Jotne EPM Technology

TruePLM

True Product Lifecycle Management

User’s Guide

Version 1.30
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## Revision History

<table>
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1 Introduction

The purpose of this document is to describe what you can do with TruePLM and how to do it.

The TruePLM solution is a product model server for integrating, storing, and accessing data for types of products and for individual products over their lifetime in a standards compliant fashion. In scope are product structure data, documents, CAD files, manuals, structured documents, e-learning data and related information. Technical data package functionality eases communications within the supply chain.

TruePLM is intended for product lifecycle management. Data and documents are collected and categorized from early design to operation and disposal. They are collected into data packages for reviews at major milestones during construction and later life. Data packages can be exported and imported; all data except the document files themselves are formatted according to PLCS.

TruePLM has been designed for the concurrent engineering requirements of the space sector. However, care has been taken to enable adaptation to other engineering domains. This has been achieved by what is called reference data. For each project the user can define specific names for roles, document types, document extensions etc. These names will appear as leading text and select items in the user interface. Reference data allow also the on-the-fly definition of types of properties, which may or may not be assigned units.

2 Functionality

2.1 Initializing the data

A user with extended access rights is allowed to define both users of a TruePLM installation and projects. All users or subsets of all users may be given roles within these projects. Project administrators may define further restrictions of access rights within each project.

2.1.1 Creating a breakdown from scratch manually

To create the main project breakdown right click on the breakdown window and fill in the form, figure 1.
To add nodes to this breakdown, right click on the main breakdown node and choose Add element. Figure 2

Select the type of element and add it to the breakdown structure, figure 3.
To create a new “Element type” read Add, rename, move, delete a breakdown element. To rename an element, right click on the element and choose “Rename element”, figure 4.

To change any of the settings of a breakdown element, e.g. Type, description, permission and assigned properties, right click on the element and choose Properties, figure 5, or just change after clicking on the element change the property on the property window on the right hand side of the application window.
Different values can be changed in the Properties form, figure 6.
2.1.2 Importing a breakdown from a zipped baseline

Menu -> Product breakdown -> Import / Initialize -> Import / Initialize...

Requires a .zip file, previously exported from TruePLM by using:

Menu -> Product breakdown -> Export current baseline...

The zip-file may include attached files.

2.2 Breakdown management

2.2.1 Add, rename, move, delete a breakdown element

To add a breakdown element right click on the node you want to add an element to and choose add element, Figure 2 and Figure 3.

2.2.2 Adding new breakdown element types

To create a new breakdown element, go to the Reference data menu and choose “Breakdown element types”, figure 7.
The above form will allow you to add or remove element types from the project.

### 2.2.3 Defining and adding properties to breakdown elements

A property is a value that can be defined for a project object type and can be assigned to a project object (breakdown element) of that type; it describes the element. This value can be a text, a unit or a numeric value with a unit. To define or remove properties go to

Menu -> Reference data -> Properties definitions -> ... for breakdown elements

This will bring up the form shown in figure 8. The property definition form allows the user to define properties for either an individual breakdown element type or properties that belong to all element types; this is done by selecting the type of node from the dropdown box at the top.

![Properties definition form](image)

**Figure 8**

For defining new properties use the “Define new property” button. This will bring up the form in figure 9. If the property is a text property without a unit the "Add as text property" checkbox should be checked. New property units will be automatically added to the project.
To delete a property just select the property on the form shown in figure 8 and press “Delete selected property”.

### 2.2.4 Versions of the breakdown

TruePLM creates a new version of the breakdown each time an element within the breakdown is modified, added or removed. Different versions of a baseline can be viewed by selecting the version from the version dropdown box on top of the breakdown window. Note that older versions of a breakdown are read only and this is shown in TruePLM by the change of colour. Figure 10 shows the current version of the breakdown.
Baselines are another method of versioning of the breakdown structure. A baseline is simply a tagged version of the entire breakdown or part of the breakdown. To create a baseline right click on the breakdown element and choose “create baseline here”, figure 12.

Note that you can make baselines of the entire structure or just of a branch of it (partial baseline). Note also that partial baselines can only be compared against
other baselines of the same branch – you cannot compare them with the entire structure.

