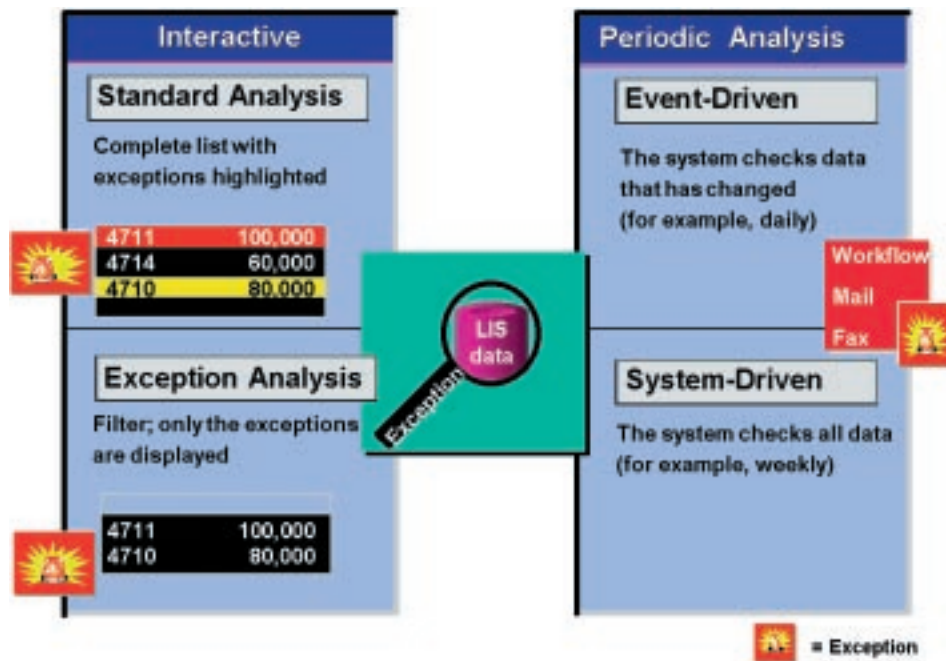


Figure 11-4: Overview of Analyses in the Early Warning System

The Logistics Information Library systematically catalogs all key figures in the Logistics Information System and organizes them in an application-specific structure. In addition, the LIL helps you to create, classify, and find key figures in logistics. The LIL enables you to access key figures from the Logistics component. It also lets you access key figures unavailable in LIS and key figures that have been created in your business.

Easy-to-use search strategies enable you to speed up access to this vast amount of key figures and provide you with a clear overview.

With LIL you can logically group related key figures with reference to specific functions or user groups.

The Logistics Information Library performs the following functions:

- ☐ Integration of key figures from user-specific developments
- ☐ Central catalog of all available key figures
- ☐ Self-defined groupings of key figures

Reporting

LIS reporting consists of standard reporting performed using the standard analyses. It also includes flexible reporting, which is performed using flexible analyses.

In standard analyses, you can use various functions and selection options to determine the scope of the data that is to be evaluated. In standard reporting, detailed data from the operative application is integrated in the Logistics Information System that is based on aggregated data. You can drill-down on key figures along

Logistics Information
Library

Standard Analyses

the characteristics defined in an information structure and refine the level of aggregation, and you can display the master and transaction data.

You can also define the following areas of standard reporting to meet your information requirements:

☐ **Standard drill-down**

In the standard shipment of the R/3 System, there is one standard drill-down for each standard analysis. You can change the sequence of the characteristics according to your requirements.

☐ **Key figures**

In the standard system, key figures are predefined for each standard analysis. You can define which key figures are displayed in your analysis. You can also selectively and interactively change key figures during the analysis.

☐ **Parameters**

In the standard system, the parameters for the layout of analysis lists are predefined for each standard analysis. You can change these parameters to meet your specific needs. In addition, you can define default values for the selection screen and then change these settings interactively during the analysis.

In addition to the standard drill-down, standard analyses contain another drill-down function called the **hierarchy drill down**. Here, a characteristic value is displayed in detail with regard to an existing hierarchy. The standard system supplies various hierarchies for each information system in logistics. Furthermore, you can define your own hierarchies.

