Capella to Enterprise Architect Extension User Guide

Artal

Version 1.0, 2020/02/28

Table of Contents

1. Introduction

Here is the user guide of the Capella to Enterprise Architect extension.

This extension allows to transform a Capella model to an Enterprise Architect model. This manual is composed of three sections:

- **Installation**: description of the extension installation
- **Capella**: description of the capella extension and how to use it
- **Enterprise Architect**: explains how to import the model exported from Capella into Enterprise Architect.

2. Procedure installation

2.1. Product description

The product is delivered as a ZIP archive: **Delivery_CapellaEABridge_X.Y.Z.zip**, where "X.Y.Z" represents the current version of the extension.

The ZIP archive contains the extension products for the both **1.3.x** and **1.4.x** Capella versions.

Figure 1. Compatible Capella versions.

For each Capella version, a **drop-in** and an **update site** are delivered.

Figure 2. Dropins and Update-site are delivered.

A drop-in is delivered as ZIP archive: **CapellaEABridge_VP-X.Y.Z-dropins.zip**, where X.Y.Z is the version of the extension.

Figure 3. Dropin delivery.

An update site is delivered as ZIP archive: **CapellaEABridge_X.Y.Z_updatesite.zip**, where X.Y.Z the version of the extension.

Figure 4. Update-site delivery.

2.2. Drop-in installation

Unzip the Delivery_CapellaEABridge_X.Y.Z.zip archive.

Figure 5. Delivery Extraction.

Open the **dropins** directory.

Figure 6. Dropin to copied

Copy/paste and unzip the CapellaEABridge_X.Y.Z-dropins.zip into the **dropins** directory of the Capella_X.Y.Z installation.

Figure 7. Extract dropin.

It is then possible to delete the CapellaEABridge_X.Y.Z-dropins.zip archive.

2.3. UpdateSite installation

Unzip Delivery_CapellaEABridge_X.Y.Z.zip archive.

Figure 8. Delivery Extraction.

Execute the Capella software.

In the Capella "Help" menu, select "Install New Software...".

Figure 9. Menu to install new update site.

In the opened wizard, click on the "Add..." button and choose the **CapellaEABridge_X.Y.Z_updatesite.zip** archive. Set CapellaEABridge in the "Name" field.

Figure 10. Add CapellaEABridge repository.

Select the CapellaEABridge feature and click on the "Next" button.

Figure 11. Select the new feature.

Click again on the "Next" button.

Figure 12. Review the items to be installed.

Accept the terms of the licence agreement and click on the "Finish" button.

Figure 13. Accept license agreement.

Once the CapellaEABridge udapte site is installed, you must restart Capella to activate it.

2.4. Check extension installation

Note: This chapter describes the check of the installation in the case of the update site installation. For check the dropin installation, check the Model transformation menu is available as it is describes in the Open Contextual "Transform model" menu section.

After installation procedure, launch Capella.

Check in the plugins installation CapellaEABridge is correctly installed.

In the Capella "Help" menu, select "About Capella".

Figure 14. About Capella.

In the opened wizard, select "Installation details" button.

Figure 15. Installation details.

Check the Capella to Enterprise Architecture feature exists.

Figure 16. Capella to Enterprise feature.

3. Export from Capella

3.1. Pre-requisite

- A Capella Project: the goal of the Capella to Enterprise Architect extension is to transform an existing capella project into a EA model stored in a XMI/UML file.

In the following sections, the **Camera SysML2 Example** Capella project is used to illustrate the process.

Figure 17. Capella project example.

3.2. Launch the Export model

3.2.1. Open Contextual "Transform model" menu

Right click on a Capella Element, and select the "Transform model" menu.