### 2.2.6 List of baselines, compare versions / baselines

To compare breakdown versions and baselines go to Menu -> Product breakdown -> Baselines

Figure 13 displays the compare form. The baseline history window provides the user the ability to view and delete baseline, but not breakdown versions since these are created by the system.

![Baselines History](image)

**Figure 13**

The show differences button will show the difference between two baselines/breakdown versions. Figure 14 shows the Diff form.
The left and right sections show the two baselines and the middle sections shows the differences between the two.

### 2.2.7 Search a breakdown element

As the breakdown structure grows in size it becomes an essential task to find a wanted element, for this reason TruePLM has breakdown element search functionality. To open the Find breakdown element form, go to Menu -> Product breakdown -> Find breakdown element... This form is displayed in figure 15.

Users can use wildcards (*,?), type of element and the entire breakdown structure or a section of it. Right clicking on a selected element, figure 16, can also start the search.
2.3 **Document management**

Documents may be assigned to breakdown elements. Physical files may be uploaded to these document definitions.

### 2.3.1 Adding files to breakdown elements

To add files to a breakdown element, right click on the element and choose Add data files; see figure 17.
This will open the Add new data file form, which allows the user to either add a single file or multiple files. In either case the other properties must be filled. Figure 18 shows the Add new data file form.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>File</td>
<td>Name of a single file to be added</td>
</tr>
<tr>
<td>Title</td>
<td>Title of the file</td>
</tr>
<tr>
<td>File format</td>
<td>File extension</td>
</tr>
<tr>
<td>List of selected files</td>
<td>Number of files to be added</td>
</tr>
<tr>
<td>Source</td>
<td>Where does the file come from, is it an internal resource or external. Sources can be added by using the Add source button</td>
</tr>
<tr>
<td>Content type</td>
<td>Show the application of the file</td>
</tr>
<tr>
<td>Description</td>
<td>A short description of file(s)</td>
</tr>
<tr>
<td>Discipline</td>
<td>Project discipline, user can add new discipline</td>
</tr>
<tr>
<td>Project phase</td>
<td>Project phase the document applies to (0..F as defined by ESA)</td>
</tr>
<tr>
<td>Current status</td>
<td>Status of the document</td>
</tr>
<tr>
<td>Editor</td>
<td>Who has edited the file</td>
</tr>
<tr>
<td>Responsible</td>
<td>Who is responsible for the file</td>
</tr>
</tbody>
</table>

To use the Add multiple files option choose it and use the Edit List button, this will allow you to select the files and edit the list afterwards, figure 19.
The selected file(s) will be placed within a *files* element under the selected element in the breakdown structure, figure 20.
2.3.1.1 File formats

File extensions (formats) can be added manually or automatically by the system. To add manually use the Add file format button and write the extension in the form. If the file extension does not exist when adding a file(s), the system will ask the user if it should add the new extension to the system, figure 21.

The system must know the file extension before it can add the file(s) to its repository.

2.3.2 The local folder

The TruePLM client uses a local folder to hold documents that are needed for editing. This folder must be declared before a user can edit a document. To select a local folder do to Menu > Files > Open my local folder, figure 22.
If the folder is defined from before, the file explorer will open in it, else it will ask for the destination for the local folder.

2.3.3 Viewing files
To view a file simply select the file and choose the View option by right clicking on it, figure 23.

2.3.4 Editing files (check out / check in)
If the users want to keep track of changes done to a document, they should allow the document to be checked out and afterwards checked in. Without the check out/ in options no history will be available for the document. To edit a document choose the Edit option by right clicking on a selected document, figure 23. If the
document is not already been checked out, it will ask the user if it should check out the document as shown in figure 24.

![Image](image1.png)

**Figure 24**

Checked out files in the breakdown structure are distinguished from the other documents by a small green icon, figure 25.

![Image](image2.png)

**Figure 25**

The document can be checked in, if checked out, by selecting the check in option in figure 23. This will bring up the check in form, figure 26, which will allow the user to perform different operations on the selected document. These operations are: changing the documents status, removing red flags, viewing local or server versions of the document and finally, comparing the edited version with the server version. It is required that the *Descriptions of changes* is filled in when checking in a document.
Figure 26

To undo the check out the user can either use the button on the check in form, figure 26, or the undo check out option in figure 27.
2.3.5 Customizing view / edit / diff functions

Before comparing different versions of a document in the check in form the user must define a compare application for the file type. This is done by running the file associations command at Menu -> Client configuration -> File associations. This command will enable the file associations’ form, which allows the user to associate applications to each file type.