Standard reporting also offers you a wide range of analysis functions that you can perform at all levels of lists. These include:

- ☐ Cumulative frequency curve
- ☐ Correlation curve
- ☐ ABC analysis
- ☐ Classification
- ☐ Dual classification
- ☐ Ranking lists

You can display all analysis results graphically. You can make various comparisons, such as a planned/actual comparison, current year with the previous year, or a comparison of two key figures.

The system provides a series of additional, general functions are available. This includes a PC download connection for follow-up processing of the analysis lists using programs like Microsoft Excel and a connection to e-mail for sending analysis lists.

The **selection version** is an extremely helpful function in standard reporting. In standard analyses, you select data at a certain point in time and save this data under a version name. You can then call up this selection version at any time for subsequent analyses. The selection versions also help you to define a specific view on the data.

Flexible analyses enable you to represent characteristics in self-defined, multi level hierarchies and to cumulate the corresponding key figures. You can also combine key figures from different information structures.

Flexible Analyses

In the flexible analyses, you can easily create reports using the Report Writer. The Report Writer helps you vary the layouts for these reports.

Evaluation structures form the interface to Report Writer. Evaluation structures are made up of characteristics and key figures. For each information structure in the standard R/3 System, there is also an evaluation structure with the same name. Accordingly, the system generates an evaluation structure for each information structure that you define.

You can use evaluation structures as the basis for defining your analyses. To do this, you can select the characteristics and key figures you require with the help of a pick-up technique.

Communication and Optical Archiving

The R/3 System contains a flexible instrument for communication between business partners. The system controls the output of all documents within Materials Management, from purchase orders to delivery notes. The system automatically determines whether transmission takes place via the regular mail, fax, or electronically.

The term “message” includes both electronic message and printed documents. For example, the following documents can be printed or transmitted as messages:

Messages

- ☐ Requests for quotation
- ☐ Purchase orders
- ☐ Contracts
- ☐ Scheduling agreements and delivery schedules
- ☐ Reminders
- ☐ Goods/issue slips

Messages are automatically created for certain business transactions. For example, a message is created when you save a purchase order.

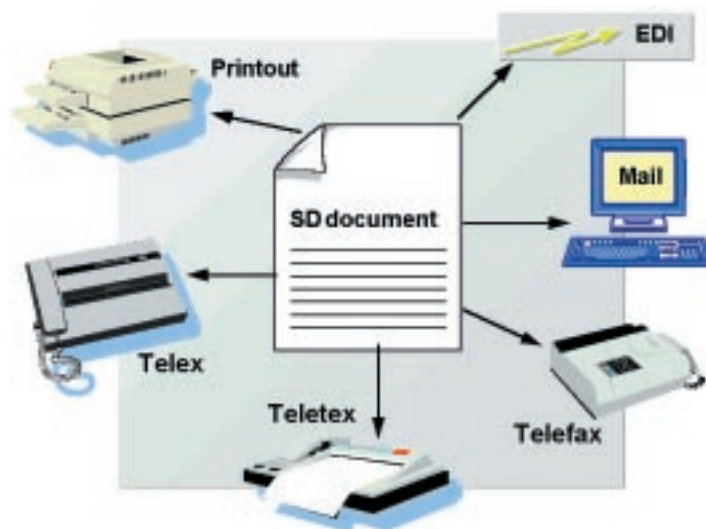


Fig. 12-1: Overview of Communication Media in the R/3 System

Controlling messages depends on the time and nature of their transmission. You can modify message control to fit your company’s individual requirements.

Depending on system parameters, the system determines the type of message transmission, but you can always determine how a message should be sent.

Purchasing can control the processing of messages individually for each vendor.