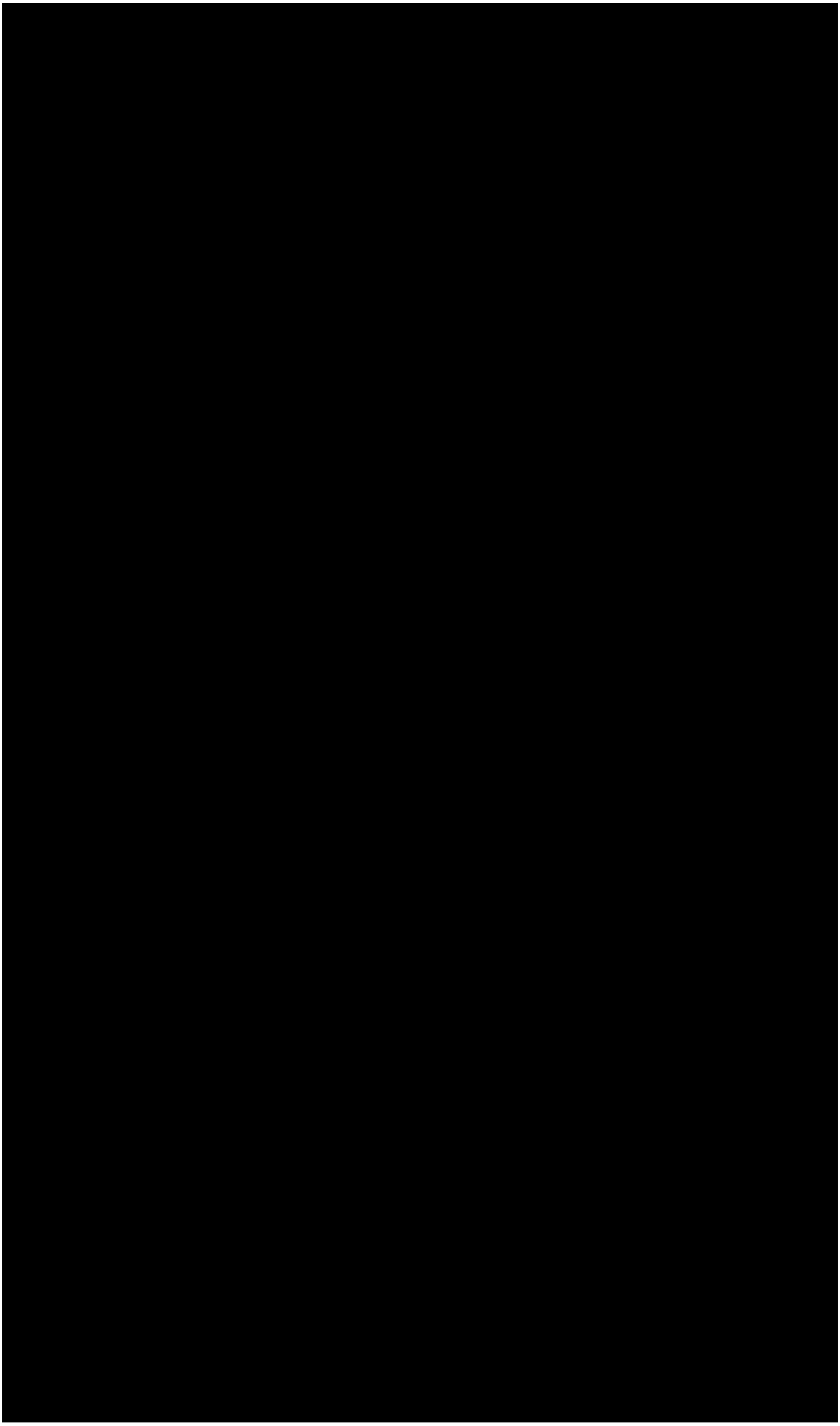


Figure 18. Exports menu

3.2.2. Configure the Export wizard

The opened wizard shall be filled with:

- The type of the transformation (the first available transformation is selected by default).
- The path of the target file.
- The (predefined) algorithm to use.

Figure 19. Export wizard.

Select the type of the transformation: the field proposes the "Capella to Enterprise Architect" type.

Figure 20. Type of transformation.

Select a target file: set the target path or click on the "Browse..." button. Using the opened wizard, all the existing xml files are displayed.

Figure 21. Selection output file.

Select an existing xml file, or set a new file name. Click on the "Open" button.

Figure 22. Export wizard.

Select a predefined algorithm.

Figure 23. Algorithm selection.

The OK button is available only when the three fields are filled.

Figure 24. Filled Exports wizard

Click on the "OK" button.

The Enterprise Architect model is built and persisted in the generated output xml file.

3.2.3. PVMT and Physical Architecture options

In the "Model transformation" wizard, in the case where "Capella to Enterprise Architect" type is selected, a check button "Export profiles" appears.

Figure 25. Export profiles.

This option allows to export PVMT data as UML profile.

Figure 26. PVMT data to UML profiles.

