
Projects

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CONTACT Software

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Introduction

The growing number and increasing complexity of projects are confronting project managers and the Project Management Office (PMO) with ever greater challenges when it comes to realizing the technical aims of the project on-time and within budget. By relieving these actors of routine activities and bookkeeping tasks and by providing sophisticated planning functions and reliable monitoring and control mechanisms, *CONTACT Projects* offers comprehensive support to both those responsible for the projects and those implementing the projects.

Advanced products are developed today almost exclusively by interdisciplinary and cross-departmental projects. High innovation pressure, among other things, is a typical challenge for these types of development projects. This causes more projects to have to be completed in less time. Insufficient multi-project controlling is another challenge. When facing these challenges, simply adding “more” scheduling is not enough. In many cases, planning and monitoring are limited to adapting the long outdated project schedule to reality.

Instead, the goal should be to integrate the knowledge and expertise of the individual responsible project team members. The system, therefore, supports the actual project work along with the project management, i.e. performing tasks to achieve project goals. The term 360° project management is used for this comprehensive view of the project control loop from planning to implementation and monitoring.

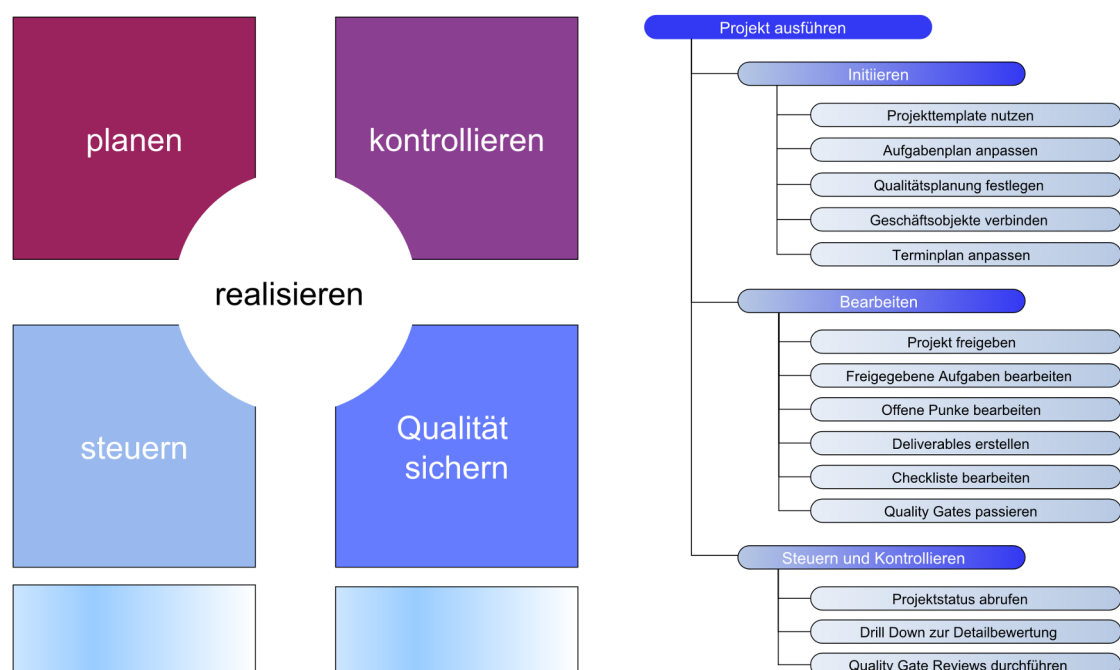


Fig. 1.1: Project management

CONTACT Projects supplies reliable status information, supports a structured procedure for the collaboration of distributed development teams and adds a tool to planning tools like MS Project or controlling instruments like

SAP PS that all participants can use to maintain their goals: project managers, project team members and external partners.

Project Management

- Supports quality assurance and lowers risks due to
 - High-quality project management with quality gates
 - Standard templates and formal processes, where useful
- Integration into the central product data management (PDM)
 - Project work integrated and online instead of “offline” by connecting directly to documents, models, parts, open issues, etc.
 - Mapping of requirements and deliverables based on CM II
- Optimized collaboration in the project team
 - Shared virtual project office
 - Interdisciplinary, cross-location and cross-company
- Enables better controlling due to multiproject management and recording the project state in real time.

The actual projects are at the foundation of the *Project management*. As a result, the portfolio of the scheduled and active projects (e.g. from the product research and development department) and the list of already completed projects are logically available centrally for all participants. The project-specific scopes of application and intended uses supported specifically appear as follows:

Project Planning Using the Project Structure Plan

A project can be arranged by task (or priority or PSP element) in a hierarchical manner for the purpose of a project structure plan. This type of arrangement, for example, is the basis for:

- Visualizing all project tasks and contents, their relationships and additional information for project management;
- Logically scheduling the project in terms of predecessor/successor relationships between the individual task steps;
- Inspecting the task goals using checklists with test criteria or deliverables as documents to be delivered;
- Determining important objectives in terms of milestones or so-called quality gates for the purpose of predictive quality planning;
- Accurate scheduling and progress control in the project business, displayed as a bar graph;
- Resource planning closely connected to scheduling, carried out as demand and capacity planning;
- Detailed effort recording and overview of performed tasks;
- The multi-faceted analysis of project information using extensive reports that can be used directly or adjusted/advanced accordingly.

Furthermore, there is the option to display single-level project hierarchies. Multiple projects can be assigned to a parent project for this purpose so that they can be displayed together in a project overview. In this process, subordinate projects remain independent of each other so that, for example, distributing project responsibilities and content-related scheduling can take place separately.

The nodes visible in the project overview are the tasks, checklists with checklist items, the project team as well as the parts and project documents assigned to the project. These nodes reflect the technical objects relevant to the project management and, in turn, include expanded information and operations described in more detail in the chapters below. The displayed structured overview makes it possible to access all relevant project information and documents quickly and easily.

Collaborative Project Management

In particular, the system supports collaborative project management, i.e. the actual execution of project work and tasks. Thus, it is not only an instrument for project managers but also and primarily for the project team itself. Special functions of this are:

- Direct access to central work pieces like products, product components, documents, change transactions, etc. in the context of the project; (basis for this is the presence of the corresponding licenses - TV, DOK, MDM etc.)
- A logically central task management which takes all tasks that accumulate as part of the project work into account, e.g. from the project structure plan, the open issues or from checklists and inspection lists. Relevant personal or project-related task lists and task lists applicable for all active projects are available to the project team members;
- Schedule and resource planning for the project tasks that show the individual project team members all information regarding their tasks, deadlines, planning and workloads in an easy-to-read way. Overall, this allows the option of discussing and planning the pending work tasks in a collaborative manner - supported by the graphic interface for schedule and resource planning.
- Effort recording and effort management for controlling project costs in an easy-to-understand manner.
- Various project views and reports that inform the project team member about important project information at a glance in a graphically oriented display.

The system is used to manage and utilize work objects like parts, CAD drawings and documents including their descriptive master data and expanded information in a joint project context - as collaborative project management. This means that all work objects can be categorized, managed and made available using one project.

Project views can be configured using filtering and provision options, which allow the project team members quicker access to their edited work objects. However, projects can also be used as security measures by only making all project documents available exclusively to project members.

Forward-Looking Quality Assurance

One of the central tasks of project management is to keep the project “on track” in terms of its content-related objectives. The system, therefore, supports crucial process models, which put this in focus as part of a forward-thinking quality assurance concept such as APQP or the quality or stage gate method. It added detailed processes here such as product FMEA on the project process level as a whole. The basis of the *Project management* is provided by the following elements:

- The management and use of project templates. Templates can be defined and stored easily. In the interests of “Best Practices”, templates do not only depict tried-and-tested project structure plans, but also typical project roles, quality gates, checklists etc.;
- Quality gates that can be connected to selected PSP elements and define at which points of the project plan important partial or intermediate results are to be expected;
- Checklists that more closely define the anticipated work results for project tasks and criteria to be met based on checklist items;
- Deliverables that enable automatic inspection of documents to be delivered based on rules to be configured;
- Filing project-related documents (including CAD documents) in the project folder structure. This has a Drag&Drop capability similar to that familiar from Windows Explorer. Corresponding to the project folder structure, all technical objects of the project can be made available.

A foundation for quality assurance is to have all relevant information in view. Therefore, the project overview occupies this role of the “Cockpits for the project members” by allowing you to quickly gain an overview of the respective project state.

By navigating, you can easily reach the desired project object to receive the relevant information in detail. The project is the context in which, for instance, the designers, project managers and toolmakers work together. The system provides this context in an easy-to-understand format - ideal for project-oriented work.

Projects

Projects are primarily identified by the uniqueness of the undertaking with start dates, end dates and objectives. With tasks, checklists and milestones, project structures present the basic framework for all that is significant in the project and has to be edited within the project stages. While the individual projects are unique, the project structures can be re-used as templates with predefined tasks and checklists. To create an object, therefore, the procedure of copying a template and adapting it according to the requirements is a useful strategy.

There are various ways available for creating and maintaining projects:

- Creating a project with the input of project-specific information.
- The use of a template for setting up a project.
- The creation of a blank project followed by importing the project contents of a Microsoft Project schedule chart via XML.

In addition to these procedures, there is also the option of copying projects. Depending on the system configuration, different project contents are copied and are available in the newly created project. By contrast, project documents and parts associated with a project are not copied, since they can each be associated with only one project.

To display all projects for which you are responsible or in which you are a project team member, you can call up the operation *My Projects* (page 9).

2.1 Menu Access

The Projects menu item is accessible in the navigation area under *Projects → Projects*. You can use this menu item to create a project or to search for existing projects; you can gather information or edit individual projects.

Creating a New Project Data Record

- 1. This requires selecting the pop-up menu item *New ...* in the menu tree under *Projects → Projects*.
- 2. The dialog for entering the project data opens.

Searching for a Project Data Record

- 1. This requires selecting the pop-up menu item *Search ...* in the menu tree under *Projects → Projects*.
- 2. Enter the search conditions for the data record to be edited. The results of the search are displayed in the hit list.
- 3. You can now apply the functions from the pop-up menu to one or more hits from the hit list.

Creation of a New Project Based on an Existing Template

- 1. This requires selecting the pop-up menu item *New from template ...* in the menu tree under *Projects* → *Projects*.
- 2. If more than one template exists in the project, a proposal catalog opens. Select the desired project template. When you confirm your selection, the dialog for entering the project data opens. If only one template exists in the system, this template is used automatically.

Project Categories for Structured Management of the Projects

- 1. Below the Projects menu item there are various categories available, to which the projects are assigned. The categories have the function of classifying the projects for better management and more targeted access. The project categories are similar to the document categories, which are used for document management as a kind of “virtual folder”. This way all projects are managed based on the project categories and can be searched and accessed according to the project categories. Furthermore, the project categories can be used to configure the access rights to project contents, as is already the case for the document categories. The everyday applications of the project categories are found in creating via the selected category, in order to have the value already available as a specification in the data mask. Or as a filter criterion during the search, whereby the category is also used as a specified value.

Direct Access to Projects via Favorites

- 1. Further menu items in the navigation area under the Projects menu item are, for example, Tasks, Checklists, Open Issues, Effort Records and Resource Management. As independent specialized objects, these can be accessed and analyzed across projects. But they are also available in the projects as contents and are explained in detail in the following sections.
- 2. As a customer-specific adaptation, the number and kind of menu items under Projects can differ from the *Project management* default.
- 3. For use in “everyday business”, the personal views of the project portfolio can be created very easily using the favorites and can be used for directly accessing projects. The favorites to be created for the projects can automatically open the selected projects in a desired display type—for example, as a start window with the project overview for beginning a work session.

2.2 Master Data

The project master data can be created, displayed or edited using the project data sheet described below. The data sheet is usually opened by double-clicking a data record (one line) in a hit list or by the operations *Information* or *Modify...* from the pop-up menu of the hit list. The configuration and name of the input fields are often customized. Therefore, the following figure and its description may differ from the respectively installed software. The main operations are explained below, however.

The display of the master data is distributed over two tabs. We distinguish between the core data on the main data sheet (which the project team member primarily has to access) and detailed data according to date and effort in the Details tab.

2.2.1 The Main Data Sheet

Parent Project / Number The parent project. Multiple projects can be assigned to a parent project using this input field so that they can be displayed together in the project overview and work breakdown structure of the parent project. They can be changed or removed subsequently.

Project Name Here you need to enter a meaningful name for the project.

Project No. The number needs to serve as a unique ID for the project. When creating a new project, the project no. is automatically assigned sequentially beginning with P000000. The project no. cannot be changed subsequently.

Position Determines the sorting sequence of projects in the context of a parent project. The item is prepopulated during the assignment of a project to a parent project and can be changed subsequently.

PSP-Code The project structure plan code is a unique label within the project structure plan.

Category The project categories selectable from a catalog as a mandatory field. The available categories depend on the respective configuration; they are also in the navigation area under the menu items *Projects* → *Projects* as a folder structure.

Template “Template” check box for designating project templates. Using this check box, a targeted search can be performed on the available project templates. This happens, for example, based on the context command *New from template ...*, through which the templates with such a designation are made available. We recommend providing prepared project structures, which can then be used as templates for new projects.

Department The responsible organizational area. When creating a project, the field is prepopulated with the department of the project team member who is logged into the system and is carrying out the project creation. This user-specific data is part of the organizational data.

Cost center Cost center of the project.

Customer Customer by whom the project was initialized. In the standard configuration, this input field is to be filled in using a catalog, which draws on the organizational data. The customer no. is linked to the input field “Name” and is filled in jointly via the catalog.

Risk class The project can be assigned to risk classes that classify the risk in the form of potential damage sums. The risk classification is often evaluated as part of a cross-project report.

Status The status in which the project currently is. This field can only be affected using the *Change status* pop-up menu item. A project can assume one of the following status:

- New
- Execution
- Discarded
- Completed

Calendar profile Is used for calculating the resource utilization. The specification *Standard* includes, for example, a simple standard profile with a weekend rule without holidays.

Rating Here, the project supervisor can give a subjective evaluation of the current state of the project. It is selected from a list of options.

[%] Completed Calculated value of the percentage of completion of a project based on its tasks. Weighting of the percentage of completion via the respective effort is also carried out. That is, calculation of the percentage of completion in percent of projects, Task Groups and Single Tasks based on the effort and the status of the individual tasks.

If the status changes for a task in the project, the system recalculates the percentage of completion across the total project structure above this.

Reason for Evaluation Here, the project supervisor can give reasons for his or her evaluation. It is entered in free text format.

Effort (Target) [h] Planned work effort in hours, which is to be valued as a framework specification for the project.

Work Day (Target) Planned Duration in Work Days.

Begin/End (Target) Planned Start Date and End Date of the Task

Description This input field serves as a short description of the objective of the project.

2.2.2 Tab Details

Field Area: Date (Begin/End)

The details area contains the plan data for the start and end dates of the project as well as data for temporal effort. We distinguish between the preset values (Target), the actually planned values (Bottom-up) and the actual values (Actual). Some of the fields cannot be filled in or edited directly by the project team member, but are automatically calculated by the system from the subordinate tasks of the project.

Target The fields specified here contain the schedule-related limits, which the project manager specified for the project and thus are to be complied with.

Work Day (Target) Planned Duration in Work Days.

End fixed This check box marks an unchanging, planned final date for the project and prevents any tasks in the project from being scheduled with a later end date.

Actual These fields show the earliest Actual value of a subtask and the last completion time of a project task and are automatically set by the system during the corresponding status changes:

- During the first status change, the Actual start is set to *Execution* and is not overwritten again. The status change also does not set it back to *Ready* or *Execution*.
- The Actual end is set to *Completed* during the status change. During the status change back to *Execution*, the field is reset.
- During the status change to *New*, both fields are reset.

Bottom-Up These fields contain values aggregated from the date-related Target fields of the subordinate tasks, and thus can be compared to the Target specifications found here as a check.

Work Days (Bottom Up) Aggregated duration in work days from the subordinate tasks.

Bottom Up Values as Target Values In some cases, changes at a lower level can be automatically applied to the next higher level. This applies, for example, if the same person is responsible for both editing levels. If this check box is selected, the bottom-up values are automatically applied in the Target fields, so that changes at a lower level are automatically moved up.

Field range: Effort [h]

Target Planned work effort in hours, which is to be valued as a framework specification for the project.

Demands Aggregated value of all resource demands that were applied to tasks of the project.

Assignments Aggregated value of all resource assignments that were applied to tasks of the project.

Actual Aggregated work effort in accordance with the effort recording for the individual tasks.

Bottom-Up This field contains the value aggregated from the effort-related Target fields of the subordinate tasks, and thus can be compared to the Target specification found here as a check.

Bottom Up Values as Target Values In some cases, changes at a lower level can be automatically applied to the next higher level. This applies, for example, if the same person is responsible for both editing levels. If this check box is selected, the bottom-up values are automatically applied in the Target fields, so that changes at a lower level are automatically moved up.

Field Area: Primary Scheduler

For each project it can be defined, whether the project will be administered in the system or in Microsoft Project.

Use Microsoft Project for Scheduling If this check box is selected, the project time schedule may only be edited in Microsoft Project. The Microsoft Project document number is found in the underlying field where project deadlines are set. See *Restrictions when working with MS Project as scheduler* (page 66) for more information.

The Signal Lights

The field ranges for target dates and work effort contain what are called signal lights, which reflect the planning state of the project and should thus enable a fast overview. The lights are used only if target values have also been specified.

- A red light signals that the specified target values violate the top-down specifications. This signal is used only for tasks and not for projects because there are no top-down specifications for projects.
- A yellow light signals that the bottom-up values violate the target specifications.
- A green light signals that the bottom-up values meet the target specifications.

Result List

In the following, you can find out which additional information is displayed in the results list:

Status Icon The icon represents the status of the project as colors.

Type The icon varies depending on the properties *Parent Project* and *Template*.

Project Manager The names of the project managers are displayed here. Only persons are considered who are assigned to the role *Project Manager*. No persons are taken into account who become project managers as a result of inheritance via other roles.

2.3 Project Overview *My Projects*

You gain an overview of your projects in the toolbar via the icon *My Projects* (page 9).