![File associations form](image)

**Figure 28**

It is important to remember that these settings are stored on the client, not on the server. The same applies for the local folder. After selecting an application the External application name form will be displayed, figure 29.

![External application name form](image)

**Figure 29**

This form allows the user to store the application name for further use. The stored applications names can be selected from the drop down menus, figure 28.
2.3.6 Comparing file versions
To compare the local document with the server (remote) based document use the compare option by right clicking on the selected file, figure 30. The output will depend on the application the user has defined.

Figure 30

2.3.7 Document relationships and red flags
To create a dependency between two documents run the Edit document relationship command, figure 31.
This will result in the creation of two folders under the selected document, figure 32.

The Affecting files are documents that this document depends on and Affected files are documents that are dependant on this document. To create the relationship just drop documents into the related folder. After dropping a document the breakdown structure will display the relationship between the two documents as shown in figure 33.
To remove a relationship or to go to the related document in the breakdown element, right click on the related document, figure 34.

The Delete relationship will remove a relationship from both documents. When the user tries to check in a document that other documents are dependant on they will get Dependency Warning form, figure 35. This form will display the files being checked in and will ask the user if a red flag is needed for the files affected by the change. The red flag is basically a notification that allows the user to do changes on one document and also find all other documents that might need some changes.
The red flags are displayed in the breakdown structure on the left hand side of a document, figure 36.

Deleting relationship will only remove the relationship folder, but the red flag on the other document will remain as a reminder, this is shown in figure 37.

As shown the document “0911.3945.pdf” has a red flag. Different actions can be taken on this document, either the red flag can be removed or the reason for the red flag can be examined, figure 38. The menu shown in figure 38 shows the document that has or has had a relationship with this document.
By selecting the red flag, bottom option, the flag will be removed. The first option will allow the user to view the history of the document’s relationship, figure 39.

The orange row shows, which version of the affecting document caused the “red flag” to be set on the affected document. In other words each orange row is the source of a red flag. This allows the user to review the version and decide if any changes are needed to the red flagged document.

2.3.8 “Sticky notes” on documents

Sticky notes are Reminder notes for documents. To view or create a sticky note, choose the Sticky notes command by right clicking on a document, figure 40. A yellow box identifies documents that already have sticky notes, see figure 37.
Figure 40

This will bring up the sticky note form, figure 41.

Figure 41
2.3.9 Grouping documents as “Data packages”

Data packages are a collection of documents that are used in review processes. Running the **Files -> Data Packages Management** command creates a data package. This will result in the data package management form, figure 42.

![Data Packages Management Form](image)

**Figure 42**

A data package must be either selected or created. Afterwards, documents can be removed or added by dropping the documents inside the grid. The form also allows the user to remove packages or manage their versions.

To start a review process, start a Scheduled event from **Menu -> Project management -> Scheduled event**. Press the **Add new** button to get the Add new scheduled event form, figure 43.

![Add new scheduled event](image)

**Figure 43**
Select the correct options and give the event a description and create the event. All scheduled events will be listed in the scheduled event form in a grid, figure 44.

![Figure 44](image)

By pressing the View details button the user can edit the event, figure 45.

![Figure 45](image)

Basically, the user can edit timetable, participants, additional data and finally output of the review. It is important to say that data package versions must be made before an event is scheduled (in this version). A data package is a mandatory input to an event.

Note: For future versions of TruePLM it is considered to allow the user to create a review event first, and later define the data packages for the review.

### 2.3.10 Document search (simple and advanced)

Within a breakdown structure it is important to be able to find elements and documents easily as the breakdown structure grows. In TruePLM the user can use the search form to find the wanted document(s). The search form is located at the bottom of the screen and has two different modes, simple and advanced mode. In the simple mode, figure 46, the user searches for a document by choosing the Discipline, Content, section of the breakdown structure and entering a text that can be combined with wildcards (*,?).
Figure 46

Clicking on the advanced button in the search form, figure 46, starts the advanced search mode. This will result in the advanced document search form, figure 47.

