Working in a project on a new functional profile

Introduction

The development of a new Functional Profile is usually done in a multidisciplinary project team. Depending on the part of the Base Model, domain expert, IT experts, security experts etc, are part of the project team. Collaboration of the project team can be done with or without using Enterprise Architect HL7 EHR-S FM Extension. The possibilities are:

1. **Without** using Enterprise Architect and the EHR-S FM Tooling extension. A **Project Facilitator** is using the EHR-S FM Tool to develop the new Functional Profile. The facilitator is making the Profile Definition when reviewing the Base Model with the project team. A possible way on this **is described** in this user guide.
2. **With** the use of Enterprise Architect and the EHR-S FM Tooling extension and the use of the EA functionality *'Project sharing'* and *'Network deployment'*. Several members of the project team are working on different parts of the profile definition at the same time and can contribute their particular knowledge. This possibility is **not described** in this user guide.
3. **With** the use of Enterprise Architect and the EHR-S FM Tooling extension and the use of the EA functionality *'Replication'*. Replication enables different users to work independently of one another, and to merge their changes at a later time. This possibility **is described** in this user guide.
4. **With** the use of Enterprise Architect and the EHR-S FM Tooling extension and the use of the EA functionality 'Security'. In managing the project of development of a new functional profile, you might want to limit the access of members in the project team to update certain parts of the profile definition. This to prevent concurrent editing and limit the possibility of inadvertent changes in the profile definition by members not designated as model authors. This possibility **is described** in this user guide.

1. Development of a new Functional Profile *without* the use of Enterprise Architect and the EHR-S FM Profiling Tool extension

A project manager can assign a project facilitator to assist in the development of a new Functional Profile. This project facilitator is responsible for creating the Profile Definition in collaboration with the project team and finally creates the actual new Functional Profile with support of the HL7 EHR-S FM FP Designer Tool.

A project facilitator can have meetings with the rest of the project team and review the functions and criteria in the base model on their applicability for the new functional profile. The project facilitator can create the Profile Definition with support of the tool while reviewing the Base Model. When the project facilitator is not available for review of the Base Model an export of a section of the Base Model in a RTF document, with the functions and criteria in a table, can be made so team members can review the section of the Base Model. They can put in their review notes in the table and the project facilitator can review the table and the notes to create or adjust the Profile Definition for that section.

How to export a section or the non-shall criteria of a section in a rtf document is described in chapter 'Export a section of the EHR-S FM' in part Export.

For the creation of the Profile Definition of the actual new Functional Profile, the Compiled Profile, see chapter 'Create Profile Definition' in part Creation.

2. Development of a new functional profile *with* the use of Enterprise Architect and the EHR-S FM FP Designer Tool and the use of the EA functionality 'Replication'.

In the EA functionality 'Replication':

- The EA project of the development of a new functional profile is converted to a design master, and then replicas are made of the master.
- Members of the project team take the replicas, modify a part of the project, and then bring their replicas back to be synchronized with the master file.

In a project team a project facilitator can be the design master and other members of the project team use the replicas. The project facilitator synchronizes the replicas with the master file.

To use the functionality Replication:

1. Convert the base project to a design master.
2. Create replicas from the design master.
3. Take the replica away and work on it as required, then bring it back for synchronization with the design master.
4. Synchronize the replicas, with all changes, to both the master and the replica. Synchronizations are propagated in both directions, so they both finally contain the same information.
5. Resolve Conflicts.

These steps are described below with examples in the context of new functional profile creation.

1. Convert the base project to a design master.

When a new Functional Profile is developed, a new project in EA is created for that. See part Creation and follow the instructions. The result is a project in EA in where you have one package with the Profile Definition, one package with the Base Model and one package for the Compiled Profile.
This project is the so called master project from which you create replicas that can be modified independently of the master project and re-merged later.