You can obtain the following information from the project overview:

- Project Image
- Status of the project (signal light)
- Tasks, Open Issues, Documents, Parts
- Timeline of the project

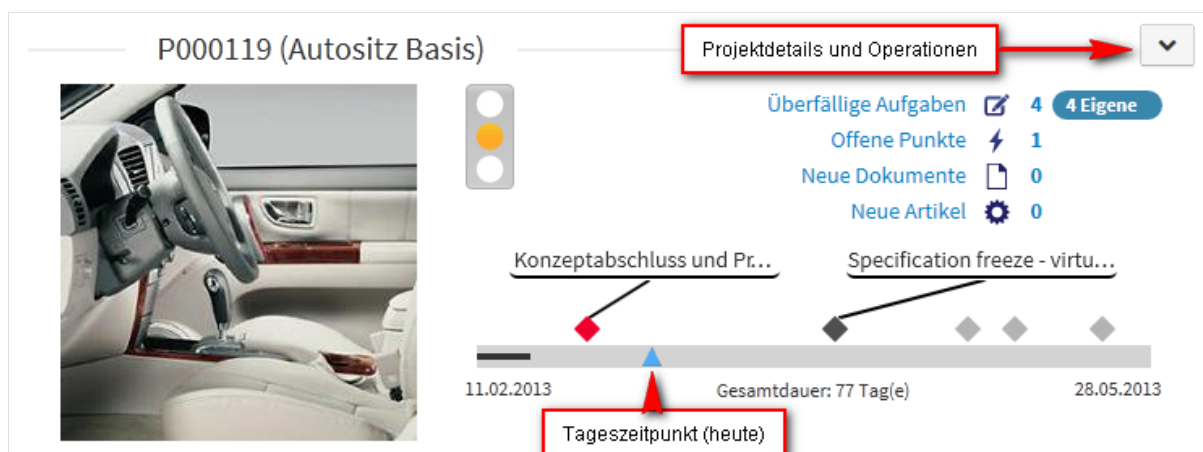


Fig. 2.1: My Projects

2.3.1 Project Image

The project image provides a fast orientation in the project overview. To insert a representative image, click *Import image* in the image area. A window opens, through which you can navigate to the desired image.

To replace an image, move the mouse over the image area. The *Import image* function appears. After clicking *Import image*, a window opens through which you can navigate to the desired image.

2.3.2 Signal Light

The status of the project is displayed here. The signal light is set via the project master data.

2.3.3 Tasks, Open Issues, Documents, Parts

In the upper, right area you will find a brief overview of overdue *Tasks*, *Open Issues*, *New Documents* and *New Parts*. Additionally, via *Own* you get notice of how many points you are responsible for. Clicking one of the topics opens an information window, which provides additional information. Overdue tasks are all tasks (including task groups and milestones) with the status *Ready* or *Execution* and with an end date before the current date (today).

2.3.4 Timeline

The timeline shows you the milestones and the progress of the project. Overdue milestones are shown in red. Closed milestones, which are in the past, are shown in green. The project progress (% done) is seen from the black line on a gray background. The start and end dates of the project are at the beginning and end of the timeline. The total duration of the project is displayed in the middle of the timeline. The current date (today) is shown as a blue triangle. The milestone before and after the current date is also provided with text. You receive additional information about a milestone by clicking it.

2.3.5 Project Details and Additional Operations

You can call up additional project details by clicking the project title. The triangle symbol *Project Details and Operations* provides you with not only the project details, but also a series of operations (for example, KPI Cockpit, Project filing, Work breakdown structure, schedule chart, etc.), which you can execute over the project.

System Access

Windows Client

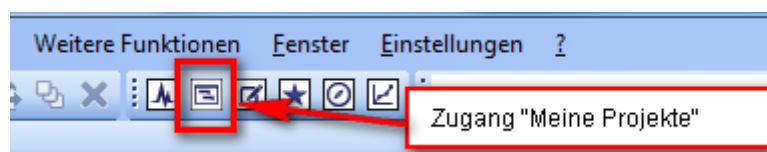


Fig. 2.2: Open *My Projects* from the toolbar of the Windows Client.

In the toolbar, click the symbol *My Projects*. The application *My Projects* opens in a new tab of the view area.

Web Browser

In the toolbar, click the symbol *My Projects*. The application *My Projects* opens in the same browser window.

Project Details and Operations

In the project view, click the triangle symbol *Project details and operations* (page 8). This opens a selection list, from which you can select a number of operations in addition to the project details.

Project details

Under the project details there is a list of relationships that currently exist for the project. In particular these are:

- Project overview
- Activities
- Active tasks
- Open Issues
- Documents
- Item
- Project Team

The project overview is expanded in the delivery version. The objects connected with the project are displayed in collapsed form.

Click the triangle symbol next to the reference object to view its details. This provides additional information and filters. A filter becomes active when clicked. The number in the parentheses of the filter shows the number of hits for the filter criterion. The filters operate “additively”. This means that the additional filter criteria are added to the query with “and”. The number in the parentheses of the title shows the total number and the number of hits of the filter currently being used.

The order of details in the display can be individually adjusted. You can Drag&Drop (click detail title) to change the order as needed. The changes are retained even after logging in again.

Operations

Operations that you can carry out via the selected project are:

- Information
- Project overview
- Project details
- *Schedule chart* (page 41)
- KPI Cockpit
- Milestone Report
- Activities > Subscribe (to do so, see the application manual *Calendar, activities and launchpad*)
- Activities > Delete subscription (to do so, see the application manual *Calendar, activities and launchpad*)

2.4 Functions and Relationships

2.4.1 Pop-Up Menu for the Project





Once you have received a hit list from searching for projects, you can edit the projects in the hit list via the operations from the pop-up menu. To do so, select a project data record in the hit list and open the corresponding pop-up menu by pressing the right mouse button.

The pop-up menus usually contain three kinds of entries, which can be structured over multiple levels, where appropriate. The entries include general operations (New, Search, Change etc.), special operations relating to the initial object (Project Overview, Resources etc.) and the calling up of other technical objects that have a relationship to the initial object (Parts, Documents etc.).
















The general operations are explained under standard functions in the application manual, and the like, and are not mentioned here. Other technical objects in the relationship are usually called up the same way, by opening









a hit list with the assigned technical objects. Correspondingly, these technical objects are also frequently offered as additional tabs for the data sheet of the initial object. Details of these pop-up menu items will no longer be looked at here. The following explains the pop-up menu functions with a special relationship to the initial object “Project”:

Table 2.1: Symbols of the pop-up menu (PCS)

Symbol	Meaning
	Standard functions, documented in the “Standard functions” chapter
	Operations that are relevant only in this pop-up menu.
	Relationships to other data records.
	Relationships to other data records, which are additionally displayed on a tab of the data sheet.

Pop-Up Menu Items

-  **Project Overview** Hierarchical display of project contents. Project contents can be edited in the project overview.
-  **Project Details** Tabular display of project contents. All project contents can also be edited in the project details.
-  **Schedule Chart** Displays scheduling for the project according to the resource planning and scheduling chapter.
-  **MS Project/Time Schedule** If the Microsoft Project project is defined as the scheduler, the primary time schedule is opened in edit mode in Microsoft Project. If the user does not have write access for the project, the time schedule is opened in display mode only. See *MS Project Time Scheduler Template* (page 67) for more information.
-  **MS Project/Import & update Project (XML)** Calling the mask for selecting a document which contains a Microsoft Project XML file. The project information from this file will subsequently be imported into the project via the *MS Project - Import and update* dialog. For more information, see chapter *Microsoft Project - Import and Update* (page 65).
-  **MS Project/Export Project (XML)** Calling the mask for selecting a local XML data path. The project will subsequently be exported in the Microsoft Project’s own XML format.
-  **MS Project/Export Task Attributes (Excel)** Calling the reports for exporting certain task properties (e.g. status) for the purpose of subsequently importing in the Microsoft Project time schedule assigned to the project. See also chapter *Updating specific task attributes* (page 66).
-  **Resource Chart** Displays resource planning for the project as shown in the resource planning and scheduling chapter.
-  **Reports...** Calling up the selection screen for creating the reports that are offered in the context of the projects (as Excel tables or corresponding to the configuration option in the selection screen). The configuration criteria are “Report” as type of the report, the language, “Report execution” as client- or server-side function and, depending on this, the report format.
-  **KPI Cockpit** Display of the key performance indicator cockpit for the project.
-  **Milestone Report** Uses the report function to create a milestone trend analysis using the milestones of the project.
-  **My Projects** Show all projects selected in a hit list in the *Project Overview* (page 8) *My Projects*.
-  **Import Image** Import function for specifying the project image.
-  **Lock** Locks the structure of a project to the project team member executing it. As long as the structure is locked, only the project team member in question is allowed to create or remove tasks. Furthermore, the project team member must, of course, also have the necessary access rights to change the project structure.
-  **Unlock** Unlocks the project and thereby makes it possible again for all authorized project team members alike to change the project structure.

- +  **Move Project Start...** Function for automated movement of the project, including all tasks, to a new specified start date.
- +  **Generate PSP-Code** Generates PSP codes for the complete project structure consisting of sub-projects and subtasks. Existing PSP codes are overwritten.
- +  **Recalculate Positions** Renumbers the position of all tasks in steps of 10 for every level.
- +  **Insert Project Folder Structure** Creation of a project folder structure based on an existing folder structure of an existing project.
- +  **Modify Calendar/Profile** Makes it possible to change the calendar profile.
- +  **Calendar/Refresh Project** Updates the project-related calendar data after modifying the entered calendar profile. This does not happen automatically, so that changes to the calendar do not take effect in older (for example, closed) projects.
- +  **Add object to time schedule** This option can be used to add the selected project a time schedule. Select the time schedule in the displayed dialog to which the project is to be added.
-  **Parent Project** Selection of pop-up menu functions for the parent project.

2.4.2 Creating Projects

A project is created in two steps:

1. Filling out the project master data

When creating a new project, the master data sheet to be filled out appears first. The fields marked red are required fields, which have to be filled out. Some input fields are supported by catalog. The assignment of the category is reflected, in turn, in the project categories in the navigation area. The project number is assigned automatically.

After pressing the *Continue* button, you come to the second step, the selection of a project manager.

2. Specifying the project manager

Now the screen for selecting the project manager appears. The person carrying out the creation of a new project is always preset as the project manager. Using the catalog, however, any project manager can be specified. When selecting another project manager, note that doing so grants this person the access rights for the project. Only the project manager receives access rights to change the project. All other project team members receive read-only access.

Pressing the *New* button creates the project. The whole creation process can be canceled by pressing the *Cancel* button.

2.4.3 Creating a new project from a template

Another option for creating projects is the procedure via the operation of the pop-up menu *Create from template*. A new project can be created based on the project templates in the system. The steps appear as follows:

1. Click on *New from Template*
2. If more than one template exists in the system: Select the template in the proposal catalog
:guilabel:`Select Project Template`
3. Enter project master data
4. Select Project Manager

When you create a new project from a template, the template is copied. The main differences to copying are:

- You must select a project manager
- The template flag is automatically removed
- The assignment to a parent project is automatically removed.

2.4.4 Project editing via Microsoft Project

An additional option for editing projects consists in the use of the project planning system Microsoft Project. The first step is to create a blank project within the system using the ways described above. A document is then assigned to the project, which contains beforehand an XML file derived from Microsoft Project. The project information contained in this XML file can now be imported into the system via the *pop-up menu operation* (page 11).

Using another *pop-up menu operation* (page 11), projects can be exported in the Microsoft Project XML format. Files generated in this way, can be directly imported in Microsoft Project as new projects.

Work Breakdown Structure and Management

The projects are organized by content using the work breakdown structure. In the structure, the tasks are the main objects of project management that describe the tasks to be edited. Furthermore, tasks can also represent services to be rendered in other contexts.

In projects, tasks are broken down to any number of levels as a hierarchical structure (work breakdown structure). The structuring of the project stages and processes for a development project represent one example of this. A responsible party (as a person or project role) has to be assigned to each task. This party can then be used as the recipient for automatic notifications.

Assignment to categories and areas in turn allows project tasks to be managed in specific ways. Information on scheduling, effort recording, resource management and other project-relevant inputs makes it possible to have all of the important information on all work tasks available directly in order to provide the best possible support for project work.

The potential task types are Single Tasks, where the corresponding values for the task are input directly, and Task Groups, where the values are aggregated from the lower-level tasks. Accordingly, the input fields for direct value inputs are available or are protected as values aggregated by the system.

Tasks can also be marked as milestones. A milestone is an event of particular importance. In project management, these events are usually subgoals or intermediate goals for a project. These goals are linked to completion of the milestone as an important project result. Tasks marked as a milestone have no duration, are managed without cost and do not get taken into account in resource management either.

Tasks Status

The system represents the status of the tasks using colored markings (in the form of colored circles). These markings allow you to quickly identify which tasks have which status in structure views or hit lists. Access rights are managed and aspects such as whether a task can still be edited are controlled based on the status.

In addition, status can be changed only if the higher-level project stages have a status that allows editing. In turn, changing a task to the *Completed* status is possible only if the associated checklist items have been assessed. A failed attempt is acknowledged using a corresponding message. In addition, only actors with the associated rights can carry out status changes.

Notification for Tasks Due

The system offers different options for informing project team members of revisions, status changes or other tasks to be completed. One familiar option is via e-mail. Another way is to display the task to be edited to the project team member via *Tasks* where they can then be edited directly.

Whether or not a task is visible to a person depends on the task status and on the responsibility. Once status of a task changes to *Ready* or *Execution*, the task becomes available for the responsible people. The business object in the *Tasks* panel provides direct access to the datasheet, the task overview and the status change. This personal view of due tasks facilitates a clear management of tasks even in complex working situations.

There are various ways available for creating and maintaining tasks. Best practices are shown using examples later on. The options appear as follows in the overview: Editing tasks ...

- using the pop-up menu of a project with the *Work breakdown structure* function.
- using the pop-up menu under the *Project Overview* function.
- in the project data record using the *Tasks* or *Subtasks* tabs.
- using the *Task manager* e-link panel.
- using the *Tasks* menu item in the *Projects* menu.

3.1 Menu Access

The menu item for searching for and editing tasks can be accessed in the navigation area under *Projects* → *Tasks*. The hit list for the tasks is initially available using the *Search...* function.

Pop-Up Menu Call of the Work Breakdown Structure for the Specific Project

The procedure for editing tasks and task structures in the context of a project emerges when searching for and selecting the project to be edited and the access to the project using the *Work breakdown structure* or *Project Overview* context command. The window areas of the *Work breakdown structure* graphical representation allow tasks to be displayed, modified and created easily.

3.2 Master Data

Tasks can be created, displayed or edited using the master data sheet. The data sheet is usually opened using the *Information* or *Modify...* functions from the pop-up menu of a task of the task structure.

The display of the master data is distributed over two tabs. We distinguish between the core data on the main data sheet (which the project team member primarily has to access) and the additional details (which are changed comparatively rarely) and are in the Details tab.

The Main Data Sheet

Project Name / Project No. The information describes the project the task is assigned to. This field is filled in automatically when creating a new checklist in the context of a project. Otherwise, a project catalog is available for selecting a project.

Parent Task Relationship to a parent task. If there is no parent task, the field remains empty. The parent task is preassigned automatically in the context of creating a new project or task. Otherwise, a list of options with all of the tasks that have been created already from the project entered in the *Project No.* field are provided.

Task Name The name of the task as natural language information.

Position Specifies the sorting sequence of the tasks in the context of the project or the higher-level task. The *Position* is preassigned using the task number when creating a task. The order can be changed later.

PSP-Code The project structure plan code is a unique label for the task within the project structure plan.

Responsible The person or role responsible for the task.

Status The status of the current task. [Here](#) (page 60) you will find the meaning of individual statuses. This field can only be changed using the task's status change pop-up menu item. A project can take one of the following statuses:

- New
- Ready

- Execution
- Discarded
- Finished
- Completed

Category Task category selected from a list of options. The available categories depend on the respective configuration.

Milestone Defines a task as a milestone, making it an event with particular importance. Milestones are not task groups. They always have a duration of 0 (start = end). They also do not have any costs and have no impact as part of resource management.

In Early Position This can affect the calculation of milestone task relationships. By default, milestones are placed at the end of a day, resulting in instances where the milestone for project completion can be on the same day as a preceding task. In early position can be set for start milestones so that a task following a milestone can start on the same day.

Division The responsible organizational area. This is set to the area for the project by default when creating a new task.

Cost Center Cost center for the task. This is set to the cost center for the project by default when creating a new task. The cost center can also differ from the cost center for the project, however.

Completed (%) Calculated value of the percentage of completion of a task using the subtasks and of the status. Weighting of the percentage of completion via the respective effort is also carried out. That is, calculation of the percentage of completion in percent of projects, Task Groups and Single Tasks based on the effort and the status of the individual tasks.

The initial value of this is 0 before the status *Execution*. As long as the Single Task has the status *Execution*, the percentage of completion of a task can be manually entered in percent (including a check of whether the value is between 0 and 100). When the status changes to *Completed*, the percentage of completion is automatically set to 100.

If the status changes for a task in the project, the system recalculates the percentage of completion across the total project structure above this.

Rating Here, project team members can give a subjective evaluation of the state of their task. It is selected from a list of options.

Reason Here, the project team member can give reasons for his or her evaluation. It is entered as free text.

The following block contains a summary of the schedule data for start and end dates and for the time expenditure of the task as well as the associated signal lights (see the Details tab for more information).

Description Text field for an additional description.

Tab Details

Field range: Dates (Begin/End)

The following block contains the plan data for the start dates and end dates of the task. We distinguish between the framework values of the higher level (top-down), the values for the task to be specified by the responsible party (target), the actually planned values (bottom-up) and the actual values (actual). Some of the fields cannot be filled in or edited directly by the project team member, but are automatically calculated by the system from the subordinate tasks.

Top-Down These fields contain the scheduling framework that has been specified for the task by the responsible party from the higher-level framework task.

Target The fields specified here contain the scheduling framework defined for this task by the person responsible. These values are used as *Top-Down* for the subtasks.

Actual These fields show the earliest actual value of a subtask or the task itself and the last completion time of a project task and are automatically set by the system during the corresponding status changes:

- During the first status change, the Actual start is set to *Execution* and is not overwritten again. The status change also does not set it back to *Ready* or *Execution*.
- The Actual end is set to *completed* during the status change. During the status change back to *Execution*, the field is reset.
- During the status change to *New*, both fields are reset.

Bottom-Up These fields contain values aggregated from the date-related target fields of the subordinate tasks, and thus can be compared to the target values found here for use as a check.

Use Bottom Up Values as Target Value In some cases, changes at a lower level can be automatically applied to the next higher level. This applies, for example, if the same person is responsible for both editing levels. If this check box is selected, the bottom-up values are automatically applied in the target fields so that changes at a lower level are automatically moved up.

End Fixed This check box marks an unchanging, planned final date for the task and prevents it from being moved by a delayed predecessor task and prevents any subtasks from being scheduled later.

Automatic Calculation Should this checkbox be set, the task's target values will be automatically calculated, based on the constraint type and date and also on the linked predecessor tasks. The calculations are made based on the network plan technique.

