

R/3[®] System

The Interface to External Project Software



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The Interface to External Project Software

General Information

This paper describes the exchange of data between the R/3 Project System and other project management software, and gives you:

- ❑ an overview of existing process and interfaces as well as recent development
- ❑ detailed information about the functionality of the interface
- ❑ description of planned enhancements
- ❑ list of exceptions that are not available in the interface

Introduction

With Release 3.1, a new interface will be available between the R/3 Project System and external project software. It is an open two-way interface that can be expanded. Structures and data are exchanged in a way that is easy to understand and control.

Process Description

Current Interface

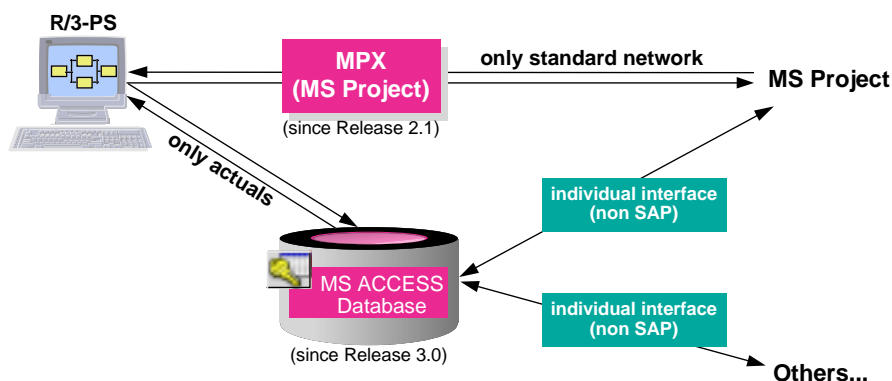


Figure 1: MPX-Interface and MS ACCESS

With Release 3.0, you have two options to supply external software with information from the R/3 Project System. You can export network structures and data to Microsoft Project using the MPX interface. However, when you

import from a PC to R/3, you can only create standard networks. Data records that can be exchanged are extremely limited due to the orientation of the MPX interface on the data structure of MS Project.

The second option is to export data from the R/3 project information system to special MS Access structures. From there, you can retrieve the data using any PC software that can access MS Access data and use an interface to present it in its own data structures. This is a two-step procedure that requires more time when dealing with large quantities of data. Nearly all data from the R/3 Project System is available under MS Access, however, you can only import actual values (confirmations) to the R/3 System.

Since both methods are batch solutions, there is no online communication.

Integrated Process with Release 3.1

With Release 3.1, you can exchange network data between the R/3 System and external project software. Remote function calls (RFC) are used to determine which data is to be exchanged, the name of each field and which action (create, change, read, delete) is to be carried out.

When you export networks, activities, relationships and dates from the R/3 Project System, all detail information, excluding costs and capacities, is also exported. When you import data, you can create, change, read or delete networks, activities and relationships at the same time.

You can create or change the following data when you import it:

- descriptions
- time constraints
- duration
- work

You can also start SAP functions, like scheduling or cost calculation, directly from the external software

Data Transfer

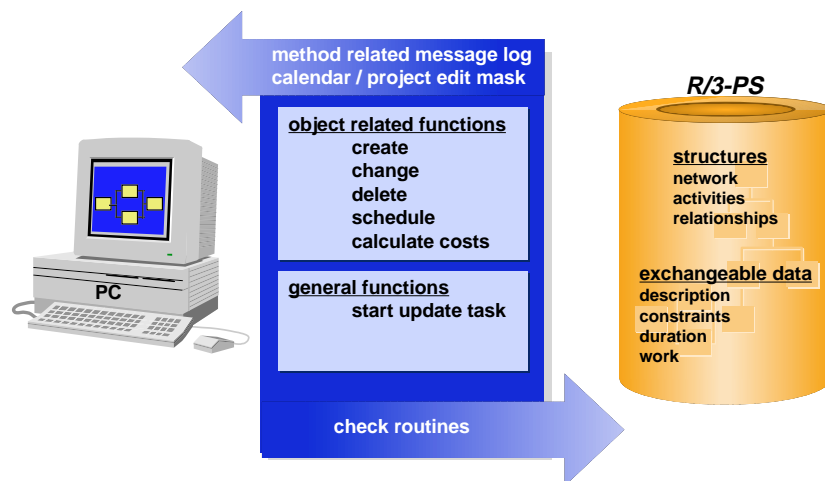


Figure 2: Data Exchange

The following is an example of how you can distribute tasks between external project software and the R/3 Project System:

R/3 PS	external project software	Distributed Tasks
structure planning	structure planning	
multi-project scheduling	project scheduling	
capacity leveling (detail)	capacity leveling (crew level)	
actual dates	actual dates	
cost calculation		
time recording		
workforce planning		
materials management		
profitability analysis		
cash management		
earned value analysis		

Functions in Detail

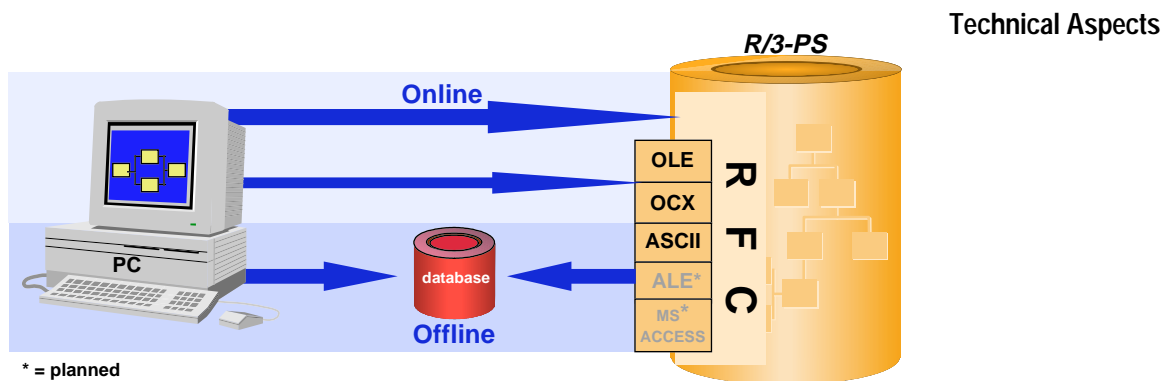


Figure 3: Communication Modes

You can exchange data directly from a PC either online, offline or using temporary files. In this way, you can export project information from the R/3 System and change, simulate or report on it in another system.

The communication is established by import and export modules using a Remote Function Call (RFC). Although the RFC log is fast, it requires some experience and programming skills to use it. An object link and embedding (OLE) connection is easier to use but somewhat slower. OCX (object link and embedding custom control) has both advantages: good performance as well as easy use. However, all three techniques require specific knowledge of data structures and internal technical descriptions. You can work offline



using basic ASCII files. For a later release it is planned for the data exchange also to use Application Link Enabling (ALE) and the MS Access Structures. A more comfortable way of communication the OCX-technique will offer by describing the interface by business data descriptions (Business Object Repository).

Data Structure

Data Objects The following objects can be exchanged with the R/3 System:

- network headers
- network activities
- network relationships

- | | | |
|------------------------|------------------------------------------------|-------------|
| Additional Data | <input type="checkbox"/> calendar | export only |
| | <input type="checkbox"/> units | export only |
| | <input type="checkbox"/> project editing masks | export only |
| | <input type="checkbox"/> message log | export only |

Data Fields

- | | | |
|-----------------------|-------------------------------------------------------------------------|-------------|
| Network Header | <input type="checkbox"/> network number | key |
| | <input type="checkbox"/> project definition | |
| | <input type="checkbox"/> work breakdown structure element (WBS element) | |
| | <input type="checkbox"/> sales document | |
| | <input type="checkbox"/> sales document item | |
| | <input type="checkbox"/> profit center | |
| | <input type="checkbox"/> network number of superior network | |
| | <input type="checkbox"/> activity number represented by subnetwork | |
| | <input type="checkbox"/> network type | |
| | <input type="checkbox"/> short text | |
| | <input type="checkbox"/> company code | export only |
| | <input type="checkbox"/> plant | |
| | <input type="checkbox"/> business area | export only |
| | <input type="checkbox"/> controlling area | export only |
| | <input type="checkbox"/> currency key | export only |
| | <input type="checkbox"/> tax jurisdiction code | |



Network Header

- object class
- planned release date export only
- basic start date
- basic finish date
- scheduled release date export only
- scheduled start export only
- scheduled finish export only
- actual release date export only
- actual start date export only
- actual finish date export only
- confirmed finish export only
- MRP controller
- scheduling type
- reduction indicator for scheduling export only
- priority
- indicator: do not schedule automatically
- indicator: do not cost automatically
- indicator: reservation not relevant to MRP, purchase requisition not generated
- network profile cannot be changed
- formatted status text export only
- indicator: marked for deletion export only
- network number key
- activity number key
- project definition
- work breakdown structure element (WBS element)
- profit center
- control key
- work center
- plant