- SAPmail** With SAPmail, the system can automatically send messages referring to a business transaction to internal or external recipients. For example, the system electronically informs the purchasing department of price variances in invoice verification.
- EDI** Messages can also be received or sent via electronic data interchange (EDI).
- Printouts** If you want to print out documents and trading papers, you can define the printer selection according to different criteria. Documents can be printed centrally on one printer or on any number of printers in the company.
- The print layout is based on the model for the standard layout of trading papers according to DIN 4991 (ISO 6422:1985). You can adapt the layout to fit your needs without programming by changing the form structure using the SAPscript layout set editor.
- Telex/Teletex/Telefax** Purchasing can also select one of these communication options. The vendor's telex, teletex, or telefax number is stored in the vendor master record and the system uses these default numbers in the message.
- Message Proposal** The following questions are asked during message transmission in purchasing:
- ☐ At what time should which message be sent?
 - ☐ In which language should the message be sent?
 - ☐ How many copies should be sent?
 - ☐ Who is the business partner or recipient for whom the message is intended?
 - ☐ Which communication medium is used to send the message?
- A message default for each business transaction answers these questions. However, you can intervene manually in individual cases.
- You can select the time at which the message is sent (see Figure 12-2). The following options are defined in the system:
- ☐ A message is sent immediately after the purchasing document is created.
 - ☐ Message transmission is explicitly requested.
 - ☐ Messages is sent with the next batch run or at a given time.

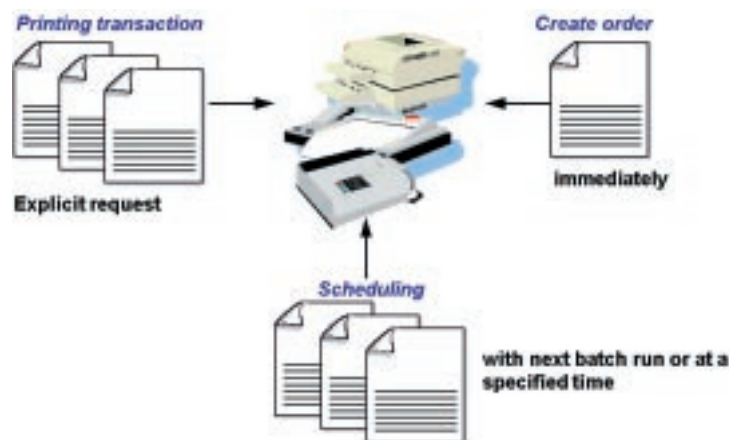


Fig. 12-2: Time of message transmission

Status information is stored in the appropriate document for each message (for example, date sent, sender, and message recipient). **Status**

How does Materials Management handle communication?

- ☐ All documents can be printed or sent in the form of messages.
- ☐ The communication media available include printers, telecommunication tools, SAPmail, and EDI.
- ☐ The system automatically proposes message parameters, including the date and recipient of the message.

ABC analysis

ABC analysis is analysis that classifies the materials in a company by their consumption value. The consumption value is calculated by multiplying current price by quantity. Each material in the analysis is given an ABC indicator which provides information about the consumption value of the material. The following consumption values are possible:

- ☐ A: important part/high consumption value
- ☐ B: less important part/medium consumption value
- ☐ C: relatively unimportant part/low consumption value

Account assignment category

Account assignment category indicates if an item is to be assigned to an auxiliary account (such as a cost center). The account assignment category determines which account assignment data (for example, cost center, account number, and so forth) are required for the item.

Account group

Account group is the key that can be used as part of account assignment when posting to G/L accounts in financial accounting.

Alternative unit of measure

Alternative unit of measure is the unit of measure that is defined in the SAP R/3 System along with the base unit of measure. Examples of alternative units of measure are:

- ☐ Order unit (purchasing)
- ☐ Sales unit
- ☐ Unit of issue

Base unit of measure

Base unit of measure is the unit of measure in which the stock of a material is kept. The system converts all quantities entered in other units into the base unit of measure.

Consignment

Consignment is a business transaction in which a vendor maintains a stock of material at a customer (purchaser) location. The vendor retains ownership of the materials until they are withdrawn from the consignment stores. Payment for consignment stock

is only required when the material is withdrawn. For this reason, the vendor is informed of withdrawals of consignment stocks on a regular basis.

Consignment material

Consignment material are goods from one or more vendors handed over to a company for storage or sale on a consignment basis. It is stored in this company's storage facilities. Consignment material is not included in the company's valuated stock until it is withdrawn. As a result of such withdrawals, the company incurs a liability towards the vendor. Such liabilities are settled at certain intervals.