Constraint Type By setting the constraint type, boundary conditions can be set, which will then be taken into account by the automatic calculation algorithm. Most constraint types require, additionally, a constraint date.

Constraint Date The constraint date is used in conjunction with the constraint type.

Field range: Effort [h]

The following block contains the plan data for the task's work effort. We distinguish between the framework values of the higher level (top-down), the task values to be specified by the responsible party (target), the actually planned values (bottom-up) and the actual values (actual). Some of the fields cannot be filled in or edited directly by the project team member, but are automatically calculated by the system from the subordinate tasks.

Top-Down Available work effort in hours that is to be rated as a framework specification for this task.

Target The work effort defined by the responsible party in hours.

Demands Aggregated value of all resource demands that were applied to the current task including all subtasks.

Assignments Aggregated value of all resource assignments that were made to the current task including all subtasks.

Actual Aggregated work effort in accordance with the effort recording for the individual tasks.

Bottom-Up This field contains the value aggregated from the effort-related Target fields of the subordinate tasks, and thus can be compared to the Target specification found here as a check.

Use Bottom Up Values as Target Value In some cases, changes at a lower level can be automatically applied to the next higher level. This applies, for example, if the same person is responsible for both editing levels. If this check box is selected, the bottom-up values are automatically applied in the target fields so that changes at a lower level are automatically moved up.

The Signal Lights

The field ranges for target dates and work effort contain what are called signallights, which reflect the planning state of the project and should thus enable a fast overview. The lights are used only if target values have also been specified.

- A red light signals that the specified target values violate the top-down specifications.

- A yellow light signals that the bottom-up values violate the target specifications.
- A green light signals that the bottom-up values meet the target specifications.

3.3 Functions and Relationships

3.3.1 Creating an Object via Templates

The *New from template* operation from the pop-up menu also lets you create tasks. A new task can be created based on the task templates in the system. To do so, proceed as follows:

1. Call up *New from template* on the result of the *Projects* hit list
2. Select the project where the desired task is located
3. Select the task from the displayed project structure tree
4. If necessary, move the task start date to the desired start date




When creating based on a template, a copy of the template's content is created. The difference when copying is that no create screen appears and, as a result, most of the data can be adjusted only as part of a subsequent pass.

However, there is an exception for the start and end date, since the move operation for potential adjustment of the date values also runs automatically after creating a new one from a template. This step only takes place after creating the task, meaning that canceling the move does not cancel the creation.


3.3.2 Pop-Up Menu for the Tasks


If the tasks are available as a hit list, these tasks can be edited using the pop-up menu. This requires that you select a task and right-click to open the associated pop-up menu. This contains both general functions (explained in the “Standard functions” chapter) and special functions and commands for calling up the relationships of tasks to other technical objects.


Table 3.1: Symbols of the pop-up menu (PCS)


Icon	Meaning
	Operations that are relevant only in this pop-up menu.
	Relationships to other data records.
	Relationships to other data records, which are additionally displayed on a tab of the data sheet.


Pop-Up Menu Items


 **Reports** Calling up the selection screen for creating the reports that are offered in the context of the projects (as Excel tables or corresponding to the configuration option in the selection screen). The configuration criteria are “Report” as type of the report, the language, “Report execution” as client- or server-side function and, depending on this, the report format.

 **Time Schedule** Display of scheduling for the project according to the scheduling chapter.

 **Move Start Date** Function for automated movement of the task, including all subtasks, to a new specified start date.


 **Recalculate Position** Renumbers the position of all tasks under the selected task, in steps of 10 for every level.


 **Task Overview** Displays the task as a structured task overview. The task overview appears as a special display for task editing and allows convenient access to contents, see *Editing the Work Breakdown Structure* (page 20).


 **Responsible** Shows the responsible parties for the selected task. This is displayed using the project role and the assigned project team member. These are, in turn, based on the organizational data. More information on this topic is available in [Project Team and Project Roles](#) (page 33).


 **Create Subtask** Allows the creation of a subtask


 **Relationships > Create Checklist from Template** Offers the option of creating a checklist for the task based on a template.


 **Task group** Offers a selection of standard functions for editing the task group. Task groups are tasks of a project connected by their hierarchical structure—the “inverse” of the subtasks, as it were. As a task group, the system can—starting from a subtask—display arrangements such as the associated task at a higher level and the subtasks present on the same level as an application of the *Task overview* pop-up menu function.

 **Project** Pop-up menu for the project the task is assigned to. If the task is assigned to a project, you can run the provided selection of pop-up menu functions on the project.

 **Add Object to Time Schedule** This lets you add the task to a time schedule. After calling the menu item, a screen appears that lets you select a time schedule to add the task to.

 **Automatic Calculation > Activate** allows you to activate automatic calculation for several selected tasks in a single step. This results in a recalculation of the time schedule of all tasks in the given project.

 **Automatic Calculation > Deactivate and Remode Dates** allows you to disable automatic calculation for multiple selected tasks in a single step. The set constraint dates are discarded and the constraint type for the selected tasks is set to “As early as possible... ”.

 **Automatic Calculation > Deactivate** allows you to disable automatic calculation for multiple selected tasks in a single step. Constraint types and dates are retained.

3.3.3 The Tabs on the *Task Data Sheet*

In addition to the information on the task description from the task data sheet, direct access to context-related technical objects related to the task is available using the tab on the window.

Change Log Displays the creation and change-related information in the context of task creation. In other words, with respect to the task creator: *Created by, on*; with respect to the last change: *Last Modified by, on*. The information is managed by the system.

Activities The activities are displayed as part of task editing here.

Subtasks Provision of the subtasks for the selected task. Option for creating additional subtasks using the *New...* context command that opens that data sheet for the subtask preassigned to information from the initial task.

Checklists Access to the checklists created for the task. More detailed information on the technical object is provided in the later sections of this documentation.

Status log Displays the data from the status log. Each status change that occurs is recorded in a status log and is used as documentation for the editing process.

Documents and document templates The templates and documents assigned to the task are provided using these tabs.

Resource demand and resource assignment Access to the corresponding technical objects from resource management for the respective task

Efforts The working hours reserved for the task are provided using Efforts. You have the option of reserving additional working hours using the context command *New...* or *Record...*

Actions Access to the actions created for the task. More detailed information on the technical object are provided in the later sections of this documentation.

Successor and Predecessor The existing successor and predecessor relationships of the task for other tasks are provided.

Active Issues Access to the active issues created for the task. More detailed information on the technical object are provided in the later sections of this documentation.

3.3.4 Editing the Work Breakdown Structure

The work breakdown structure can be accessed using the Work breakdown structure pop-up menu option for a project. The project is selected in the upper window area. The Subtasks option is selected in the lower area of the overview window. This setting causes all of the subtasks in the project to be displayed in the lower hit list sorted by their order.

New tasks can be created in the lower hit list by selecting the *New...* pop-up menu option. Since the project is selected in the upper window area, top-level tasks are created with this setting. This means the *Parent Task* attribute of the new task creation mask stays empty.

In order to create a subtask, the task for which the subtask is to be created must first be selected in the upper window area. The *Subtasks* option has to be selected in the lower area of the overview window. The subtasks of the selected task are then displayed there.

Selecting the *New...* pop-up menu option displays the create new task mask. The *Project No.* and *Task No.* or *Project name* and *Parent Task* fields then start filled with the correct values. After filling out all of the mandatory fields marked in red, the task can be created by pressing the *New* button. A task, along with its subtasks, can be moved within the work breakdown structure later on. This is achieved by changing the *Parent Task* and/or *Position* field in the data sheet or on the detail tab for the task.

Checklists, Quality Gates and Deliverables

In project management, checklists form an interface between content-related work and management. Step by step, they represent processes that are “checked-off” when completed while also serving as documentation. For your use cases, such as in product development, checklists help with maintaining methods and allow the use of uniform process models as a “tool of quality management”. The use of the term *Checklist* is equivalent to the use of the terms *Quality gates* and, to a certain extent, *Deliverables* below.

Checklists are connected to tasks for which they document and record the quality of the work results in the form of colored identifiers. In the checklists, the work results are rated using checklist items. Checklists and checklist items have to be handled like tasks.

When used in project work, the result of a checklist is displayed with a complete rating of all inspection tasks in the checklist as colored identifiers. In the product development process, this means that project team members can quickly obtain an overview of the state of projects, particularly using the overview in the Checklists folder.

As you may be familiar with from tasks, checklists and checklist items are assigned to a responsible division and a role or person and are provided with a due date if applicable. Other information to be specified includes the rating scheme (e.g. red/yellow/green), weightings (e.g. KO criterion) and descriptive information. If the responsible person rates the last checklist items of a task after completing it, this is shown in the checklist as a result. The task can only be switched to the *Completed* status once it has been rated.

Quality Gates

Quality gates are a special type of checklist. They are not used for individual tasks, but as a transition between project stages. This makes them more important by their very nature. According to the definition of quality gates, they form a barrier between consecutive stages and their being rated as successful is a requirement for starting subsequent stages.

Quality gates are represented by a time signal icon. The checklist items for a quality gate are used for checking the actual state at the end of a project stage. Subsequent tasks can be switched to the *Execution* status only once the quality gate returns a satisfactory test result, meaning it has been processed successfully.

System-Side Effects of Rating Checklists and Quality Gates

Checklists and quality gates are used for documenting and maintaining the quality of work results in the form of text-based quality criteria in conjunction with colored identifiers. The actual rating takes place using lower level checklist items; the detailed process for this is explained below.

It should be noted that the rating results of checklists and quality gates are visually configured using the *RedYellowGreen* or *GermanSchoolmarks* rating schemes without any system-side effects in the *Project management* standard. In other words, continued editing or status changes for an associated task are still possible even with a checklist rated as “red”. The same applies to a checklist rated green or yellow.

The task of rating results is to clarify the respective work states and results for persons responsible for the project. Interventions by the system, such as preventing a status change at the task level, have not been implemented. The process model is that unsatisfactory rating results are analyzed, edited and resolved by the persons involved.

It is conceivable that corresponding system operations could be integrated specific to a customer. These could include actions such as implementing a notification service in the event that a quality gate rating is too low or triggering other system-side events that temporarily suspend continued work on a task. The system provides a starting point that can be flexibly adapted according to different requirements.

Deliverables

Deliverables are another specialized form of checklists. They use formal criteria to describe the work results that must be provided to complete a task and ensure the deliverables are created in a timely manner. Work results for a task are typically documents that have to be created. Depending on the specific configuration, however, any other technical objects could be used for work results that must be provided.

Deliverables can be specified starting in the project planning stage and used to define which documents and technical objects are to be created at which point in the course of a project and which properties these are to fulfill. A task can be completed only once the work results described by the assigned deliverables have been created and assigned. This allows workflow monitoring for a project to be bound to the provision of formally defined results.

For example, if you must ensure that a cost and resource chart is created before a technical concept is created, you can assign a corresponding deliverable to the task for creating the cost and resource chart. Then you can link the two tasks with an end-start relationship. The task can be completed and—due to the end-start relationship—the subsequent task can be started only once the described documents have been created and assigned to the deliverable.

The documents to be created are displayed via the deliverable's *Work Objects to be Created* relationship. A precise formal description of these documents using document master data is concealed behind these entries. Document properties frequently used here include the category, creating system or status. These descriptions are typically defined in the project templates and requires administration knowledge. You can find additional information, as needed, in the platform administration manual in the *Configurable rules* section. The required object rules are defined once, by the administrator. The object rules are defined once and then template designers or project managers can use them in project templates or specific projects.

The object rules assigned to a deliverable describe the objects to be created in a manner similar to declarations without having to program declarations. A deliverable is marked complete if you change its status to *Completed*. All of the associated object rules are evaluated against the technical objects assigned to the deliverable during this process and the status change is rejected if necessary if not all of the object rules are met. An object rule is considered met if at least one technical object with the described properties is assigned directly to the deliverable. The project team member receives a combined error message listing the work objects that are still missing. If a project team member wishes to check if an assigned technical object fulfills the object rule, the team member can use the *Show objects* operation in the pop-up menu for the object rule to display all of the suitable technical objects. If a technical object meets the rule, it has to appear here.

In addition to object rules, the checklist items you are familiar with from conventional checklists can also be assigned to a deliverable. The checklist items for a deliverable are used for recording criteria that cannot be described using document master data. This frequently relates to content-related aspects that are intended to be checked off as taken into account or implemented during document creation.

All of the checklist items have to be checked off to complete a deliverable. If this is not the case during a status change for the deliverable, then any checklist items that are still unrated are also displayed in the combined message. The created work objects are assigned for documents using the document relationship of a deliverable. Other technical objects to be created are assigned using separate relationships depending on the specific configuration where appropriate.

When using deliverables, it makes sense to provide the necessary document templates directly in the context of the deliverable for later editors. This is particularly useful for standardized project workflows and when using project templates. This frees the editor from having to search and use the template for the document to be created. Instead the editor can find the document in the editing context. A new document can be created from a template by calling the *Create new document...* pop-up menu function. The created document is then assigned to the deliverable automatically and users can search for it using project filing.

The assigned document templates can optionally be set up so that the document is generated from the templates and assigned to the deliverable automatically in the event the deliverable's status is changed to a specific status.

The *Evaluation* status of the deliverable is provided for this. Checklists and deliverables automatically assume this status if the associated task is put *Execution* and the deliverable is ready for editing. The editor of the task can start editing the document immediately without having to create the document. You can find additional information on using document templates in project structures in the *Documents* application manual under *Document templates in project structures*.

4.1 Menu Access

Various paths are available in CIM Database for creating and maintaining checklists. The paths are briefly covered below. First, as access to all of the existing checklists for a *project management* installation that can be searched across projects using *Navigation* → *Projects* → *Checklists*. Second, as filtered access to the checklists of a specific project. This is done via the project's overview by accessing the Checklists folder.

The predominant path, however, is using the task-related query/display of checklists. In other words, a project's checklists are intended to be examined starting from the respective tasks of the project. In the structure tree of the project overview, the desired tasks are displayed in the hit list in the bottom window area when selecting the tasks with the Checklists option set in order to facilitate this. Best practices are shown using examples later on.

Creating, Editing and Searching Checklists

- By calling the project overview (as a structure tree) and selecting the desired task (under the Tasks folder). With the *Checklists* option set, the hit list for the *Checklists* is displayed in the bottom area. New *checklists* can be created in the hit list (*New...*) or existing ones can be accessed.
- Across tasks using the data sheet for a project using the data sheet's *Checklists* tab
- Across projects using the *Checklists* menu item in the Projects menu. This could be as a report for all *checklists* for a specific reporting period/quarter.

The menu item for searching for and editing checklists can be accessed in the navigation area under *Projects* → *Checklists*. The hit list for the checklists is initially available using the *Search...* function.

Pop-up menu call for editing checklists:

The procedure for editing checklists in the context of a project emerges when searching for and selecting the project to be edited and the access to the project using the *Project Overview* contextual command.

The window areas of the *Project Overview* graphical representation allow checklists to be displayed, modified and created easily. The *checklist items* are shown in the bottom area of the window if a checklist is selected in the overview. In this area, existing checklist items for the checklist can be edited and new checklist items created if necessary.

4.2 Master Data

Checklists can be created, displayed or edited using the checklist data sheet. Existing checklists can be accessed across projects using *Navigation* → *Projects* → *Checklists*. Filtered access to all checklists of a specific project is possible using the project's overview by accessing the Checklists folder.

However, the task-related query/display of checklists is used frequently. In other words, a project's checklists are intended to be examined starting from the respective tasks of the project. In the structure tree, the desired tasks are provided as a hit list in the bottom window area when selecting the tasks with the Checklists option set in order to facilitate this. The data sheet for the checklist contains the following information:

Project No. / Project Name The project the checklist is assigned to. This field is filled in automatically when creating a new checklist in the context of a project. Otherwise, a project catalog is available for selecting a project.

Task The task to which the checklist is assigned. This field is filled in automatically when creating a new checklist in the context of a task. Otherwise, a list of options is available for selecting the task.

Name Short, descriptive name of the checklist as free text.

Type List of options for checklist type: Selection of *Checklist*, *Quality gate* or *Deliverable*. This type assignment is defined as a criterion for later use of the technical object.

Rating Scheme List of options for the rating scheme: *RedGreenYellow* or *GermanSchoolmarks*.

Category Task category selected from a list of options. The categories available depend on the respective configuration and can be used for subsequent evaluations, e.g. as a report for the state of all checklists in the Documentation category.

Template Check box for marking the checklist as a template that can be searched and reused accordingly.

Description Text field for more information and descriptions of the checklist.

Rating Rating result for the checklist resulting from the completely rated inspection tasks.

Status The checklist's status. Only the *Change status* pop-up menu item for the checklist can affect this field. A checklist can assume one of the following status:

- New
- Evaluation
- Completed
- Discarded

Auto If this field is set, the checklist is switched to the *Completed* status automatically when the last checklist item is rated. Otherwise, the person responsible for the checklist has to do this by hand.

Remark Text field for additional comments that are of significance with regard to checking.

Responsible / Type The person or role responsible for the checklist. Technical object type assigned by the system corresponding to the Responsible input field.

Division The responsible organizational area. This is set to the area for the project by default when creating a new task.

Due Date Deadline set for the checklist; can be selected from the date component provided. Upon reaching the deadline, the checklist can be "escalated" accordingly. This means it is displayed for the responsible party, such as in the *Task manager*.

4.3 Data Sheet for a checklist item

The checklist items for a checklist, quality gate or deliverable can be created, displayed and edited using the data sheet for checklist items. The data sheet can be accessed in the project overview, such as in the context of a checklist. In other words, *checklist items* is specified as an optional value when selecting a checklist and the hit list for the checklist items is displayed in the bottom area of the structure tree. In the hit list, the checklist items can then be opened or new ones can be created using the *New...* function in the pop-up menu.

The information in the data sheet for the checklist item is the same as that for checklists to a large extent. Any input fields that are different are described below:

Project No. / Project The project the checklist is assigned to. This field is filled in automatically when creating a new checklist in the context of a project.

Criterion The designation of the criterion.

Weighting List of options for choosing the weighting for the checklist item. The default is a value of 1. The list can be configured accordingly.

k.o. criterion Check box for marking the checklist item as a k.o. criterion. In the *project management* standard, this check box serves as information and is intended to increase the importance of the checklist item. The check box could be reused for system-side events or for creating reports.


4.4 Functions and Relationships


4.4.1 Pop-Up Menu for Checklists


If the checklists that you managed in CIM Database are available in a hit list, they can be edited using the pop-up menu. This requires that you select a checklist and right-click to open the associated pop-up menu.


The pop-up menu contains both general functions (explained in the “Standard functions” chapter) and special functions and commands for calling up the relationships of checklists to other technical objects.

