Reports

Planon Software Suite

Version: L127

Planon
Building Connections

About this Document

Intended Audience

This document is intended for *Planon Software Suite* users.

Contacting us

If you have any comments or questions regarding this document, please send them to: support@planonsoftware.com.

Document Conventions

Bold
Names of menus, options, tabs, fields and buttons are displayed in bold type.

Italic text
Application names are displayed in italics.

CAPITALS
Names of keys are displayed in upper case.

Special symbols

	Text preceded by this symbol references additional information or a tip.
	Text preceded by this symbol is intended to alert users about consequences if they carry out a particular action in Planon.

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Reports

Reports is designed for Planon administrators and supervisors who may use the tool to create (custom) reports.

The Reports action is available on all the TSI selection levels and steps and allows users to create reports for the selected data.

- Planon end users may use the Reporting tool to generate management reports containing Planon data.
- When creating reports, check your browser's pop-up blocker settings. The Planon site needs to be a part of the allowed sites of your browser's pop-up blocker otherwise reporting functionality, such as previewing a report, will not work properly.
- Reporting is subject to Authorization. If authorization applies or if content is not displayed on layouts, the data may not appear in reports.

Reports – Concepts

This section describes the concepts available in Reports and how they interact with each other.

See the links below for more information:

- Business object
- Report definitions
- Planon system reports
- Subreports
- Flexible subreports
- Fields and columns
- Field types
- Mail merge reports
- Expression builder

Business object - Reports

A business object is a logical unit of functionality that refers to a facility management concept.

A report definition focuses on one main business object, but may include information on other business objects. Data fields that are linked directly to this business object are stored in the same database table.

A few examples of business objects are: properties, spaces, floors, assets, people, addresses, orders and keys.

Users with sufficient authorizations can create user-defined business objects. In order to be able to use Reports efficiently, it is important to have a clear understanding of the business object for which you are creating a report definition.

Custom report

A user report with a customized layout. A customized layout can include logos, charts, images, etc. This customized layout is created by a specialist and is user-report-specific. Users can view custom reports and save them as PDF.

Expression builder

By using expressions, you can apply specific calculations or operations to the fields in a report definition. The results of these calculations or operations can be included as extra columns in a report.

You can create the expressions triggering these calculations/operations with a built-in tool: Expression Builder.

For more information on Expression Builder, refer to Working with Expressions.

Flexible subreports

A flexible subreport is a report definition specifically for mail merge reports and templates that are either in .doc, .docx or .rtf format.

Contrary to a subreport, in which fixed descriptive text is typically listed above the values of the individual fields comprising the subreport, a flexible subreport allows you to combine fixed descriptive text and field values in the same paragraph.

The field values and text for each element in the subreport (for example, for individual contract lines) are then listed consecutively in paragraphs. For more information on flexible subreports, see Inserting flexible sub reports in a mail merge report.

Mail merge reports

In addition to regular reports, it also possible to create mail merge reports in Planon ProCenter . When mail merging, you combine a Planon report definition with a template *.rtf, *.doc, *.docx or *.html file.

This means that apart from a report definition, created in Planon ProCenter , you also need a *.html file, *.rtf file, *.doc file or *.docx file that includes special merge codes, created in Microsoft Word.

The template file may represent any type of document, from a job ticket, to a quotation, to a letter of acknowledgment. The merge codes included in your *.html, *.rtf, *.doc or *.docx template should consist of the exact Planon field codes placed between characters representing angle brackets (< and >). The merge codes included in your *.doc, *.rtf or *.docx template should consist of the exact Planon field codes placed between angle brackets (< and >).

In a similar way, subreports can be also included in mail merge reports using square brackets (“[“ and “]”). When mail merge reports are finally generated (printed or exported), the merge codes in your template file are replaced with actual data from Planon ProCenter .

For more information on mail merge reports, see Creating Mail Merge Report Definitions.

System reports

In addition to creating your own report definitions, Planon ProCenter also provides several ready-made reports. The definitions of these Planon system reports cannot be

altered. You can only change a number of report settings when generating (printing, exporting) the reports.

Report definitions

Reports is designed to enable users to extract specific information from Planon ProCenter and present this information in straightforward management reports.

The content of reports that can be defined and generated with this tool depends on the business object for which reports are created. For example, if you are working in Spaces & Workspaces , on the **Spaces** selection level, you can only define reports that focus on space-related subjects.

Subreports

A subreport is a report definition that is inserted in the main report definition. The main report definition focuses on the central business object of the selection step you are currently working on. The subreport focuses on an associated business object.

For example, the main report may focus on the business object **Property**, while the subreport focuses on the associated business object **Visitors**.

A report definition can have as many as 10 subreports.

Fields and columns

In Reports , you can select data fields from Planon ProCenter business objects to be included in your report definition. The selected fields will be represented as columns in the actual report. When creating your report, you can adjust the column width, column title and other field-related settings.

For more information on field settings, refer to Making field settings.

Field types

Reports distinguishes three conceptual types of fields that can be included in reports:

- Normal fields

  Normal fields are immediately available and selectable for a report definition, belonging to the active business object.

- Reference fields

  Reference fields have a one-to-one relationship with the main business object in the report definition. For example, a property can only be located in one city.

- Association fields

Association fields have a one-to-many relationship with the main business object in the report definition. For example, multiple orders may be linked to a single property.

System fields, however, are still just fields on a business object. As long as a system field is exposed in the selection step you are reporting on and it is allowed to be used (In selection), then they can be added as fields in a report definition.

See also Report types and fields.

Reporting hub

Reporting hub is the central place for managing and maintaining reports used and created in the Planon Software.

Rather than having to go to each individual business object and creating reports or selecting the available reports, you can now directly go to the **Reporting hub**.

By having a central place for reports, all Planon users can easily find and create reports.

Extending functionality

In addition to being a central place for reports, **Reporting hub** also enables users to extend and unlock its capabilities.

By making available and using free fields on report definitions, users can:

- Create and apply filters

  Reporting hub is a regular TSI, which enables you to create filters. Having filters, allows you to create and publish a list of reports by role.

  This allows publishing a list of reports by role, as long as you have some filter option on the report itself (free fields).

- View report descriptions and understand their intended use

  The data panel shows the fields of the **User reports** business object - including its free fields.

- Specify a report owner (team or individual) or contact

  You can use a free field to specify an owner or contact so that users know whom to contact.

- Create and verify a list of 'their reports'

  Create personal filters to assemble a list of favorite reports.

  Similarly, system admins can use the TSI user filters functionality, allowing them to specify user filters for this TSI, and even list reports per specific user group.

To use **Reporting hub**, customers should add the TSI (TSI-ReportingHub) to their navigation panel. Currently you can only view, add & edit reports.

Levels and steps

Reporting hub contains two levels and multiple steps. These will be described further in this paragraph.

Business objects

The first level in **Reporting hub** contains a subset of all business objects and only lists those for which you can create and run a report.

The **General** tab only has two fields, default filtering options are available (advanced search and quicksearch) and there are no actions available in the action panel.

Reports

The **Reports** level is subdivided into two steps:

- User reports
- System reports

As customary in the Planon software, what you see on the second level depends on your selection in the first level.

User reports

- In this step, users can add/edit/delete reports.
- When adding a report, you must select a business object (same as the subset of business object available on the first level).
- As the data is not available in this TSI, you cannot run a report (print & preview) or click **Save as**.
- Quick search and advance filter options are available.
- This level has 3 tabs:
  - **General** - the edit mode of fields depends on the report type.
  - **Miscellaneous** - only visible if free fields are made available (on the **User reports** business object in Field definer).
  - **Audit info** - read only data.

System reports

- Only single select (no action on selection)
- Mostly display only fields - minor editing is possible
- Quick search and advanced filtering available

- Authorization applies to the reports that can be seen / added /edited / deleted by users. If users are not allowed

to an action on a report on a specific business object, they cannot do so in this TSI either.

- If you are looking to change or reword the labels of the report, please note that for system reports, you need to do this in the language file (and not in Field definer).
- The Reports section provides more detailed information about reporting functionality in Planon.

Reports using expressions

Reports can be created and stored throughout the Planon application.

Reporting Hub is the central place for managing and maintaining reports used and created in the Planon Software.

To find reports using expressions, proceed as follows.

Procedure

1. In **System Settings** > **Reporting** click **Download expression report** in the action panel.

   The report is downloaded to your browser's download location.
   This report lists all reports that use expressions.
2. Open the report and select a name of a report from the list.
3. Go to **Reporting Hub** TSI and select the **Reports** level and search for the corresponding report.
4. Select it and click **Edit user report** to change the expression.

Reporting

Reports is available on all TSI selection levels and steps and allows you to create reports for the selected data.

There are ready-made user report definitions available in the **Reports** dialog box > **User reports** tab. You can create three types of user reports: **Report**, **Data only**, **Mail merge**.

On some selection levels and steps, there are also system reports available on the **System reports** tab. System reports are predefined by Planon and their report definitions cannot be modified. You can, however, modify the report settings, if required.

Prior to creating a report, you must first select the TSI > selection level > selection step corresponding to the subject of the report. Data corresponding to these elements will be included in the report. For a description of the report field settings, refer to Report settings.

For example, if you want to generate a report on available workspace, go to Spaces & Workspaces > Workspaces and click **Report**.

- The report settings you configure are stored per report and per individual user. Next time you log in your personal settings are loaded again.
- When using the Planon application for creating reports, check your browser's pop-up blocker settings. The Planon site needs to be a part of the allowed sites of your browser's pop-up blocker otherwise reporting functionality, such as previewing a report, will not work properly.

Saving reports

This topic describes how you can save reports in Planon ProCenter . Reports can be saved in various formats, such as CSV, PDF, HTML and XLS.

Procedure

1. Select the report you want to generate.
2. On the action panel, click Save as.

   The Save as dialog box appears.

   Refer to Save options for reports and select the appropriate options in the dialog box.
3. Click OK.

Save options for reports

Complete the following fields when saving a report:

Field	Description
Output	Specify the path where the report must be saved.
Save as	From the list, select the format in which you want to save the report. The available formats depend on the type of report you select. The following file formats are available for user reports: • CSV • HTML • PDF • XLS: Data only • XLSX: Data only The following file formats are available for system reports: • CSV • HTML • PDF • XLS: Data only • XLS: Formatted Single Sheet • XLS: Formatted Multiple Sheet • XLSX: Data only • XLSX: Formatted Single Sheet • XLSX: Formatted Multiple Sheet
Delimiter	Select a special character to separate the fields in the saved report. You can choose between semicolon (**;**), comma (**,**) and <tab>. Available only for CSV output. Delimiters used inside values are *escaped* to prevent interpretation issues when importing the CSV into other programs (such as Excel).
Output line break characters as	Allows you to give line break characters such as, Space, LF (Line Feed), CR (Carriage Return), CR\LF, . CR and LF are used to mark a line break in a text file. • Windows uses CR/LF (`\r\n`) • Unix and macOS uses only LF (`\n`)

Field	Description
	Available only for CSV output.
Include header	Select **Yes** to include a header. Available only for XLS, XLSX and CSV output.
Wrap text for Excel	Select **Yes** if you want to wrap the text in the cell output. This feature is only available for XLS- and XLSX **data only** formats.

Exporting data to XLS / XLSX

When exporting Planon data to Excel, the data is exported mapping the Planon format to Excel. This enables users to perform calculations in Excel without having to first reapply formatting.

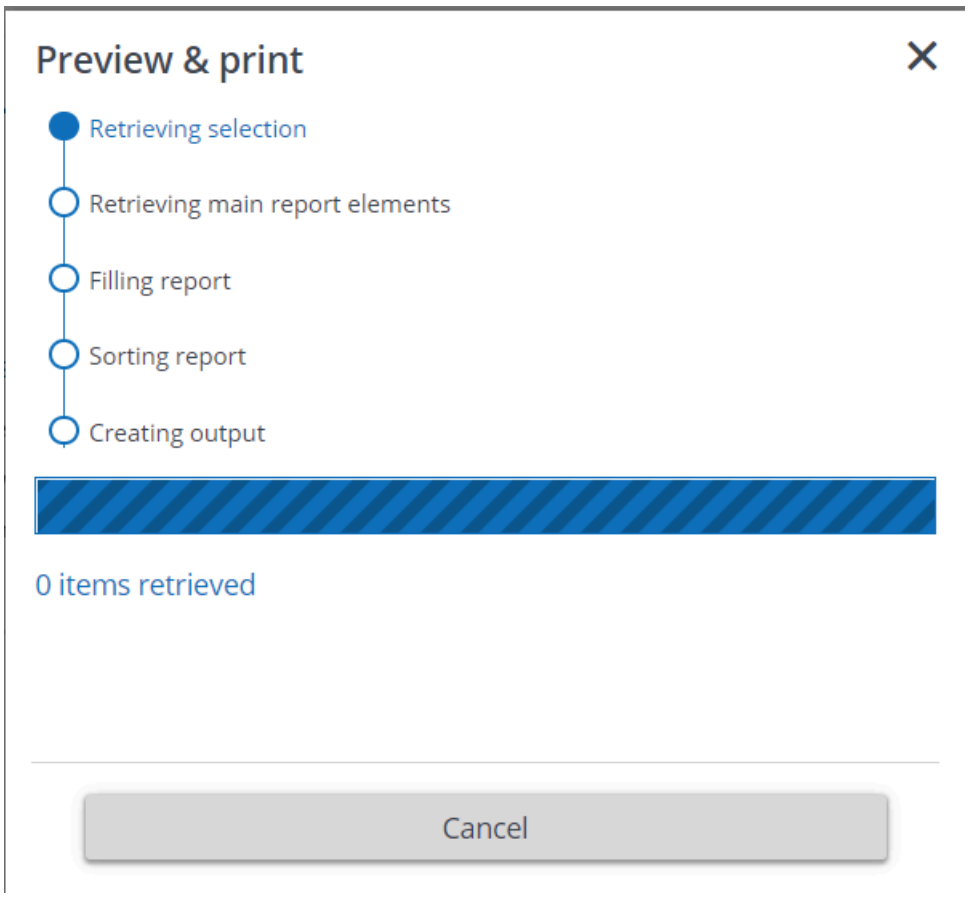
The mapping between Planon and Excel is as follows:

Planon field type	Excel cell format	Remark
Numbers	General	Not taking into account the Planon mask
Dates/date-time/time	Custom	Taking into account the Planon mask

- There is a difference in the way times are treated in Planon and Excel. Times are stored in numbers in Planon and the '0' is defined differently. This may cause unexpected results when comparing times in Planon and in Excel.
- Expressions, if the result is a number, date, date-time or time, will be formatted as specified above.
- Totals and group totals will be formatted as specified above.
- Group headers will not be formatted.
- Expressions, if the result is a number, date, date-time or time, without a Planon mask will be exported with the Planon java mask. This could differ from the Excel mask.
- Separators (date, decimal, thousand) are derived from the Excel user locale.

