Customer Service

Carrying out maintenance activities as a service is becoming increasingly important. Furthermore, stricter regulations regarding manufacturer liability mean that information on pieces of equipment purchased and tasks performed on them has to be available. A detailed overview of this kind is also often required from a marketing perspective

A wide variety of companies offering maintenance services have expressed an interest in using the R/3 PM client-server solution for their service requirements. Having successfully implemented the maintenance module in the market in Release 2.1, SAP is meeting this new demand with the development of a comprehensive solution for this customer group from Release 3.0.

SAP is already working on this system development in close contact with pilot customers from a wide range of industry sectors.

The following is required for the maintenance of customer equipment.

Equipment

Customer equipment that is supposed to be maintained as individual, tangible objects (for the most part with its own serial number) is defined as a piece of equipment. This could be a wide range of object categories, such as

❑ instruments that are standardized to a large extent (photocopiers, fork-lift trucks, medical instruments)

Equipment Categories

❑ special machines

❑ buildings

❑ computer systems (hardware and software)

In the previous chapters of this booklet, you will find a description and explanation of the purpose of the master record. In addition, the following enhancements will be available as of Release 3.0.

A customer contact is necessary for performing maintenance tasks, mailings, and for queries related to PM notifications. You can therefore enter one or more contacts, in the same way as in the customer master record. Possible contacts are proposed from the customers in the equipment master record (customer, end customer and operator).

Customer Employees

Internal Employees Often, the same technician is required to support customers and their pieces of equipment. You can therefore link one or more personnel master records with the equipment master record. This has been developed parallel to the enhancements made to the Capacity Planning module, which place more emphasis on the individual employee than previously.

The employees assigned to the work are allocated in the same way as corresponding partner roles are allocated in the customer master record (responsible employees, sales and distribution representatives).

Customers As a rule, the customer and end customer are proposed on the basis of the operator of a piece of equipment, in the same way as in the customer order.

Sales Area A piece of equipment can be assigned to a sales area for simplified processing of the service tasks. The sales area is proposed on the basis of the PM planning plant.

Counter and Measurement Readings You can define any number of counters and measurement categories with reference to an individual piece of equipment or to a material master (= equipment category). You can enter counter and measurement readings.

Warranties

Warranty Warranties can refer to the equipment as a whole or to individual PM assemblies.

Each piece of equipment or assembly can have more than one warranty, covering a different scope.

The warranty type describes the scope of the warranty. Here a distinction must be made between warranties covering the supplier and warranties covering the customer.

Warranties can be measured in time (= warranty time) and/or by one or more warranty counters.

Equipment Hierarchy

Equipment hierarchies are particularly well suited to represent customer equipment that consists of several serialized components. Such equipment hierarchies can be handled (for example, delivered and stored) as a whole.

Functional Location

It is also useful to be able to represent systems in terms of a functional location hierarchy for structuring complex customer systems and examining the stress on pieces of equipment from a functional perspective.

To create a reference to the customer, specifications regarding the customer, end customer, operator and contact person are recorded in the master records of the functional location and the piece of equipment. This information is copied to the installed equipment in the usual manner. This is a simple way for you to represent the replacement of a piece of equipment at the customer's, using the installation and dismantling functions.

Bills of Material

Bills of material are used to describe the structure of a piece of equipment or functional location. They can be related to a category, or to individual pieces of equipment.

Complex Technical Systems

Contracts

The objects to be maintained often form the subject of a large number of diverse contracts.

Objects   Contracts are divided into items. The items can refer to pieces of equipment, functional locations and their PM assemblies. Several objects can also be linked together with an item by means of an object list. The number of objects is used in calculating the price of the contract item.

Contract Types   Different types of contracts are feasible:

❑   straightforward leasing or rental contracts

❑   contracts in which maintenance services are provided

Validity   The items have a fixed validity period. The contract as a whole can also have such a validity period. The system verifies that the periods of the individual items lie within this period. The validity period can be extended if required.

Maintaining Statuses   Contract and item are connected to status maintenance. In this way, they can be locked, set to inactive, or labeled as straightforward quotations. Application-specific statuses can also be defined.

Deleting Contracts   Contracts and contract items cannot be deleted directly; you have to set a deletion indicator. The actual deletion is performed by a reorganization program.

Employees   Customer and internal employees can be allocated to the contract header, in the same way as pieces of equipment.

