Information Systems

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

R/3 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 data (information) from the application 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.

These information systems are integrated in the *Logistics Information System (LIS).* 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 (LIS). It is integrated in all information systems belonging to LIS and is a prerequisite for implementing and using all other components of these systems.

The functionality in the Logistics Data Warehouse enables you to create a self-defined Logistics Data Warehouse 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 operative application to the information system. Update groups and update rules help you to influence this process.

Information Structures

Information structures contain the data (information) from the active application 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 which 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.
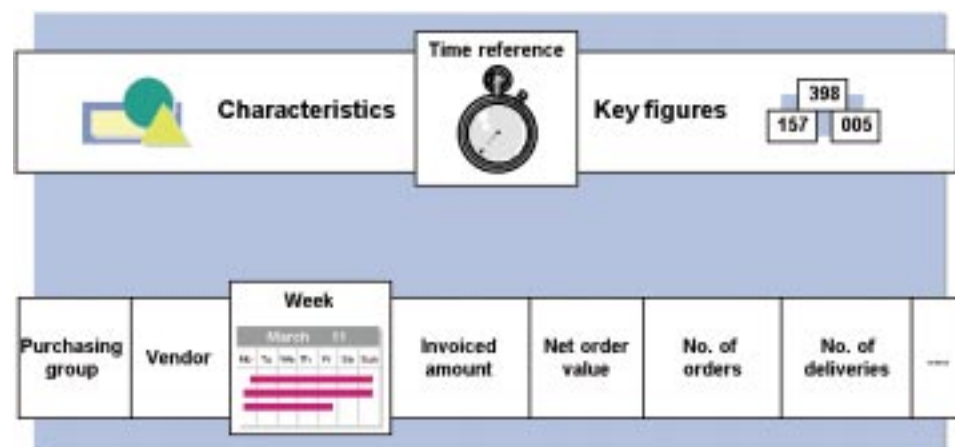

Fig. 11-1: Typical Information Structure

The standard information structures and self-defined information structures form 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 respective application.

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 enable you to map these different views.

Extensive functions are also available to support and help you with your activities in the Logistics Data Warehouse. The following tools play a key role in this area:

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 (LIS) that cannot reach LIS directly through updating. This means that the entire functionality in LIS can also be used to manipulate this data.

The functionality of the LIS inbound interface for external data overlaps with Copy Management in certain respects. The relevant documentation, however, provides you with recommendations to help you choose the more suitable tool.

For instance, if you need to transfer data continuously, then you are advised to 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.

❍ If updating of information structures has been activated after documents designated for the statistics were already available in the system.

❍ If the statistics update has been changed in Customizing.

❍ If the statistical data is inconsistent.

❑ Distribution of Statistical Data (ALE)

ALE (Application Link Enabling) supports the setup and operation of distributed applications in one integrated system. This lets you exchange data between a central application and several distributed applications, which run on various logical systems.

ALE encompasses an exchange of messages controlled by the business, and at the same time consistent data retention in loosely linked SAP applications.

The individual applications run autonomously. That means each non-central 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 applications. The application initiates the distribution of the data. The communication that is necessary to do this takes place asynchronously by using IDocs (Intermediate Documents). The IDoc has a neutral data structure. For that reason, not only can SAP systems (R/3 - R/3, R/2 - R/3) communicate by using IDocs, but non-SAP systems and the SAP R/3 system

can also communicate with each other. ALE also enables communication between different release levels.

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

You can use ALE to distribute the statistical data from these logistics 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. Consolidated statistics can even be saved when business transactions have been performed on different R/3 Systems. You can also update differing statistics in the decentralized systems and in a centralized system.