Previewing & printing reports

For user reports, when selecting the **Preview & Print** option, a dialog box indicating a step by step progress of report generation is displayed. The generation process also displays the number of elements being retrieved and filled. You can cancel the preview of a report while it is in progress by clicking **Cancel** or by just closing the dialog box.



When a report contains more than 500 records, generating it may take a long time. When this happens, a warning message will be displayed notifying the user about this possible performance issue.

Report settings

The following table lists the fields available for report settings.

Field	Description
Name	Enter a name for the report.
Subtitle	If you would like to add a subtitle to your report, you can specify one in this field. The subtitle will be placed

Field	Description
	immediately below the report's main title.
Comment	Here you can add notes on the report's functionality.
Print options	
Print only selected element(s)	Using this option, you can narrow down the number of elements to be printed. Only elements that have been specifically selected from the list will be printed in the report.
Print user name	Select this option to print your login name in the footer of the report.
Print drill-down route	If you enable this option, the drill-down route displayed at the top of the elements list on your screen will also be printed in the header of your report.
Print titles and drill-down route on each page	Select this option to print the report title and drill-down route on each page of the report.
Preview all documents as one file	Select this option to show the preview in one file for Word mail merge reports.

Report settings fields

Report types and fields

When opening the **Report definitions and settings** dialog box, you can create your own user report, or run a system report, if available. The following overviews list the icons/ fields available for report definitions and describe their meaning.

Report types

Icon Type	Description
Custom	Indicates a user report with a customized layout. A custom report uses altered styling on the report. See also Custom report.

Icon	Type	Description
	Report	Indicates a regular Planon report.
	Mail merge	Indicates a mail merge report.
	Data only	Indicates a data-only report.

Report definition and settings

Icon	Field	Description
	Normal field	Indicates a field that is immediately available (selectable) for a report definition and belongs to the active business object.
	Association field	Indicates a field on another business object that references the active business object. These fields are only visible if you select **Show business objects that refer to the active business object**.
	Reference field	Indicates a field that is referred to from the current business object.
	System field	Indicates a read-only field that contains data that is populated by the application.

User report definitions

This section explains how you can create your own user report definitions. The purpose is to hand you the information you need to create report definitions, which include all required business data in a smart layout.

Prerequisites

- You must have the appropriate authorization.
- You must first open the TSI and navigate to the selection step that contains the business object for which you want to create a report definition.

  Since system reports are linked to a particular business object, information on their function will be given in the user manual and help topic that focuses on that business object.

User report settings

Adding a new user report definition

If you want to add a new user report definition, proceed as follows:

Procedure

1. Select the appropriate selection step in the appropriate TSI.
2. Click Report in the action panel.

   The **Reporting** window opens, displaying existing reports on the **User reports** tab.
   New definitions can be initiated here, while old ones can be edited or deleted.
3. Click Add in the action menu to start a new report definition.

   The **Report definitions and settings** window opens.
4. Make the necessary settings for your report.

   For example, specify a name and title for the new report, or choose another page size or orientation.

For more information on report settings, refer to Making report settings.

5. From Available fields, select the normal fields you want to include in your report definition by double-clicking them or by using the arrows.

   Normal fields are recognizable by the  symbol.

A filter option enables you to easily find fields. By default, the filter is set on the Name field, which you can change to any other field in the list. The filter operator is set to Contains, which cannot be changed. After entering the search criteria and pressing ENTER or clicking the search icon, the search result is displayed. When the result is displayed, the filter box changes color from blue to yellow. This feature also works for expressions.

   The fields concerned are transferred to the **Selected fields** section.

6. Select any reference fields you want to include in your report definition by double-clicking the required reference field in the list. Reference fields are recognizable by the  symbol.

   The referenced business object is opened, which in its turn also contains reference fields. The path above the **Available fields** indicates the route through which you descended. Use the **Show upper business object** icon to go up one level.

7. Transfer reference fields from the selected reference table to Selected fields.

   For more information on reference fields, refer to Field types.

8. If required, include subreports (reports within a report) in your report definition by following the procedure described in, Including sub reports in your report definition.
9. Click OK to save your report definition.

   Consequently, you return to the **Report** window where you can generate a print preview of the new report definition by clicking **Preview & print**.

You can export and import report definitions from one Planon ProCenter environment to another using Configuration transfer. This is useful if you want to add or update report definitions in another Planon ProCenter environment.

10. Click OK to save your report definition and have another preview.

    When you are satisfied with the results you can proceed with actually generating the report.

Show additional field information

At the top of the **Report definitions and settings** window, the **Show additional information** option is available.

By enabling this option, the various field names of the fields belonging to the active business object will become visible in **Available fields**.

- The **Name** column displays the field names chosen by your organization (your own 'translation');
- The **System name** column displays the field names given by Planon;
- The **Database name** column displays the field names used in the Planon database;
- The **Field type** column displays the technical characterizations of the fields, for example a String (text) field or a Boolean (yes/no) field.

You can also include system fields in your report definition. These fields are recognizable by the  symbol.

If fields have been transferred to **Selected fields**, the complete field information becomes visible in **Settings**, once you select the field concerned. The complete field information of the selected field is displayed here if the **Show additional information** option is enabled.

Including sub reports in your report definition

When you create a report definition for a business object, it may be linked to one or more other business objects. You can include data from these linked business objects in the report. When a report on a primary business object contains a section that displays data from a linked business object, this section is called a *subreport*.

For example: orders are linked to a property. You could make a report on properties, including a subreport with orders per property.

Procedure

1. Open the TSI and selection level or step corresponding to the subject of the report, for example the Properties selection level of the Work Orders TSI if you want to create a report with properties, including a subreport on orders for each property.
2. From the Report action menu, select the Report option.

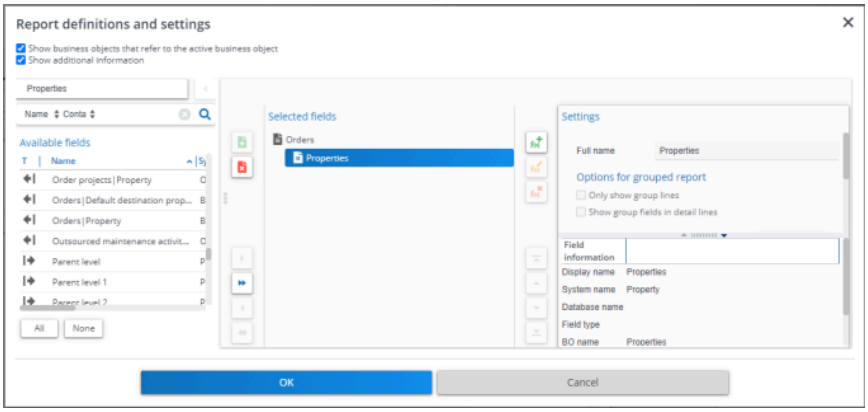
   The **Reporting** window opens.
3. Click Add.

The **Report definitions and settings** window opens. In this window you can select the fields you want to include in your report definition.

By using the horizontal and vertical sliders in this window, you can customize the panels' size as required.

For more information on including 'normal' fields, refer to To add a new user report definition.

For subreports, you can use either association fields or reference fields. For more information on these field types, refer to Field types.



4. Select the association (or reference) field you want to include in your subreport, for example the Orders|Property field if you want to include a subreport with orders for each property.
5. Click Add subreport  , to add a subreport.

In a report definition, it is possible to define subreports down to a maximum of 10 levels.

A subreport is added to your definition. In the **Settings** section of the window, you can make some settings for the subreport, such as font type and background color.

For more information on this subject, refer to Making report settings.

From the **Available fields** section, select the fields you want to include in your subreport, for example **Number** and **Description**, and move them to the **Selected fields** section.

6. Make the required field settings for the selected fields, such as column width or alignment.

For more information on field settings, refer to Making field settings.

7. Click OK to save your report definition.
8. To save the report in the required output format, click Save as.

For more information on Save as settings, see Save options for reports.

You can copy an existing user report for convenience, and then reuse or modify it as needed.

Making report settings

When creating or editing a report definition, you can make a number of settings that apply to the report as a whole. These settings become visible in the **Report definitions and settings** window if you select the top node in the **Selected fields** section.

Set as defaults

After changing the report settings, you can click **Set as defaults** to retain these settings. These will then be default for subsequent user reports. This is true for all settings, except for grouped report options:

- Only show group lines
- Show group field in detail lines

For a description of the report settings, refer to Report settings fields.
The grouped report settings are described in Options for grouped reports.

Options for group fields

The **Only show group lines** and **Show group fields in detail lines** options apply only to report definitions that contain *group fields*. A group field is any field for which the **Group by this column** option has been enabled.

For more information on this option, refer to Group by this column.

Only show group lines

If you enable this option, the resulting report will be a concise list without details.

Items that are displayed in concise reports include:

- Group headers;
- Group totals (=subtotals);

- Totals (= grand totals);
- Any field for which the **Group by this column** option has been enabled.

Show group fields in detail lines

If you enable this option, the names of fields that were selected as group fields will be printed in each detail line. For example, in a report on properties, if the property name is a group field, this name is repeated in each detail line.

To save a group report, always select **CSV** in the **Save as** option. The .xls format is not recommended for a group report because the output will not be properly formatted.

Fonts for reports

When creating reports, you can select a font from the available font set.

The Planon application has been fitted with a fixed font set from which you can select a specific font.

The reasons for choosing the current font set are two-fold:

- To move away from installation dependent fonts
- To make sure that Planon is compliant to the supplied fonts' license agreement

Available fonts

The following table shows the fonts available per language.

Substitution fonts	Languages*
Allerta(Trebuchet)	French, German
Arimo(Arial)	French, Hebrew, German
Comic Neue(Comic Sans)	French, German
Cousine(Courier New)	French, Hebrew, German
DejaVu Sans	Arabic, Hebrew, German
DejaVu Sans Condensed	French, Arabic, Hebrew, German
DejaVu Sans Light	German

Substitution fonts	Languages*
Gelasio(Georgia)	French, German
Noto Mono(Andale Mono)	French, German
Noto Sans(Verdana)	French, German
Oswald	French, German
Shippori Mincho	Japanese
Signika(Tahoma)	French, German
Tinos(Times New Roman)	French, German, Hebrew

* All fonts also support English and Dutch.

If there is no matching font available, Planon will automatically default to using *Noto Sans*.

Report definitions and settings

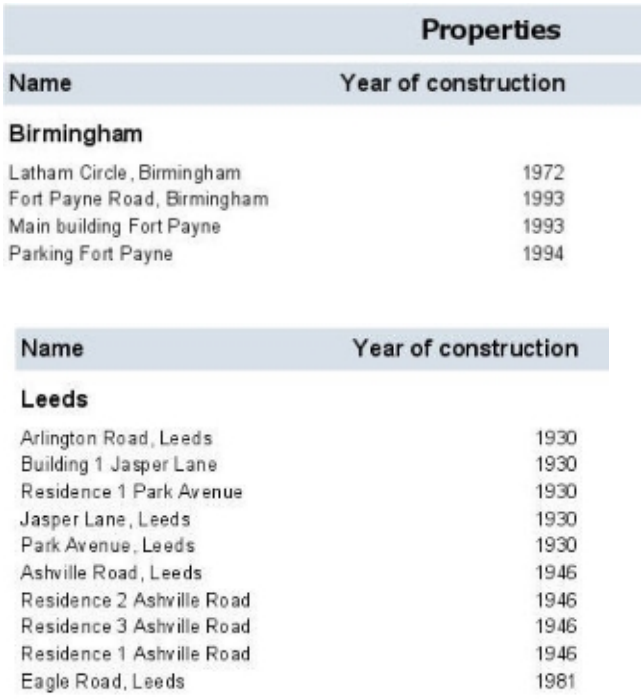
The selected fields will be represented as columns in the actual report. The column width, column title and other settings can be adjusted in the **Settings** section of the **Report definitions and settings** window.

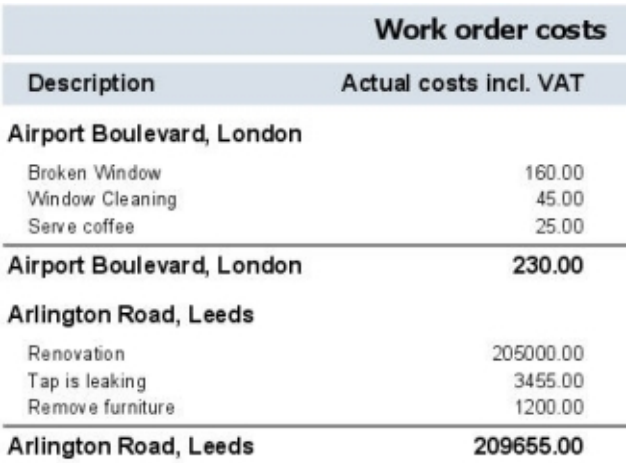
Depending on the field type and the report type there are several variants of the **Settings** section.