Consignment stock

Consignment stock is stock made available by the vendor which is stored on the purchaser's premises. It remains the vendor's property until withdrawn from stores or transferred to the purchaser's own valuated stock.

Consumable material

Consumable material is procured material or service which is settled on a value basis through cost element accounts or asset accounts. There are several categories of consumption materials:

- ☐ Without a material master record
- ☐ With a material master record without inventory management
- ☐ With a material master record with inventory management on a quantity basis only

Cost center

Cost center is the unit within a company distinguished by area of responsibility, location, or accounting method.

Date required

Date required is the date in a reservation when the material is to be withdrawn from the warehouse.

Delivery costs

Delivery costs are costs that are incurred by the ordering user along with pure material costs. Delivery costs include:

- ☐ Freight costs
- ☐ Duty costs
- ☐ Miscellaneous delivery costs, including packaging, delivery, and so forth

Delivery date

Delivery date is the date when goods are delivered or a service is rendered.

Delivery schedule

Delivery schedule is the time plan for successive delivery of parts of the total quantity of a material, which are agreed upon in an item of a scheduling agreement. You can specify the exact delivery time in the delivery schedule.

Effective price

Effective price is the price calculated by taking all existing price conditions into account (for example, taxes, delivery costs, discounts, and miscellaneous provisions).

Exchange rate

Exchange rate is the relationship between two currencies. This rate is used to translate an amount into another currency.

External procurement

External procurement is the procurement of raw materials, operating supplies, trading goods, or services from an external supplier for organizational units within a company which require these items.

Final delivery

Final delivery is the last goods receipt of a particular material regarding an order item. No further deliveries are expected for this item. The order item is regarded as closed.

Forecast

Forecast is the estimation of the future values of a time series. In the SAP System, a forecast is carried out based on a first-order exponential smoothing procedure (Winter's procedure).

Forecast model

Forecast model states the most obvious structure of a time series. The following forecast models exist:

- ☐ Constant model
- ☐ Trend model
- ☐ Seasonal model
- ☐ Seasonal trend model

Goods receipt

Goods receipt is the term in inventory management which refers to the acceptance of goods from a company. Goods receipts are entered with or without reference to a purchase order.

Goods receipt blocked stock

Goods receipt blocked stock is the quantity of a material delivered/supplied by a vendor that has been received. It is subject to conditional acceptance and has not yet been placed in final storage. Goods receipt blocked stock is not yet regarded as part of the receiving company's own stock, but is considered in the purchase order history.

Gross price

Gross price is the price that does not include discounts or surcharges.

Inventory Management

Inventory management is the area of logistics which includes the following tasks:

- ☐ Management (recording and tracking) of stocks of a material on both quantity and value basis
- ☐ Planning, entering, and documenting all stock movements including goods receipts, goods issues, stock transfers, transfer postings
- ☐ Physical inventory (stocktaking)

Invoice Verification

Invoice verification encompasses the entering and checking of vendor invoices. Vendor invoices are compared with the purchase order and goods receipt. They are checked in three ways:

- ☐ Content
- ☐ Price
- ☐ Quantity

Issuing plant

The issuing plant is the plant from which the materials are withdrawn for a stock transfer.

Material

Material is the term used for all objects processed in materials management. A material master record is usually created for each material in the SAP System and each material is assigned a material number.

Material group

Material group refers to a group of several materials with the same characteristics.

Material master

Material master contains all the materials used in a company and their data.

Material type

Material type is the indicator which subdivides materials into different groups. For example:

- ☐ Raw materials
- ☐ Semi-finished materials
- ☐ Finished materials
- ☐ Operating supplies

The material type determines the material's procurement type and controls the following:

- ☐ Screen sequence control
- ☐ Field selection
- ☐ Type of number assignment in material master maintenance
- ☐ Type of inventory management
- ☐ Account determination

Material valuation

Material valuation determines the material stock value. Valuation-relevant data for a material includes:

- ☐ Valuation price
- ☐ Valuation class
- ☐ Valuation procedure: standard price, moving average price

Multiple account assignment

Multiple account assignment is the assignment of an order item to several accounts. The distribution of costs can be made based on percentages, quantity, or amount.

