

## Resource Management



Increasingly complex logistics processes involve a flow of information in day-to-day activities. To obtain reliable knowledge from these datasets about the use of resources appropriate to requirements in a logistics operation, a large number of logistics coordinators face a significant problem.

For delivery dates to be met, in the material planning, the question of how much resources (employees, forklifts, shelf access equipment, etc.) is required to complete an order for a fixed end date, is posed repeatedly. However, if the resources are only available on a limited basis, it is then a question of how long it would take to process the existing order.

The Resource Management enhancement module was specially developed to respond to both problems. The functions are designed for the user to display the information gained using graphically formatted dialogues from complex logistics processes and to simulate the alternatives. Thereby, tasks can be assigned to task group  $n$  and resources can be assigned to task  $m$ . The task groups are defined logistical business processes, such as preparing an order item or executing and putting away a goods receipt. The task groups consist of individual operations, whereby an operation represents part of a procedure, which is required to convert a logistical

business process (e.g. picking, transport or packaging). An operation has a defined execution time and certain resources are assigned to it. The resources are individuals, work centres, installations, equipment and devices which are required to complete defined operations, e.g. picking staff, picking bins or forklifts.

### **Planning Process**

In the planning process, the user initiates the transfer of data, which is available for the planning using a dialogue function and stores it in a pool. If sufficient data (e.g. order data) for a planning period is available in the pool, the user triggers the planning procedure. The system transfers the data from the pool and groups it together for a task list group, which is displayed in a bar chart. The user sees from the chart the tasks and the number of operations which are required to complete the scheduled tasks in the planning period. The user can investigate the individual task list group in a detail dialogue. The individual operations are displayed there on the time axis. The time axis complies with the start date/time of the first operation and with the end date/time of the last operation. Thereby, resource management acts on the assumption of a real situation in the day-to-day activities. The real situation is shaped by intertwined procedures which result from the competing optimisations of subsystems. Therefore, the underlying algorithm uses the available duration as a calculation base.

The user can analyse the results of the planning process using two dialogues.

The Capacity dialogue shows how a resource is scheduled using the time axis and responds to the question of how much resources are required to complete the scheduled tasks. The user sees the maximum available resources capacity. If the line is crossed, the resource is overloaded and cannot manage the pending tasks. The Workload dialogue reveals how the resources are used to capacity and responds to the question of how long the available resources require to complete the scheduled tasks. If a resource is overloaded, it cannot manage all the operations so that either the start or end date can be adjusted or the amount of resources must be increased.

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