Field	Description
Full name	This read-only field displays the complete name of the selected field.
Alternative column text	Enables you to customize and replace the **Column text**.
Column text	The column text indicates the name given to the column in the **Selected fields** section. In addition, the column text is also printed above the respective column in the report itself. The field description is specified as default.
Width	Here, you can specify the column width, measured in centimeters (default is 2 cm).
Mask	For date-time fields, numeric fields, dimension fields and money fields a mask can be specified. Masks help you to specify the way in which field values are

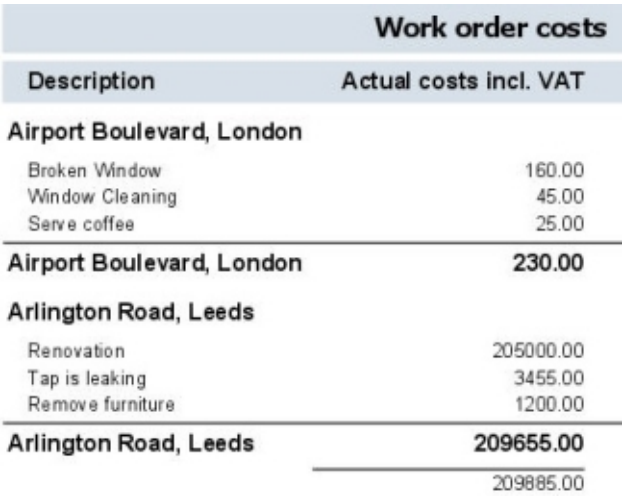
Field	Description
	displayed in a report. For example, a date can be shown in various formats, such as 01-05-2020, 1-5-20 or 1 May 2020. Depending on the field type, different mask pick lists are available from which you can select an example. The mask pick list can be opened by clicking the pick list button in the **Mask** field. However, the contents of the **Mask** field can also be entered or modified manually. **Numeric fields** By using a mask you can determine how a number in a numeric field is displayed in a report. You can select an example from the **Select a numeric mask** pick list. You can also enter or modify a mask manually in the **Mask** field. For a description of these fields, refer to Numeric fields. **Dimension fields** You can use a mask to determine how a value in a dimension field is displayed in a report. Select the required mask from the pick list to display the unit of measurement (for length, area, volume or amount/area) after the value. &LENGTH, &AREA, &VOLUME and &AMOUNT/AREA can also be used as macros in other masks. **Money fields** By using a mask you can determine how an amount in a money field is displayed in a report. You can select an example from the **Select a mask for amounts** pick list. You can also enter or modify a mask manually in the **Mask** field. For user reports, you can use the following masks: • **#,###** Use this mask if you want to leave out the decimals of an amount. • **#,###.00** Use this mask if you want to show the thousand separators of an amount. The mask can be used as 9,999.00 (US) or as 9.999,00 (European). The mask must be configured in one way: ◦ comma (,) as thousands separator

Field	Description
	◦ period (.) as decimal separator When you run the report, the report is displayed according to the language settings of the logged in user. **Date-time fields** You can specify the way the date and time is included in a report in the date and time fields. In some cases this depends on the **Regional settings** specified in your Microsoft Windows operating system. For more information, refer to your Windows documentation. You can select an example from the **Select a mask for dates** pick list. You can also enter or modify a mask manually in the **Mask** field. For a description of these fields, refer to Date-time fields. Text placed between single quotation marks is included in a report. For example: 'the date is' d MMMM → the date is 7 September 2020.
Horizontal alignment	Here, you can specify whether to left align, right align, or to center the text in a report.
Vertical alignment	Here, you can specify whether to align bottom, justified, center or top.
Group by this column	Use this option to group and sort data according to a specific field. If you select this option, the data will automatically be grouped. A heading is created for each new group.
Sort by this column	Use this function to sort data (alpha) numerically. You can sort data in ascending or descending order.
Display each group on a separate page	If enabled, each group is started on a new page. This option is only available if the **Group by this column** option is enabled. **Example of final report: each group starts on a new page**

Field	Description
	
Group totals under this column	If enabled, a subtotal per group is placed at the end of a column. This applies to numeric fields and money fields. To enable grouping totals, the following conditions must be met: 1. The **Print** field should be selected. 2. The field should be numeric. 3. **Show group fields in detail line** option must be selected. 4. **Group by this column** option must be selected. 5. Any grouped fields must be selected. **Example of final report** This example displays a report on order costs, subtotaled per group.

Field	Description
	

Work order costs	
Description	**Actual costs incl. VAT**
Airport Boulevard, London	
Broken Window	160.00
Window Cleaning	45.00
Serve coffee	25.00
Airport Boulevard, London	**230.00**
Arlington Road, Leeds	
Renovation	205000.00
Tap is leaking	3455.00
Remove furniture	1200.00
Arlington Road, Leeds	**209655.00**

Totals under this column	If enabled, a grand total is placed at the bottom of a column. This applies to numeric fields and money fields. To enable grouping under this column, the following conditions must be met: 1. The **Print** field should be selected. 2. The field should be numeric. 3. **Show group fields in detail line** must be selected. 4. **Group by this column** must be selected. **Example of final report** This example displays a report on order costs, with subtotals per group and a grand total. 

Work order costs	
Description	**Actual costs incl. VAT**
Airport Boulevard, London	
Broken Window	160.00
Window Cleaning	45.00
Serve coffee	25.00
Airport Boulevard, London	**230.00**
Arlington Road, Leeds	
Renovation	205000.00
Tap is leaking	3455.00
Remove furniture	1200.00
Arlington Road, Leeds	**209655.00**
	209885.00

Field	Description
Print column	Use this option to specify whether to include a field in the report. **Example** You have created an expression for a name. The expression is as follows: Initials + Prefix + Surname. You decide to sort by Surname. You can add an additional column for the surname, which you do **not** want to print. **Example of the final report** **Development Department** R.R. Adams Mark A. Allen David R. Anders James Austen Colleen H. Baker Leslie M. Banks Don J. Barnett Valerie Becker Jacky L. Brown Keith Burns Virginia W. Cameron Catherine M. Coldwell Ron S. Curtis Stefanie Davis Tina L. Edwards Andrew J. Ellis Ronald G. Ewing Diana Fields Ellis Fitzgerald For more information on expressions, refer to Working with Expressions.
Display each group on a separate page	Select this option to display the data of each group on a separate page. To enable this, you must first select **Group by this column**.

Creating a report customization

Planon enables you to create a custom report which you can customize using external tools.

Proceed as follows to create a custom report:

1. Create a user report definition as described in Adding a new user report definition.
2. Under Settings, in the Type field, select Custom and save your changes.
3. On the action menu, click Export report definition.

Your report definition is downloaded to your computer. The report definition is a zip file containing one or more jrxml files of the main report (and - if applicable- subreports).

- In order to edit the report definition, you need to have JasperSoft Studio installed on your computer. You can download the software from the JasperSoft website.
- The JasperSoft software is distributed under an EPL license, which is included in the download.

4. Extract the jrxml file(s) from the zip file and edit it/them in JasperSoft Studio.

If you are using a subreport, note that the main report refers to it so it is best to open both in JasperSoft Studio.

5. After tweaking the report definition, add it to a zip file and upload this file by clicking Import report definition on the action menu.

   The Upload file dialog box appears.

6. Browse to and select your zip file and click OK.

   You have completed creating a customized report. After uploading a customized report, the:

   - **Customization uploaded?** field is set to **Yes**.
   - **Type** field becomes read only so you can no longer change it.

There are various operations possible on custom reports:

- **Delete customization** removes the customizations from the report definition so you can start again. This also changes the value of the **Customization uploaded?** field to **No**.
- **Delete** completely removes the custom report definition.
- **Save as** allows you to save the report as a PDF, which is the only option available for custom type reports.
- **Copy** allows you to copy a customized report; the **Customization uploaded?** field will be set to **Yes**.
- Update an existing report (export the report definition and import it again):
  - If fields are removed from Planon and the report definition is not updated, they will appear empty in the report result.
  - Fields can only manually be removed from the report definition in JasperSoft Studio.
  - Fields added to the report definition in Planon will not appear in the report result until they are added to the definition in JasperSoft Studio.

Creating a report on available workspaces

Prior to defining a report, you select the TSI, selection level and step corresponding to the subject of the report. For example, if you want to create a report on available workspaces, complete the following steps:

1. Open the Spaces & Workspaces TSI.
2. Select the **Workspaces** selection step.
3. Open **Reports** from the action menu.
4. Add a new report definition.

The fields that are immediately available (i.e. selectable) for the new report definition, belong to the business object that is opened.

In terms of report definitions, these are normal fields. They can be recognized by the  symbol. However, Planon ProCenter also enables you to include fields from other, related business objects in your report definition.

These are reference fields and association fields.

Reference fields

Reference fields are fields that have a one-to-one relationship with the main business object in the report definition. A property (building), for example, can only be located in one city.

So, if you are defining a report that focuses on the **Property** business object, reference fields from the related **City** business object can also be included in your report definition.

Reference fields can be approached by double-clicking the item preceded by the  symbol.

Association fields

Association fields are fields that have a one-to-many relationship with the main business object in the report definition. For example, numerous orders may be linked to one particular property.

So, if you are defining a report that focuses on the **Property** business object, association fields from the related **Orders** business object can also be included in your report definition. Association fields can be approached by double-clicking the item preceded by the  symbol.

It is recommended to include association fields as subreports in your report definition.

For more information on subreports, see To include sub reports in your report definition.

Displaying multiple-select free fields in reports

Planon enables you to create reports including multiple-select free fields (MSFF). A multiple-select free field (MSFF) is a technical name for a picklist. To include a multiple-select free field, you must follow a series of steps:

Procedure

1. First, create a multiple-selection list (picklist) and link it to a business object. For information on how to do this, see Linking a multiple-selection list to a business object
2. After linking multiple-selection list to a business object, you have to make it available for the user. For information on how to do this, see Making a multiple-selection list available for use
3. Select a business object for which you want to create a report and add a new report. For information on how to do this, see Adding a new user report definition.
4. Add a subreport to the report created and select the multiple-select field that was created in Step 1. With this step we specify to use the multiple-select free field in the report. For information on adding a subreport, see Including sub reports in your report definition.

When you click **Preview & print** on the action panel, the report will be generated and will display the selected fields.

Creating 'Data only' reports

‘Data only’ reports are user reports that don’t produce a formatted document (no PDF/ RTF/Word layout), but only deliver raw, structured data for use elsewhere.

The main purposes are:

1. **Provide raw data for integrations and mappings**

   CAD Integrator user-defined mappings use *Data only* reports to define which fields are available and how they are grouped in the legend.
2. **Feed other functionality inside Planon**

   They can be used as a data source for visualizations (like space / workspace color mappings in CAD Integrator)
3. **Efficient data extraction**

   Because there’s no layout/rendering, *Data only* reports are suited for:

   - Technical exports
   - Scenarios where another system or component will handle the presentation layer

The following sections describe how the **Data only** report type is used to:

- create definitions for the texts and tool tips that are displayed in **CAD Integrator drawings**.
- create reports that can be used as a basis for user-defined space mapping in **CAD Integrator drawings**.

Creating reports for texts and tooltips

You can create text and tooltip definitions for floors, spaces, flexible workspaces, assets and people. Once created, the definitions can be selected as texts or tooltips for floors, spaces, flexible workspaces, assets and people from the relevant pick lists in the **Settings** dialog box of CAD Integrator .

- By default, some basic information is already displayed in texts and tooltips if no report is linked. For example, for spaces the space number and space name are displayed as text and tooltip in the CAD Integrator drawing.
- For details on selecting texts that are displayed in CAD Integrator drawings, see CAD Integrator documentation.

Procedure

1. Select the appropriate selection level or step in the appropriate TSI.

   For a description of these fields, refer to Report for texts and tooltips fields.

2. Click Report on the action menu.

   The **Reporting** dialog box opens, displaying existing reports on the **User reports** tab.

3. Click Add in the action menu to start a new report definition.

   The **Report definitions and settings** dialog box opens.

4. In Settings, in the Type field, select Data only.

   Specify a name for the new report. Select the **Include field names** check box if you also want to display the field names of the selected fields in the texts and tooltips.

If required, you can also include subreports.

5. From Available fields, select the fields you want to include in your report.
6. Click OK to save your report definition.

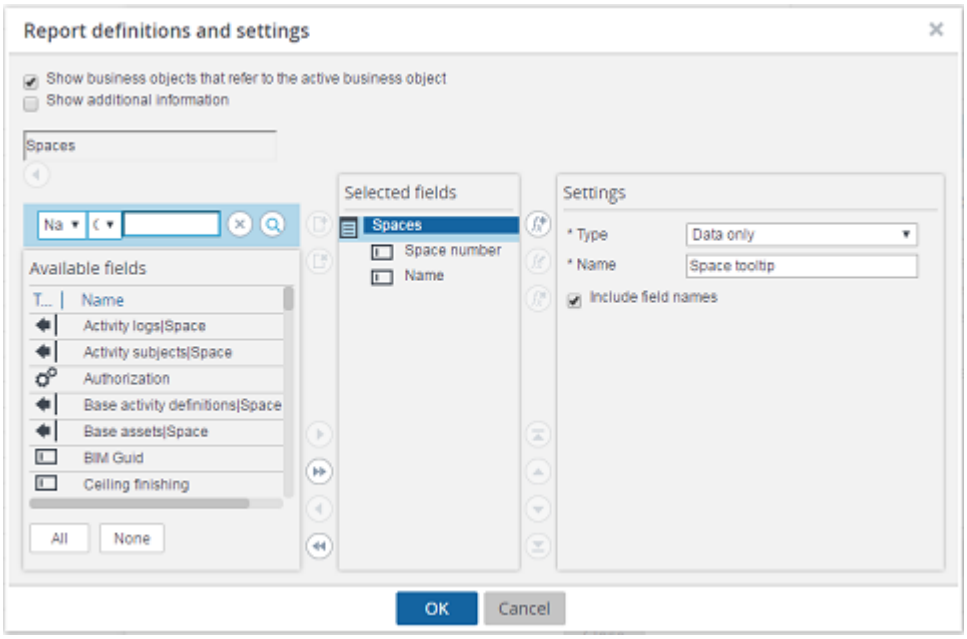
After your report definition has been saved, you can select it from the relevant pick list in the **Settings** dialog box of CAD Integrator .