Net price

Net price is the price which includes all vendor surcharges and discounts.

Number assignment

Number assignment is the allocation of numbers to objects (for example, materials). There are two types of number assignment:

- ☐ Internal - number assigned automatically by the system
- ☐ External - number assigned manually by you

One-time vendor

One-time vendor is a vendor master record used for processing transactions involving miscellaneous vendors that are not part of a customer's regular suppliers. If an RFQ or PO is sent to a one-time vendor, you must enter the one-time vendor's address manually.

Order

Order describes a task to be performed within a company. The order specifies:

- ☐ Which task is to be performed
- ☐ When the task is to be performed
- ☐ What is needed to perform the task
- ☐ How the order costs are to be settled

Order price history

Order price history refers to the series of prices representing the purchase prices charged by a vendor for a material or service over a certain period extending to the present.

Order price unit

Order price unit is the alternative unit of measure that can be used by the purchasing department for ordering purposes. The order price unit allows you to express the order price in a unit that differs from the order unit.

For example:

Ordered: 100 m2; Price: \$24.20 for each 10 kg. The order unit is m2, whereas the order price unit is kg.

Order unit

Order unit is the unit of measure that permits a material to be ordered (by purchasing) in a unit that differs from the base unit defined for the material.

Organizational level

Organizational level is the hierarchy level on which certain data in the material master record is entered. Examples of organizational levels include company code, plant, and storage location levels.

Price comparison list

Price comparison list is the method for comparing prices in quotations. The price comparison list also directly compares a quotation with the minimum, average, or maximum price on an item-by-item basis.

Price control

Price control is the indicator which determines the material valuation procedure. In the standard SAP System there are two procedures:

- ☐ Standard price valuation
- ☐ Moving average price valuation

Price unit

Price unit is the unit which the valuation price refers to in the material master record.

Pricing conditions

Pricing conditions refers to the terms of payment negotiated with a vendor, such as surcharges or discounts. Pricing conditions determine, for example, how the system calculates the net price.

Procurement lead time

Procurement lead time is the time it takes for the ordered material to be available in stock after the purchase order has been released.

Procurement type

Procurement type is the classification which determines whether a material is produced in-house, whether it is procured externally, or whether both are possible.

Purchase order

Purchase order is a request to a vendor to supply certain materials or perform certain services. A purchase order contains general data including:

- ☐ Terms of delivery
- ☐ Terms of payment
- ☐ Items with detail such as:
- ☐ Material description
- ☐ Order quantity
- ☐ Delivery date
- ☐ Price

Purchase requisition

Purchase requisition is a request or instruction to the purchasing department to procure a certain quantity of a material or service on, or by, a certain date.

Purchasing document

Purchasing document is the instrument used by the purchasing department to procure a material or services. The standard SAP R/3 System includes the following purchasing documents:

- ☐ Purchase requisition
- ☐ RFQ
- ☐ Quotation
- ☐ Purchase order
- ☐ Contract
- ☐ Scheduling agreement

Purchasing document type

Purchasing document type is the identifier that allows a distinction to be made between the various forms of a document category. It determines, for example, the relevant number range and the fields for maintenance.

Purchasing document category

Purchasing document category is the identifier for the classification of purchasing documents. Purchasing document categories include the following:

- ☐ Requests for quotation (RFQs)
- ☐ Purchase requisitions
- ☐ Purchase orders
- ☐ Contracts
- ☐ Scheduling agreements

Purchasing document categories can be subdivided into purchasing document types.

Purchasing group

Purchasing group is the key organization for a buyer or group of buyers responsible for certain purchasing activities. A purchasing group is:

- ☐ Internally responsible for the procurement of a material or class of materials
- ☐ As a rule, the principle channel for a company's dealings with its vendors

Purchasing info record

Purchasing info record is the source of information for the purchasing department regarding a certain material/vendor relationship. The purchasing info record contains the following data:

- ☐ General data
- ☐ Quotation data
- ☐ Order data

The purchasing info record permits the purchasing department to obtain the following information:

- ☐ For which materials a certain vendor has submitted a quotation or supplied to date
- ☐ Which vendors have quoted prices for or supplied a certain material

Purchasing organization

Purchasing organization is the organizational unit that negotiates general conditions of purchase for several plants.