Commercial Aspects   Commercial aspects include the price, conditions, payment methods and so on.

Termination   The termination conditions are specified by means of a key.

Settlement Procedure   The settlement procedure is specified at contract level. Certain items may be inactive at certain times, in which case they are not invoiced.

Response Times   Besides the commercial aspects, the response time is significant for maintenance contracts that describe services carried out: when a service technician must be available in which time period. The intervals can be maintained specifically for an item. Criteria for determining the response time are the

❑   time the notification was made

❑   type of damage

❑   equipment assembly affected

Cyclical maintenance services and their maintenance schedules can be described by including maintenance items

Maintenance

Maintenance intervals can be both time and activity-dependent.

Services generally refer to an object or object category. Often incidental services, such as the use of a hotline, are also included in the contract item. These services can be described in service master records.

Services

Monitoring the cost-effectiveness of maintenance contracts is very important for most customers. You can therefore specify a control object to which all the costs and revenue affecting the maintenance contract are posted.

Contract items contain specifications regarding the

Contract Items

❑ service window factor

❑ response time

❑ conditions

❑ service activities

❑ object reference

Service Notification

Malfunction notifications can be simply and quickly entered on a screen to avoid having to subject callers to long waits when they telephone customer service. For example, the following information can be entered on the screen:

- ❑ functional location or equipment number

- ❑ repair date required

- ❑ damage

- ❑ customer contact

The customer number is displayed for control purposes. The customer service representative can also check over the telephone what type of maintenance contract the customer has, since this determines whether the customer is authorized to take advantage of hotline services.

Information System

Suggestions on how to repair a malfunction can also be made over the telephone. For this reason, it is useful to have a connection to an appropriate help system in which the customer service representative can find the relevant information. Often the long texts on the various (equipment category-specific) damage symptoms provide valuable help. Alternatively, connection to an information system, such as Lotus or an expert system, is also an option.

It is also possible in this context simply to access the equipment history.

Monitoring the Response Time

Response time is frequently an important component of the maintenance contract. If the response time is exceeded, considerable contractual penalties may be incurred. A monitoring mechanism issues a warning if the notification dates exceed the permitted response times.

Processing Service Orders at the Customer's and in the Workshop

Service Task Procedure

The processing of a service order can vary extensively, depending on a number of factors, such as whether

❑   maintenance is carried out at the servicing workshop or at the customer's

❑   the actual maintenance task is being planned, or carried out and briefly recorded for the history

❑   it is a regular maintenance task or repair

❑   it is at the quotation stage, or a maintenance task which is not directly preceded by any sales activities

The flexible SAP System can support a wide range of procedures. Three possible options are presented below:

No PM Planning, Brief Documentation for the History

A simple option is to process the task entirely within Sales and Distribution. A customer order is entered (or an existing one extended) during or after the PM task. All the resources which were necessary for maintenance are entered in the customer order. Before billing, the system checks whether it includes services for which the customer should not be billed, based on the warranty or a maintenance contract. It then bills the calculable items and produces an accounting document. In order to document the maintenance task for the equipment history, a maintenance notification is created from the customer order, in which the task is described in technical terms. Checks are also used if the customer orders spares to install them in-house, without involving a service technician.
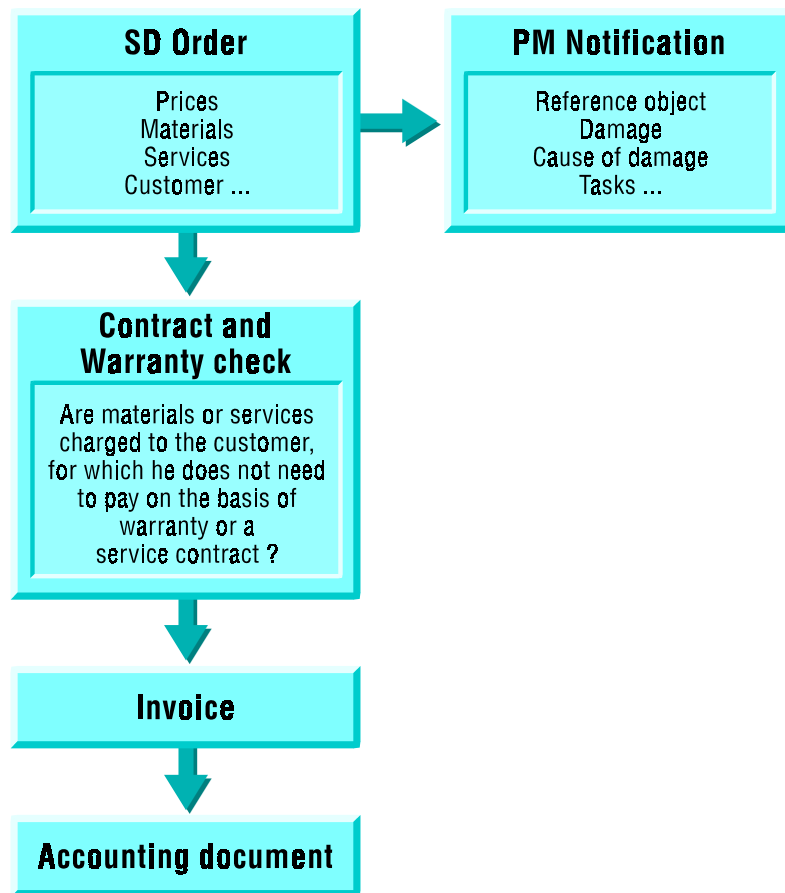
SD Order