Example

Assuming you want to display the following information in the spaces tooltip:

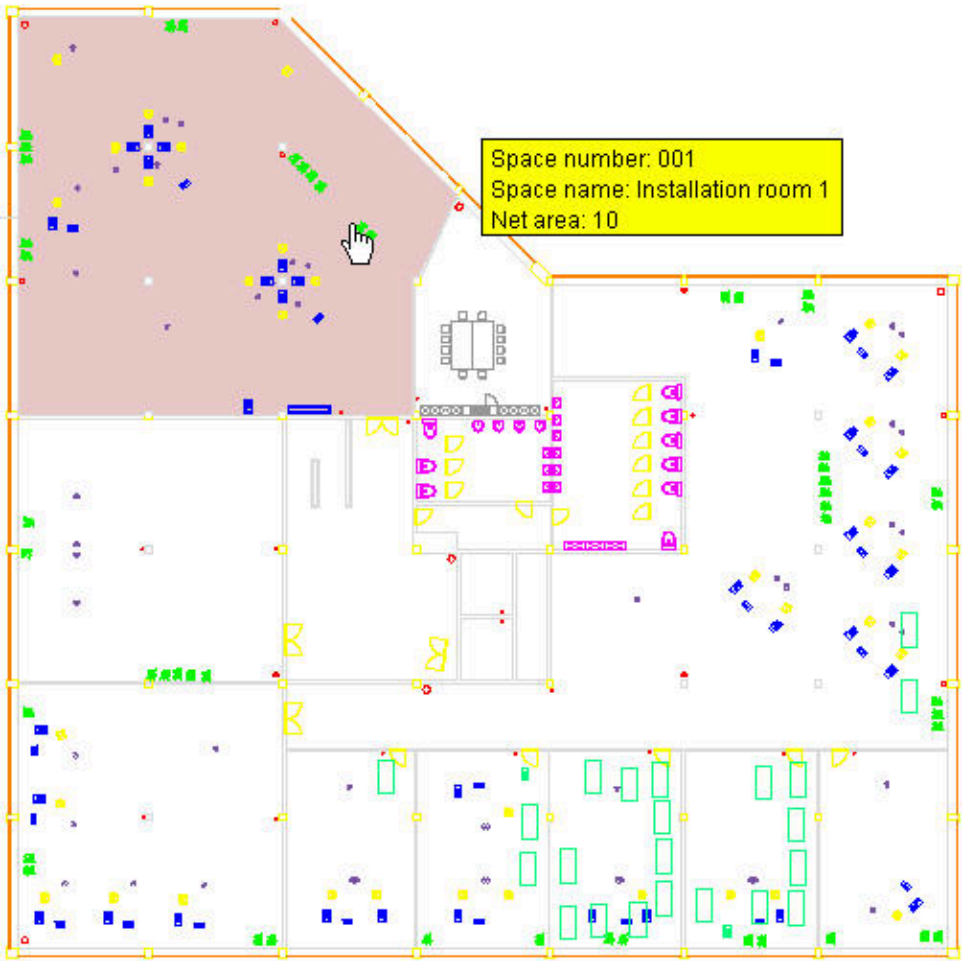
- Space number
- Space name
- Net area

  In addition, you also want to display the field names of selected fields in the tooltip.



In the CAD Integrator settings dialog box, in the **Tooltips - spaces** field, select the tooltip definition you created for spaces:

You can see the result in the following CAD Integrator drawing:



Creating reports for space mappings

In addition to the standard Planon-defined space mappings—such as Department, Space category, Space type, Cost center, Tariff group, Space standard, Free attributes, and Space usage—you can also create your own user-defined space mappings.

For this purpose, you must define a report in which you indicate the fields to be used to create a space mapping. All the available fields for the business objects **Space** and **Space usage** can be used for this purpose. For details on creating a report, follow the procedure described in Creating reports for texts and tooltips.

In order for the report to be available in the CAD Integrator menu> Space mapping > **User-defined space mapping** > **User reports** dialog, first select a field to group data on and then select the **Group by this column** check box.

By selecting the **Group totals under this column** and **Totals under this column** options you can display the totals of multiple numeric fields (including free numeric fields selected in the report definition) per grouping criterion and also per column in the floor drawing's legend.

It is recommended to select the **Group totals under this column** option to get the correct values for each legend row. For example, if an area field is added to the report, Planon calculates the total of the area field and shows the total in the floor drawing's legend.

After you have defined the required report, you can use it to generate your user-defined space mapping in CAD Integrator .

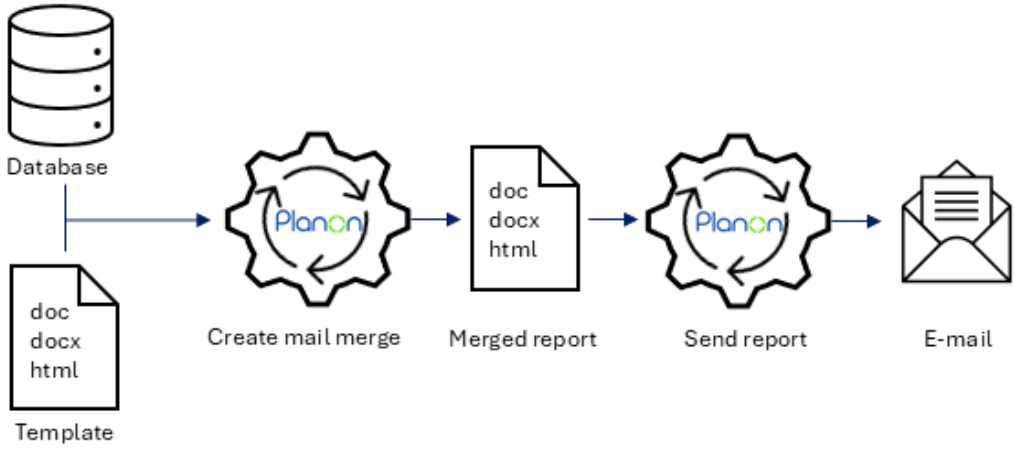
- For details, see generating user-defined space mappings in **CAD Integrator**.
- To save a group report, always select **CSV** in the **Save as** options. .xls format is not recommended for group report as the output will not be properly formatted.

Mail merge report definitions

This section explains how to create your own mail merge definitions and the corresponding template files. It provides the information you need to build mail merge reports that include all required business data.

Process

The following image illustrates the role of **templates** as *input* and the **merged report** as *output* in the *Create mail merge process*.



Templates in general

- Fields that are included in the template file should also be included in the report definition. The sequence of fields in the mail merge definition is not important. The position of the fields is determined by the template file.
- If your mail merge definition includes subreports, the order of fields becomes important. Subreport fields are added to the template in a table-like structure, following the exact sequence defined in the mail merge configuration.

HTML templates

Conventions

- Angle brackets (< and >) are part of the HTML syntax. To display angle brackets in HTML, certain character combinations are used to represent these brackets.

  The character combination used to represent angle brackets in HTML syntax is the following:

- **<**
  This combination represents an opening tag (<) in HTML
- **>**
  This combination represents a closing tag (>) in HTML

```
&lt;Description&gt;
```

HTML syntax example

When viewing the report by clicking the **Edit** button in the **Report definitions and settings** window, the selected template will display in read-only mode. Here, the editor converts the used syntax to angle brackets:

```
Description          :    <Description>
```

Result in a viewer

The *.html template file should be drafted first, even if you do not know the exact merge codes of the fields that are to be included. The exact field merge codes can be copied from Planon ProCenter and pasted between characters representing angle brackets (< and >) in your template file later.

Important!

Mail merge template `.html` files should be saved as UTF-8 with Unicode Byte Order Mark (BOM). Text editors such as *Notepad++*, *TextPad*, *UltraEdit* will allow you to specify the encoding when saving a file.
When you use UTF-8 with BOM (*Byte Order Mark*), Planon ProCenter will be able to automatically detect this encoding and therefore no further settings are required.

When you do not use a BOM, Planon ProCenter will not be able to detect the encoding and will use the encoding specified in the Template Encoding setting on the report template is associated with, unless this setting is not specified, it will use the Web client machine's platform encoding (not recommended).

We recommend to create .html templates with a HTML editor. You can also use Microsoft Word to create .html template files. However, if you use Microsoft Word, the result cannot be guaranteed.

All HTML-tags in report templates must be in lowercase as defined by the XHTML standard.

HTML templates and notifications

When using HTML templates for notifications (Alerts), please note that the HTML template is only used for the body of the message. Other properties - such as the subject of the message - are derived from the notification settings.

See also Creating a mail merge definition and a template file.

RTF, DOC and DOCX templates

RTF, DOC and DOCX templates are created in Word in the same manner as HTML templates, with the exception that the literal symbols "<" and ">" and "[" and "]"are now used instead of the html syntax for the brackets.

Creating a mail merge definition and a template file

Creating a mail merge definition is slightly different from creating a normal report definition. You can use the following procedure to create a mail merge definition:

Procedure

1. Open the template file you have created, with the required text and (preliminary field) names between the angle brackets, or in the case of a HTML template, between the characters representing angle brackets (< and >).

   The exact merge codes can be copied later (in step 9 of this procedure).

2. On the action panel of the relevant business object, for example **Orders**, select **Reports** and select the Add option.

   The **Report definitions and settings** window opens.

3. In Settings, in the Type field, select the Mail merge option.
4. In the Name field, type a name for the report.

In the **Template** field, select the correct template file (the template file you have opened earlier in step 1).

Note that when using multiple property sets, the mail merge functionality may be affected if each property set has its own WebDAV server (and file location). The Template field now shows files of each available property set.

- There should at least be one template file selected.
- If there is a template for the current property set, it will be linked to the current property set.
- When upgrading to the current release - in the Cloud - template file references will be updated accordingly, but the file will actually be have to be copied manually. For on-premise, this will have to be arranged manually.

5. In the Custom file name field, click the button to use the Expression builder to specify an expression on which the file name is to be based. The generated file name will comprise the result of the expression, appended by a random number. This prevents overwriting of the existing files when the same report is executed multiple times.

   For details on using **Expression builder**, see Working with Expressions.

6. In the Email subject field, click the button to use the Expression builder and specify an expression on which the subject line is to be based that is used in notification and confirmation emails.

- It is highly recommended to specify an expression in this field. The expression you specify here will be used to populate the subject of the mail that is sent as a notification or a confirmation mail. This field is only used if this mail merge report is used in a notification or for sending the confirmation mails. For details on using **Expression builder**, see Working with Expressions.
- If this field is not populated:
  - for notifications, the name of the notification definition is used. If there is no name either, the notification definition's code is used.
  - for confirmation emails, the subject that is defined on creating a mail is used.

7. In the Available fields section of the Report definitions and settings window, start selecting the (reference) fields you want to include in your mail merge definition and subsequently save the definition.

   For more information on including fields, see To add a new user report definition.

8. In Selected fields, select the first field from the list.

9. In Settings, copy the field's merge code from the Merge code field to the correct position in the opened template file.

   For HTML templates, ensure the merge code is placed between the characters representing angle brackets (< and >).

10. Repeat copying and pasting merge codes for each field in Selected fields (the mail merge definition) until all merge codes have been included in the correct location in the template file.
11. Only when your template is not using the UTF-8 encoding with Unicode BOM, you should fill in the Template encoding field to explicitly specify the encoding your template is using. Enter a valid encoding name. You will receive an error message if you enter a wrong encoding name.

A list of valid encoding names is published and maintained by the Internet Assigned Numbers Authority in the IANA Charset Registry: http://www.iana.org/assignments/character-sets
Planon ProCenter will always attempt to automatically detect the used encoding from the Unicode Byte Order Mark (BOM) on the template file itself, but in some cases this is not possible. If the encoding is not detected automatically, the **Template encoding** specified in the report properties will be used.
File encoding is usually not detected if:

- The file is encoded in some legacy encoding such as ISO-8859-1
- The file is encoded as Unicode, but without Byte Order Mark (BOM).

12. Save your template file.
13. Save the mail merge definition.

    You are now ready to generate the mail merge report(s).

    When the system setting **Apply UTF-8 for Mailmerge** is not changed (it is on **Yes**), the output reports will be encoded in UTF-8. Only then can we guarantee that all symbols can be used in reports without issues.

Uploading a template directly instead of using WebDAV

You can upload templates via WebDAV, but WebDAV does not support multi-factor authentication (MFA). In order to use MFA, you should upload your mail merge templates directly.

You can upload a template for mail merge reports directly, using the **Upload template** option.

Procedure

1. In the System settings TSI, select File locations.
2. On the action panel, click Upload template.

   The **Upload template** dialog box appears.
3. In the Upload template dialog box, click Choose file and select the required file.
4. In the Target directory field, specify the relevant path and click OK.

The **Planon managed** setting is not applicable to this feature. Therefore, you can create a new folder inside the templates folder.

Generating mail merge reports

Once you have a complete mail merge definition and template file, you can choose between different kinds of mail merge output. We recommend generating a print preview before you actually print or export your mail merge documents.

- If **Preview all documents as one file** is set to **No** and you preview a report in the **Reporting** dialog box, the reports are displayed as individual documents.
- If **Preview all documents as one file** is set to **Yes**, all reports are displayed in a single document.

Creating bulk mail merge reports

It is possible to generate bulk mail merge reports for an order. The reports can have both HTML and DOC/DOCX templates. The mail merge report will be downloaded as a single zip file.

1. Go to Work Orders > Orders.
2. Select the order for which you want to create a mail merge report.
3. Click **Report** in the action menu. A dialog box will appear.

Mail merges are supported for up to 1,000 records. If the data set contains more than 1,000 records, an error message will appear.