Purchasing value key

Purchasing value key is the key defining the valid reminder days and tolerance limits applicable to the material (in the material master record) for the purchasing department. The purchasing value key serves as an input aid.

Quantity contract

Quantity contract is the contract in which the purchase quantity of goods or services is agreed upon. To create a quantity contract, you must enter the agreed quantity.

Quota arrangement

Quota arrangement is the method for dividing the total requirements for a material among certain sources of supply by allocating quotas to each source. The quota specifies which portion of the requirement should be procured from a given source of supply. The system uses the quota to propose a source in requisitions and purchase orders.

Rejection letter

Rejection letter is the communication addressed to an external supplier informing them that their quotation (bid) submitted has not been accepted.

Release point

Release point is the person, department, or other organizational unit of a company that must release (approve) the items in a purchase requisition before the ordering process can be initiated. Several release points can be specified by a release strategy.

Release strategy

Release strategy is the term used in purchase requisition processing. The release strategy specifies which release points must approve the items of a purchase requisition and in which order. A certain release strategy can, for example, be specified for all purchase requisitions whose value exceeds a certain amount.

Requirement tracking number

Requirement tracking number is the number that facilitates monitoring the procurement of required materials or services. This number can relate to a requisition note (requisition document or requirement slip) that was not generated in the system.

Scheduling agreement

Scheduling agreement is a type of outline agreement. A scheduling agreement is a long-term agreement between a vendor and a customer. It involves the subsequent creation and regular update of schedules for delivering materials specified in the line items of the agreement.

Source list

The source list specifies the allowed (and/or not allowed) sources of supply for a material in a plant. It also indicates the period for which the source is valid. The source list of material is composed of source list records, each of which identifies a possible source of supply for the material.

Source of supply

Source of supply is the procurement option for a material. A source of supply can be an external source (vendor) or an internal source (for example, a company's plant). The preferred source at any one time can be determined by the system based on quota arrangements, source list records, outline agreements, or info records that have been defined for the material.

Stock

Stock is a materials management term for part of a company's current assets. It refers to the quantities of raw materials, operating supplies, semi-finished products, finished products, and trading goods in the company's stores/warehouse.

Stock material

Stock material is material that is always kept in stock (for example, a raw material). A stock material has a material master record and is managed on a value basis in a material stock account.

Storage location

Storage location is the organizational unit that allows the differentiation of material stocks within a plant.

Unit of issue

Unit of issue is the unit of measure that expresses the quantity of materials issued from the warehouse. The unit of issue allows you to record material usage/consumption, stock transfers, transfer postings, and physical inventories in a unit of measure other than the stock-keeping unit.

Unit of measure

Unit of measure is a unit that allows you to determine the dimension or quantity of a material. The SAP System contains several units of measure, including:

- ☐ Base unit of measure
- ☐ Unit of entry
- ☐ Unit of issue
- ☐ Order unit
- ☐ Sales unit

Valuation area

Valuation area is the organizational level on which stocks of a material are managed based on value. The valuation area is either:

- ☐ A plant
- ☐ Several plants in a company code
- ☐ All plants in a company code

Valuation category

Valuation category is the criterion for the separate valuation of different stocks of a material. Reasons for split valuation include:

- ☐ Quality
- ☐ Batch
- ☐ Degree of purity

Value contract

Value contract is the contract in which the purchase of goods or services is agreed up to a certain total value. The goods to be released against the contract are specified in contract release orders. Criterion for the performance of a value contract is its agreed total value.

Vendor

The vendor is the external source from whom materials or services can be procured.

Volume-based rebate

Volume-based rebate is the cumulative, period-end discount granted by a vendor to a customer. It is usually based on the volume of business done with the customer within a specified period. The volume-based rebate is defined with the help of condition records.

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