The advanced document search form allows the user to search for a document by using the document's metadata. These metadata can be content type, dates, review status, users or properties.
2.4 Access control

2.4.1 Default permissions

The default permissions in TruePLM are displayed in table 1:

<table>
<thead>
<tr>
<th>Role</th>
<th>Permission</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Read</td>
<td>Write</td>
<td>Delete</td>
<td></td>
</tr>
<tr>
<td>Project Manager</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Project Administrator</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Project Leader</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Subdomain</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Outside of subdomain</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Project Member</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Subdomain</td>
<td>Yes</td>
<td>Yes(^1)</td>
<td>Yes(^1)</td>
<td></td>
</tr>
<tr>
<td>Outside of subdomain</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>

1- Files only; not breakdown structure

2.4.2 Customizing access control: user types, subdomains and roles

TruePLM allows further restrictions on the breakdown structure by using subdomains and roles. Roles are the different categories of users, which are created by a project manager or a project administrator. To define new roles execute the Reference data - > Project Roles command. Figure 48 shows the project role form:

![Select project role](image)

Figure 48

Add new roles by typing the role in the right textbox and adding them to the project roles with the “Add new” button. This will only create a new role, not apply the role; to apply roles subdomains must be created.

A subdomain is a part of the breakdown structure; this can be a complete branch or just an element. To create a subdomain you need to right click on the place that you want to create the subdomain in the breakdown structure and choose “create subdomain here”. Figure 49 shows the process.
This will bring up the create subdomain form, figure 50.

![Create subdomain form](image)

**Figure 49**

This will create the subdomain. To edit or manage subdomains right click on the node and choose “Manage subdomain”, figure 51. The subdomain management form allows the user to create and assign roles to a member user. Roles can only be assigned to member users.

**Figure 50**

This will create the subdomain. To edit or manage subdomains right click on the node and choose “Manage subdomain”, figure 51. The subdomain management form allows the user to create and assign roles to a member user. Roles can only be assigned to member users.
Roles restrict the use of a subdomain to members with a certain role. Before this restriction can be used permissions for a branch must be changed so that only a member with a certain role can access it. Right click on the selected node and choose properties from the popup menu. Choose the permissions tab and click on the “Change permissions” button. The “Edit permissions...” form, figure 52, allows restricting access to a node.

Figure 52

2.5 Project management

TruePLM provides two different approaches for managing a project. First the Project management menu item, which provides the user tools to manage the progress of a project. Second the Reference data menu item, which creates
boundaries for the project through the use of metadata. Here we shall go through different options that are available.

### 2.5.1 Milestones overview

To create a milestone use the Project management -> Milestones command. Here the user can create, remove or modify milestones.

### 2.5.2 Scheduled events (review support)

To create a scheduled event use the Project management -> Scheduled events. Scheduled events are project actions that are supposed to be performed on data packages. Thus, before creating an event, data packages need to be available. Create a new event by clicking on the Add new button, figure 48.

![Add new scheduled event](image)

**Figure 53**

If the event type is not available, create it in Reference data-> Scheduled events types.

Note: An event may be considered more like a process than a task; normally it will be the review of a data package, which can last for a long time (months). For more info about review, read ESA CASP documents. For representing concrete tasks, use “project actions”.

### 2.5.3 Project actions

To create an action, execute the Project management ->project actions command. The project action form, figure 54, allows you to create an action and assign that action to a user or users. It also allows adding documents to an action. To create a new action, click the “Create new action” button.
Figure 54

Figure 55 displays the “Create new action list”. To create a new action either select it from the list or if it is not available, type in the name and press enter; this will add a new action to the action list.

Figure 55
2.5.4 Automatic notifications

For each action and scheduled event a notification is sent to the assigned user. Notifications are not sent by email, but will appear in the TruePLM client application of the addressee. Figure 56 shows a user’s notification form.

![Notifications: what's new]

Figure 56

2.5.5 Changing project phase

Project phases are changed in Project management -> current project phase.

2.5.6 RDL: editing selectable values for project metadata

The Reference data menu allows the user to manage meta data per project.