4. Type a Name for the report. The download .zip file will be created with this name.
5. To customize the extracted file names, select **Edit user report**.
6. In the **Custom file name** field, click the  button to use the **Expression builder** to specify an expression on which the file name is to be based.

For details on how to use the Expression builder, see Working with expressions.

7. To preview all the reports in a single HTML file, set the **Preview all documents as one file** field to **Yes**.
8. Select **Preview & Print** to preview the report.

A preview of all the reports in a single HTML file will be displayed.

9. Click **Save as** to download the file.

A single HTML file with all the mail merge reports will be created in your browser's download location.

Subreports in a mail merge report

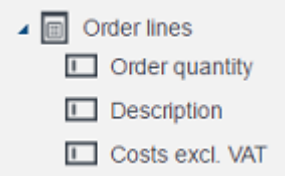
You can include subreports in mail merge definitions. By using a subreport, you can include more details (for each record in the main report).

Adding a subreport is similar to adding subreports to a standard report definition, as described in To include sub reports in your report definition.

For more information on how to create the mail merge definition and template file, refer to Creating mail merge definition and a template file.

Example

The following example is a catering confirmation with a subreport on the order lines that have been created.



The template file should contain the subreport name in square brackets: [Order lines].

Reports will replace the subreport tag with a table listing the fields of the subreport in columns. This works for both HTML and Word templates.

Order Lines

Order quantity	Description	Costs excl. VAT
4	Coffee	3.00
4	Tea	2.40
8	Water	3.60

Important notes

When your report includes a subreport with specific fields, its definition must begin with `[Start:data]` and end with `[End:data]`.

Example

- Avoid using a hard line break (ENTER key) within the `[Start]` and `[End]` tags, as it can disrupt the code.
- Instead, either refrain from adding line breaks entirely or use a soft line break (SHIFT+ENTER) where necessary.
- In Word, a hard line break (ENTER: ¶) and a soft line break (SHIFT + ENTER: ↵) are represented by different characters. This helps you choose the appropriate type of line break for your content.

Predefined table subreport

The **Predefined Table Subreport** is a powerful feature available in Planon mail merge reports when using **Word** (doc, docx) templates.

Introduction

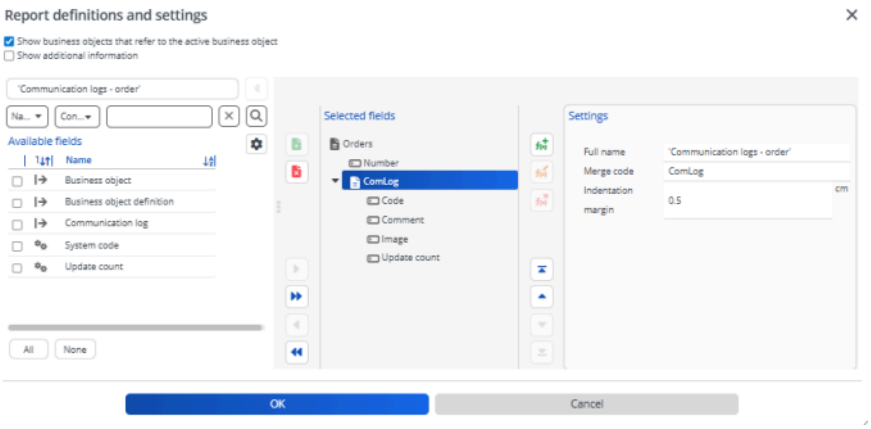
This feature allows you to design and style tables directly within your Word template, providing greater control over the appearance and formatting of subreport data.

You can create a table in your template that includes headers, footers, and custom styling such as outlines, colors, and text formatting (bold, italics) using Word's native tools. The data from your subreport is automatically merged into this predefined table structure, ensuring that the final report maintains your desired layout and style.

This feature only works with Word (doc, docx) templates.

How it works

1. Create a report definition - in this example a report on Orders with communication logs.



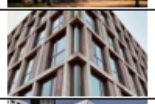
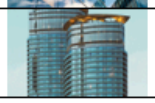
2. Create a table in **Word** - a table can include a header row, must include at least a data row, and can optionally include a footer row:

Code	Comment	Image	Count
[TableStart:ComLog]<Code>	<Comment>	<IMAGE:ImageRef>	<Count>[TableEnd:ComLog]
Footer			

   - The header and footer are free definable by the user.
   - The `TableStart` and `TableEnd` tags must be included in the table row
   - The tags of the first row cell must include:
     - [`TableStart`:Mergecode of the subreport]
     - <merge code of the field in first column>
   - The tag for the middle fields should include only the <merge code of the field>
   - The tags of the last row cell must include:
     - <merge code of the field in last column>
     - [`TableEnd`:Mergecode of the subreport]
3. Upload your template in **System settings** > **File locations** so it can be used in mail merge reports.
4. When running the report, the structure and styling of the table is maintained. The result will resemble the following:

Order number: 154.00

Communication logs:

Code	Comment	Image	Count
001	Building 1		13
002	Building 2		9
003	Building 3		13
004	Building 4		10
005	Building 5		10
006	Building 6		9
			64
Footer			

Restrictions

- `TableStart` and `TableEnd` tags have to be in the same row.
- `TableStart` and `TableEnd` tags must exist inside a table cell.
- The report definition can only have one subreport level - a subreport within a sub report is not allowed.
- A table can contain only one subreport.
- When on a field **Totals under this column** is enabled, totals for this field are calculated and a row is added after the last inserted row with the totals.

Pointers

In Word, you can apply various table properties that will affect the outcome, these can be applied by the customer's discretion.

The pointers provided refer to Microsoft Word functionality. Planon is not responsible for how Word handles tables or any related behavior.

- Using sections for each order allows grouping communication logs and customizing page size/orientation.
- **Repeat header rows** works best when configured via the classic Word **Table Layout** menu and may require extra rows during setup.
- Page breaks between tables give more control over table placement.
- Not using page breaks/sections lets Word control layout, which may be suitable for simple scenarios.
- Splitting pages into columns can mix *before* and *after* tables; for more control, use a base table with two cells (one for each).
  - Pitfall: Header repetition may not work as expected in nested tables.
- Embedding fonts in templates ensures consistent PDF output but increases file size and upload time.
- For images:
  - Avoid **Automatically resize to fit contents**—let row height control image display.
  - Use **Specify height** with **At least** for rows.
  - Avoid hard returns in tag cells.
  - Portrait and landscape images will affect table appearance.
- For numeric fields:
  - Use column totals to add summary rows.
  - Use column sorting to manage data order.
  - Use expressions to filter and calculate fields, especially for before/after scenarios.

Inserting flexible subreports in a mail merge report

A flexible subreport allows you to provide layout and positioning flexibility for subreport data inside mail merge templates, beyond what a simple subreport can do.

If you want to create a mail merge report in which individual field values appear within the same paragraph as your own descriptive text, you can insert a flexible subreport into the template.

The procedure to do this is identical to that described in To include sub reports in your report definition, however regarding the template used, the following must be adhered to:

- The template used must be in either .doc, .docx or .rtf format.
- The flexible subreport must be preceded and succeeded by a carriage return in the template.
- The start of a flexible subreport is indicated by the tag [Start:flexible subreport name]. The end of the subreport is indicated by the tag [End:flexible subreport name].

Tags are case sensitive and the capitalization must be observed.

- The text and merge code tags between the start and end tag of the subreport are repeated for every record (that is, element) in the subreport.
- Hard line breaks (ENTER) cannot be used between the start and end tags of the flexible subreport, otherwise an error occurs when generating the mail merge report. Soft line breaks (i.e. SHIFT +ENTER) can be used within the subreport.
- When creating the template, write a paragraph of text as required and simply insert the field merge codes within the text.
- The merge codes used in the template must match the merge codes defined in the **Report definitions and settings** dialog box for the fields included in the subreport. In addition, all merge codes in the subreport must be unique within the overall report definition.
- For price announcement letters for contract lines, if you want to include the **Period start date** or **Period end date** fields in your report, complete the following steps:

1. Create an expression in the **Report definitions and settings** dialog box.
2. Enter a function that returns a date, e.g. currentDate().
3. Specify the date format in the **Mask** field of the dialog box.
4. Enter the merge code 'PERIOD_BEGINDATE' or 'PERIOD_ENDDATE'

If you use the merge codes in the template they will be replaced with the **Start date of period** and **End date of period** as entered in the price announcement letter dialog box.

- It is not possible to use tables or cells within in a flexible subreport

Emailing forms containing signatures as PDF attachments

You can email a work order report that is based on a mail merge template. This report can include a signature (stored as an image in communication log files) and can be sent as a PDF attachment.

1. In Orders select the order for which you want to send a report containing a signature in PDF format.
2. On the action panel, click Add form.

a. Select Save as PDF this will send the report as a PDF mail attachment (only for Word, not for HTML).
b. Specify the addressee(s).

The selected work order must have a communication log containing a Document reference to an image file (the signature).

3. On the action panel, click Report.
4. Create/select a mail merge report and select the proper template.

The template must contain a reference to the image merge code that is prefixed with IMAGE: (in the following example, `IMAGE:myimage`)

Example

```
[Start:Communication logs - order]<IMAGE:myimage>[End:Communication logs - order]
```

5. Click Preview & print to preview the output. The mail is sent as scheduled/configured.

Emailing a form to multiple recipients

If you would like to enter multiple email recipients for a form, proceed as follows:

Procedure

1. Select the item for which you want to send a form.

This feature is only available for Order-based objects, such as Reservations or Orders).

2. Click Add form on the action panel.

The Forms dialog box appears.

3. Select the template on the left and click Edit email on the action panel.
4. In the To field, next to the recipient's email address type a comma and enter the next recipient's email address (or as many as required).
5. Click OK to close the dialog box.

Images in templates

You can include images—such as your company logo—in your templates. When you use Microsoft Word, you can simply insert the image directly into the Word template.

For HTML templates, additional rules apply:

Only individuals with appropriate knowledge of HTML should do this.

To display your image in the report:

- the template file must refer to it.
- the image file must be located in the same folder as the template file.

If either of these conditions is not met, the image will not display in your report.

The following example shows an image reference in HTML syntax that you can include in a HTML template file. The file name of the image you want to include should always be placed between quotes:

```
<img src="image001.gif"></img>
```

When adding an image to a .rtf, .doc or .docx template, it is not necessary to include any tags or place images in a folder.

Including images dynamically in templates

You can include images dynamically from the business object that the mail merge is based on. This section uses an example that shows how to add a property image to a property mail merge report.

You can dynamically include images in both HTML- and in DOC/DOCX templates. The procedure for these templates differs slightly, see:

- HTML templates
- DOC/DOCX templates

Notes about images

- The following file extensions are supported: bmp, jpg, gif, png, jpeg.
- This is not supported for secure documents.
- This is possible for flexible subreports, not for simple subreports.
- The size of the image can be defined by adding a text box and adding the merge code into this text box. Place the merge code in a table cell within the text box and set the table option **AutoFit** to **Fixed Column Width**.
- The file name of the image used in the mail merge must have a minimum length of 3 characters (or it will not be included).
- The image can be merged from both fixed fields and expressions, as long as they are targeting an image field type.

Dynamic images in HTML templates

Displaying images in HTML mail merge templates.

1. Access the business object Properties for which you want to include images dynamically and click Report on the action menu.
2. In the Reporting window that appears, click Add on the action menu to add a new report.

The Report definitions and settings window opens.

3. In Settings, in the Type field, select Mail merge.
4. In the Selected fields section, click Add expression to add an expression.
5. In the Expression builder, in the Expression panel type:

```
"<img src='" + Properties.Image + "'alt='" + Properties.Name + "'/>"
```

and click Check.

The Information window appears informing you that the expression is approved.

6. Click Exit to close the Information window.
7. Click OK to close the Expression builder window.
8. In the Report definitions and settings window, in the Merge code field, type PROPERTYIMAGE.

Ensure that the **Image** field on **Properties** contains an image.

9. In the Selected fields, click Properties and select the HTML code template from Settings > Template.

For more information on creating templates, see Templates in general and subsequent topics.

10. Open the HTML template, add:

```
&lt;PROPERTYIMAGE&gt;
```

11. Save and close the HTML template.
12. In the Report definitions and settings window, click OK and preview / print the report.

Dynamic images in DOC/DOCX templates

Displaying images in DOC/DOCX mail merge templates.

1. Access the business object Properties for which you want to include images dynamically and click Report on the action menu.
2. In the Reporting window that appears, click Add on the action menu to add a new report.

The Report definitions and settings window opens.

3. In Settings, in the Type field, select Mail merge.
4. Add a field with the constant "IMAGE:" in the merge code in order to get the image in the Word document instead of the file reference:

a. Move the Image field from Available fields to Selected fields.
b. In the Settings window, in the Merge code field, type "IMAGE:" before the already automatically populated translation of the field Image

5. Under Selected fields, select Properties and select the DOC/DOCX template in the Template field.

For more information on creating templates, see Templates in general and subsequent topics.

6. Open the DOC/DOCX template, add <IMAGE:PROPERTYIMAGE>.
7. Save and close the DOC/DOCX template.
8. In the Report definitions and settings window, click OK and preview / print the report.

Working with Expressions

By using expressions you can apply specific calculations or operations to the fields in a report definition.

The results of these calculations or operations can be included as extra columns in a report. The expressions triggering these calculations/operations should be created with Expression builder.

It is not possible to add inline comments to expressions, because doing so would invalidate the expression syntax.

To clarify the purpose of complex expressions, you can use one of the following approaches:

- Use a descriptive name in the **Column text** field of the **Expression** in the Report definition.

  For example: `TotalRentInclIndexation_Expr`.
- Provide report documentation that explains the logic behind complex expressions.

Adding an expression to your report definition

Follow the next steps to add an expression to your report definition.

Procedure

1. Add a new report definition or open an existing report definition to which you want to add an expression.

   For more information on creating report definitions, refer to Creating User Report Definitions.
2. Click the Add expression button.