Network Activities



- Network Activities**
- activity description: 1st line of text
 - account number of customer or vendor
 - price
 - price unit
 - cost element
 - currency key
 - number of purchasing info record
 - purchasing organization
 - purchasing group for external activity
 - material group
 - indicator: flexible duration
 - number of required capacities
 - work percentage
 - usage
 - activity type
 - amount for costs in activity
 - confirmation number of activity
 - internal counter
 - number of purchase requisition
 - item number of purchase requisition in order
 - factory calendar ID
 - capacity requirements distribution key for internal processing
 - priority
 - tax jurisdiction code
 - object class
 - business area export only
 - indicator: reservation not relevant to MRP, purchase requisition not generated
 - indicator: activity for project summarization
 - activity unit of measure



Network Activities

- planned delivery time in days
- normal activity duration
- unit of normal duration
- minimum activity duration
- unit of minimum duration
- basic date constraint for activity start
- time constraint for activity finish
- work of activity
- unit of work
- actual work export only
- earliest scheduled start
- earliest scheduled finish
- latest scheduled start
- latest scheduled finish
- actual start export only
- actual finish export only
- forecast finish date from confirmation export only
- forecast finish time from confirmation export only
- free float export only
- total float export only
- constraint start (basic) for activity
- constraint start time (basic) for activity
- constraint finish (basic) for activity
- basic finish time of activity
- processing duration export only
- unit of processing export only
- forecast work (actual + remaining) export only
- forecast duration from confirmation export only
- unit of forecast duration from confirmation export only



Network Activities

- key word ID for user-defined fields
- user-defined field with 20 characters
- user-defined field with 20 characters
- user-defined field with 10 characters
- user-defined field with 10 characters
- user-defined field for quantity (length: 10.3)
- user-defined field for unit of quantity fields
- user-defined field for quantity (length: 10.3)
- user-defined field for unit of quantity fields
- user-defined field for values (length: 10.3)
- user-defined field for unit of value fields
- user-defined field for values (length: 10.3)
- user-defined field for unit of value fields
- user-defined field for dates
- user-defined field for dates
- user-defined field for evaluation indicator
- user-defined field for evaluation indicator
- actual duration of confirmation
- unit of actual duration
- remaining duration of activity
- unit of remaining duration
- formatted status text export only
- indicator: marked for deletion export only
- additional (user-defined) fields

Network Relationships

- network number of predecessor key
- activity number of predecessor key
- network number of successor key
- activity number of successor key
- relationship type

- time interval
- unit of time interval
- factory calendar ID
- percentage for calculating predecessor/successor time interval
- key for interpreting relationship time interval
- work center
- plant
- earliest start date export only
- latest start date export only
- earliest finish date export only
- latest finish date export only
- indicator: marked for deletion export only

Check Routines

The system checks whether the interface accepts all of the objects and data fields and ignores those which are not accepted. The system issues a warning in the message log.

The R/3 System checks all data imported by the interface. The system checks whether:

Data Import

- imported fields are permitted in R/3
- objects exist (network, activity, relationship)
- Customizing and master data exist
- data is consistent in a business environment

The results of the check are written in a log and sent to the PC program.

Currently you cannot name a leading system. Therefore, before you perform an update, you should read the R/3 network data and compare it with the network data in the external project software.

The external software should offer a change log, which means it must recognize when the data in the R/3 System is different.

When you export data from the R/3 System, the data is always imported together, that is, as a complete network.

Data Export

The external software decides how the exported data will be used. The data can be displayed or used to create a new network. The R/3 System checks only whether the network already exists.



Interface Communication

Message Log

The R/3 system issues all messages related to the online exchange of network data to a log. This log consists of an object ID for the network activity, a message ID, an error number and an error text.

The R/3 system exports the log to the external project software, so that you can only view it there, not in R/3. The external software is responsible for whether and how the messages are presented. It must also supply information about how to resolve any errors.

In the log you can have 4 types of messages:

- I = Information
- W = Warning
- S = Success
- E = Error

When an “E” message occurs in the R/3 System, processing may continue but is stopped when you try to save the data transfer.

The external software is responsible for analyzing the error messages and must convey the information to the user or make changes automatically, whenever possible.

Future Enhancements

The interface will be extended gradually in future development releases.

The import of WBS structures, data and activity elements is in the planning phase

The function modules will be designed as standard Business Application Program Interfaces (BAPI).

Exceptions

The following information cannot be exchanged:

- production resources/tools
- material components
- service specifications
- production orders
- purchase requisitions and purchase orders



- available capacities of
 - work centers
 - people
- cost centers
- financial data