The profiles will be exported into a XML file naming "MDG_CapellaProfile_xxxxx" with xxxx is the export date. This file is exported in the same path than the target file.

4. Import to Enterprise Architect

4.1. Create a new Enterprise Architect Project.

Start Enterprise Architect. Click on the "New File" menu.

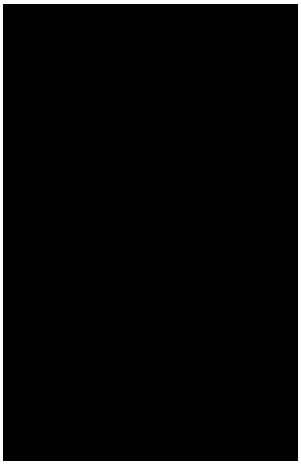


Figure 27. New project...

In the displayed standard Windows file browser dialog, locate a suitable folder for your project and, in the "File name" field, type in a distinctive name. Click on the "Save" button.

Figure 28. Create a new project.

4.2. Import PVMT profile into a UML profile

In the case where profiles has been exported from Capella (<PVMT options>), It’s necessary to import these profiles in Enterprise Architect. In this way, the user can use this profile in Enterprise Architect software.

Start Enterprise Architect. In the Enterprise Architect ribbon, select "Start → Share → Resources" menu.

The Resources browser is displayed.

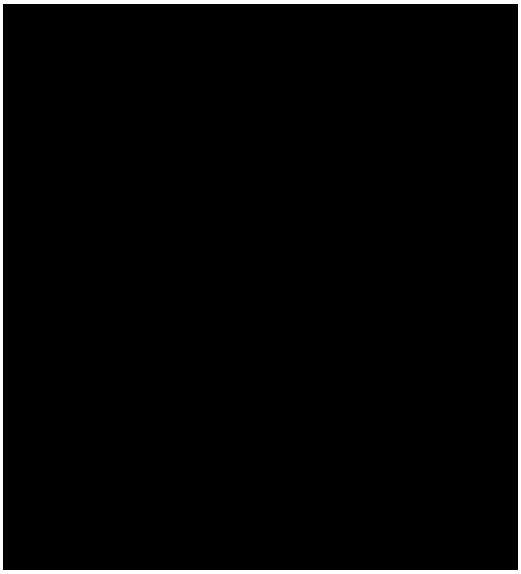


Figure 29. EA Resources.

In the "MDG Technologies" node, right click and select the "Import Technology" menu.

Figure 30. Import Technology.

"Import MDG Technology" wizard is displayed. In the "Filename" field, select the MGG_CapellaProfile_xxxx.xml exported from Capella.

Figure 31. Import MDG Technology wizard.

In this wizard, the others fields are automatically filled. Click on "OK" button.

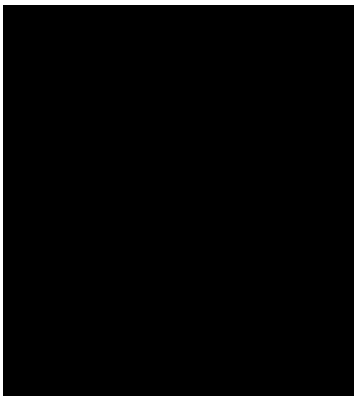


Figure 32. Capella profiles added.

In the EA project, create a new Component.

Select this component. In the "Properties" view, select the Stereotype field.

In the "Perpective" field, select "Specialized → Model Technologies" value.

Figure 33. Model Technologies perspective.

In the "Profile" field, several profiles are available In the "Profile" field, several profiles are available, including profiles imported from Capella.