Pop-Up Menu Items

 **Overview** Displays the checklist with the assigned technical objects as a structured overview. The overview for the checklists appears as a special display for editing checklists and allows the editing of contents such as checkpoints.

 **Responsible** Shows the responsible parties for the selected task. This is displayed using the project role and the allocated project team member. These are, in turn, based on the organizational data. More information on this topic is available in *Project Team and Project Roles* (page 33).

 **Project** Pop-up menu for the project the checklist is assigned to. If the checklist is assigned to a project, the provided selection of pop-up menu functions can be carried out on the project.

 **Task** Pop-up menu for the task the checklist is assigned to. If the checklist is assigned to a task, the provided selection of pop-up menu functions can be carried out on the task.


4.4.2 Context Menu of Checklist Items


If checklist items that you manage in CIM Database are available in a result list, they can be edited using the context menu. To do this, select a checklist and open the context menu with the right mouse button.

The context menu contains both general operations, which are explained in the Standard Operations section, and special operations and calls of the relationships of checklist items to other specialized objects.

Pop-Up Menu Items

 **Evaluate** You can evaluate one or more checklist items using the operation *Evaluate* from the context menu. For more information on this topic, see *Rating Checkpoints and Checklists* (page 26)

 **Change Position...** For one or more checklist item, you can change the standard order using the operation *Change Position...* from the context menu. For more information on this topic, see *Changing the Position of Checklist Items* (page 27)

 **Responsible** You can display details about the person responsible for an checklist item by choosing the operation *responsible*.

4.4.3 The Tab of the Checklist

In addition to the information from the checklist data sheet, direct access to context-related technical objects related to the checklist is available using the tab on the window.

Change Log Displays the creation and change-related information in the context of checklist creation. In other words, with respect to the creator: *Created by, on*; with respect to the last change: *Last Modified by, on*. The information is managed by the system.

Checklist Items Displays the checklist items assigned to the checklist, which are used to rate the checklist. This view can also be used to edit or create new checklist items.

Documents The documents assigned to the checklist are available using this tab. If a checklist is to be documented in more detail, it can be assigned documents such as damage reports, test logs and the like. This can be done easily using Drag&Drop by dragging a document that has not been registered yet onto this tab. If the document has been recorded already, activate the *Documents to checklist new...* pop-up menu command on the *Documents* tab and search for that document using the selection catalog. The selection catalogs for the *Document No.* attribute initially only offers documents that are assigned to the same project as the checklist itself. Any possible document can be selected as needed by removing the “Project” search specification.

Status log Displays the data from the status log. Each status change that occurs is recorded in a status log, allowing it to be used as documentation for the editing process.

4.4.4 Creating a Checklist and Checklist Items

As shown previously, creating a new checklist is possible in the context of a project using the pop-up menu of the *Project Overview* or using the *Checklists* menu item in the *Projects* menu. The data sheet for creating a new checklist is opened using the *Checklists* menu item and the *New...* pop-up menu option. This also requires entering the project the checklist is to be assigned to. Then the checklist data is entered. The fields in red are mandatory fields and must be filled.

The checklist items for a checklist can then be created based on the checklist. As shown previously, this is also possible using the project overview in the context of a project and using the checklists within the project. Checklist items can be created or accessed via the data sheet of a checklist using the additional *Checklist Items* tab. Selecting the *New...* pop-up menu function opens the data sheet. Entering data creates the checklist item for the checklist. The checklist item can, in turn, be rated using the pop-up menu for the checklist item.

With regard to processing the data sheets of checklists and checklist items (using the *Modify* pop-up menu command), it is important to keep in mind that technical objects can no longer be modified once they have been rated. Modifications to the technical objects can be made only before they are rated and if you possess the corresponding rights. If rated technical objects are to be modified with respect to the changeable master data despite this, they must be converted to the initial status beforehand using a corresponding status change.

4.4.5 Rating Checkpoints and Checklists

Checklists are created and managed in the context of project tasks for which they document and record the quality of the work results as a rating. In the checklists, in turn, the work results are rated using a number of checkpoints where each established checkpoint is rated according to a provided rating scale.

The result of a complete rating of all inspection tasks is then shown in the checklist as a colored marking, which also causes the checklist to undergo a status change to the *Completed* status.

The rating of the inspection tasks can be accomplished in the project overview using tasks and the checklists for the tasks by selecting the checkpoints. The *Evaluate* pop-up menu item is then used to rate the checkpoint or checkpoints. The checkpoints do not have a workflow. The Evaluate operation supports multiple selection; in other words, several checkpoints can be rated in one work step. A selection catalog with a *RedGreenYellow* or *GermanSchoolmarks* rating schemes is available for rating checkpoints. The rating scheme is part of the checklist data record and is selected when that record is entered.

Rating checkpoints

The *Valuate* operation is at the top of the pop-up menu with a corresponding icon.

The ratings of checkpoints can be modified as desired as long as the checklist is not in the “Completed” status. When rating the first checkpoint, the checklist automatically switches to the *Evaluation* status if the associated task is being edited. The rating can be removed using the additional option “unrated”* in the rating selection.

The checklist rating is calculated and displayed immediately using the checkpoints rated so far when any checkpoint is changed. This allows you to see the interim grade at a glance in the project overview without having to expand the checklist. Checkpoints can be added to checklists that are in the *Evaluate* status at a later point.

An n:m relationship is used to assign work objects (documents, parts, etc.) to a checklist. This enables a quick Drag&Drop strategy and allows several objects to be assigned to one checklist. Checklists can also be created without a project relationship and without a relationship to articles and documents.

Changing the Position of Checklist Items

For checklist items, the system saves the order in which they are created. Checklist items are sorted according to this order. The following section explains how you can change the order of checklist items:

1. Select one or more checklist item that you want to move.
2. Click in the context menu the operation *Change position....*
3. A selection catalog opens
4. Select an checklist item. All selected checklist items are placed in unchanged order behind the checklist item selected here.
5. Confirm your selection by clicking the button *Select*.

This means that you have changed the order of the checklist items.

Note: The order described here cannot be effective in your installation due to a different configuration of the results list.

4.4.6 Reports for Quality Gates

A list of quality gates including their items can be created as a report in the form of a Microsoft Excel spreadsheet. The report is available for both projects and project tasks. To open the report for a project, select „*Reports...*“ in the context menu of a selected project. To open the report for a project task, select „*Reports...*“ in the context menu of a selected task.

Confirm your selection with OK. A mask opens in which you can customize the contents of the report:

Project number / Project The system displays the project for which the report is executed. The fields are not editable.

Task number / Task When the report is called for a task, the system displays the task on which the report is executed. The fields are not editable.

Quality Gate No./Quality Gate Here you can select a quality gate to which the list of items should be restricted.

K.O. Criterion When the option is enabled, the list of items is restricted. If this option is activated, only items with the property K.O. criterion set are listed.

Save Filter Here the current settings of the mask can be saved. If the report is called again, the stored values are preset. Confirm the entry with OK.

The report is opened with Microsoft Excel.

Open Issues

An almost “everyday project task” is handling questions and tasks that come up unexpectedly in the course of a project instead of being incorporated in the schedule chart as project tasks. These are typically entered as “Open issues”.

Open issues, for example, represent change requests or problems as part of a project. Open issues must be solved and, therefore, are characterized as tasks. These types of additional tasks can be registered as an *Open issue* quickly and on the fly. Less typically, an open issue is transferred to a regular task in the project structure plan after an accurate assessment. Thus, an open issue is a non-foreseen, “lightweight” task, while tasks of the project structure plan are planned in advance and are of a weightier nature.

Traditionally and conventionally, open issues are often managed in the form of a paper or computer spreadsheet for each project. Typical disadvantages of paper-based information management are avoided if open issues are managed in an information system. There are also advantages such as a regulated and flexible rights system, the option of automatic notifications in case of changes and a transparent and reliable status check.

Open issues are always created in the context of a project and can relate beyond the project to one of the project work objects *Project Task*, *Document* or *Part* - i.e. similar to: “Open Issue for Part No. ...” *Open Issues* can also be stored without any project, part or document relation. The n:m relationship is used to assign work objects (documents, parts) to an open issue. This enables easy Drag&Drop strategy and allows several objects to be assigned to one open issue.

It can be useful in everyday use to make completing all open issues of a work object a prerequisite for releasing the work object. However, completed *Open Issues* can also be brought back to *Execution*. In terms of rights, each project team member can create *Open Issues*. The creator has full access to the open issue as long as it has the *New* status. If the status is changed, for example to *Evaluation*, the creator loses the rights to the open issue if he/she is not the responsible party or the project member him/herself.

5.1 Menu Access

The menu item for searching for and editing open issues can be accessed in the navigation area under *Projects* → *Open Issues*. The hit list for the open issues is initially available using the *Search...* function.

Pop-Up Menu Call for Editing Open Issues

The procedure for editing open issues in the context of a project emerges when searching for and selecting the project to be edited and the access to the project using the *Project Overview* contextual command. The window areas of the *Project overview* graphical representation allow open issues to be displayed, modified and created using the *Open Issues* option.

Open Issues in the Context of a Work Object

Work objects for the *Open Issue* are assigned via the corresponding tabs offered with the data sheet of the *Open Issue*. *Documents* or *Parts* can be assigned to these tabs easily - e.g. using Drag&Drop, which can also be used to assign multiple objects to an *Open Issue*.

However, in a similar way, open issues can also be created or assigned starting from a document or article using their data sheets via the *Open issues* tab. The *Open issues* tab of a work object contains all associated open issues and makes it possible to directly other new open issues.

This is described using an article as an example. The starting point is the article in question, looked up and displayed in the hit list. This article's open issues can be accessed using either the *Open issues* pop-up menu command or the article master data and *Open issues* tab. All open issues for the article can be viewed and edited using this process. A new entry can be added if needed. The entry for the article is assigned automatically here.

5.2 Master Data

The attribute fields in the data sheet of an open issue are described below.

Attributes of an open issue

Project No./Project Number and name of the project in conjunction with which the open issue appears. Not configured as a key field by default and is therefore optional.

Task Name of the task in conjunction with which the open issue appears. Not configured as a key field by default and is therefore optional.

Title Concise designation and short description of the open issue.

Reported by /on Who reported the issue when? The registered project team member and current date is entered by default. If needed, another person and another date from the list of options or a freely selectable person can be entered.

Category Classifying the issue into a category. The default value is *Correction*. The values for the list of options can be maintained in the menu tree under *Project Management* → *Catalog Management* → *Open Issue Categories*.

Priority Input of a priority from a list of options. The default value is *normal*.

Description More detailed description of the issue in longtext form.

Waiting for/Reason If the processing of an issue cannot be continued because another person has to contribute first for further explanation/processing, the workflow status *Waiting for...* can be selected by changing the status of the open issue. Selecting this status requires details for *Waiting for...* and *Reason* in the status change mask. This information is taken over in the data sheet of the open issue. Therefore, the data cannot be changed there. If the status of *Waiting for...* is transferred to another status, the data in the data sheet are deleted automatically.

Status The current workflow status of the open issue. This field can only be affected using the *Change status* pop-up menu item. The attainable status are described further below under *Open Issue Status Change*.

done An illustration of the workflow status at one of the three values *yes*, *no* or *open*. More specifically:

- *Status Completed* or *Discarded* -> *Done* = *yes*
- *Status Deferred* -> *Done* = *offen*
- *Done* = *nein* applies for all other status values

The *done* value also determines the appearance of the icon of an open issue.

Attributes of an open issue characterized as a task

Responsible / Type Party responsible for completing the issue. The default value is the registered project team member. Another person can be selected from the list of options or using a free input. All members of the selected project are offered in the list of options.

Division Area to which the open issue is assigned.

Cost center Cost centers that are to be charged the costs accrued by completing the issue.

Due Date Date when the issue is to be completed. By default, once the date arrives, the open issue is shown to the responsible party in his/her task manager for processing.

Work Cost (budget, hours) Number of hours foreseen as necessary for completing the issue.

Material Cost (budget, EUR) Material cost in euros foreseen as spent for completing the issue.


5.3 Functions and Relationships


5.3.1 Open issues pop-up menu


If the open issues are available in a hit list, they can be edited using the pop-up menu. This requires that you select an *Open Issue* and right-click to open the associated pop-up menu.

The pop-up menu contains both general functions (explained in the “Standard functions” chapter) and special functions and commands for calling up the relationships of *Open Issues* for other technical objects.

Pop-Up Menu Items

 **Responsible** Shows the responsible parties for the selected task. This is displayed using the project role and the assigned project team member. These are, in turn, based on the organizational data. More information on this topic is available in *Project Team and Project Roles* (page 33).

 **Project** Project pop-up menu to which the open issue is assigned. If the open issue is assigned to a project, the provided selection of pop-up menu functions can be carried out on the project.

 **Task** Task pop-up menu to which the open issue is assigned. If the open issue is assigned to a task, the provided selection of pop-up menu functions can be carried out on the task.

5.3.2 The Open Issues Tabs

In addition to the information from the “Open Issues”, direct access to context-related technical objects related to the open issues is available using the tab on the window.

Description Using the *Descriptions* tab, an open issue can be carried out or viewed in detail using three long text fields. These contain the fields *Description*, *Solution* and *Comments*.

The *Description* input field is identical to the corresponding input field of the main data sheet for the open issue.

The *Solution* input field offers a place for information on how the issue is to be solved/has been solved.

The *Comments* display field is used to display all of the comments left via the *Comments* tab. No entry may be made here. The entries are sorted in chronological order and with a serial number, the author and the entry date so that a seamless history of all comments is available more or less at a glance.

Change Log This tab contains information on who created the data record and when, as well as on who changed it last and when (*Created by, on, Last Modified by, on*).

Comments Comments are created in the *Comments* tab of an open issue using the *New...* context command. Once a comment is entered, it cannot be changed. Any number of comments can be added. The *All comments* field contains all formulated comments in chronological order.

Documents/Parts If an *Open Issue* is to be documented in more detail, it can be assigned documents such as damage reports, test logs and the like. This can be done easily using Drag&Drop by dragging a document that has not been registered yet from the desktop onto this tab. The create dialog for documents appears.

If the document is already available in the system, activate the *Documents for the Open Issue New...* pop-up menu command on the *Documents* tab and search for this document using the appropriate selection catalog. The selection catalog for the *Document No.* attribute initially only offers documents that are assigned to the same project as the *Open Issue* itself. Any possible document can be selected as needed by removing the "Project" search specification in the selection catalog.

Status Protocol All status changes carried out on the *Open Issue* are logged in the status log. These are used for documenting the processing histories.

Change Log (details) The *Change log (details)* tab lists all revisions made to date to selected master data (category, priorities, responsibilities, etc.) of an open issue in ascending chronological order. In each entry (besides the initial one), only the attributes that have actually been changed compared to the directly preceding revision are listed. An empty entry means no revision.

5.3.3 Open issue status change

As part of a workflow, an *Open Issue* can assume the following status:

- New
- Execution
- Discarded
- Completed
- Deferred
- Evaluation
- Checking
- Waiting for ...

Here, every other status can be attained from a status by a corresponding status change. Exceptions include:

- The *New* status is an initial status and cannot be returned to.
- *Evaluation* cannot be reached from the *Execution* and *Review* status.

The *Waiting for* and *Reason* attributes must be assigned if *Warten auf...* has been selected as a target status.

Waiting for A person who is to contribute to the open issue before the execution by the actual responsible party can be continued. A selection catalog that contains all project members is used for selection.

Reason required information about what is being waited for and why. If the status is changed, the completed attribute and the icon depiction of the open issue are also changed, where appropriate.

done The respective status is illustrated corresponding to one of the three *done* values: yes, no or open.

- Status *Completed* or *Discarded* -> *done* = yes
- Status *Deferred* -> *done* = offen
- *done* = no applies for all other status values

(see [Master Data](#) (page 29))

5.3.4 Open Issue List as a Report

A compilation of open issues can be created and transferred to Microsoft Excel, a spreadsheet program. You must use Microsoft Excel from Microsoft Office 2000 or later.

The screenshot shows a Microsoft Excel window with the title 'Offene Punkte_Mon-07-Jun-2010-12-15-01_caddok.xlsx - Microsoft Excel'. The report is titled 'CIM DATABASE Report Offene-Punkte Liste' and is dated '07.06.2010'. The project number is 'CON-PCS-P000003'. The project name is 'Entwicklung von Beispielszenarien' and the description is 'Grundlage zur Erstellung von Demo-Daten'.

Nr.	Titel	Kategorie	gem. von	am	Status	Priorität	Verantw.	erled. bis	warten auf	Grund	erledigt
1	Weiterentwicklungsmöglichkeit Zusatz	caddok		20.11.2006	in Bearbeitung	normal					nein
2	Anwendungsbreite weiterer De Korrektur	caddok		21.12.2006	angelegt	normal		31.01.2007			nein
3	Klärung der Video-Codex zur E Korrektur	caddok		11.01.2007	angelegt	normal	Projektleiter				nein

Fig. 5.1: Example of a open issue list in Microsoft Excel

Use the *Reports* → *Open issues* pop-up menu command if you would like to display a project's open issues. Select the appropriate project to begin creating an "Open issue report" (e.g. in the hit list or as top node of the project overview). The *Reports...* operation is located in the pop-up menu. To start creating a report, call up the selection mask for creating the report, which is an option in the context of the project. The *Open issues* report must be selected under *Report* as a configuration criteria.

The open issues to be depicted in the list can be restricted for creating an open issues list using the dialog.

Project No./Project Restricting the open issues list to a certain project.

Task No./Task Restricting the open issues list to a certain project task. The list of options provides all tasks of the project entered in the *Project No.* field in a structured form. If no project is selected yet, all projects are provided with their tasks. A project should always be entered in the *Project No.* field first since there are usually a great deal of projects.

Reported from / to Restriction to a time period in which the open issues have been reported.

Priority Restriction to open issues with a certain priority.

done ? Summarized status that is to be taken into account exclusively.

Project Team and Project Roles

Persons participating in a project are assigned to the project as a project team. A team member takes on specific roles in the context of the project (e.g. project manager), thereby receiving specific access rights. Team and role assignments can only be made by the respective project manager or by the administrator (with administrative rights).

For each project, the structure tree of the project role overview displays the project team, roles and role assignments for individuals.

Access Management Organization for Projects

Access rights are managed based on access control domains, in which specific access rights are assigned for selected technical objects (e.g. project documents). One example is the access control domain (“projects:all”), in which the project manager is given full access rights while other project roles are granted graduated access rights such as “read only”. Since these roles are filled per project and access rights are dynamically assigned to roles, a flexible rights system is available for project management. Access to project documents etc. can also be controlled via access control domains. With the configuration of exclusive rights within access control domains, a project can be protected from external access. For example, only project members could access project documents. The usage practices for access control domains are to be taken from the administration manual *Administration and Configuration*.