For example: different groups of the project team can work independently on parts of the Profile Definition. Domain experts can work on the section Care Provision and Security experts can work on the section Trust Infrastructure. The project facilitator can synchronize the replicas with the design master.

To convert the project in to a design master follow the next steps:
Step 1: take a back-up of the required EA project. So you will always have a copy of the original project. The project is the eap file you created as a result of the part Creation.
Step 2: Select the project in the project browser.
Step 3: Select the Make Design Master menu option and follow the on-screen instructions. See figure 1. Select Tools in the navigation, select Data Management, Select Manage EAP. File and then select Make Design Master.
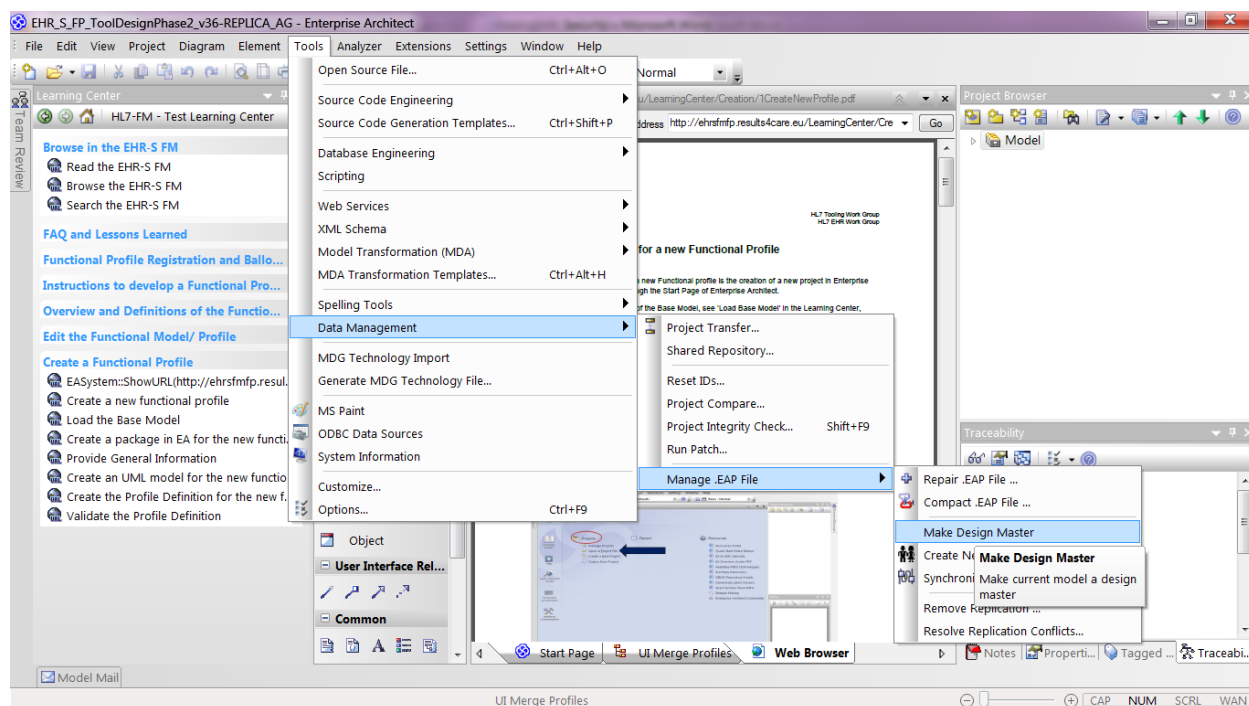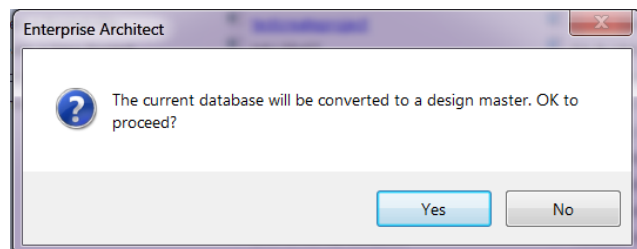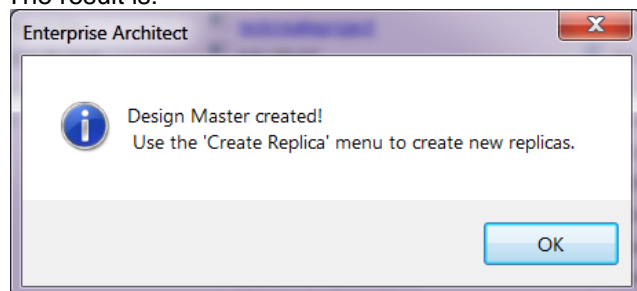
Figure 1. Make Design Master menu option.