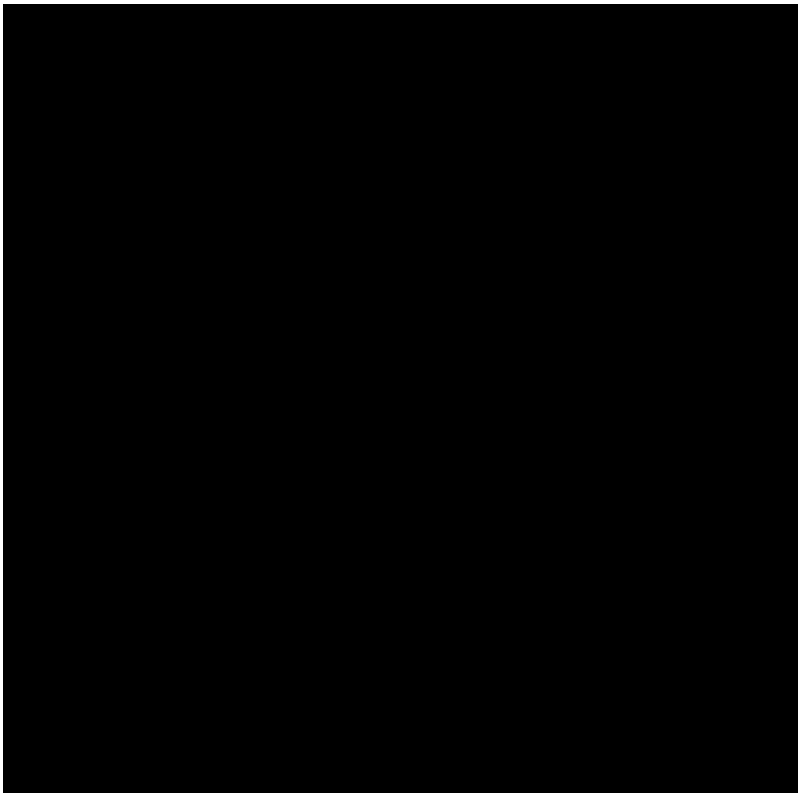


Figure 34. Profiles from Capella.

In this list, select a profile. All the compatible stereotypes from the profile with selected element are displayed.

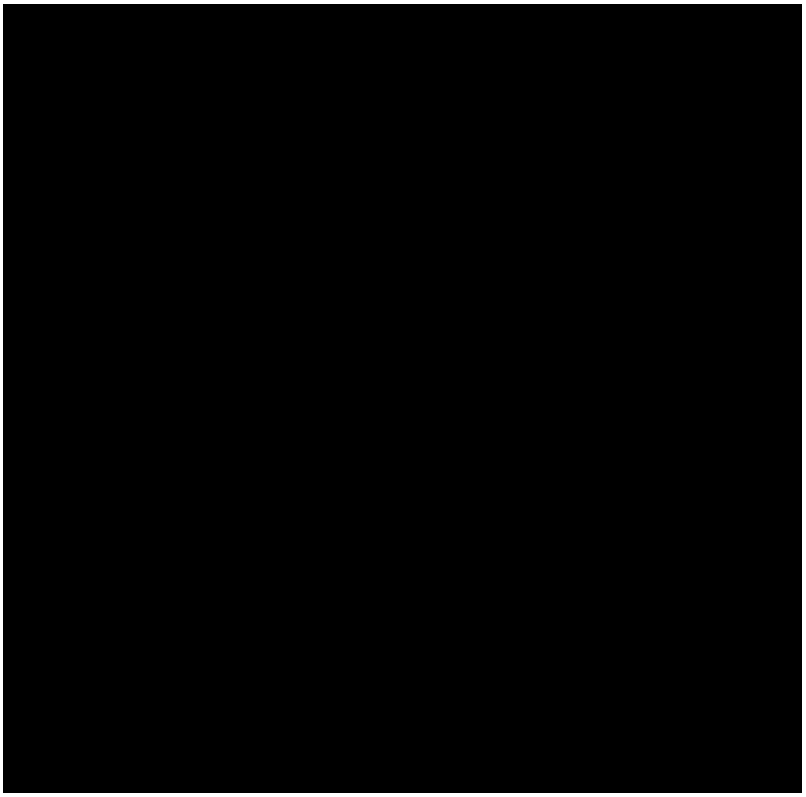


Figure 35. Stereotypes from Capella.

Select stereotype and click on "OK" button. The stereotype is applied on the Component.

4.3. Import Enterprise Architect model

In the "Browser" explorer, select the "Model" node.

In the Enterprise Architect ribbon, select "Publish → Model Exchange → Import XMI → Import Package from XMI" menu.

Figure 36. Import XML file.

In the displayed "Import Package from XMI" dialog:

- **Filename** field: type the directory path and filename from which to import the XMI file.
- **Baseline Package after import** checkbox: Select this checkbox to open the "Create Baseline" dialog, through which to baseline the imported Package once the import is complete.
- **Import** button: Click on this button to start the import

- **Close** button: Click on this button to close the dialog.

Figure 37. Import XML wizard.