6.1 Project Team

A project team can be assembled according to various procedure methods. An example is shown as follows: As a relationship of individual persons to the project via

- the project master data, *Project Team* tab;
- the project overview in the lower part of the structure tree with the *Project Team* selection;
- the pop-up menu of a selected project by means of the *Project Team* operation.

People can be added to or removed from the project team via the available pop-up menu options. If, for example, the project data sheet was opened via the *Information* operation, team members can be assigned via the *New Project Team...* pop-up menu command or via Drag&Drop, directly from a personnel hit list. The Drag&Drop method presents an efficient opportunity to simultaneously select and assign multiple people.

Every person assigned to the project team also automatically receives the *project member* role, including the minimum authorization rights within the project. Conversely, each person assigned a project role is automatically added to the project team. Those assigned a project task at a later project planning date, in the context of resource or requirements allocation, are also automatically assigned to the project team.

6.1.1 Pop-Up Menu Options for Managing the Project Team

The *Project Team* pop-up menu tab displays available operations for managing the project team, which are explained in detail as follows.

New Project Team... The data sheet for assigning a person to the project team opens via the *New Project Team...* pop-up menu item. The field *Person No.* must be filled out by selecting a person from the catalog. A person can only be assigned to the project team once.

Delete Project Team... When this pop-up menu item is chosen, all selected persons are removed from the project team. If no person is selected, this command is not available.

Project Team Information When one of these pop-up menu options is chosen, the data sheet opens with the *Project ID* and *Team Member* information. Selection of a team member is supported via a catalog. A team member entry makes direct access to the associated personal data record available in hyperlink form. The *Role Assignment* tab is also available. If no person is selected in the hit list, this command is not available.

A person can be assigned to project-specific roles via the *New...* pop-up menu option in the *Role Assignment* tab. Assigning roles via this tab is an alternative method to the role assignment procedure described in Section *Assigning Project Roles* (page 35).

The additional pop-up menu items are predominantly operations that relate to management of personal data records. They are explained in the application manual.

6.1.2 Putting Together a Project Team Using Drag&Drop

Using Drag&Drop is the easiest option for putting together the project team. The project data sheet must be opened for this using the *Information* pop-up menu function. Then, the *Project Team* tab must be selected. Team members can now be added to the project from any personnel hit list using Drag&Drop. Multiple team members can also be added at the same time using multiselection.

Similarly, persons can also be dragged from within the *project overview* onto the *project team* folder to accomplish the same result.

6.2 Project Roles

Persons participating in a project assume certain roles in the project context. Examples of project roles are *Project manager* or *Project assistant*.

The *Project manager* and *Project member* roles are created when creating a new project.

When you create a project, a project manager is defined. This does not apply to project templates. The system ensures that at least one person is defined as project manager at any time.

Depending on the assumed project roles, persons receive different access rights to project data or technical objects assigned to them. Examples of assigned technical objects are documents or parts. Each person assigned to the *project team* (page 33) automatically assumes the *Project member* role and receives a basic version of access rights.

Persons that have been classified to execute a task as part of a resource or fund allocation are assigned to the project team automatically as a project member.

Note: Using project-specific access grants depends on the respective configuration of the system. Project roles can also be used solely for informational purposes without having an effect on the access rights of the project team member. If necessary, please ask your system administrator which access rights are assigned by assigning a project role to a person.

6.2.1 Defining project roles

It is not usually required for the project manager to set up other project roles since they are already created automatically when a new project is created. However, if defining additional project roles is required, it can be done using the *Project Roles Overview* option in the context menu of a project.

Durch Auswahl von *Neu...* aus dem Kontextmenü der unteren Trefferliste wird die in Maske zum Hinzufügen von weiteren projektspezifischen Rollen zum Projekt angezeigt. Das Feld *Rolle* muss durch die Auswahl einer Rollenbezeichnung aus dem bereitgestellten Katalog gefüllt werden.

New project roles, which - as described above - can be assigned to the projects, can be created using the *New...* context operation in the “Project role catalog” selection window and requires the corresponding administration rights in the system.

Um die Bearbeitung der Projektaufgaben zu unterstützen, wird an den Projektrollen verzeichnet, ob der betreffenden Rolle eine Aufgabe zugeordnet wurde und ob die Rolle bereits durch mindestens eine zugeordnete Person gedeckt ist.



Projektrolle gedeckt Der Projektrolle ist bereits mindestens eine konkrete Person zugeordnet worden.



Projektrolle perspektivisch ungedeckt Der Projektrolle ist noch keine konkrete Person zugeordnet worden. Derzeit ist allerdings auch noch keine dieser Rolle zugeordnete Aufgabe in auf den Status *bereit* oder in *Umsetzung* genommen worden.



Projektrolle aktuell ungedeckt Der Projektrolle ist noch keine konkrete Person zugeordnet worden. Derzeit existieren eine oder mehrere Aufgaben, die dieser Rolle zugeordnet wurden und die sich im Status *bereit* oder in *Umsetzung* befinden. Damit haben diese Aufgaben derzeit keine explizit verantwortliche Person für ihre Umsetzung.

6.2.2 Assigning Project Roles

The following types of project roles are distinguished when assigning them.

- Role assignment directly to persons. This is usually the case.
- Role assignment to common roles. Correspondingly, project roles are assigned indirectly to the holders of common roles.
- Role assignment to other project specific roles. Project roles are indirectly assigned to holders of other project roles.

The last two types of role assignments are usually for specific cases. There are various options on the interface for assigning project roles. We recommend using the *Project Roles Overview* pop-up menu option for the respective project. The different types of role assignment are described in greater detail in the subsections below.

Note: Different options are provided depending on the context in the lower part of the *Project Roles Overview*. These options are used for inspecting and editing the data records. Role assignment to *persons*, *common roles* or *project-specific roles* are the three options described below. For information on the other options offered, refer to the *Administration and configuration manual*. For example, refer to the documentation under *Administration* → *Rights management* → *Exceptional authorization* for more information on *Exception assignment to...* options.

Role assignment to persons

The following section explains how to assign project roles to team members. It is assumed here that the *Project Team* (page 33) and *Project Roles* (page 35) have already been created.

If the project is highlighted in the middle window area of the *Project Roles Overview*, then, the *Team members* option can be selected in the lower window area. In the lower window area, these settings are used to display all

persons belonging to the *Project Team* (page 33). Project team members can now be moved via Drag&Drop onto the desired roles. Multiselection allows multiple persons to be assigned to a role at the same time.

The role assignment to persons mask is displayed each time a role is assigned. No entries are required in this mask when assigning using Drag&Drop, since all fields are already preassigned.

Project No. / Role The project-specific role to be assigned. These fields are preassigned for the recommended procedure.

Person If not preassigned, a catalog is displayed for selecting a person. The catalog provides a selection of all persons belonging to the project team. Persons not belonging to the project team cannot assume a role in the project. The field is already preassigned for the recommended procedure.

Role assignment to common roles

Project-specific roles can also be assigned to holders of common roles instead of to persons. Common roles do not just apply in the context of a certain project, but rather generally. Common roles are managed by the system administrator. An example of a common role is *Managing director*. For example, if you would like all managing directors in a certain project to assume the role of a project manager, the project-specific project manager role can be assigned to the general role of managing director.

Common roles are assigned using the *Project Roles Overview*, with a selected option for assigning roles to common roles in the lower window area. The roles to be assigned are displayed in the middle of the window area and the *Role assignment to common roles* option has been selected in the lower window area. The mask for assigning common roles is opened by selecting the *Role assignment new...* pop-up menu option in the lower window area. Existing role assignments can be edited by selecting the operations of the pop-up menu.

Project No. /Role The project-specific role to be assigned. These fields are preassigned for the recommended procedure.

Assigned role The common roles to which the above-mentioned role is to be assigned. The *Assigned role* field is filled by selecting a role from the catalog. The catalog provides a selection of all common roles.

Application example

The *common managing director role* is assigned the *project-specific project manager role*. The *managing director* role is assumed by the person Paul Cordes. This results in Paul Cordes also assuming the *project-specific project manager role*.

As an alternative, you can also assign the person Paul Cordes directly to the *Project Manager* role. (see *Role assignment to persons* (page 35)) However, the disadvantage of this version is that when another person becomes managing director, the role must be adapted in all project-specific role assignments. Using the “common managing director role” offers the advantage of determining the managing director automatically.

Note: By assigning project roles to common roles, project roles can potentially be occupied by persons not assigned to the *project team* (page 33). Therefore, these persons cannot be looked up using the *Project Team* project tab!

Role assignment to project-specific roles

Assigning other project-specific roles is useful if the projects exist together in a logical context, for example, if a project has subordinate subprojects. The *project manager* of the parent project could also potentially assume the *project manager* role in the subproject. If the project manager of the parent project changes, the corresponding project manager role also changes in the subproject automatically.

Project-specific roles are assigned using the *Project Roles Overview*, with a selected option for assigning roles to project-specific roles in the lower window area. The roles to be assigned are displayed in the middle of the window area and the *Role assignment to project spec. roles* option has been selected in the lower window area. The mask

for assigning project-specific roles is opened by selecting the *Role assignment new...* pop-up menu option in the lower window area. Existing role assignments can be edited by selecting the operations of the pop-up menu.

By assigning project roles to other project-specific roles, project roles can potentially be occupied by persons not assigned to the project team. Therefore, these persons cannot be looked up using the Project team project tab!

Looking up roles in projects

In addition to the standard search operations, the system also offers the option to search projects based on project role assignment. This searching option allows you to search for any project roles and a selectable role holder.

In the search, in-depth role hierarchies are taken into account, which contain cross-contextual role assignments to common roles or cross-project role assignments. The mechanism can also be used for any organizational context.

Effort Recording

Alongside handling project content, effort recording and effort monitoring assume considerable importance. Time sheets enable differentiated, task-oriented recording of work performed. Time expenditure for a task is documented with the help of standalone time sheet entries.

The system enables direct time tracking of individual tasks, so that time expenditure can be mapped and edited straightforwardly. When logging new time expenditure data, relevant values are already present via task preselection. These can then be applied and completed with additional entries. Previous effort records are also available in the effort record listing. In turn, reports can be created in list form from the time entries to present the recorded time expenditure. These flexible, customizable reports make “real-time project management” with direct time expenditure monitoring possible. The data provided can then be processed and used in further application.

With *Effort Recording*, effort can be conveniently recorded according to project, task or workday via a special recording window. It is important that project team members are assigned only those projects and tasks for which they can enter their time expenditure.

7.1 Home Screen for Effort Recording

Effort records are usually accessed via the *Projects* → *Details* → *Effort Records* menu item. The data entry window, available via the pop-up menu, is opened by selecting the *Record* operation. Alternatively, the data entry window can also be opened through any of the other access options for calling up time expenditures (e.g. Project Overview or the Time Expenditures tab).

Project team members view their entries for the current week by default – insofar as there are any. The current day is highlighted so that data can be entered directly.

If needed, personnel and weekly assignments can be changed in the upper field. Clicking the *This Week* button brings the view back to the current week. The calendar button enables selection of specific weeks further in the past.

The effort records are automatically grouped into the appropriate days of the week and are sorted according to entry order within a day (most current on top). Each day has its own header, even if there are no entries for a given day.

A day is open by default and remains open until the project team member closes it via the *Close* button. Additional time expenditures can only be assigned to a day while the day is in open status. The header therefore serves as input dialog. Closing a day helps the project team member easily view and note which days are completed and can be put out of mind.

The days are color coded for easy visibility:

- *Day open and target hours achieved* = green
- *Day open and target hours not yet achieved* = red
- *Day closed* = gray

The system retrieves the target hours from the calendar. If no calendar is used, the value defaults to 8 hours daily. The project team member can close a day even if the target hours have not yet been achieved. A closed day can be reopened for editing at all times.

Entering a new time expenditure To create a new time expenditure, the project team member fills out the respective day's header and clicks the *Save* button. The project and task catalog supports data entry via the catalog. For example, a list of the three most recently used projects or tasks (tasks independent of an entered project) is available, sorted according to frequency of the particular entry. Otherwise, by default the catalog receives only those projects to which the project team member is assigned and those tasks she is responsible for.

The field *Description* can be edited freely or filled by using the catalog. The catalog offers checklists, checklist items or issues with configurable properties. These properties can be customized by your system administrator using configurable rules.

You must fill the *Performance Type* by using the catalog. The values of the catalog can be customized by your system administrator.

It is mandatory to fill out all input fields. The input field selection is changed by means of the Tabulator key, and the Return key, along with the *Save* button, closes the dialog. If the dialog is exited without this confirmation, the previously entered data remains in the fields unless the effort recording program is entirely exited.

Timer Instead of manually entering the hours, the user can use a stopwatch. To start it, he presses the corresponding button next to the hour field. The clock changes to an empty prohibition sign and below the hour field the start time becomes visible. The clock can be stopped at any time by a new click, so that the time in hours is updated. The measured duration is added to the existing effort. As long as the input dialog box is not closed, timekeeping can be resumed at any time and further times can be added. This is possible even if an hour entry was made manually first.

Changing an existing time expenditure So long as a time expenditure entry has not yet been archived, the entry can be changed. Closed entries must first be reopened for changes to be made. To make changes, click the *Change* button. The corresponding entry is then displayed in the header as well.

The following time expenditure totals are visible in the data entry window:

- The *weekly total* is added up once below all day descriptions.
- Individual *daily totals* are located below the respective day.

If the day is not yet closed, the sum total of hours to be rendered is available in gray font in the hours entry field of the header. It is available here as a suggested entry, so long as the project team member does not enter any data here.

The project member can use the following filters when searching for certain effort records:

- *Incomplete* displays open days only, for which target hours have not yet been achieved
- *Open* displays open days only, whether incomplete or not
- *Mo-Su* also displays the headers for Saturdays and Sundays. This is the default only when the current day is a Saturday or Sunday.
- *Project*, available via the list of options, makes it possible to filter out entries for a specific project. The catalog function appears in the same way it does for time expenditure input.
- *Task*, available via the list of options, makes it possible to filter out entries for a specific task. The catalog function appears in the same way it does for time expenditure input.

The filters remain active even when changing the week. The buttons in the data entry window indicate what the project team member is currently accessing: i.e. a button is displayed in gray font if not usable. Example: The *Save* button is then only active if all input fields are filled out.

Effort records are found again in the hit lists, tabs and data sheets of the effort recording.

7.2 Access to Effort Records

Effort records are usually retrieved and looked up via the ‘time sheet entries’ menu item or in the context of a concrete project task.

For a project hit list, time expenditure for the project or its tasks can be looked up via the *Project Overview* pop-up menu item. The task for which effort records are to be displayed is selected in the upper area of the overview window. The *Efforts* option is selected in the lower area of the overview window. The displayed time sheet entries can be processed via the pop-up menu options from the bottom hit list. The pop-up menu command *Record*, in turn, initiates the capture window.

7.3 Master Data Sheet

Effort records can be displayed or edited using the data sheet. The data sheet is usually opened using the *Information* or *Modify...* functions from the pop-up menu of a task of the task structure.

Project No. / Project name The project where the effort is incurred.

Task The name of the task to which the effort is assigned.

Person The person for which the effort is entered. Upon creation, the field is pre-filled with the person’s personnel ID. Efforts can also be entered for persons that are not recorded as project team members.

Day The date when the effort is incurred.

Hours The incurred effort in hours.

Description Short description of the task that led to the effort.

Location The location where the efforts are incurred. Efforts are incurred on-site at the customer or booked at the in-house location. This field is intended for later use and is pre-configured accordingly.

Status This field is intended for later use and is pre-configured accordingly.

7.4 Effort Report

The effort report presents the time expenditure of a project or task in Microsoft Excel table form and calculates the sum of the time entries.

Reports of all *efforts* of a project or task can be started using the *Reports...* context menu option. Time expenditures to be included in the report can be restricted by means of a dialog window.

Project No. / Project The project for which the report is created. These fields are always prepopulated automatically.

Task No. / Task Restriction to a specified project task. All subtasks are always included. If the report was started from the pop-up menu of a task, these fields are then automatically prepopulated. If no task is selected, all project tasks are included.

from / to Restriction to a specific time period in which the time expenditure was entered. If these fields are empty, no date-dependent restrictions will be made.

Person / Alias Restriction to effort records for a specific person. If no person is selected, the time sheet entries of all individuals will be included.

billable Restriction of time expenditures to a specific billing type.

Sort Establishes the sort order of the time expenditures displayed in the report.

Additional information on report output configuration options are available in the PowerReports documentation.

Schedule Planning

The system also supports schedule planning for projects. Scheduling and milestone planning in projects is displayed in the form of a bar chart or Gantt chart. A Gantt chart is ideal as a centralized communication, planning and controlling instrument in a project. It shows the logical relationships, processing periods and other details (such as collaboration) for work packages. This happens in a direct way in conjunction with all of the other work information and technical objects that are to be processed as part of the PDM/PLM tasks.

Potential questions and procedures for planning schedules and milestones in a project could include:

- “When do the various tasks and milestones have to be completed?”
- “Which tasks have to be completed when before the next stage can start?” (... for determining logical links between work packages)
- “How much longer is the completion of the task expected to take?” (... for analyzing the processing period per work package, checked against the workload level for the persons involved)
- “Is the scheduling realistic? Do other fixed deadlines have to be taken into account?” (... for fine-tuning and rework directly in the system)

The *Schedule Chart* lists all the tasks of a selected project and displays them in a Gantt chart on a timeline. The bar graph can be edited interactively, similar to the modification options in Microsoft Project that you may be familiar with.

8.1 Schedule Chart

The primary task of the *Schedule Chart* function is to support project team members with detailed scheduling after the creation of project tasks. The *Schedule Chart* ensures this with a clear overview of the project structure using a Gantt chart. The *Schedule Chart* visualizes the tasks together with their dependencies and gives the project team member a quick overview of the project workflow.

The schedule data graphically represented in the time schedule is identical to the data of the same name in the task data sheet. The schedule is accessed







- via the project overview in which time schedules are listed in a separate category
- Via the pop-up menu of the respective project, for example, selected via the hit list. If the project contains multiple time schedules, a list of the time schedules is provided for selection.
- via the navigation tree in the category *Projects > Time Schedules*


For each created project, a time schedule is also created automatically.

The project team member can receive more detailed information on the individual tasks using the tool tip that is shown when moving the mouse pointer over the taskbar. The start, end and duration in working days are specified here.

Buttons for Controlling and Managing the Schedule Chart

Filter If you enter text here, only the tasks that contain this text are shown in the time schedule. The filter is removed again by removing the text.