You will get the following question:

Click Yes.

The result is:

2. Create replicas from the design master.

For example: different groups of the project team can work independently on parts of the Profile Definition by using a replica of the Design Master. In this way domain experts can work on the section Care Provision and security experts can work on the section Trust Infrastructure.

To create replicas follow the next steps:
Step 1: create a design master. This is done by following the previous part 'Convert the base project to a design master'.
Step 2: select the Create New Replica menu option and follow the on-screen instructions. See figure 2. Select Tools in the navigation, select Data Management, Select Manage EAP. File and then select Create New Replica.
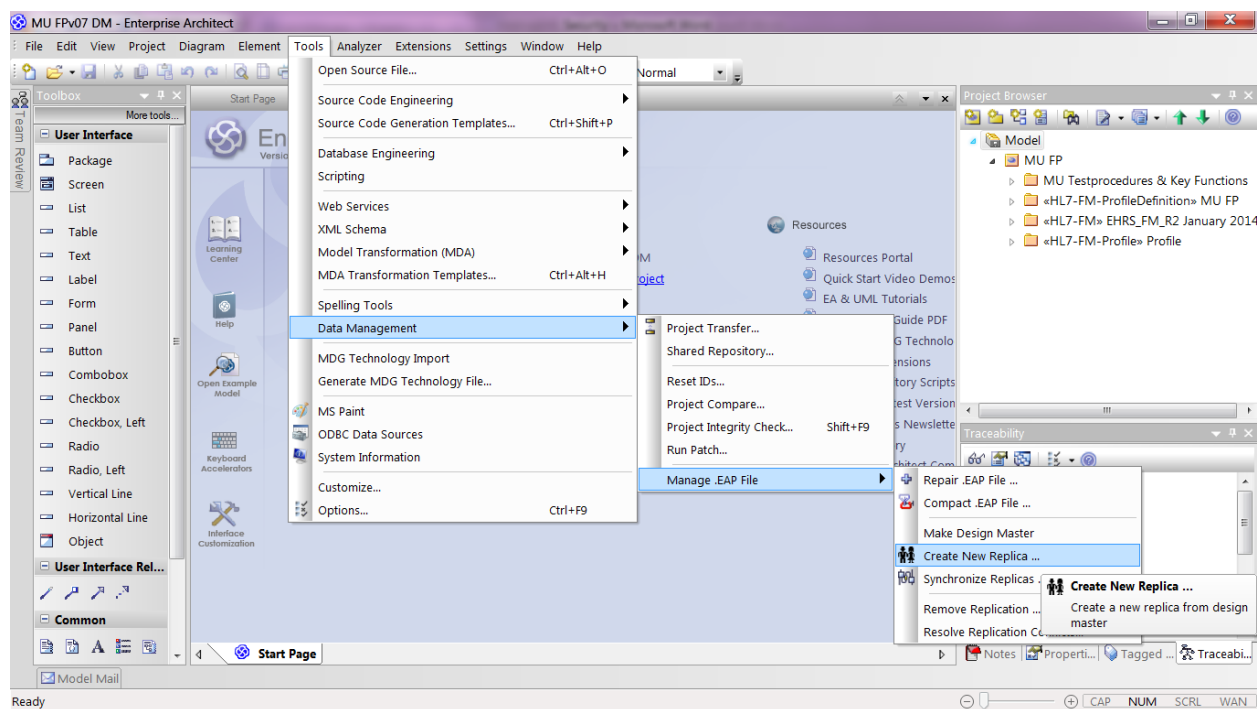

Figure 2. Create Replica menu option.