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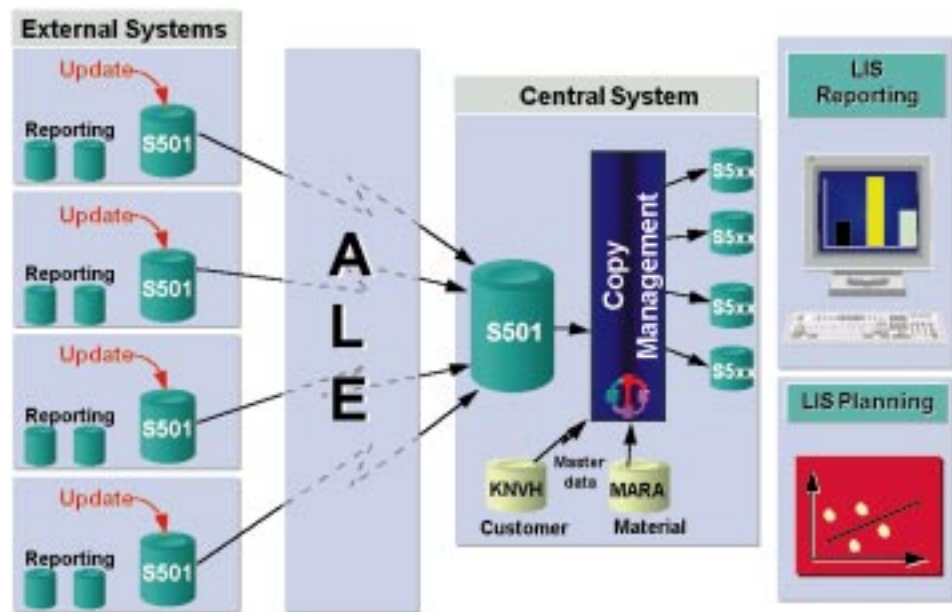

Fig. 11-2: LIS as a Central System

❑ Copy Management

You can use the Logistics Data Warehouse to tailor the Logistics Information System (LIS) to meet your requirements. The design of the information structures is instrumental for guaranteeing 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 offers the following options:

❍ Reduction of the system load by reducing the number of information structures to be updated.

❍ Improved performance in reporting by providing information structures with a high level of aggregation.

❍ Enhancement of statistical data with information that is not provided by the normal updating function.

❍ Reorganization of historical statistical data.

❍ Simulation of the effects of reorganizing data.

❍ Preparation of statistical data to satisfy special requirements (for example, in accordance with planning requirements).

❍ Import of external statistical data to the LIS information structures.

❍ Distribution of statistical data over one or more information structures.

❍ Simple procedure for copying statistical data.

❍ Simple procedure for targeting specific statistical data for deletion.

You can perform complex statistical data transformations by using *methods.* SAP provides several transformation scenarios to support and facilitate the creation of methods. Each scenario consists of both a detailed business description (documentation) and one or more template methods which 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 are advised to use Copy Management.
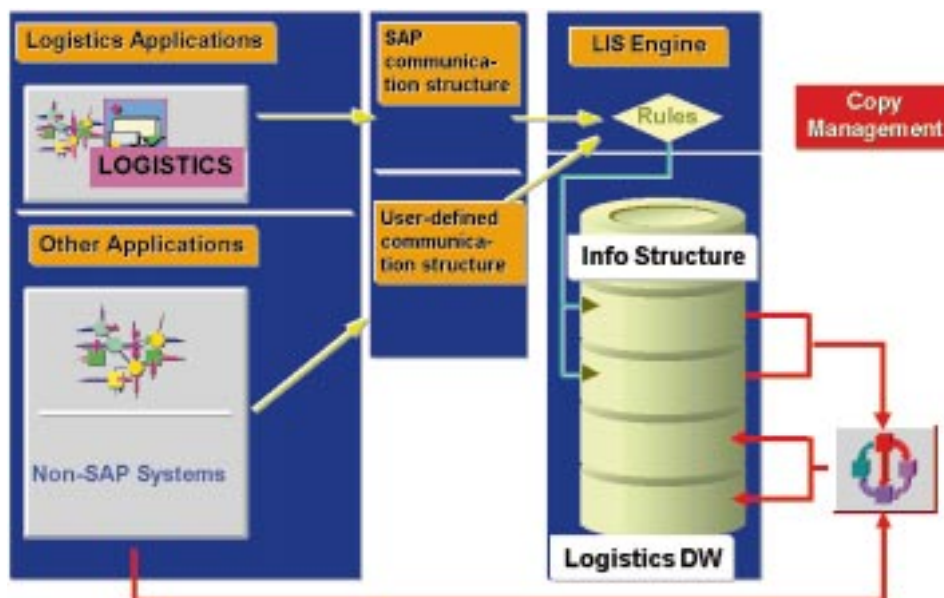

Fig. 11-3: Enhancement of Standard Updating

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, planning is conducted 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 planning level, as well finished products at a detailed level. In addition, you have the option of creating sales and operations plans, as well as plan for additional data (such as key figures of an information structure). Furthermore, you can compare and level material resources, production tools/resources, and costs to guarantee that your resources are sufficient for achieving your specific objectives.