-  **Fully expand from selected node** The button fully expands the tree structure under the marked objects.
-  **Show parent objects** This button includes the top parent object in the time schedule. Should this function be used on a task, for example, the top parent would be the project to which this task belongs to.
-  **Refresh data** Reloads all data in the time schedule. In this way, the time schedule can be refreshed if changes are made to the received data in another tab or by another user.
-  **Go to** Jumps to the start of the highlighted task in the Gantt chart.
-  **Go to today** Jumps to the current date in the Gantt chart.
-  **Adjust the display period to plan** Adjusts the Gantt chart to the available space so that, if possible, the entire planning period is visible. However, this is only possible if the chart does not fall under the minimum width of the calendar scale columns.

Simultaneously push the Ctrl button and the button to enlarge the calendar scale automatically so that the scheduling period is adjusted in the visible area in every case.
-  **Zoom** Zoom the Gantt chart scale in/out in steps using the magnifying glass buttons. In this process, the scale units (days, weeks, months, years) and the scale of the chart are changed. To adjust a desired analysis period accurately, you can also click the corresponding time unit in the calendar scale, e.g. a certain month or quarter. This is used to adjust the visible area of the Gantt chart accurately to this time range.

Creating a Time Schedule

If a time schedule is not located in a project or if you require additional time schedules, you can create a new time schedule in the *Project Overview*. To do so, right-click the *Time Schedules* category and select *New...* Give the new *Time Schedule* a name in the dialog that is displayed and specify a *Primary Project*. Through the *Primary Project*, the time schedule receives the rights context of this project so that, for example, it is visible for all team members as soon as it has the status *Valid*. After confirming the dialog, the new time schedule appears in the corresponding *Project Structure* category.

Creating Tasks in the Time Schedule

In the *time schedule*, you can create tasks and modify them without needing to change the project or task overview.



Time Schedule operations Klicken Sie auf das “i” um das Datenblatt des Terminplans in einem neuen Reiter anzuzeigen. Klicken Sie auf das Pfeilsymbol, um das Drop Down-Menü anzuzeigen, in dem Sie die verschiedenen Operationen des Terminplans auswählen können.

-  **Objektbezogene Operationen** Klicken Sie auf das Operationen-Icon, um das Drop Down-Menü anzuzeigen, in dem Sie verschiedene Operationen für das Projekt bzw. die Aufgabe auswählen können.

You can create new tasks by highlighting a project in the time schedule and selecting *Create Task*) from the operation menu. The task screen, in which you can define the task’s properties, is displayed. After your confirmation, the new task is attached at the bottom of the task list in the project. To subdivide this further, highlight a task and select *Create subtask*). This is how you can nest tasks as deeply as you want into your project structure.

Changing a Task Position

To change the order in which the tasks are arranged, display the *Position* column (see *Table columns*). There, edit the position numbers to change the order of tasks.

Task Groups

Task groups, which are all tasks that contain subtasks, are displayed with two bars in the Gantt Chart. The same is true for projects. The top, dark bar represents the target duration, while the bottom lighter bar shows the Bottom-Up duration.

Apply bottom-up values automatically

If, in the data sheet of a task group, the option *Use Bottom Up Values as Target Values* is switched on, both bars are always kept synchronous.

- The task group is in this case always set with *Automatic Calculation*.
- The task group's dates cannot be changed manually. Only a constraint (e.g. "Start no earlier than...") can be set.
- A task group's relationships and constraints also affect all of the subtasks.
- If you make changes to the subtasks that influence the dates of the task group, the target dates are adapted automatically.

Do not apply bottom-up values automatically

When in a task group's data sheet, the option *Automatically Adopt Bottom Up Values as Target* is not checked, changes of the task group's and subtasks' target dates influence each other to a lesser extent. In this case, the top bar can possibly show different target dates than the Bottom-Up calculation of the subtasks would yield.

- You can change the task group's dates manually, without thereby changing the subtasks and vice versa.
- Task group's relationships affect (by automatic calculation) only the task group and not the subtasks.

The conflict must then be resolved manually by the project participants.

Exception: For automatically calculated subtasks with constraint type "as soon as possible", the start date of the task group still applies as boundary condition and for subtasks with "as late as possible", the end date of the task group.

Modifying Tasks in the Time Schedule

Multiple options are available to you to modify tasks in the time schedule.

Inline editing

Tasks can be edited directly in the Gantt chart table. In a previously highlighted task (or project), simply click in a cell, e.g. the name cell, to reach editing mode and enter the desired changes there.

Modify

Mark a task or a project in the Gantt chart table and select the *Change* entry from the operations menu. The *Task* (or *Project*) screen appears, in which you can apply the desired changes. You can reach the respective screen even more quickly by double-clicking a task or project in the Gantt Chart table.

More detailed information on the properties that can be changed here are described in the sections [Projects](#) (page 4) and [Work Breakdown Structure and management](#) (page 14).

DragDrop


If you want to change task dates, you can also achieve this directly in the Gantt Chart by using Drag&Drop for the project and taskbars. If move the mouse pointer over a bar in the center, it transforms into a black double-arrow.


Drag the bar to the left or right to move the task. While dragging the bar, you will see a preview of the exact schedule dates in the tool tip that the task receives once you release the mouse button.

To change the beginning or end of a task, move the mouse pointer over the bars at the respective end of the task. The mouse pointer changes into a white double-arrow. Now, if you drag, only the date on the end selected is changed and the duration of the task is adjusted accordingly.

Table Columns

You can configure which information is to be shown in the table section of the Gantt chart.

 **Choose columns** Click the table symbol to the far right in the table header to display a list of available columns. You can place or remove a checkmark in this list for each column to define whether the column is to be displayed. By using Drag&Drop in this list, you can define the sequence of the columns. Once you have completed your desired configuration, click the save button at the bottom end of the list. The columns are now assigned accordingly.

 **Minimize Columns** To quickly expand the available space for the Gantt Chart, select the *Collapse* symbol on the top right in the table header. This hides all table columns that are located to the right of the name column so that the Gantt Chart can occupy a wider space. By clicking the symbol again, the table is expanded back to the standard column configuration.

You can change the column width by holding the right margin of the column in the header with the left mouse button, adjusting the desired width by sliding the mouse and releasing the left mouse button.

Task Dependencies


For illustrating the process planning, tasks in the time schedule can be linked using task relationships. This makes it possible to automatically calculate the effect of a date change on the subsequent tasks. Subsequent, directly or indirectly linked tasks will have their dates automatically adjusted, where appropriate, as long as their checkbox *Automatic Calculation* is checked and the constraint dates allow the corresponding adjustment. All relationship conflicts, which cannot be solved by the automatic calculation algorithm, will be displayed with a red arrow.

Furthermore, task dependencies are used to control editing sequences, for example, by releasing tasks for editing and starting them only once the predecessor is complete. For example, first the “Delivery of components” task must be completed so that the “Assembly of delivered components” task can start.

The typical link types as they are used for project tasks are available:

- Finish-Start, FS: The successor may only start once the predecessor is completed (normal sequence)
- Start-Start, SS: The successor may only start once the predecessor has started (start sequence)
- Finish-Finish, FF: The successor may only finish once the predecessor has finished (end sequence)
- Start-Finish, SF: The successor may only finish once the predecessor has started (jump sequence)

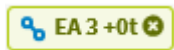
You can define a relationship between two tasks by entering the corresponding acronym and row number (not position!) in the column *Predecessor* or respectively *Successor*. If the columns are not displayed, that can be changed using the column configuration.

 **Dependency Status** You can show/hide the predecessor or successor column much more quickly and conveniently by clicking the arrow pointing to the left (predecessor) or the arrow pointing to the right (successor) in the *Dependency Status* column. The respective column is then shown/hidden immediately.

To create a task relation, type the acronym of the link type and the row number of the other task. For example, to create a finish to start relationship between the tasks in rows 2 and 3, first check the column *Successor* to be displayed in the column configuration, if it's not already. And then, in row 2 of this column, type SF3 (similarly, typing SF2 in the column *Predecessor* of row 3 would achieve the same result)

You can also establish fixed time gaps for relationships. When between the two tasks, a gap of 5 days must be maintained, type: FS3+5d. For desired overlaps, use a negative gap: FS3-5d

When a task should have relationships to several other tasks, you can type the acronyms separated by a coma. The successor cell contains “FS3, FS5” when the task has rows 3 and 5 as successors.



Task Dependency In the predecessor or successor column, your entry for a new task dependency is converted into a symbol, which provides more information and operating options:

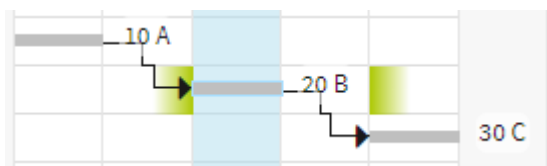
- It includes the abbreviation for the link. If the row number is missing in the abbreviation, the linked task is not included in your time schedule or is located in a closed structure node.
- In this case, click the link symbol to show the non-visible task or load it into the time schedule. This fixes the task to the time schedule, i.e. the pin symbol is placed in the *Fix* column. More information on this can be found in the *Individual time schedules for multi-project planning or detail observations* section.
- The color indicates whether there is a schedule conflict for this task dependency. If this is the case, the symbol is red; otherwise, it is green. In the case of a schedule conflict, an exclamation mark is also displayed above the link symbol.
- Delete a task dependency by clicking on the X in a link symbol.

The task dependency is represented in the Gantt Chart by an arrow between the linked ends of the two tasks. If the task dependency is violated, i.e. a conflict has developed in your scheduling, the link arrow is shown in red.



Time Constraints Wenn Sie eine Aufgabe markieren oder mit dem Mauszeiger darüber fahren, werden Ihnen im Diagramm die Termingrenzen angezeigt, die vom Beginn bzw. Ende der Aufgabe eingehalten werden müssen, damit die Aufgabenbeziehungen erfüllt sind.

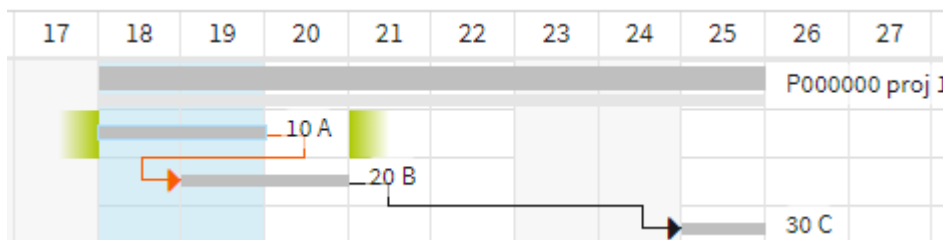
Als Termingrenzen werden der frühest mögliche Anfangstermin (Symbol nach links verblassend) und der spätestmögliche Endtermin (Symbol nach rechts verblassend) angezeigt.



Die Termingrenzen werden unter Berücksichtigung des ganzen Netzwerks berechnet, d.h.

- für den Anfangstermin: Die Aufgabe könnte frühesten an der Termingrenze enden, wenn alle Vorgängeraufgaben konfliktfrei terminiert wären.
- für den Endtermin: Die Aufgabe könnte spätestens an der Termingrenze enden, wenn alle Folgeaufgaben konfliktfrei terminiert wären.

Beispiel: Wenn man Aufgabe A und B soweit wie möglich nach hinten schieben würde, ohne das Projektende zu verschieben, dürfte Aufgabe A spätestens am Tag 20 enden (und Aufgabe B spätestens am Tag 22).



Die Farben des Symbols bedeuten:

- Grün: Der tatsächliche Anfang liegt nach der Anfangstermingrenze bzw. das tatsächliche Ende liegt vor der Endtermingrenze.

- Rot: Es liegt ein Terminkonflikt vor, d.h. der tatsächliche Anfang liegt vor der Anfangstermingrenze bzw. das tatsächliche Ende liegt nach der Endtermingrenze.

Zu beachten: Wenn keine Einschränkungstermine verwendet wurden, werden die Termingrenzen so angezeigt, dass Projektanfang und -ende eingehalten werden. Wenn Sie jedoch Einschränkungstermine wie *Ende nicht später als* oder *Muss enden am* verwendet haben, werden die Termingrenzen so angezeigt, dass diese Einschränkungstermine nicht verletzt werden.



Dependency Status The *Dependency Status* column provides you with a very brief overview of the presence of schedule conflicts. There, for each task, you can immediately detect whether there are schedule conflicts for other tasks, even if linked tasks are not currently visible.

- A predecessor/successor symbol in red means that there is at least one conflict for a predecessor/successor.
- A predecessor/successor symbol in green means that all relations to predecessors/successors are conflict-free.
- A predecessor/successor symbol in white means that no relations to predecessors/successors are available.

Click the symbol to have the corresponding column displayed.

Adjustment options for tasks

Changing a task's dates, due to its relationships, can affect the successor tasks. Here you can decide if the time schedule should only show the conflicts or carry out automatic adjustments, by activating or deactivating the checkbox *Automatic Calculation*.

- Automatic tasks: when a task is set as **automatic**, the planning algorithm takes over the task's time positioning on the basis of the linked predecessors and any constraint dates. However, a date shift will only be performed when the task has not already begun.
- Manual tasks: when a task is set as **manual**, the planning algorithm will not change the task's preset dates. All predecessors and successors of the task will compute their earliest start and latest finish based on the manual task's dates and not based on its earliest or latest possible position.

Note: Note that in case of any conflicts during the automatic calculation, the constraints have priority over the relationships to other tasks. The potential relationship conflicts will be signaled with a red highlight.

Individual Time Schedules for Multi-Project Planning or Detailed Observations

The time schedule that is created automatically for each new project is not the only possible time schedule. If you require a time schedule for a multi-project view or want to create an extra time schedule for partial aspects of your project, you have the option to compile as many time schedules as desired with various content. During this process, projects and tasks can be conveniently included in multiple time schedules, because there is only one of each time schedule element and the projects and tasks are only linked to this element when being added to a time schedule.

Fixed Time Schedule Elements

To assign a time schedule element - a project or task - to a time schedule, it has to be fixed to the time schedule. You can detect fixed objects in the time schedule by locating the pin symbol in the *Fix* column. Fixed time schedule elements can be expanded at any time in the time schedule so that all subordinated tasks are visible in the time schedule.

Fix new time schedule elements

You can add new time schedule elements to a time schedule (fix) in the project overview. Expand the *Time Schedules* category. All time schedules assigned to the project are listed here. To fix tasks from the same project, drag them to the desired time schedule in the project overview. To fix other projects or tasks from other projects to

the time schedule, assign a hit list or project/task overview next to it and drag the desired time schedule elements across windows to the time schedule in the project overview.

Desweiteres haben Sie die Möglichkeit im Kontextmenü des Terminplans die Operationen *Projekt hinzufügen* und *Aufgabe hinzufügen* aufzurufen, um Objekte dieses Typs auszuwählen und damit in den Terminplan aufzunehmen. Diese Operationen stehen ihnen ebenso innerhalb des geöffneten Terminplans zur Verfügung.

Fixed time schedule elements at multiple classification levels

You can also fix a task that is subordinate to a fixed task by clicking the pin symbol in the *Fix* column. Using the pin symbol, the task is now labeled “fixed”. If you want to collapse the higher-level time schedule element, the subordinate element is not hidden, but rather displayed at the uppermost hierarchy level. In this way, you can also ensure that certain tasks that you would like to keep displayed are never hidden.

Accordingly, a task that you display via the *Link symbol* in the *Predecessor* or *Successor* columns (see *Task relationships*) is fixed to the time schedule below. If the task was hidden because it was located in a closed task group, it is hidden at the uppermost classification level as soon as it is visible by expanding the task group within the hierarchy. If you close it again, the fixed task is attached to the bottom again as long as it is fixed.

Disconnect time schedule elements from the time schedule

To remove fixed time schedule elements from the time schedule again, click the pin symbol in the *Fix* column. If a parent object is not fixed either, the task disappears immediately from the time schedule.

Fix subnode

If a time schedule element is fixed to a high hierarchy level, but you only want to have a subordinate subnode in the time schedule, first fix the subordinate subtask and then remove the higher-level time schedule element from the time schedule. This hides the latter from the time schedule, but the subordinate task remains fixed.

8.2 Exporting the Time Schedule

Time schedules, including Gantt Charts, can also be exported to Excel. To do so, highlight the desired time schedule in the project overview or in a hit list and select *Export Gantt* from the pop-up menu. Now, you receive a dialog in which you can configure the time range for the exported time schedule and which time scale is to be used for the bar chart (days, weeks or months). Now, confirm your settings to start the export.

During the export process, the state of the tasks (expanded/collapsed) is to be taken into account in the original time schedule. In addition, only tasks that begin, end or cover the selected display period are exported. Using these two methods, you can control which tasks are ultimately to be seen in the Excel export. Therefore, before the export, check whether the time schedule is in the desired state (expanded/collapsed).

If you have exported the time schedule in the day or week view, an Excel column is used in the Gantt Chart for each day so that you can receive a true-to-detail preview of the bars. When exporting in the month view, on the other hand, you will receive a preview in Excel in which each column represents an entire month. In this way, you can receive a very compressed representation of longer time ranges.

You can also change the time scale later in the Excel time schedule by selecting another view in the *Display view* field in the schedule header and then calling up the button *Plot time schedule* in the schedule header. In this way, the display period can also be changed retroactively.

Note: Replotting the dates does not update the selection of the tasks shown in Excel, but rather only replots the data previously exported to Excel. To update your export, please select *Update report* in the Excel menu.

The resulting Excel file also includes a *Configuration* data sheet. The export creates this; please do not carry out any manual changes in the data sheet.