   Expression builder is launched and you can start building an expression.
3. Build an expression.

   For more information on building expressions, refer to Building expressions. This section gives a number of detailed examples for expressions.

- Please note that we advise against including period fields in an expression because the output will display the technical value instead of the translated value.

- In Expression Builder, there is one operator with a notation that deviates from the standard notation: != stands for NOT EQUAL.

Building expressions - Adding an operator

In Expression Builder, you can include a calculation between (the values of) two numeric fields in an additional column.

When you include string field (alphanumeric) values in your expression, enclose them with double quotes to make your expression valid. See the AND operator for an example.

Numeric values do not require double quotes, see the OR operator for an example. For a description of these fields, refer to Operator fields.

- After completing building an expression, click **Check** to validate it.
- You can combine multiple operators to build complex expressions.
- The '**if() then else**' operator uses the '**if, then**' part to determine what the numeric output of the expression will be.
- Your expression will use the field's system name, which is always unique - for convenience, the translated name is shown in the panel below the expression.

Example 1

If you use the following expression:

(If (Orders.'Actual costs incl. VAT' - Orders.'Cum. estimated amount incl. VAT' < 0) then 0 else (Orders.'Actual costs incl. VAT' - Orders.'Cum. estimated amount incl. VAT')).

The output will be rounded to whole numbers, because "0" is treated as an integer output. This is true even when the mask is applied to the field. For example, if the output of the calculation is 14223.75, the expression result will be rounded to 14223.00

Example 2

If you use the following expression:

(If (Orders.'Actual costs incl. VAT' - Orders.'Cum. estimated amount incl. VAT' < 0) then 0.00 else (Orders.'Actual costs incl. VAT' - Orders.'Cum. estimated amount incl. VAT')).

The output will be rounded to two decimals, because "0.00" is treated as a decimal output. So, the expression result for the value 14223.75 will be shown as 14223.75.

In the following example, an expression is built showing you how to calculate the difference between the purchase amount and the sales revenue of a property.

Procedure

1. Add a report for the properties business object.

2. Click the Add expression button to open the Expression builder window.
3. In the Available fields section, select the Sales revenue field and click the Add button in that section.
   Or
   In the Available fields section, double-click the Sales revenue field.
4. In the Operators section, click the [-] function and click the Add button in that section (or double-click the [-] function).
5. In the Available fields section, double-click the Acquisition amount field.

   The expression has now been completed.

6. In the Expression section, click the Check button.

   Planon ProCenter will now check whether the expression you have built is correct.

7. Click OK to save the expression and to close the Expression builder window.

   You will now return to the **Report definitions and settings** window. Your expression has been added to the **Selected fields** section.

8. In the Selected fields section, select the expression you have just created.
9. In the Settings section, specify the required field settings. For more information on field settings, refer to Making field settings.
10. View the result in the print preview of the report.

	Property data
	Profit
Airport Boulevard, London	
	499,780
Apple Tree Road, Bridgwater	
	-900,000
Church Street, Oxford	
	1,000,000

Adding a text constant

The name of a person usually consists of multiple fields, for example **First name** and **Surname**. If each field is included in a report individually, a fixed column width is used for each field. Without the use of an expression, the report might look like this:

First name	Surname
Valerie	Becker
Leslie	Banks
Ron	Curtis
Abraham	Johnson
Alice	Jones
Brenda	Smith
Ronald	Adams
Frank	Sheppard
Terry	Newman
Ronald	Wilson

The following example explains how an expression can be built to include multiple fields separated by a space, instead of being placed in individual columns.

Procedure

1. Add a report for the people business object.
2. Click the Add expression button to open the Expression builder window.
3. In the Available fields section, double-click the First name field.
4. In the Operators section, double-click the [+] function.
5. In the Constants section, select the Text option.
6. In the Constants section, enter a space in the box.
7. In the Constants section, click the Add button.

   The space is displayed as [" "] in the **Expression** section.
8. In the Operators section, double-click the [+] function.
9. In the Available fields section, double-click the Surname field.

   The expression has now been completed as you can see from the following example.

10. In the Expression section, click the Check button.

    Planon ProCenter checks whether the expression you have built is correct.
11. Click OK to save the expression and to close the Expression builder window.

You will now return to the **Report definitions and settings** window. Your expression has been added to the **Selected fields** section.

12. In the Selected fields section, select the expression you have just created.
13. In the Settings section, specify the required field settings.

    For more information on field settings, refer to Making field settings.

14. View the result in the print preview of the report.

If you want to make your expression appear over multiple lines (line_feed) in the report, then enter the expression as shown in the following screenshot:

Adding a numeric constant

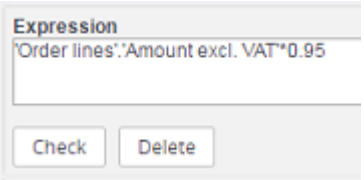
A field can be edited by using a constant. If, for example, a 5% discount applies to orders that are paid within three weeks, you can create a report showing the amounts before and after the discount has been deducted. The following example shows how to build this type of expression.

Procedure

1. Add a report for the order business object.
2. Include the Number and Description order fields.

3. Add a subreport and include the Description and Amount excluding VAT fields from the Order lines|Order in your subreport.
4. Click the Add expression button to open the Expression builder window.
5. In the Available fields section, double-click the Amount excluding VAT field.
6. In the Operators section, double-click the [*] operator.
7. In the Constants section, select the Numeric option.
8. In the Constants section, type the value 0.95 in the box.
9. In the Constants section, click the Add button.

   The expression has now been completed as you can see from the following example.



10. In the Expression section, click the Check button.

    Planon ProCenter will now check whether the expression you have built is correct.

11. Click OK to save the expression and to close the Expression builder window.

    You will now return to the **Report definitions and settings** window. Your expression has been added to the **Selected fields** section.

12. In the Selected fields section, select the expression you have just created.
13. In the Settings section, specify the required field settings.

    For more information on field settings, refer to Making field settings.

14. View the result in the print preview of the report.

Orders

Description

24.01

Order office supplies

Article	Amount excluding VAT	Amount after discount
Marking pens	330.00	313.5
Pens	200.00	190
Post-it notes	138.00	131.1
Suspension files	600.00	570
Writing pads	500.00	475

When specifying a date-time format, the format specified must be identical to one of those listed in the **Select a mask for dates** dialog box shown in Date-time fields. This includes the case (uppercase and lowercase).

Adding functions

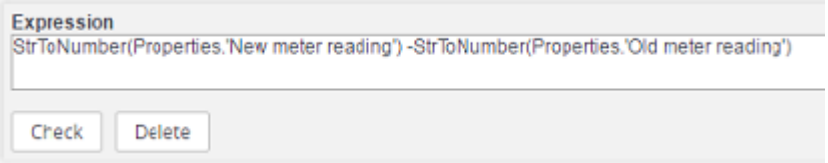
Functions are predefined set of commands that perform a specific operation on data.

1. Add a report or open (edit) an existing report.
2. Click the Add expression button to open the Expression builder window.
3. In the Functions section, double-click the desired function.

   The function is added to the **Expression** section. Possibly the function needs parameters.
4. When the function needs parameters (as specified in the explanation and in General functions, Date-time functions, String functions, Numeric functions), place the cursor between the brackets behind the function at the correct parameter position.
5. It is possible to populate the parameter now either by:
   - Adding a text constant.
   - Adding a numeric constant.
   - Adding an operator.
   - Double-clicking the field in the **Available fields** section. If this field is a reference to another business object, the fields of this business object are shown.
   - Typing in text manually into the **Expression** section.
6. Complete all parameters as described above

   Data is now added to the **Expression** section, between the brackets of the function.

The expression has now been completed as you can see from the following (**StrToNumber** function) example.



7. In the Expression section, click the Check button.

   Planon ProCenter will now check whether the expression you have built is correct.

8. Click OK to save the expression and to close the Expression builder window.

   You will now return to the **Report definitions and settings** window. Your expression has been added to the **Selected fields** section.

9. In the Selected fields section, select the expression you have just created.
10. In the Settings section, specify the required field settings.

    For more information on field settings, refer to, Making field settings.

11. View the result in the print preview of the report.

    If the report looks fine you can print or save it.

General functions

count

The **count** function adds a column to number the lines.

Example: count()

Properties UK	
Number	**Name**
Birmingham	
1	Main building Fort Payne
2	Parking Fort Payne
3	Latham Circle, Birmingham
4	Smith Street, Birmingham
5	Fort Payne Road, Birmingham
Boston	
6	Copperhead Road, Boston
Bridgwater	
7	Apple Tree Road, Bridgwater
Cambridge	
8	College Avenue, Cambridge
Canterbury	
9	Forest Lane, Canterbury

---

isEmpty

The **isEmpty** function returns 'Yes' if the field is empty.

Example: isEmpty(Orders.'Actual completion date-time')

Number	Order not closed
35.00	Yes
36.00	Yes
37.00	Yes
38.01	Yes

For an additional example, see also Combining functions.

Date-time functions

The following functions can be used for date-time fields.

currentDate

The **currentDate** function returns the current date.

Example: currentDate()

Current date
Oct 16, 2014 12:00:00 AM

---

currentDateTime

The **currentDateTime** function returns the current date and time as a date value.

By using this function you can calculate the difference of current date and time based on the application server's time zone compared to the requested end date and time of an order.

The **currentDateTime** function returns the current date and time of the application server. You can use it to compare "now" with all date–time fields, because the expressions are evaluated on the application server. So the application server compares both values in its own time zone. You cannot use this function to show the **CurrentDateTime** of the end user in a multi-time zone environment.

Example: currentDateTime()

Current date-time
Oct 16, 2014 3:20:59 PM

---

currentTime

The **currentTime** function returns the current time.

Example: currentTime()

Current time
01/01/1970 15:21

---

dateDiff

The **dateDiff** function calculates the difference (in minutes) between two dates.

Example: dateDiff(Visitors.'Expected time of departure', Visitors.'Expected arrival time')

Arrival	Departure	Duration (min.)
09:58	12:57	179
09:58	12:57	179
09:01	12:01	180
09:00	12:00	180

---

calcDate

The **calcDate** function is used to add or subtract numbers to or from a selected date-time field. To subtract numbers, add a negative number.

The **calcDate** function adds <D> days, <M> months, <Y> years, <H> hours, <M> minutes and <S> seconds to a specified date-time, date or time <DT>.

In the following example, a column is created to subtract two days from the arrival date of a visitor to get a list of expected visiting dates. (This example can be extended to compare the result with the current date).

Example: calcDate(Visitors.'Visiting date',0,0,-2,0,0,0)

	Visitors expected
Preparation date	**Visiting date**
Sep 22, 2009 12:00:00 AM	Thu 24 Sep 09
Sep 28, 2009 12:00:00 AM	Wed 30 Sep 09
Oct 5, 2009 12:00:00 AM	Wed 7 Oct 09
Oct 5, 2009 12:00:00 AM	Wed 7 Oct 09
Oct 19, 2009 12:00:00 AM	Wed 21 Oct 09

---

extractDay

The **extractDay** function extracts the day from a date (as a number).

Example: extractDay(Visitors.'Visiting date')

Day	Visiting date
7	Wednesday, October 7, 1998
4	Tuesday, February 4, 2003
9	Thursday, November 9, 2006
9	Thursday, November 9, 2006
9	Thursday, November 9, 2006

---

extractDayOfWeek

The **extractDayOfWeek** function extracts the day of the week from a given date. It returns a number where Monday = 1, Tuesday = 2, etc. It returns 0 if the date field is empty. This function can only be used for date fields.

Example: extractDayOfWeek(Visitors.'Visiting date')

Upcoming Visits by Weekday		
Department.	**Name visitor**	**Expected**
1		
Productie	Peters	09:00
Afdeling Verkoop	Dunhill	09:00
	SR Externe bezoeker SUB	09:00
	Somelder bezoeker	09:00
3		
Afdeling Technische dienst	Dhr. Pietersen	09:00
Productie	Urkewhich	08:00
Afdeling Produktie	Gireg	08:00
Afdeling Facility Management	De Witt	10:00
4		
Afdeling Logistiek	Dhr. Klaasen	14:45
Productie	Spink	08:00

---

extractMonth

The **extractMonth** function extracts the month from a date (as a number).

Example: extractMonth(Orders.'Start date & time')

Month	Start date & time
12	Sun Dec 10, 06
12	Sun Dec 10, 06
11	Fri Nov 10, 06
11	Fri Nov 10, 06
9	Mon Sep 10, 07

---

extractYear

The **extractYear** function extracts the year from a date (as a number).

Example: extractYear(Orders.'End date & time')

Year	End date & time
2014	30/09/2014
2014	22/07/2014
2014	12/08/2014
2014	29/10/2014

---

formatDate

The **formatDate** function changes a specified date-time into text according to a specified format.

Example: formatDate(Orders.'Start date & time', "yyyy/MM/dd HH:mm")

Date
1997/08/26 00:00
2004/08/17 20:25
2004/08/17 20:25
2004/08/17 20:25
2004/09/03 09:00
2004/09/06 09:00

See also Mask.

---

parseDate

The **parseDate** function converts a text string into a date-time according to the specified format.

Example: parseDate("31-12-2014", "dd-MM-yyyy")

parseDate
Dec 31, 2014 12:00:00 AM

---

weekOf

The **weekOf** function returns the week number of the specified date-time.

Example: weekOf(Orders.'Start date & time')

Week No.	Start date & time
48	26/11/2004
39	21/09/2004
52	21/12/2004

String functions

The following functions can be used for string fields.

formatString

The **formatString** function links a given number of text strings with a given separator. If one of the text strings is empty, the first non-empty string is returned.

Example: formatString(", ", Personnel.Initials, Personnel.Prefix, Personnel.Surname)

Name
G., Janssen
M., de, Jong
A.M., de, Jong

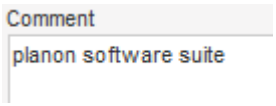
---

pretty

The **pretty** function is used to automatically capitalize the first word of a sentence.