Figure 38. New Baseline.

4.4. Inspect Import results

In the "Browser" explorer, the imported data are displayed. Under the "Model" node, "Import Capella" package is created. This package contains all imported data from Capella.

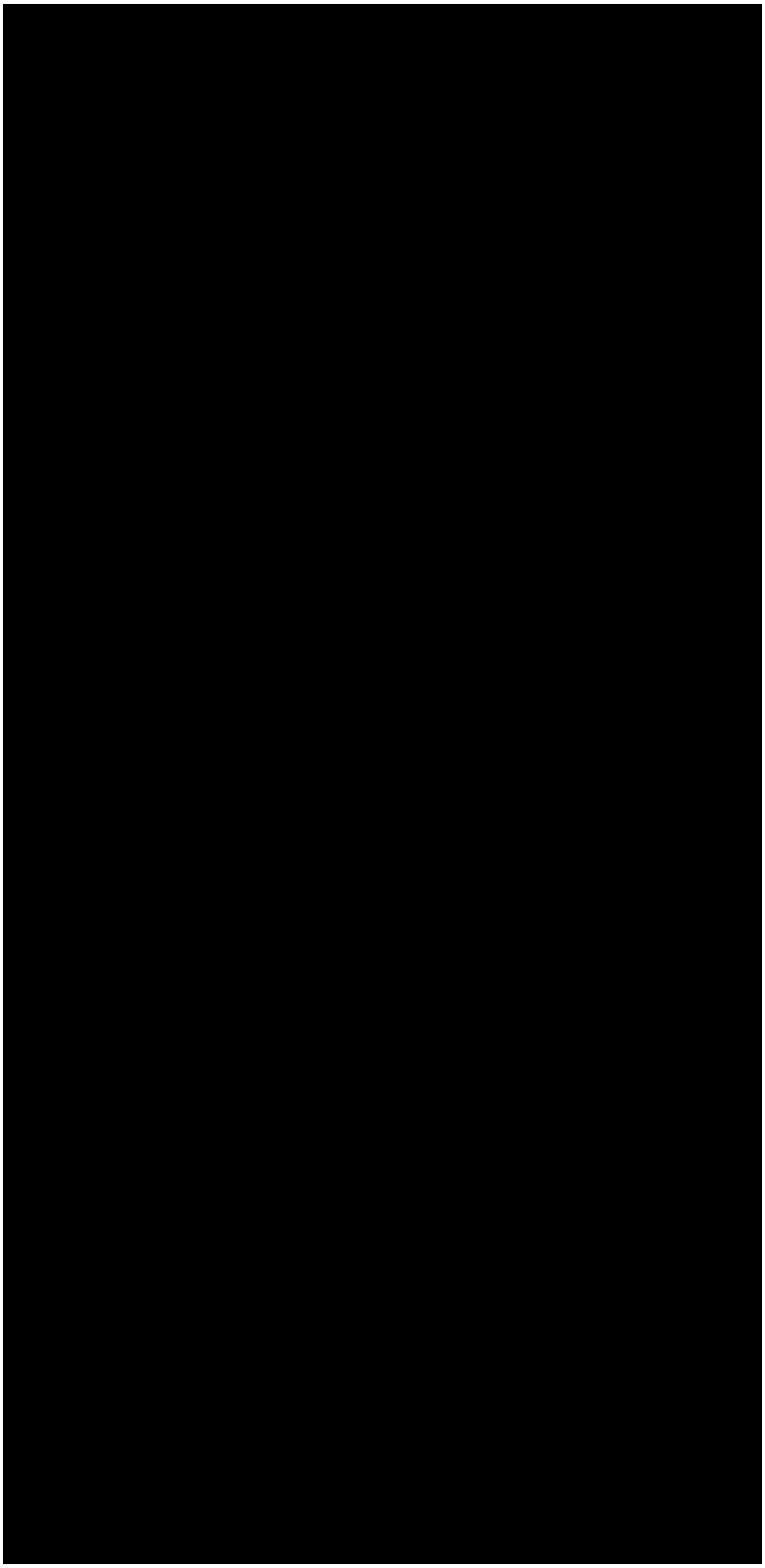


Figure 39. EA model.

Create a component diagram and drag and drop all components inside.

Figure 40. Component diagram.

Create a Class diagram and drag and drop all others elements.

Figure 41. Class diagram.