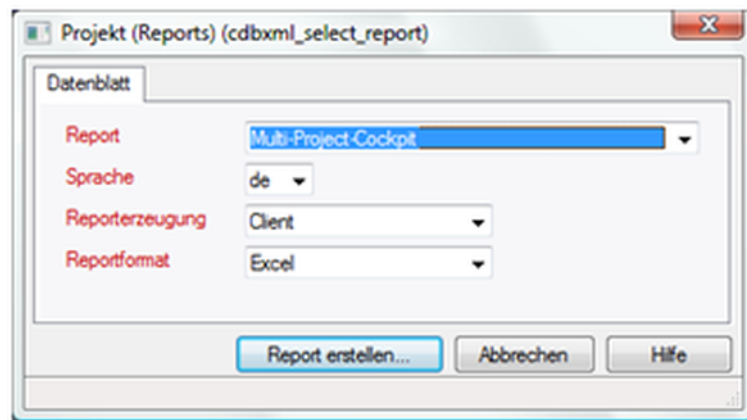


Fig. 8.1: Calling the Multi-project cockpit for analyzing selected projects

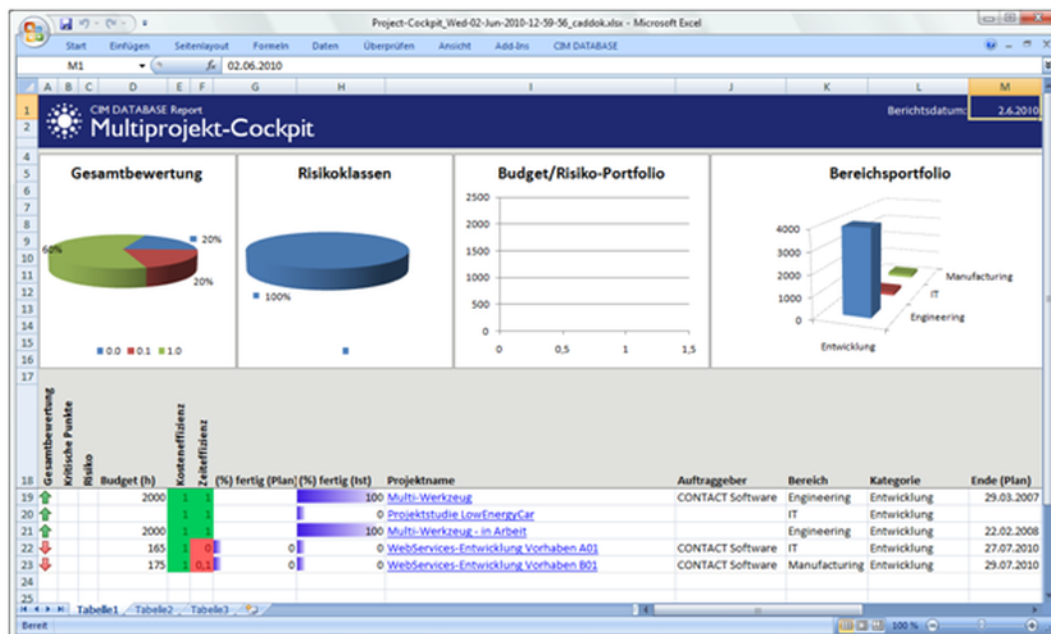


Fig. 8.2: Multi project cockpit

8.3 Reports for Date Planning

The system provides various reporting options using scheduling and resource planning. One example of these is the “Multi-project cockpit” report. Applied to the selected projects using the Reports pop-up menu command, the information is exported and shown graphically in Excel.

The starting point is the selection of the corresponding project or projects and calling the selection mask for creating the report. Using the list of options for the Report field allows you to select and create the “Multi-project cockpit” report.

The contents of the report are based on the criteria relevant to the project in the provided standard report that could be important for rating the projects. This report includes key performance indicators, which are determined in the key performance indicator module. These and additional, potentially custom-configured key performance indicators can be defined and used for reports and for the KPI cockpit.

The reports can be adapted specific to a customer. The PowerReports module also provides a wide range of options for easily configuring your own reports. PowerReports is licensed separately as an additional component.

Context-free reports are applied via the menu *More Functions > Reports...*

8.4 System for Time, Costs and Quality Assessment

For the “Multi-project Cockpit” report, delivered by default, project KPIs are used that are based on the methods of *Earned Value Analysis*. The following simplifications and definitions have been defined for this:

- The budget (planned value) of a task corresponds to its planned working hours. Different hourly rates and object costs are ignored. This makes the *hour* the base unit of costs.
- The budget is implemented over the duration of a task with a linear distribution. On the reporting date (cutoff date), the budget is applied as a planned value based on percentage corresponding to the elapsed time for this reason.
- For task groups as well as the overall project, the planned value on the reporting date is added up automatically from the planned values of the individual tasks.
- The percentage of completion for a task on the reporting date is applied using the attribute of the same name. This can be edited only while the individual task is in the *In progress* status. Before that point the percentage of completion is equal to 0%; a status change to *Completed* automatically makes it equal to 100%.
- The percentage of completion cannot be edited for task groups and the overall project; instead it is aggregated from the completion percentages of the subtasks, where the completion percentages of the subtasks are weighted using their budget.
- The earned value (according to earned value analysis; also known as completion value) of a task corresponds to the percentage of completion, expressed in *hours* (the cost unit), and represents the already rendered or *earned* value of a task at the time of reporting. This also applies to task groups and the overall project.
- Earned value analysis integrates quality assessment into one expression for time and cost performance indexes. A schedule performance index = 1 then means: The target goals for an activation time *t* have actually been achieved at *t*. A cost performance index = 1 then means: The target goals have been achieved using the planned budget.

This results in (based on earned value analysis):

- Planned costs for task (PCT) = Budget * ((cutoff date - start date) / (end date - start date))
- Planned costs for project (PCP) = Total(PCT)
- Actual costs (AC) = Posted hours
- Earned value (EV) = Budget * Percentage of Completion

- Schedule variance (SV) = EV - PC
- Cost variance (CV) = EV - AC
- Schedule performance index (SPI) = EV / PC
- Cost performance index (CPI) = EV / AC

For complete and correctly applied earned value analysis, however, only 100% completed (accepted) tasks are taken into account when calculating aggregated earned value in order to avoid the pitfalls of 90% done syndrome. Conversely, the budget of a task is taken into account as planned values in its full amount beginning from the start date. This results in very informative quality characteristics for the project status.

Milestone Report

The milestone report is an important method from project management because it is easy to implement and can be significantly scaled. It provides a process for realistic prediction of project workflows based on regular – usually weekly – personal assessments of milestones by the parties responsible for them.

9.1 Principles

The management and project managers require the most realistic overview of the currently planned basic date. They usually do not have the time and have not been tasked with going into detail. In addition, employees responsible for the individual project phases should also always have an eye on their project tasks and be able to estimate future deadlines as honestly as possible. This is especially important if multiple departments, or even larger organizational units, need to coordinate on projects. As part of good project planning, milestones with end date specifications are agreed upon for important phases for general schedule planning to accomplish this.

The so-called *Milestone Report* can be used to for quick, highly realistic analysis of milestones. The *Milestone Report* assumes that responsible persons are defined for milestones and that these responsible persons are checking the dependencies between their milestones by regularly reassessing the milestones and correcting them in coordination with each other whenever necessary. This often takes place as part of a weekly project meeting in many organizations. The *Milestone Report* provides a history with a graphical representation of the regularly reassessed milestone deadlines. This then makes it possible to derive trends and, generally, to arrive at a statement such as one of the following:

- Milestones and their dependencies are running on schedule.
- Milestones and their dependencies have been defined with excessively large buffers and are being completed early.
- Milestones and their dependencies cannot be met and are putting the end date at risk as well.

9.2 Requirements for the Milestone Report

The milestones for a project serve as the basis for the *Milestone Report*. Furthermore, the *Milestone dates weekly* key performance indicator must be defined in the system and be in the *Valid* status. Have an administrator ensure the definition and approval of the key performance indicator.

A typical application scenario would be to prompt all project managers and persons responsible for subtasks to reassess the deadlines of milestones in their current projects and to update them to be as realistic as possible in a weekly meeting for the current project state—regardless of whether that meeting is held centrally or decentrally.

Because milestones are specialized project tasks, you can use the various access options for project tasks for displaying the milestones:

- Milestones can be displayed, using the project overview by selecting the project and selecting the *All Tasks* relationship in the detail selection list.

- Another option is, creating a hit list with all of the active milestones as favorites.
- Additionally, separate milestone plans can be created for active projects.

All of these variants can be adjusted so that only the milestones for which the current user is entered as the responsible person are shown.

9.3 Updating Milestones

Using the *described methods of access* (page 52), you can change the active milestones in the context of a project meeting.

You have two options for this:

- You can run the *Modify* operation through the pop-up menu and update the target date in the *End (Target)* field.
- You can adjust the milestone target dates directly in the time schedule and can - independently of a milestone report - identify any effects visually.

9.4 Milestone Report Access

The milestone report can be called up from the context menu of a project both directly through the *Milestone report* menu item as well as under the *Reports* menu item by selecting *Milestone Report*. Both means of access are based on the same functionality and provide an equivalent result.

9.5 Milestone Report Options

After calling up the milestone report, a selection window appears where the user can set three options:

- **Scaling**
In the selection list you define the time-wise scaling of the milestone report. This determines the selection of the displayed milestones. The standard setting is *weekly*.
- **Map dates to start of time interval**
For a better graphical representation, the milestone points at the beginning and end of a time interval are rounded off when exporting the data. If you select this option, milestones that are not located exactly at the beginning of the interval are displayed at the interval start (in other words, for *weekly* scaling, they are rounded off to the preceding Monday). If you do not select this option, the milestones are displayed at the interval end (in other words, for *weekly* scaling, they are rounded off to the following Sunday).
- **Limit the period to milestones**
If selected the earliest and the latest milestone date will be the time frame to display the schedule. If deselected the start date and the finish date of the project end will be used as the time frame.

9.6 PowerReport Project Milestone Report

The *Create report...* function generates a PowerReport from all of the available milestone updates of the selected project using the selected options and opens the report in Microsoft Excel. The Excel report is stored in the system's local user directory. In Excel, the user may have to carry out the *Enable Editing* function depending on the security settings and then click the *Update chart* button.

The milestone deadlines generated by the PowerReport function and sent to Excel are displayed as a line graph based on a pivot table. The transmitted milestones are on the *Data* tab. The tab also contains the *Recent Objects* date series, which reflects the selected interval (e.g. one entry/week for “weekly”).

9.6.1 Options

Since the display of the milestone report is a pivot table, users can make use of the Microsoft Excel functions they are familiar with. For example, you can reposition the legend, modify the report name or display the data series in the graphic. The pivot table is located on the third tab, “Table 2” of the created PowerReport

Project Filing

The system makes it possible to work with documents efficiently via the *Project Overview*, as it is also used in the file system, for example, based on the folder structure (comparable to working with Windows Explorer). Documents can easily be “drawn into” a project, so that the project assignment is made automatically. The *Documents* area within the project overview serves this purpose.

All documents of the project are accessible in the project filing, for example, grouped according to the document categories. Furthermore, the system enables navigation in the filing area, as well as a powerful search capability via data fields with free text input and wildcards. The project filing and project overview is, so to speak, the Cockpit of the project team, through which one can quickly gain an overview of the project. Furthermore, it is also possible to define “virtual folders” from other points of view, for example, as folders in which all approved documents, etc., are to be found.

10.1 Structure View of Project Filing

Project filing enables structured, project-specific filing and searching of project documents in document categories. It can be accessed using the *Project filing* pop-up menu option for a project. Furthermore, filing of a project is also displayed in the *Project Overview* under the *Project Documents* folder.

The upper window area of the overview shows the hierarchy of available document categories and the respectively associated documents. The available document categories and the number of hierarchy levels depend on the respective configuration of the system. They have the same origin as the document categories in the navigation tree under the *Documents* menu item. Selecting a document category will display the documents contained in the selected category as a hit list in the bottom window area. Selecting a main category will display all documents of all subcategories.

The specific pop-up menu options are available for documents via the nodes/folders in the structure and in the bottom hit list. For example, new documents can be created directly via the pop-up menu option *New...* or *Create from template...*. Documents can also be stored in Project filing via Drag&Drop. A category in the structure area or the bottom hit list can be used as the drop destination for this.

10.2 Document Templates in Project Structures

When carrying out a project, a wide array of different document types are created depending on the type of project. The spectrum ranges from planning documents, concept and specification documents to QM documents. Templates are often used to create these types of project documents. These templates achieve the highest level of standardization possible and provide the composer with a suitable frame. The system supports these template-based methods using assignment options of document templates within the project structure. Templates can be assigned for any editing context at all levels of the project structure:

- General templates at the project level
- Task-specific templates at the project phase, work package and individual task level

- Templates at the checklist, quality gate and deliverable level
- Templates for individual checklist items of checklists, quality gates and deliverables

Any *Documents* can be used as document templates in project structures. The document assigned as a template does not necessarily have to be labeled as a template. This allows templates to be used in the project context without making them available within the general template management for all project team members.

Assigning document templates is particularly useful for standardized project workflows in conjunction with project templates. Here, the document templates are only assigned to the project template once and are then available in all projects created from the project template. The template assignments of specific projects can be added to and changed at any time during the duration of the project.

Assigning document templates can be useful even for individual projects. For example, for special templates that are only to be used as part of a certain project or to relieve the task editors of the responsibility for searching for the right templates.

By assigning document templates, you can easily ensure that each correct document template valid at that moment is used in the projects. This frees the editor from having to search and use the template. Instead the editor can find the templates required for completing the tasks in the editing context.

10.2.1 Assign document as template in the project

You assign documents or document templates using Drag&Drop and proceed as follows:

1. Navigate in the project structure to the appropriate *Working context* (page 54)
2. Navigate to the relationship *Document Templates*
3. In another tab, open a result list of documents or document templates.
4. Select one or more documents that you want to assign.
5. Drag the documents into the relationships tab *Document Templates*.
6. Confirm the assignment by clicking the button *New*.

You have now assigned the document as a template in the working context.

10.2.2 Properties of the assignment of documents as templates in projects

Project No. Here you have to select the project number.

Task Only in the *working context* (page 54) of a project task: Here you have to select a task.

Checklist Only in the *working context* (page 54) of a checklist or a checklist item: Here you have to select a checklist.

Task Only in the *working context* (page 54) of a checklist item: Here you have to select a checklist item.

Document No. Here you must select a document number.

Index Here you can select a document index.

Always Use this Index If you activate this option, you tell the system that this index of the document should always be used as a template, regardless of whether newer indexes exist. The index must be in status *Released*, *Revision* or *Blocked*. The prerequisites can be configured differently by your system administrator.

If you do not activate this option, the system always uses the currently valid index of the document, regardless of which index is assigned in the field *Index*. An index is valid if it is in the status *Released* or *Revision*. The definition of a valid index can be configured differently by your system administrator.

Generate Copy on Status Here you can select a status of the business object in which *working context* (page 54) you assign the document.

If you enter a status, the system automatically creates a document from the document template when the business object meets the entered status. More on this topic can be found in chapter: [ref:cdbwinusrman-pcs-doctemplates-automatic-creation](#).

If you do not enter a status, the system does not create a document automatically. You can create a document manually from the document template. More on this topic can be found in section [Creating a New Document Manually](#) (page 56).

10.2.3 Creating a New Document Manually

The creation of a new document from a template is done by running the operation *Create new document...* in the context menu of the document template. When you start the operation, the template is copied and the new document is automatically assigned to the working context. The document is now visible in the *Project Overview* and in the relationship *Documents* of the corresponding business object. Finally, the information sheet is opened, which gives you access to further operations of the document. You can decide whether you want to change master data or edit the document, for example.

The operation *Create new document...* can be used several times for a template to create multiple documents from the same template.

Documents can only be created from valid templates. More information on this topic can be found in the [Description of properties](#) (page 55) of an assignment.

10.2.4 Creating a New Document Automatically when Changing Status

The assigned document templates can optionally be set in such a way that the document is automatically generated from the template when a *certain status change* (page 55) of the corresponding *business object* (page 54) is made. Project members can start working with the document directly without having to create it themselves. The user recognizes documents that are automatically created and assigned by a special icon of the template.

The operation *Create new document...* can also be used for templates for which automatic document creation is activated.

Note: If the document is created manually before the automatic creation by calling up the operation, the automatic document creation is deactivated, i.e. the document is not re-created when the configured status is achieved.

Documents can only be created from valid templates. More information on this topic can be found in the [Description of properties](#) (page 55) of an assignment.

10.2.5 Usage of documents as document templates in project structures

If you want to see the usage of documents as templates in projects, proceed as follows:

1. Select the selected document in a results list
2. Open the context menu by clicking the right mouse button
3. Select the operation *Information*.
4. The data sheet for the document opens.
5. Navigate to the mask tab *Usage as Template in Projects*.
6. Here you can see a list of all projects in which the document is used as a template.

At delivery, the mask tab *Usage as Template in Projects* is hidden. If necessary, you must first display the mask tab.

10.3 Project Folders

Along with standardized project filing based on document categories, the system offers flexible project filing in which folders can be created dynamically. Project-specific compilations of documents can be configured in these folders.

The project folders must be evaluated as virtual folders that are created and organized by the project participants themselves. Separate folder designations and folder structures can be created and used for this purpose. The created project folders appear as an additional file structure along with the document categories used up to this point. The system offers the *Dynamic Folder* and *Version Folder* folder classes for this purpose.

In dynamic folders, a document is assigned based on its number. Then, all associated index revisions not identified as obsolete are displayed in the folder. Thus, the folder contents change dynamically if new program versions are created or existing ones are identified as obsolete. A dynamic folder is identified in the standard package with a *refresh*-icon (🔄).

Version folders always contain exactly the index revision of a document that was assigned to this document. They can be used to create a baseline, for example.

10.3.1 Master Data

The attribute fields in the data sheet of a project folder are described below.

Label-ID The language-neutral label of the folder. This is always shown if no language-specific label has been specified in the *Label* tab.

Name The multi-lingual configurable name of the folder

Folder type There is only one type of folder in the standard package. Folder types can be used to lay down rules for the documents contained. For example, there could be a *Baseline* folder type which would then imply rules for the documents contained, e.g. that they cannot be changed.

Project Number The project to which the folder belongs.

Folder-ID A unique identifier for the folder.

Folder is immutable If this check box is selected, the folder cannot be removed from the project. This is usually the case if a certain folder structure is to be fixed. The flag can only be reset in the standard package by the project manager.

Add documents allowed If the check box is not selected, the folder can only be used for structuring and no documents can be assigned to it.

Subfolder allowed If the check box is selected, additional folders can be created within the folder.

Main category, category If new documents are created within the folder, the document categories can be preassigned using a template of these fields. However, unlike in project filing, a document does not have to meet the conditions to be able to be assigned to a folder.

10.3.2 Functions and Relationships


Project Folder Pop-Up Menu


To do so, select a project and open the associated pop-up menu in the *Project folder* tab by right-clicking.

The pop-up menu contains both general functions (explained in the “Standard functions” chapter) and special functions and commands for calling up the relationships of project folders to other technical objects.

Pop-Up Menu Items

 **Folder Structure** Opens a structured representation of the folder with its subfolders.

 **Insert Project Folder Structure** This operation can be used to insert a folder structure from another project within this folder.

 **Parent Folder** Makes it possible to carry out operations on the parent folder.

Insert Project Folder Structure

The operation enables you to completely or partially assign the folder structure of another project to a project or a folder. The operation can be called up directly on *Projects* and *Folders*. The fields of the dialog opened after calling up the operation are described below in more detail.

Dialog of the Insert Project Folder Structure Operation

Project No. The project number of the project of which the folder structure is to be taken over. The corresponding list of options only displays projects labeled as templates initially. In principle, though, the structure can be copied from any project.