Prices
Materials
Services
Customer ...

PM Notification

Reference object
Damage
Cause of damage
Tasks ...

Contract and Warranty check

Are materials or services charged to the customer, for which he does not need to pay on the basis of warranty or a service contract ?

Invoice

Accounting document

Figure 10-1: No Maintenance Planning (Brief Documentation for the History)

Customer Call, Repair at the Customer's

The second option describes a repair task performed at the customer's. A trigger for the task might, for example, be the customer's phone call to the service control station. The customer's details are recorded in a maintenance notification. This is forwarded to the dispatcher who plans the order resources: technician, spares presumably required, and so on. The order is

forwarded to the service technician, who enters the times and materials required, and returns it to the central office. The contract and warranty checks are performed as described above. Moreover, single items can still be changed manually, for example for tolerance reasons. The entries are transferred to the customer order at sales prices. The customer order is billed and an accounting document is generated.
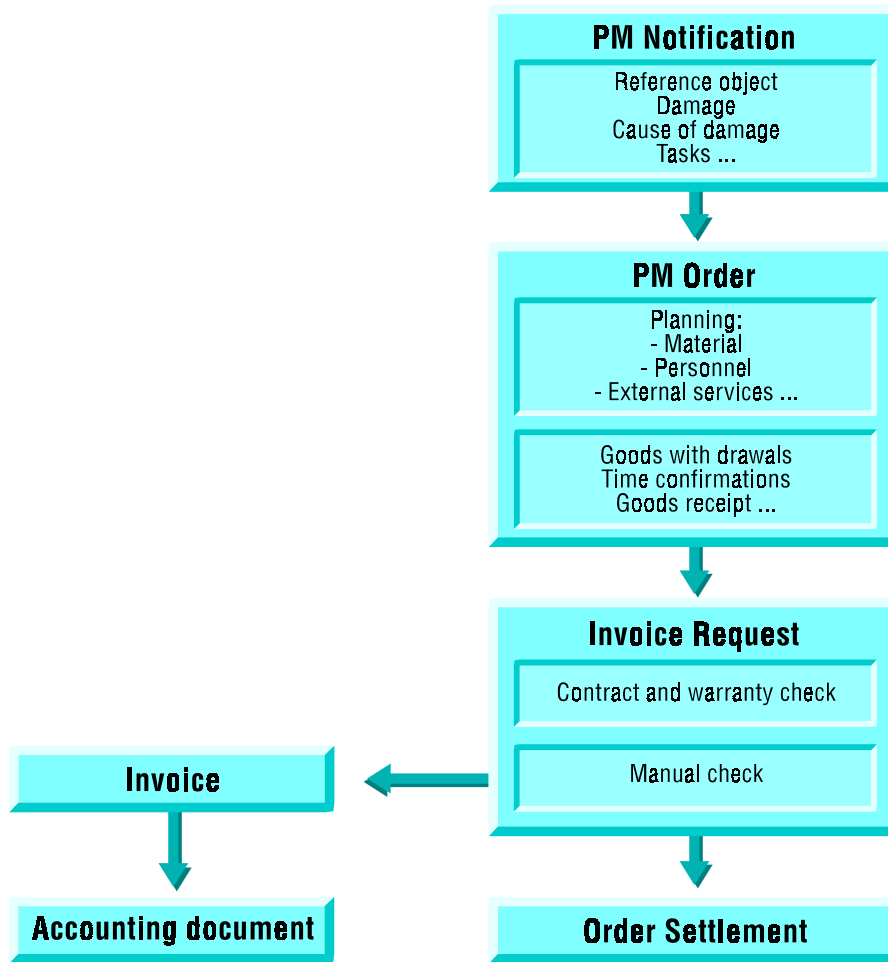
PM Notification
Reference object
Damage
Cause of damage
Tasks ...