Example: pretty(Personnel.Comment)

Text in the application:



Text in the report:

Comment
Planon software suite

---

strToNumber

Free fields are by definition non-numerical with the exception of the free numerical fields. However, free fields can hold numeric values. By using the **strToNumber** function the contents of the field can be converted into numeric values, enabling you to use the value in a calculation in a report. The **strToNumber** function will not affect the database and is only used to compile reports.

The following example describes how an expression is built enabling you to calculate the difference between the **Old meter reading** and **New meter reading** free fields of a property.

Example: `strToNumber(Properties.'New meter reading') - strToNumber(Properties.'Old meter reading')`

Power consumption per property	
Power consumption 2005	
Airport Boulevard, London	
	11,400
Apple Tree Road, Bridgwater	
	7,978
Church Street, Oxford	
	224,188
City Hall Plaza, Liverpool	
	9,979

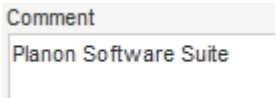
---

substring

The **substring** function renders part of the text <S>, starting at position <Start> with a length of <Length> characters.

Example: substring(Personnel.Comment,7,8)

Text in the application:



Text in the report:

Comment
Software

---

toLower

The **toLower** function converts a text into lower case.

Example: toLower(Personnel.Comment)

Text in the application:

Text in the report:

Comment
uppercase changed to lowercase

---

toUpper

The **toUpper** function converts a text into upper case.

Example: toUpper(Properties.City.Location)

Properties UK
City
Airport Boulevard, London
LONDON
Apple Tree Road, Bridgwater
BRIDGWATER
Church Street, Oxford
OXFORD
City Hall Plaza, Liverpool
LIVERPOOL

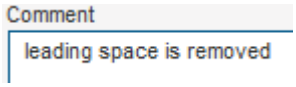
---

trim

The **trim** function removes leading and trailing spaces from a given text.

Example: trim(Personnel.Comment)

Text in the application:



Text in the report:

Comment (trimmed)
leading space is removed

Special functions

You can use special functions, for example, to add details of who printed the report.

To understand the functions, consider the following example:

Person linked to the account:

- First name - John
- Last name - Williams
- Initial(s) - J.

Logged in user's account:

- User name - JW@Planon
- Description - John Williams

The special functions work as follows:

loggedInPerson()

The **loggedInPerson()** function returns the value of the name of the linked person as a string. The string is returned in the format -"**Firstname"**space**"Last name"**.

You can also append parameters related to the person details - such as **First name**, **Last name** or **Surname** - to the function.

The **loggedInPerson()** works only if there is a person linked to the logged in account, otherwise, it will not return any value.

Example	Result
loggedInPerson()	John Williams
LoggedInPerson("LastName")	Williams

loggedInUser()

The **loggedInUser()** function returns the value of the user name and the description field of the account as a string.

You can also append parameters related to the user account details or person details - such as **Account name** - to the function.

Example	Result
loggedInUser()	JW@Planon, John Williams
loggedInUser("Accountname")	JW@Planon

retrieveExternalURL()

The **retrieveExternalURL()** function returns the value of the **Externally accessible URL** field (System settings > General) and includes it in your report.

In the **Expression** box, you can - for example - extend the URL by adding the **+** operator and typing the URL part of the web definition whose link you want to include in your report:

```
retrieveExternalURL() + "/case/BP/PUB003"
```

Result

https://<YourEnvironment>.cloud/case/BP/PUB003

By using this function, the URL remains working dynamically, even when you work across DTAP environments.

generateDeepLinkItemURL(,,)

This expression can be used to generate **deep link items** (encrypted URLs). In Planon ProCenter , encrypted URLs / deep link items can only be generated in **Report generator**. The expression builder functionality can be used to create these URLs with an encrypted part that is based on *system code*. This means that the URL is specifically created for a particular record in Planon. See Generating deep link items for more information about generation deep link items.

Once generated, you can use deep link item in emails, mail merge reporting etc. to redirect users to a relevant record in Planon.

This is the basic syntax:

```
generateDeepLinkItemURL(,,)
```

In the **Expression** box, you can - for example - extend the deep link item URL further, for example to allow navigation to a specific Personnel record.:

```
"<A HREF="+generateDeepLinkItemURL("Personnel",Person.'Syscode',
 "NavDef001")+">[hyperlink name]</A>"
```

Numeric functions

The following functions can be used for numeric fields.

abs

The **abs** function returns the absolute value of a number.

Example: `abs('Financial commitments'.'Amount incl. VAT')`

Value in the application:

€5,000.00

€4,335.00

€2,895.00

€-1,327.24

Value in the report:

Amount
5,000
4,335
2,895
1,327.24

---

formatNumeric

The **formatNumeric** function changes a numeric value into text according to a specified format.

Example: `formatNumeric('Financial commitments'.'Amount incl. VAT', "####")`

Value in the application:

€5,000.00

€4,335.00

€2,895.00

Value in the report:

Amount incl. VAT
5000
4335
2895

See also Mask.

---

frac

The **frac** function returns the decimal part of a fraction.

Example: `frac('Order lines'.'Total costs incl. VAT')`

Value in the application:

4770,02

2120,25

Value in the report:

Decimal
0.02
0.25

---

int

The **int** function renders the natural part of a fraction.

Example: `int('Order lines'.'Total costs incl. VAT')`

Value in the application:

4770,02

2120,25

Value in the report:

VAT (int)
4771
2120

---

max

The **max** function renders the maximum value of two numbers.

Example: `max('Order lines'.'Total costs incl. VAT', 'Order lines'.'Total costs excl. VAT')`

incl. VAT	excl. VAT	Max.
4771.02	4500.96	4,771.02
2120.25	2000.24	2,120.25

---

min

The **min** function renders the minimum value of two numbers.

Example: `min('Order lines'.'Total costs incl. VAT', 'Order lines'.'Total costs excl. VAT')`

incl. VAT	excl. VAT	Min.
4771.02	4500.96	4,500.96
2120.25	2000.24	2,000.24

---

numToString

The **numToString** function converts a numeric value into text.

Example: `numToString('Order lines'.'Total costs incl. VAT')`

numToString
4,771.02
2,120.25

See also Combining functions.

---

round

The **round** function is used to round a number up or down.

In the example the **round** function is used to round the purchase amount of a property.

Example: `Round(Properties.'Acquisition amount')`

Without round function:

	Acquisition amount
Airport Boulevard, London	310585.35
Apple Tree Road, Bridgwater	450877.59
Church Street, Oxford	210995.99
City Hall Plaza, Liverpool	255224.51

With round function:

	Acquisition amount
Airport Boulevard, London	310585
Apple Tree Road, Bridgwater	450878
Church Street, Oxford	210996
City Hall Plaza, Liverpool	255225

If-then-else expressions

In this section you will find an example of a more complex expression.

If-then-else operator

The **If-then-else** operator enables you to build extensive expressions. In the following example, the **If-then-else** operator is used to display the number of people for a reservation and - if no people are registered for a reservation - to display the text: "No people".

Procedure

1. Add a report for the Reservations business object.
2. Include the Start date, Reservation unit and Description fields in the report.
3. Click the Add expression button to open the Expression builder window.
4. In the Operators section, double-click the (if ( ) then else) operator.

   The **(if ( ) then else)** operator is added to the **Expression** section.
5. In the Expression section, place your cursor between parenthesis after 'if'.
6. In the Available fields section, double-click the Number of people field. The expression will look like this:

```
( if (Orders.'Number of people') then else)
```

7. In the Expression section, place your cursor after the field 'Orders.'Number of people''.
8. In the Operators section, double-click the > operator and enter a zero (0) directly behind this operator. The expression will look like this:

```
( if (Orders.'Number of people'>0) then else )
```

9. In the Expression section, place your cursor between 'then' and 'else'.
10. In the Functions section, double-click the NumToString function. The expression will look like this:

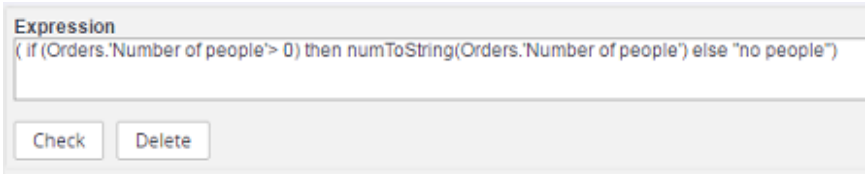
```
( if (Orders.'Number of people'>0) then numToString() else )
```

11. In the Expression section, place your cursor between parenthesis of 'numToString' function.
12. In the Available fields section, double-click the Number of people field. The expression will look like this:

```
( if (Orders.'Number of people' >0) then numToString(Orders.'Number of people') else )
```

13. In the Expression section, place your cursor after 'else'.
14. In the Constants section, select the Text option.
15. In the Constants section, enter the text "no people".
16. In the Constant section, click the Add button.

    The expression has now been completed as you can see from the following example.



17. In the Expression section, click the Check button.

    Planon ProCenter will now check whether the expression you have built is correct.

18. Click OK to save the expression and to close the Expression builder window.

    You will now return to the **Report definitions and settings** window. Your expression has been added to the **Selected fields** section.

19. In the Selected fields section, select the expression you have just created.
20. In the Settings section, specify the required field settings.

    For more information on field settings, refer to

21. View the result in the print preview of the report.

Reservations			
Date	**Reservation unit**	**Description**	**Number of people**
16/06/2006	Orion	Department Meeting	10
03/05/2006	Southern Cross	Sales Meeting	4
06/06/2006	Jupiter	Development Meeting	34
04/05/2006	Mars	Planon Training	No people
28/04/2006	Mars	Planon Training	7

For more examples of if-then-else expressions, see Boolean fields in if-then-else expressions and Combining functions.

Boolean fields in if-then-else expressions

When using a Boolean field in an expression, the construction of this expression should adhere to the following format:
(if (<field of type Boolean>) then xxx else yyy)

Example: (if (Personnel.'Transferred to archive (Y/N)') then "Yes" else "No")

Code	Surname	Archived Y/N
0000000002	Grootens	Yes
SO PERS1	Somelder	No

Combining functions

This section lists some examples of expressions combining multiple functions.

Example 1

```
if (isEmpty(Personnel.'First Name')) then
 toUpper(substring(Personnel.Initials,0,1)) + "." else Personnel.'First Name'
```

Example data	Result
First Name = Adrian, Initials = “A.P.”	Adrian
First Name = “ “, Initial = “a”	A.

Example 2

```
if (Orders.'Number of people' > 8) then "Extra staff (" +
 numToString(Orders.'Number of people') + " visitors)" else ""
```

Example data	Result
Number of people = 8	“ “
Number of people = 10	Extra staff (10 visitors)

Using slashes in expressions

In **Expression builder** there is a way for using slashes in expressions.

Your configurations includes the fields:

Field name	Value
Server	server

Field name	Value
Directory	directory
File name	filename.pdf

Suppose you want to include a file path reference in your report including the server name, the server directory, and the file name, separated by a single backslash.

1. Select the business object for which you want to generate a report.
2. Select a record in the element list and click Report on the action menu.

   The Reporting window appears.
3. Add a new report, and click Add expression.

   The Expression panel appears.
4. Construct your expression:
   - Enter ***"\\" +*** and double-click on the **Server** field to add it to the expression.
   - Enter ***+ substring("\\", 1, 1)+*** and double-click on the **Directory** field to add it to the expression.
   - Enter ***+ substring("\\", 1, 1)+*** and double-click on the **File name** field to add it to the expression.

   The complete expression (built on Communication logs) is:

   ```
   "\\" + 'Communication logs'.Server + substring("\\", 1, 1)
   + 'Communication logs'.Directory + substring("\\", 1, 1) +
   'Communication logs'.File name
   ```
5. Close the Expression builder, and click Preview in the Reporting window.

   The report preview displays the following output: \\server\directory \filename.pdf

Attribute expressions

In Reporting, you can use the functions `attributeAsString`, `attributeAsNumber` and `attributeAsDateTime` in expressions to report on individual attribute values from the **Attributes** field of business objects such as **Base assets**.

Each function has its own supported attribute types, validation behavior and output formatting.

Sample attribute data

The following table contains the sample data that will be used to illustrate the effect of each attribute function when it is applied.

Attribute code	Attribute name	Attribute value	Attribute system type
age	Age	10	Integer
brand	Brand	Volvo	Text
entryDate	Date of entry	27/03/2025	Date
height	Height	10.6	Decimal
serviceDateTime	Service date time	27/03/2025 08:49	DateTime
timeToStart	Time to start	08:49	Time

attributeAsString

The function `attributeAsString(<Attributes field>, "<attributeCode>")` returns the value of the specified attribute as a **text (String)** value.

- It supports attributes with system types:
  - Integer
  - Decimal
  - Text
  - Date
  - DateTime
  - Time
- The value is converted to a string and formatted according to the **user locale** (for dates, times and numbers).

Report result examples

Based on the Sample attribute data, the following result can be expected:

(Results are shown with default formatting for the user locale.)

Expression	Report result*
`attributeAsString('Base assets'.Attributes, "age")`	10

Expression	Report result*
`attributeAsString('Base assets'.Attributes, "brand")`	Volvo
`attributeAsString('Base assets'.Attributes, "height")`	10.6
`attributeAsString('Base assets'.Attributes, "entryDate")`	27-3-2025
`attributeAsString('Base assets'.Attributes, "serviceDateTime")`	27-3-2025 08:49
`attributeAsString('Base assets'.Attributes, "timeToStart")`	08:49

*Formatting uses the default mask based on the user's locale.

attributeAsNumber

The function `attributeAsNumber(<Attributes field>, "<attributeCode>")` returns the value of the specified attribute as a **number**.

- It supports attributes with system types:
  - Integer
  - Decimal
- The value is converted to a numeric value and formatted according to the **user locale** (for decimal separators and number formatting).

Report result examples

Based on the Sample attribute data, the following result can be expected:

(Results are shown with default number formatting for the user locale.)