4.5. Merge in Enterprise Architect

Figure 42. Merge scenario.

This schema shows the different steps to execute a merge in Enterprise Architect. The merge process allows to compare the last version of the EA model with a previous version and to choose to keep old or new data.

In Capella software, modify the name of the following Capella elements:

- "Camera power button" component name to "Camera power button from Capella"
- "Sensor Command" exchange item name to "Sensor Command from Capella"
- "Timestamp" class name to "Timestamp from Capella".

Export the Capella model as it's describe in the Export from Capella section.

In Enterprise Architect, in the previously imported model, modify the name of the following EA elements:

- "Camera power button" component to "Camera power button from EA"
- "Sensor Command" operation to "Sensor Command from EA"
- "Explosure Triangle" datatype to "Explosure Triangle from EA".

It's very important to increment the version of the Enterprise Architect model after the last modification. This version allows to have a tag to compare with the new import to merge.

In the "Browser/Project" explorer, select the root package item (Logical Architecture in the

example). In the Enterprise Architect ribbon, select "Design → Model → Manage → Manage Baselines…" menu.

Figure 43. Manage Baselines…

In the displayed Baselines dialog:

Figure 44. Baselines dialog.

Select the "New Baseline" button. In the "New Baseline" dialog, type the new version name in the version field.

Figure 45. New Baseline.

In the Baselines dialog, the new version is added in the top of the list.

Figure 46. New version.

And click in "Close" Button.

Select the root package item in the "Browser/Project" explorer (Logical Architecture in the example) and import the last version of the Capella export file as described in the Import Enterprise Architect model section.

Figure 47. Import Package from XML

In the Import Package from XML dialog, after to configure when describe in the above screenshot, click on the "Import" Button. **Warning** don’t use the "Merge" Button. The exported Capella file is write in XMI 2.1/ UML 2.1 format. The EA merge doesn’t support XMI and UML version upper than 1.3.

After the import, the "New Baseline" is displayed. In the "Version" field, type a new name version.

Figure 48. New BaseLine.

Click on "OK" button. And Click on "Close" button in the "Import Package from XML" dialog.

In the "Browser" explorer, all the data modified before the last import are removed.

In the Enterprise Architect ribbon, select "Design → Model → Manage → Manage Baselines..." menu.

Figure 49. Baselines.

In the displayed dialog, select the version before the last import.

Figure 50. Select previous version.

And click on the "Show Differences" button.

The "Baseline Comparison" view is opened and display the differences between the two compared versions.

Warning: In the Capella software, the both created and modified dates aren’t managed for the Capella element. For this reason, in Enterprise Architect is possible to ignore the dates differences. In the "Baseline Comparison" toolbar, click on the "Baseline comparison options" button.

Figure 51. Comparison options.

Check the both "Suppress Date Modified" and "Suppress Date Created" options. These options allow to ignore the dates informations in the "Baseline Comparison" view.

Figure 52. Baseline comparison.

If the Enterprise Architect user want keep the old value, select the element in the "Model Elements" explorer and click on the green arrow.

Figure 53. Keep old version.

Click on the "OK" button in the opened message dialog.