PM Order
Planning:
- Material
- Personnel
- External services ...

Goods with drawals
Time confirmations
Goods receipt ...

Invoice Request
Contract and warranty check

Manual check

Invoice

Accounting document

Order Settlement

Figure 10-2: Customer Calls, Repair at the Customer's

In the third option, a quotation stage precedes the maintenance task.

Processing with Quotation

A quotation is made for the task. After the customer has accepted the quotation, a customer order is created with reference to the quotation and a maintenance order is created with reference to the customer order. The remaining procedure corresponds to that in the second option.
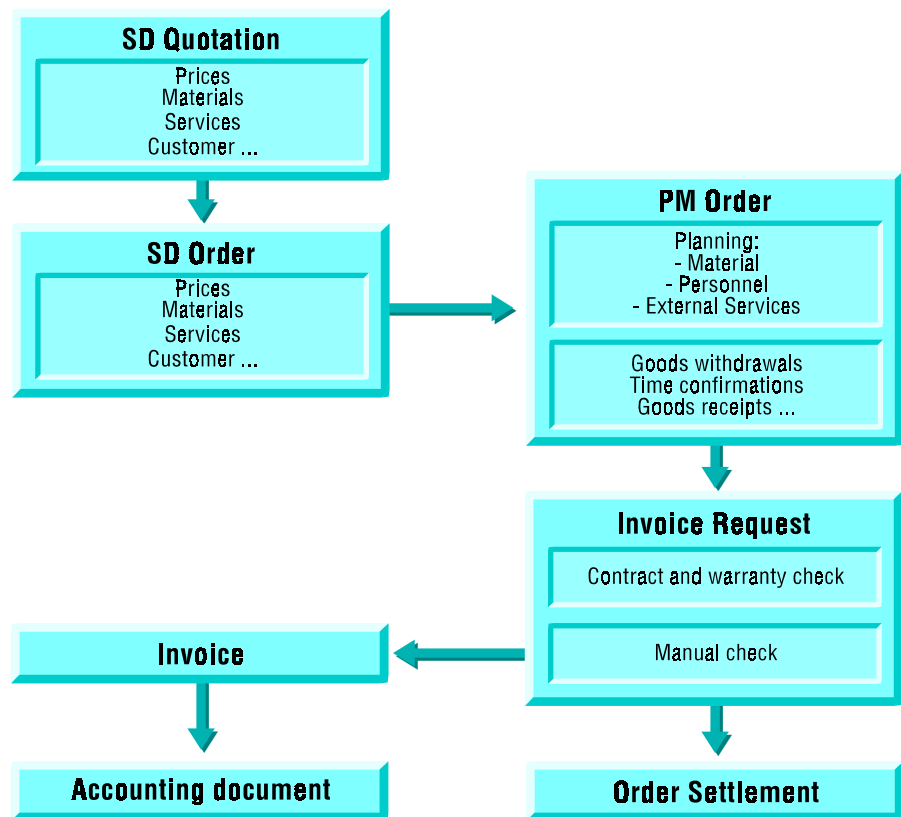
Figure 10-3: Processing with Quotation

Further Options   We will not describe all the feasible options here, but will only refer to four further important options:

❑   If the maintenance task is very extensive, we recommend using the project system (PS module).

❑   In the case of regular maintenance tasks, the system automatically generates a maintenance order. The task does not need to be triggered by a maintenance notification, as in the second option.

❑   During processing in the servicing workshop, the piece of equipment to be maintained can first be collected, that is, a goods receipt is posted to a customer's special stock. After the maintenance task has been performed, the corresponding goods issue is carried out and a delivery note generated.