Expression	Report result*
`attributeAsNumber('Base assets'.Attributes, "age")`	10
`attributeAsNumber('Base assets'.Attributes, "height")`	10.6

*Formatting uses the default numeric mask based on the user's locale.

attributeAsDateTime

The function `attributeAsDateTime(<Attributes field>, "<attributeCode>")` returns the value of the specified attribute as a **date/time value**.

- It supports attributes with system types:
  - Date
  - DateTime
  - Time
- The value is converted to a Date/Time and formatted according to the **user locale** (date and time masks).

Report result examples

Based on the Sample attribute data, the following result can be expected:

(Results are shown with default date/time formatting for the user locale.)

Expression	Report result*
`attributeAsDateTime('Base assets'.Attributes, "entryDate")`	27-3-2025
`attributeAsDateTime('Base assets'.Attributes, "serviceDateTime")`	27-3-2025 08:49
`attributeAsDateTime('Base assets'.Attributes, "timeToStart")`	08:49

*Formatting uses the default mask based on the user's locale.

Troubleshooting

This section provides guidance on how to identify and resolve the most common issues you may encounter while working with the system.

Each section describes the symptoms of a specific problem, explains the likely cause, and offers straightforward steps you can take to resolve the issue yourself.

Cannot save or preview reports

When you have issues with reports, for example not being able to save or preview reports, this may be caused by the way your SQL server language has been configured.

The suggested solution for this is to add the following lines to the tomcat-wrapper-default.conf.

Procedure

(This procedure needs to be done by your system administrator or someone who has the required skill and access level).

1. Go to ..\Server\tanuki\webserver\conf\tomcat-wrapper-default.conf and open the file in a text editor.
2. Add the following lines:

```
wrapper.java.additional.<n>=-Duser.language=en

wrapper.java.additional.<n+1>=-Duser.country=US
```

Replace the <n> and <n+1> with the correct sequence numbers.

It is also recommended to keep the default language settings of the SQL server.

Field access vs. data access

In **BO Rights**, you can define access permissions for fields, actions, and other elements for a specific function profile.

It is important to note that **field access** and **data access** are separate permissions.

Example

If you remove access to a **picklist field**, users assigned to the affected function profile will no longer see the field in the user interface (UI). However, they may still be able to view its data in reports.

This happens because restricting field access in the UI only hides the field itself—it does not restrict access to the underlying data. The picklist data remains available, but it is simply not visible in the UI.

To fully restrict access to the data as well, you must configure **data authorization** separately, which you can do by using authorization filters.

For more information, see Creating authorization filters.

Field descriptions

Report settings fields

Field	Description
Type	Displays the report definition type: • Report • Mail merge • Data only • Custom
Name	Specify a suitable name for your report. The default name given by Planon ProCenter is <new report>. You can overwrite this name with a meaningful name of your own.
Title	Specify a suitable title for your report.
Title position	Specify the position of the title in the report.
Only show group lines	Only include in the report those fields that were designated as group fields. This option will result in a concise list. If no group fields have been included in the report, this option is disabled.
Show group fields in detail lines	Insert an extra column for each group field. The name of the group will be repeated in each detail line. This option is disabled if no group fields have been included in the report.
Page size	Select the preferred paper size from the list. You may want to check in advance whether the selected size is also supported by your printer.
Orientation	Select the required paper orientation for the report: portrait or landscape.
Font for title	Select an appropriate font type and size for the title of the report.

Field	Description
Font for heading	Select an appropriate font type and size for the headings in the report.
Font for detail lines	Select an appropriate font type and size for the detail lines in the report.
Background color	Set a background color for the title bars in your report.
Include date/time	Print the current date in the footer of your report.
Include reference date	Select the check box to print the current reference date in the header of the report (output). This option is only available for a report of type *Report* and works for PDF and HTML (not for CSV, XLS(X)).
Mask	Set a mask (=notation format) for date/time fields included in your report definition. You can either select a mask from the list or compose one yourself. For more information, see Mask.
Include page number	Print page numbers in the footer of your report.
Specify company name	Print the company name in the footer of your report.
Company name	Enter the company name to be displayed in the footer of the report.
Column width setting	Indicate how the width of a column should be determined for subreports: • **Autofit**: the column width is determined by the text width. If the width of the text exceeds the available space, the column will be adjusted to the maximum available space.

Field	Description
	• **Fixed column**: the text width is fixed. If the width of the columns exceeds the available space, the text will be hidden. This setting is only available for report type mail merge (and for document type doc, docx, ttf).
Default date mask	Select a default mask for dates. When empty, the standard value as defined in code is used for date fields that are added to a report (EEEE, MMMM d, yyyy). When filled, new date time fields which are added to the report will use the **Default date mask** instead. Note that this only works for fields that are newly added to the report, and changing the **Default date mask** does not change the mask value of fields already on the report. This field is only available on the main report settings, but is used also for date/time fields added to subreports.
Default date-time mask	Select a default mask for date-times. When empty, the standard value as defined in code is used for date-time fields that are added to a report (EEEE, MMMM d, yyyy HH:mm). When filled, new date-time fields that are added to the report will use the **Default date/time mask** instead. Note that this only works for fields that are newly added to the report, and changing the **Default date/time mask** does not change the mask value of fields already on the report. This field is only available on the main report settings, but is used also for date/time fields added to subreports.

Field	Description
Default horizontal alignment	Specify a horizontal alignment that will be used by default. The setting will be applied to newly added fields and will not affect fields already used in the report.
Default vertical alignment	Specify a vertical alignment that will be used by default. The setting will be applied to newly added fields and will not affect fields already used in the report.

Report settings

User report settings

Field	Description
Alternative column text	Select this check box to specify a custom name in the **Column text** field.
Width	Set the column width in centimeters.
Mask	Set a mask (=notation format) for date/time fields included in your report definition. You can either select a mask from the list or compose one yourself. For more information, see Mask.
Default horizontal alignment	Specify a horizontal alignment that will be used by default. The setting will be applied to newly added fields and will not affect fields already used in the report.
Default vertical alignment	Specify a vertical alignment that will be used by default. The setting will be applied to newly added fields and will not affect fields already used in the report.

Field	Description
Group by this column	Select this option to group and sort data (ascending/descending) according to a specific field.
Sort by this column	This function can be used to sort (alpha) numeric data. Select this check box to sort the report data by the selected column and select in which order you want to sort the data: in ascending or descending order. This setting also applies to **Data only** reports and **Custom** reports.
Group totals under this column	Select this option if you want to display a subtotal per group. This applies to numeric fields and money fields.
Totals under this column	Select this option if you want to display a total sum at the bottom of a column. This applies to numeric fields and money fields.
Print column	Clear this option if you do not want to print a column.
Display each group on a separate page	Select this option if you want each group to appear on a new page. This option is only available if the **Group by this column** option is enabled.

User report definitions

Adding a new user report definition

Numeric fields

Format	View	Example
0	If the character in the position of the 0 is a number, the number	0#### → 01350

Format	View	Example
	is used. If not, a zero is used.	
#	If the character in the position of the # is a number, the number is used. If not, no value is placed in this position. If the number of # and 0 that is placed before the decimal point is lower than the value to be shown, the complete value is shown.	##### → 1350 ## → 1350
.	A decimal point. This is used to indicate that you want to include numbers after the decimal point in the report. The decimal point is used depending on the locale of the Planon ProCenter language used by the logged in user. If the number of # or 0 placed after the decimal point is less than the number of decimal places to be shown, the value is rounded up or down. This also applies if no numbers are used after the decimal point.	####.#00 → 1350.45 #.## → 0.26 0.26 →rounded up to 0.3
,	For numbers over 999 a separation mark is used. The grouping symbol is determined by the locale of the Planon ProCenter language used by the logged in user.	#,### → 1,350

Format	View	Example
‘ ’	Text placed between single quotation marks is included in a report.	‘The United Kingdom has’ #.### ‘points.’ → The United Kingdom has 1.350 points.
;	A mask contains a positive and negative subpattern, for example, "#,##0.00; (#,##0.00)". Each subpattern in the mask has a prefix, numeric part, and suffix. The negative subpattern is optional; if absent, then the positive subpattern prefixed with the localized minus sign ('-' in most locales) is used as the negative subpattern. That is, "0.00" alone is equivalent to "0.00;-0.00". If there is an explicit negative subpattern, it serves only to specify the negative prefix and suffix; the number of digits, minimal digits, and other characteristics are all the same as the positive pattern. That means that "#,##0.0#;(#)" produces precisely the same behavior as "#,##0.0#; (#,##0.0#)".	####; -0#### 1350 →1350 -01350 0 → -1350 #,##0.00;(#,##0.00) 123456.78 → 123,456.78 #,##0.00;(#,##0) -123456.78 → (123,456.78)

Date-time fields

Letter	Date or time component	Examples
G	Era designator	**AD**
y	Year	**yyyy** →2017, **yy** → 17
M	Month in year	**M** → 1 If you use the format **MM**, months 1 to 9 are preceded by a zero: **MM** → 01 If you use the format **MMM**, the month is shown as an abbreviation: **MMM** → Jan If you use the format **MMMM**, the complete names of the months are shown: **MMMM** → January
w	Week in year	**W**, yyyy → 9, 2017 If you use the format **ww**, weeks 1 to 9 are preceded by a zero: **ww**, yyyy → 09 2017
W	Week in month	MMMM, **W** → September, 2 If you use the format **WW**, the week number is preceded by a zero: MMMM, **WW** → September, 02
D	Day in year	**D**, yyyy → 250, 2017 If you use the format **DDD**, the days 1 to 99 are preceded by a zero: **DDD**, yyyy→ 025, 2017
d	Day in month	**d** MMMM yyyy → 7 Sep 2017 If you use the format **dd**, days 1 to 9 are preceded by a zero: **dd** MMMM yyyy → 07 Sep 2017
F	Day of week in month	**F** → 2
E	Day in week	**E** dd MMMM yyyy → Thu 07 September 2017 If you use the format **EEEE**, the complete names of the days are shown: **EEEE** dd MMMM yyyy →

Letter	Date or time component	Examples
		Thursday 07 September 2017
a	Am/pm marker	h:mm **a** → 12:08 PM
H	Hour in day (0-23)	**H**:mm → 0:00
k	Hour in day (1-24)	**k**:mm → 24:00
K	Hour in am/pm (0-11)	**K**:mm → 0:00
h	Hour in am/pm (1-12)	**h**:mm → 12:00
m	Minute in hour	H:**m** → 7:45 If you use the format **mm**, minutes 1 to 9 are preceded by a zero: H:**mm** → 10:05
s	Second in minute	H:mm:**s** → 10:08:55 If you use the format **ss**, seconds 1 to 9 are preceded by a zero: H:mm:**ss** → 10:08:05
z	Time zone	HH:mm **z** → 10:08 CEST If you use the format **zzzz**, the complete names of the time zones are shown: HH:mm **zzzz** → 10:08 Central European Summer Time
Z	Time zone	HH:mm **Z** → 10:08 +0200

Report for texts and tooltips fields

You can create text and tooltip definitions for floors, spaces, flexible workspaces, assets, and people. These definitions can then be selected as tooltips from the relevant pick lists in the **Settings** dialog box of **CAD Integrator**. To create a report for tooltips, you need to use the **Data only** report type.

Texts and tooltips for…	Create report in
Floors	Spaces & Workspaces , Components > Floors
Spaces	Spaces & Workspaces , Spaces
Assets	Assets > Assets
Flexible workplaces	Reservations, Graphical planner > Flexible workspaces
Personnel	Personnel > Personnel
Visitors	Personnel > Visitors

Operator fields

Operators in expressions serve multiple purposes in Planon ProCenter 's reporting functionality. They allow users to perform calculations and operations on fields within report definitions.

These operators can be used to create additional columns in reports, combining or manipulating data from existing fields.

By utilizing these operators, users can create customized and dynamic reports that perform calculations, apply filters, and present data in more meaningful ways.

Operator	Description	Example
+	Addition (numeric) Adds one value to another	`Budgets.'Total invoiced/ actual costs' +Budgets.'Remaining budget'`
	Concatenation (strings) Appends strings See Text constant for an example.	`Personnel.'First name' + Personnel.Surname`
-	Subtraction Subtracts one value from another	`Budgets.Budget -Budgets.'Total invoiced/actual costs'`
*	Multiplication Multiplies one value by another	`Budgets.'% of budget category' * 0.95`

Operator	Description	Example
/	Division Divides one value by another	`Budgets.'Remaining budget'/ 12`
%	Modulo or remainder operator. This operator returns the remainder of a division. **Example** 5 % 2 = 1	`Orders.Workplace.'Surface area' % Orders.'Number of people'`
=	Equals Returns items that match the value following the equal sign	`Orders.'User-defined status'.Code = "O1"`
<	Less than Returns items that are less than a specified value	`Orders.'User-defined status'.Code < "O2"`
>	Greater than Returns items that are greater than a specified value	`Orders.'User-defined status'.Code > "O1"`
!=	Does not equal Returns items that are not equal to a specified value	`Orders.'User-defined status'.Code != "O1"`
<=	Less than or equal Returns items that are less than or equal to a specified value	`Orders.'User-defined status'.Code<="O2"`
>=	Greater than or equal Returns items that are greater than or equal to a specified value	`Orders.'User-defined status'.Code >= "O2"`
and	Logical AND Results in an expression that checks on both parameters	`Orders.Property.'Property code' = "41008" and Orders.'Requested`

Operator	Description	Example
		`completion date' = currentDate()`
or	Logical OR Returns items for which one of the parameters is true	`Orders.'Number of people' = 8 or Orders.'Number of people' = 9`
not	Logical NOT Returns items for which none of the parameters is true	`not (Orders.'Number of people' = 8 or Orders.'Number of people' = 9)`
If () then else	If then else Returns items matching the query as 1 and other items as 0	`( if (not( Orders.'Transferred to archive (Y/N)') )then (Orders.Number))`

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