Folder-ID If you only want to copy part of the folder structure for the selected project instead of the complete structure, you can select the folder you want to start copying the folder structure from here.

Copy folder documents If this check box is selected, the contents of the folder that are copied are retained. This means that the same documents are referenced in the copied folders. The documents themselves are not copied here.

Standard-Language Determines the language from which the language-neutral designation of the copied folder is copied.

Project Management in Action

The system offers, through its project management capabilities, not only the ability to plan projects, but also the ability to manage and link all relevant planning data (tasks, quality gates, checklists) with the actual data, work results, product information and engineering documents originating in the course of the project. The system thus forms the backbone of product development, as the central collection point for all data, documents and information from the development process. A cockpit for decentralized, collaborative control and monitoring is available to individual project team members for their development project. The planning objects are also directly conducive to self-monitoring by the project engineers (constructive, forward-looking quality assurance).

The key aspect in using the system is that the project structure does not just serve as a planning guideline and aid to orientation throughout the ongoing project. It is also the focal point for all work tasks, information and results, which in turn can be accessed and processed in a well-organized manner. The administered project objects are “living”, so to speak, and the project team members are responsible for their welfare.

The system is therefore based on access rights management and a relationship configuration between the technical objects of project management. These are conducive to controlling, implementing and monitoring projects in the desired manner. This “desired manner” can mean, for example, that only the responsible parties may make important decisions and carry out ratings and status changes. The project objects are thereby subject to a “logical progression” that does not allow tasks to be reported as *Finished* before they have even been started.

11.1 Implemented Rules for Editing Projects

The system is configured in projects using a set of technical object management rules. These rules help to maintain control over the project and keep it consistent throughout its lifetime from planning through project completion. For this purpose, you define the statuses the project or one of its components (tasks, checklists, etc.) can have in each context, the editing capabilities that are available, the automatic status changes that are triggered and which users are authorized to make changes.

Here are some examples:

- A project task cannot be switched to Execution until the project manager has switched the project to Execution.
- Completing a task automatically releases the subsequent task for execution.
- Subsequent changes may not be made to a completed project.

This ruleset is contained in the corresponding Python scripts as a rule configuration; administrators can take from it after a little practice. The extensive adaptability and configurability of the system, however, allow programming and implementation of fairly simple modifications to the rules as well.

As a result, the following overview of the rules describes the *Project Management* standard configuration. The rules may vary from installation to installation. Changes to the standard can normally be found in the corresponding release notes. The arrows in the following summary indicate potential alternative directions.

11.1.1 Initial State of a Project

- *Project* → New
- *All Tasks* → New
- *All Open Issues* → (none should be present)
- *All Checklists* → New
- *All Checklist Items* → New

11.1.2 End State of a Project

- *Project* → Completed or Discarded
- *All Tasks* → Finished, Completed or Discarded
- *All Open Issues* → Completed or Discarded
- *All Checklists* → Completed or Discarded
- *All Checklist Items* → Completed or Discarded

11.1.3 Status of the Project Elements and their Meaning

Projects

- *New*

The project is in planning. All subordinate structures are in an initial state.
- *Execution*

The project has been released for execution. It is displayed at a suitable location in the interface.
- *Frozen*

The project has been frozen because it was temporarily abandoned; it can be reactivated at a later time.
- *Discarded*

The project has been canceled. All subordinate structures are in a final state.
- *Completed*

Editing of the contents of the project has been completed. All subordinate structures are in a final state.

Tasks

- *New*

The task is in planning. All subordinate structures are in an initial state.
- *Ready*

The task has been released for execution. It is displayed at a suitable location in the interface.
- *Execution*

The task has been switched to Execution. It is displayed at a suitable location in the interface.
- *Discarded*

The task has been canceled. All subordinate structures are in a final state.

- *Finished*

Editing of the contents of the task has been completed. All subordinate structures are in a final state.

- *Completed*

The task has been organizationally closed. All subordinate structures are in a final state.

Open Issues

- *New*

The open issue has been recorded.

- *Evaluation*

The open issue is being analyzed by the responsible parties.

- *Execution*

The open issue has been switched to Execution.

- *Deferred*

The open issue has been postponed until further notice.

- *Waiting for...*

The open issue cannot be edited again until after an event has occurred.

- *checking*

The open item is being checked by the responsible parties.

- *Discarded*

The open item has been canceled.

- *Completed*

Editing of the contents of the open issue has been completed.

Checklists

- *New*

The checklist is in planning. All subordinate structures are in an initial state.

- *Evaluation*

The checklist has been switched to Execution. It is displayed at a suitable location in the interface. This status is applied automatically once the first checklist item has been rated.

- *Discarded*

The checklist has been canceled. All subordinate structures are in a final state.

- *Completed*

Editing of the contents of the checklist has been completed. All subordinate structures are in a final state. This status is applied automatically once the last checklist item has been rated.

Checklist Items

Project team members typically evaluate checklist items using the “Evaluate” pop-up menu command instead of using the data sheet and a subsequent status change.

- *New*

The checklist item is in planning.

- *Ready*

The checklist item has been approved for editing. It is displayed at a suitable location in the interface.

- *Discarded*

The checklist item has been canceled and is not integrated into the checklist assessment.

- *Completed*

The checklist item has been assessed.

11.1.4 The project lifecycle and its elements

The project and project elements Task, Checklist with Checklist Items and Open Issues are hierarchically and chronologically related to each another. This relation also has to be taken into account for the status of project element in order to ensure a consistent project state. Some status changes here are applied from top to bottom (e.g. project manager releases project for execution), while others are applied from bottom to top (e.g. employee reports task as finished). This is taken into account in the *Project Management* standard configuration rules and follows the project lifecycle in the following ways:

Scheduling a project

The project is initially in the *New* status. As long as it remains in this status, all subordinate project elements must also remain in the *New* status. Tasks, checklists and open issues are not visible to the responsible persons in the task manager.

Structurally relevant attributes of tasks can only be changed by the project manager and only while the project is in the *New* status. The position, parent task and milestone attributes are protected. This involves checking the authorization `pcstask_edit_all` in the UserExit program code and, if necessary, setting the specified attributes to *Read Only*.

Executing the project and setting the task status to *Ready*

Once the project is sufficiently scheduled and ready to start, the project manager sets the project status to *Execution*. This automatically sets all relevant project tasks to *Ready* and allows them to be set to *Execution* by the people responsible for the respective tasks. As a result, these tasks are visible to the responsible people in their task manager instances as todos. Please note that the task manager only shows single tasks, no task groups.

The following tasks are not automatically switched to *Ready*:

- Tasks that are successors of an end-start relationship cannot start until their predecessors are *Finished*. They automatically switch to *Ready* once the predecessor is set to *Finished*.
- Tasks that are successors of a start-start relationship cannot start until their predecessors are in *Execution*. They automatically switch to *Ready* once the predecessor is set to *Execution*.
- Tasks that have already been *Discarded*.

Tasks that are not automatically set to *Ready* can be manually set to *Ready* by the person responsible for the task. This, however, requires that the parent task has already been set to *Ready*.

Place and Complete Tasks in *Execution*

The person responsible can place tasks that are *Ready* in *Execution*. Even when starting to evaluate a checklist, the task belonging to the checklist is automatically placed in *Execution* if the task or its parent task is *Ready*.

Once the first subtask is in *Execution*, the parent task groups are automatically placed in *Execution*. This way, it is signaled ahead that, for example, a work package or stage has been started.

A task can also be placed directly from *New* to *Execution* if at least its parent task is *Ready*.

Tasks and checklists already placed in *Execution* can be set back to *Ready* or *New*, whereby follow up tasks from start-start relationships automatically set to *Ready*, if any, are set back to *New*. Ratings already entered are retained.

The person responsible signals that a task is complete by placing it in *Finished*. Checklists are automatically placed in *Closed* once the last checklist item is assessed. When all tasks, checklists and active issues of a task have the *Finished* or *Closed* status, the parent group task is automatically set to *Finished*.

The following tasks may not be set to *Finished* by default:

- Tasks that are successors of an end-start relationship when their predecessors are not *Finished* or *Closed*.
- Tasks that are successors of a start-start relationship when their predecessors are not at least in *Execution*.

Tasks and checklists already set to *Finished* or *Closed* can be placed back in *Execution* again. Parent tasks are also set back to *Execution* and follow-up tasks in *Ready* are set back to *New*.

Completing tasks and projects

While setting a task to *Finished* reports upwards in the project hierarchy, completion of a project is a top-down action that may be carried out by the project manager only. Setting a task to *Completed* terminates it irrevocably so that no more efforts can be booked on that task. The completion of a task also completes all subordinate tasks and checklists that have a status of *Finished*.

The project manager irrevocably terminates a project by setting it to complete. As described above, this also completes or discards all related tasks and checklists, respectively. A completed project cannot subsequently be reactivated, not even by the project manager.

Open issues

As highly informal elements of project planning, open issues are only loosely linked to tasks. The only interdependencies with tasks exist in that tasks cannot be set to *Finished* unless no issues are open, and completed open issues can only be reset to *Evaluation* if the task is set to *New*, *Ready* or *Execution*.

Set projects, tasks, checklists and parts of the project structure back to *New*

A project manager can postpone a project, parts of the project structure or individual elements using a status change to *New*. Postponing requires that the higher-level technical object has a valid status for postponement.

The following applies to postponing tasks: The super task must be in the *New*, *Ready* or *Execution* status. The project must be in the *New* or *Execution* status.

The following applies to postponing checklists: The assigned task must be in the *New* or *Ready* status. Postponing a technical object propagates downwards within the project structure. This means all of the subtasks and all of the checklists assigned there are also postponed.

Freezing projects

You can temporarily stop a project by setting its status to *Frozen* and resume it, if necessary, at a later point in time. If a project is frozen, all subordinate project elements keep their last valid status but are labeled as inactive by the *Frozen* flag.

The project elements of a frozen project are disconnected from any evaluation and calculation contexts and can no longer be changed by the people responsible for the individual tasks. Only the project manager still has full access and can make any changes before resuming the project, e.g. by adjusting the deadline and resource schedule to the time of resumption and, if necessary, make any changes to the content.

In detail, freezing a project has the following effects:

- The project elements are no longer displayed in the task manager as todos
- No more effort data may be booked on the tasks.
- The resource capacities originally planned for the respective tasks are released. This means that the demands and assignments of the project no longer utilize any capacity in the resource schedule of an organizational unit. The combined project and resource schedule, however, still provides the project manager with a preview on how resuming the project would affect resource capacity.

The project can be reactivated by resetting the project status to *New* or *Execution*.

Canceling projects, tasks, checklists and parts of the project structure

Project managers or the respective responsible parties can cancel a project, parts of a project structure or individual elements. This requires that the technical object has not been set as completed.

The status change to *Discarded* propagates downwards within the project structure. This means all of the subtasks and all of the checklists assigned there are also discarded if they have not yet been set as completed. Completed tasks and checklists, as well as the ratings of partially completed checklists, remain intact.

Discarded technical objects can be set back to *Execution*, to *Ready* or to *New*.

Discarded elements can also be reset to *New* using a status change. Tasks that have already been completed and rated checklists are also reset in this process.

Authorizations

For project structure elements (tasks, checklists and checklist items), authorizations overlap the structure on the basis of the responsible parties registered.

- The *project manager* is authorized for all technical objects in the entire structure.
- A *person responsible for a task* is authorized for that task and its entire underlying work breakdown structure, as well as for all assigned checklists and checklist items. Subtasks can have differing responsible persons. The same is valid for the resulting component structure.
- A *person responsible for the checklist* receives authorizations for that checklist and all associated checklist items.
- A *person responsible for the checklist items* receives authorizations for individual checklist items only.

11.2 Maintaining Revisions via MS Project

The planning of project deadlines with their contingencies on the one hand, and the actual management of the project based on the project structure on the other, are two different work tasks. Implementing “special applications” for each of these is recommended. Scheduling frequently constitutes the beginning stage, along with basic creation and linking of project tasks. For these scheduling activities, Microsoft Project is often the tool of choice, since among other things it enables interactions via graphic technical objects.

For the “actual project work” and the related necessary project management, the system then offers the capability to further plan, structure and routinely maintain project content. Furthermore, planning data can be synchronized with actual deadlines, which are easier to edit via Microsoft Project. The MSP XML interface supports importing project data from Microsoft Project.

One characteristic of “living projects” is that they frequently involve deadline delays or changes in content. These changes then in turn affect subsequent work packages. The danger is that these modifications may not be updated, since project planning and project implementation are frequently carried out by different parties and separately analyzed. With this System, on the other hand, all relevant project planning and implementation data is centrally provided and administered. For processing and editing project revisions and new deadlines, the planning software Microsoft Project can be linked using the XML interface.

This *project management* linking makes “convenient project administration” possible. Schedule changes can be quickly taken into account and modified on the basis of graphically supported planning options in Microsoft Project. For example, should a task deadline be revised, resulting in further changes to follow-up tasks, the revision could be incorporated in the project Gantt diagram in Microsoft Project, for example. Schedule revisions can be completed with just a few clicks and are then automatically transmitted to the linked follow-up tasks. With subsequent import of the Microsoft Project XML file to the system, the updated project data is available. For project team members, this procedure no longer contains the risk of having to work on the basis of “obsolete project data” that, due to a lack of “systemic capabilities”, had not been updated.

You can control whether a project is managed in the system or in Microsoft Project individually for each project. There can only ever be one unique, primary project schedule for managing the respective project. See [Field Area: Primary Scheduler](#) (page 7) for more information.

11.2.1 Microsoft Project - Import and Update

Calling the *pop-up menu operation* (page 11) opens a document catalog in which a document, containing the desired Microsoft Project XML file, must be selected. Afterwards, the dialog *MS Project - Import and update* appears, which shows a preview of all pending project changes. In the upper right corner, a percentage bar indicates at a glance how much and in what way the project will relatively change. Existing tasks and referenced objects which are not affected by the import process are not listed. Now can the import process be started with the button *Execute Import*. In case of a conflict or error during the import, the whole process is canceled and the corresponding error messages appear in the dialog next to the affected objects. If desired, the dialog can remain open until all conflicts are resolved. Finally, the import process can be carried out to completion using, again, the button *Execute Import*.

11.2.2 Attachment of referenced objects

By default, it is already possible to specify in a Microsoft Project time schedule, which workflows and checklists should be attached during an import process for a task. For this purpose, enter the name of the desired objects into specific text fields of the task. For workflows this is the column *Text11* and for checklists *Text13*. In this case, templates with the appropriate names should already exist in the system, which can then be copied during the import process and linked to the task. The syntax for the text fields of the task is as follows:

```
Text11=<template-project-name>::<template-workflow-title1>;<template-project-name>
→::<template-workflow-title2>;...
Text13=<template-project-name>::<template-checklist-name1>;<template-project-name>
→::<template-checklist-name2>;...
```

The prefix *<template-project-name>::* is optional. If this is missing, the respective template must be linked to the currently edited project. For both the project and templates for the referenced objects, the flag *template* must be set.

Exemplary text field contents

```
TP1::Documentation;;TP1::Testing
TP2::Security
Prototyping
```

In Microsoft Project it is furthermore possible to prespecify catalogs for the columns *Text11* and *Text13*, so that, on one hand, can be specified which referenced objects should be allowed to be selected. And on the other hand, it prevents errors such as entering the wrong workflow or checklist name. For this purpose, in the dialog *Custom*

fields for the regarding text field, in the subcategory *Custom properties*, the value *Lookup...* should be set. The possible values can now be entered in the subdialog *Lookup table*.

11.2.3 Updating specific task attributes

Using a *pop-up menu operation* (page 11), specific task properties can be exported to a Excel file. This file can subsequently be directly imported in Microsoft Project in the corresponding time schedule. The procedure is as follows:

1. In Microsoft Project, in the *Open* dialog, set the file suffix filter to *.xlsx* and select the previously generated Excel file.
2. In the newly opened *Import Wizard* define a *New map*.
3. Then, select the option *Merge the data into the active project*.
4. Now select *Tasks* and click *Next*.
5. In the *Task Mapping* dialog, select the Excel sheet *PcsTaskAttributesToMsp*.
6. Link the following Excel fields and Microsoft Project-fields:

mvp_uid	Unique ID
status	Number10
joined_status_name	Text15
mapped_subject_name	Text14

Where only the first link is mandatory. All other links are optional and accordingly can be linked to other Microsoft Project-fields.

7. The first link (*Unique ID*) additionally *Set Merge Key*.
8. In the following dialog form, the map you have just defined can be saved globally, so that by all following updates, only the map has to be selected and therefore steps 2 to 7 can be skipped.

Note: A globally saved map can also be applied in advance to any MPP file, for example to a shared time schedule template. This eliminates the need to define the map at every workplace.

11.2.4 Limitations on Working with Microsoft Project

Locked planning data for tasks and projects

Properties of projects and tasks that refer to their chronological position cannot be changed in the system if

- the project is locked by another user or
- the time schedule of the project is processed exclusively in Microsoft Project.

The following table provides you with the relevant objects and properties

Object	Property	Attribute
Project and Task	Start (Target)	start_time_fcast
	End (Target)	end_time_fcast
	Working Days (Target)	days_fcast
	Adopt Bottom Up Dates as Target	auto_update_time
Task	Task Name	task_name
	Milestone	milestone
	Early Position	early_position
	Position	position
	Automatic Calculation	automatic
	Constraint Type	constraint_type
	Constraint Date	constraint_date
	Parent Task No.	parent_task
	Parent Task	parent_task_name

Level of Progress

Regarding [%] Completed *CONTACT Projects* is always leading. No value is transferred when importing and publishing from Microsoft Project to *CONTACT Projects*.

When exporting to Microsoft Project, the value of [%] Completed is also exported. However, since Microsoft Project calculates the value of a task group according to other rules, this value differs in Microsoft Project.

11.2.5 MS Project Time Schedule Template

When no primary time schedule is assigned for a Microsoft Project project explicitly defined as a time scheduler, this occurs automatically by a global time schedule template, if one is configured. A document's definition as time schedule template occurs via the *mspt* property, where the value depends on the `<z_nummer>;<z_index>` syntax.

A time schedule template should be used since certain formats within the schedules are desired. Below is an example of a *highlight filter definition* generally useful in a time schedule template:

And/Or	Field Name	Condition	Value(s)
	Number10	Equal	180
Or	Number10	Equal	200
Or	Number10	Equal	250

This highlight filter results in all *canceled*, *finished* or *completed* tasks being highlighted. This is a great benefit for the user since such tasks cannot be modified by proxy.

Note: The highlight filter's color can be adjusted in Microsoft Project with the *Text Styles* dialog.

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