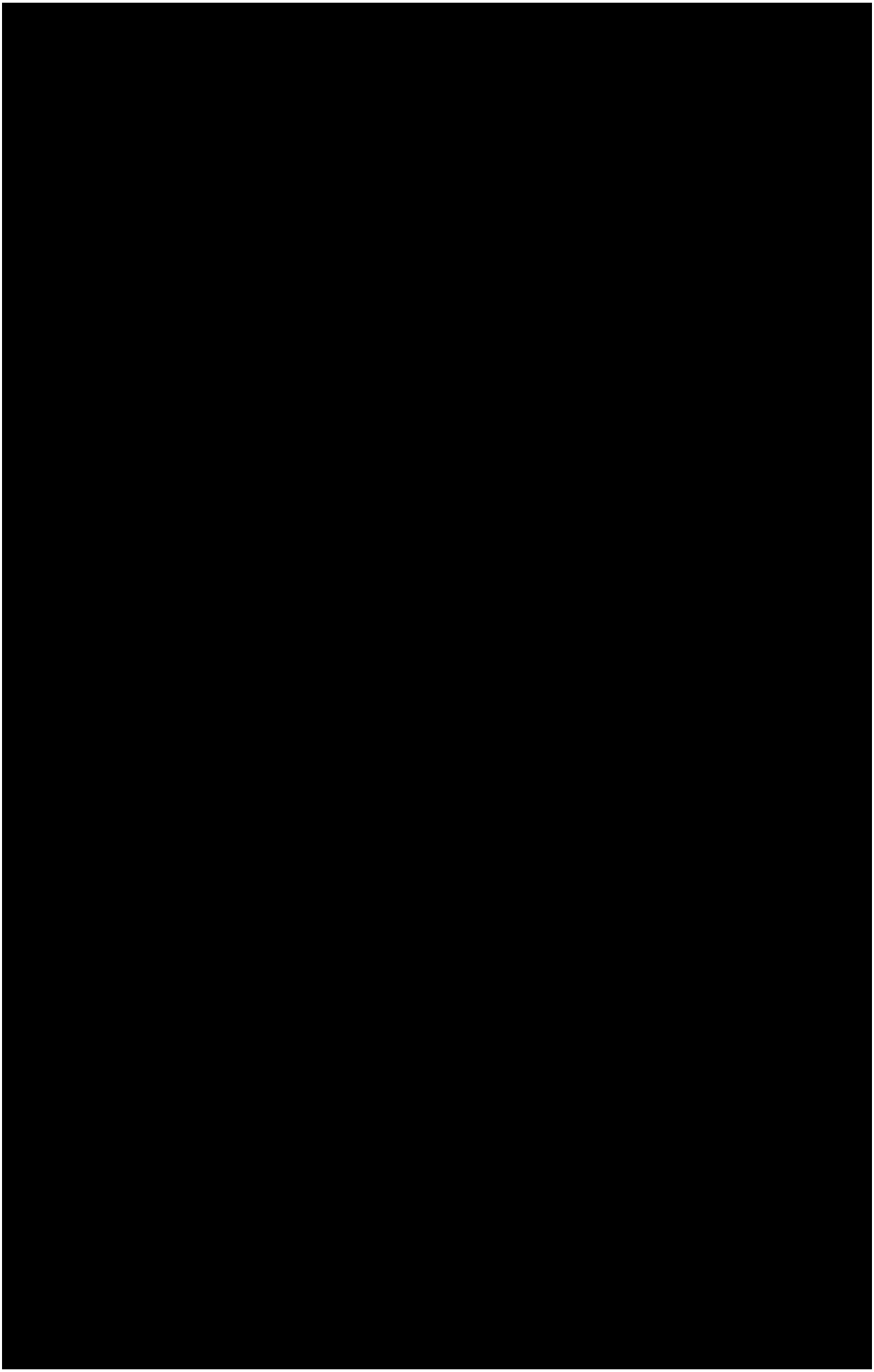
The element is removed from the "Baseline Comparison" view and is updated in the EA model.

Figure 54. Updated model.

The last step, is to create a new Baselines after the merge.

5. Transformation rules

5.1. Logical Architecture transformation



5.2. Alternative Physical Architecture transformation

6. Limitations

6.1. Limitation 1:

When in Capella the Components are in Component packages, the bridge does not export these Components packages because Enterprise Architect cannot build packages under Commponents.

6.2. Limitation 2:

The bridge does not transit some data types

6.3. Limitation 3:

The bridge does not transit some Exchange items

6.4. Limitation 4:

The bridge does not keep the order of the model elements in Enterprise Architect as in Capella.

6.5. Limitation 5:

In Capella, it is possible to use the data, Exchange Items and Interfaces of a superior Arcadia perspective (for example, In PA, it is possible to reference data coming from SA or LA). The bridge transit only the data, Exchange Items and Interfaces of the selected Arcadia perspective (for example, if the physical architecture is transited, only the data, Exchange Items and Interfaces of this PA will be transited)

6.6. Limitation 6:

In Enterprise Architect, when a Capella profile has been imported into Enterprise Architect via MDG technology it is not possible to see the content of this profile (but it is possible to use it).

6.7. Limitation 7:

The iterative process is not fully efficient in order to take account the differences coming from EA (OK from Capella): in the documentation, the process describes the last baseline of the EA model is the model coming from the transition of the Capella model ; the process says to display the differences between the previous baseline (the last updated EA model) and the new baseline. So in these differences, we retrieve the differences coming from the last Capella model but all the differences coming from the all updates (of all iterations) of the EA models.