Planning is conducted in a user-friendly planning table that resembles a spreadsheet. Here you can perform planning activities such as defining macros and events, and comparing 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 enabling you to target and monitor weak points in the area of 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 also have the option of defining the follow-up processing of exceptions. To define an exception, you need to specify characteristics/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 have the additional option of making a forecast that is based on historical data.

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

❑ Standard analysis

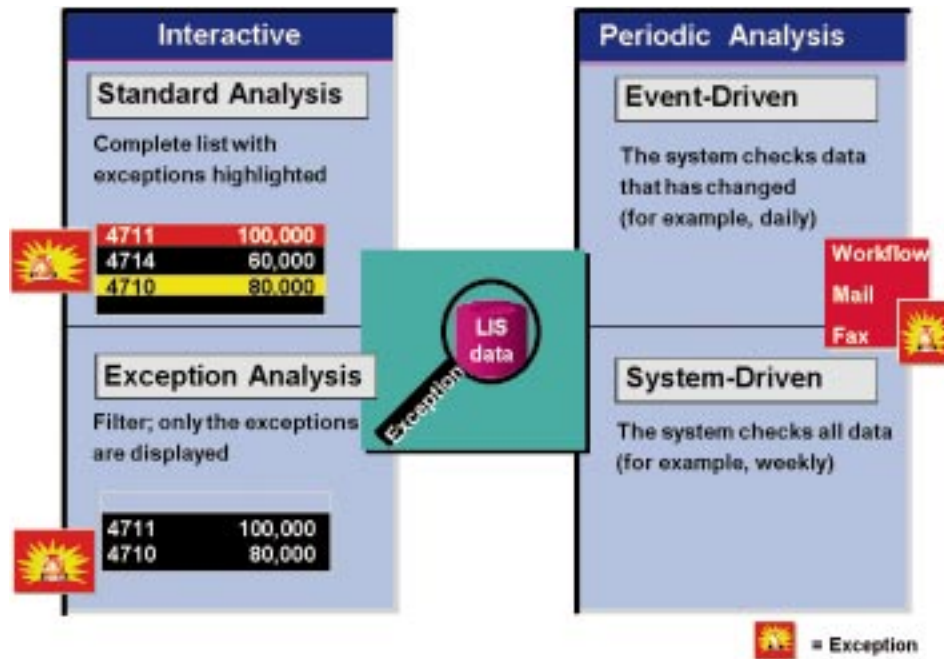❑ Periodic analysis

❑ 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 SAP Logistics module. It also lets you access key figures which are not available in LIS, as well as 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.

The LIL also gives you the option of logically grouping 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

Logistics Information Library

Reporting

In the Logistics Information System, reporting consists of standard reporting, which is 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. On one hand,

Standard Analyses

you can drill-down on key figures along the characteristics defined in an information structure and refine the level of aggregation. On the other hand, you can display the operative data (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 have the option of changing the sequence of the respective characteristics according to your requirements.

❑ Key figures

In the standard system, key figures are pre-defined for each standard analysis. You can define which key figures are displayed in the list that is generated by the analysis you have chosen. You also have the option of changing the selected key figures interactively during the analysis.

❑ Parameters

In the standard system, the parameters for the layout of analysis lists are pre-defined for each standard analysis. You can change these parameters to meet your specific needs. In addition, you have the option of defining default values for the selection screen. You can change these settings interactively during the analysis.

In addition to the standard drill-down, there is a further drill-down function in the standard analyses called the *hierarchy drill-down*. Here, a characteristic value is displayed in detail with regard to an existing hierarchy. In the standard system, various hierarchies are available for each information system in logistics. Furthermore, you have the option of defining your own hierarchies.

Standard reporting also offers you a wide range of *analysis functions* that can be performed on all list levels. These include:

❑ Cumulative frequency curve

❑ Correlation curve

❑ ABC analysis

❑ Classification

❑ Dual classification

❑ Ranking lists

All analysis results can be displayed in *graphical form.* You also have the option of making various comparisons (such as a planned/actual comparison, comparing the current year with the previous year, or comparing two key figures). Furthermore, 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 EXCEL and a connection to Mail for sending analysis lists.

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

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

In the flexible analyses, you can easily create *Report Writer reports* for displaying data. You also have the option of varying the layouts for these reports.

The *evaluation structures* form the interface to Report Writer. Evaluation structures are made up of characteristics and key figures. For each respective 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.

Since an evaluation structure with the same name is created for each information structure, it is very easy to evaluate information structures using the flexible analyses.

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.