❑   In the case of external service processing, costs are frequently incurred which are entered in the context of travel expense accounting in the HR module. This data is copied as the resources used to the PM order and from there to the SD order.

Details on Order Processing

Information regarding the contact person and customer is also available in the maintenance order, to support the creation of maintenance orders without reference to a notification.

Contact Person

Order processing without an equipment master record is possible in the same way as for a notification.

Processing without a Master Record

Material provision for a maintenance task at the customer's may first require shipping the parts to the customer. The appropriate shipping documents can be created for this purpose.

Material Provision

In order planning, the system verifies which services the customer may claim in principle or free of charge on the basis of his/her maintenance contract.

Cost Monitoring

If service technicians work in (external) customer service, communication between the service control station and the technicians is particularly important.

Communication between Service Technicians and the Control Station

❑ How does the order information reach the technician from the control station?

❑ How can the technician transmit the necessary information to the control station?

The following figure describes the most important interaction between the technician and the control station. It compares communication using only media communications (mail, fax and telephone) with the communication facilities available using a modern laptop system with access to a digital mobile broadcasting network. The assumption is made here that communication with the SAP System is set up by means of this network.

Communication means / Operation	Telephone/Fax/Post	Laptop with telecom
Report order	by telephone, order papers sent by fax or mail	Telecommunication via the laptop
Enter material ithdrawals from the service workshop, record times etc. Enter counter and measurement readings	on the order form	on the laptop, if nec. using the sender on the equipment for counter and measurement readings
Complete reporting order	by telephone or in writing, using the order form	in connection with entering the resources on the laptop
Material purchase order	in writing by telephone, fax	on the laptop, if nec. with availablioty check
Receive contract requirements	in writing by telephone, fax	on the laptop
Determine equipment configuration	in writing by telephone, fax	on the laptop

Figure 10-4: Communication between Service Technician and Control Station

For frequently occurring interactions, we recommend entering the data with the appropriate software on the laptop computer itself and then sending only short messages to the SAP System. The same happens in reverse: the SAP System sends only the actual order data and this data is then interpreted on the laptop computer. This helps to keep telecommunication costs to a minimum. For transactions which occur less frequently, however, a direct connection to the SAP System is of course also possible.

The advantage of the laptop solution is that it provides rapid communication at reasonable cost with respect to the costs per individual event (variable costs). It also avoids unnecessary duplication of data. It is easy to reach the technician, since the work to be done is displayed as soon as he/she switches on the laptop computer. The control station is quickly informed about what the technician is doing.

Transfer of Costs from the PM Order to the Customer Order and the Invoice

After completion of a maintenance order, services (= line items) often need to be transferred from the maintenance order to the customer order, to invoice them to the customer.

This process is described below in three steps.

In the first step, a check is carried out to see whether particular items should not be transferred on the basis of the warranty.

Warranty Check

A warranty account is determined using the equipment category and the warranty type. Any costs which were not transferred are charged to this account. The maintenance order is credited with the corresponding amount.

The second step investigates whether contract items contain particular line items, which are not transferred.

Contract Check

Costs which cannot be transferred are charged to the control object of the contract and the maintenance order is credited with the corresponding amount.

The third step involves a manual check, as opposed to the first two steps, which are completely automatic. Further line items can be excluded on the basis of other criteria. A corresponding account, which credits the maintenance order and charges the costs to itself, can also be specified for the sum of the costs.

Manual Check

Following the third step, a customer order is created or an existing customer order is extended. All transferable line items are transferred into this customer order and subsequently invoiced, generating the corresponding accounting document.

Transfer to the Customer Order

Evaluations

The evaluation tools of the Sales and Distribution (SD), Plant Maintenance (PM), and Controlling (CO) modules complement each other, enabling you to analyze the service activities from a wide range of perspectives.

❑ SD Order/Contract report functions

❑ Internal order report function (processing)

❑ Revenue/cost report function
    Contracts and orders

What are the advantages of an integrated solution for customer service?

❑ The necessary data is collected and prepared for the service when the object is sold/delivered
❑ Information from usual customer transactions is directly available to the customer service
❑ All the customer service operations are automatically shown in Controlling Materials Management, Accounting and so on

What reasons are there for joint customer service and internal maintenance?

❑ The customer's technical objects show the same requirements after structuring
❑ Often customer objects and internal objects are maintained with the same maintenance organization
❑ Maintenance processing and internal processing are developed in the same way.