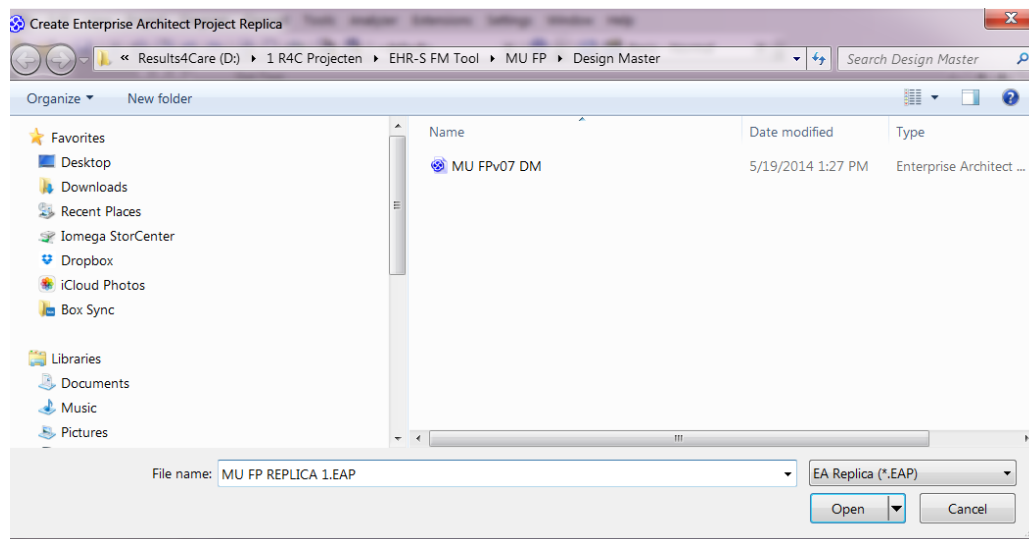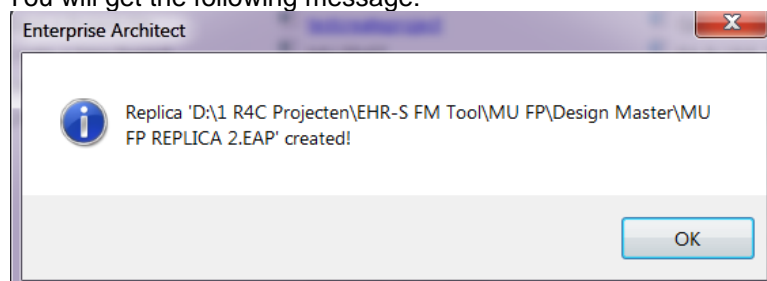After selecting the Create Replica option you will get the Windows explorer. See figure 3.

Figure 3. Creating a replica from the design master.

- Select the Design Master file (indicated with DM) and click on Open.

You will get the following message:

NOTE: If the functionality Security is enabled (in the Corporate[1], Business and Software Engineering, Software Engineering and Ultimate editions of EA) you must have Manage Replicas permissions to create replica.

3. Take the replica away and work on it as required, then bring it back for synchronization with the design master.

You can create multiple replicas for the different expert groups you have in your project team. Each group can work with its own replica. After a period they bring back their replicas to be synchronized with the master file.

For example: different groups of the project team have worked independently on parts of the Profile Definition by using a replica of the Design Master. The domain experts worked on the section Care Provision and the security experts worked on parts of the section Trust Infrastructure. When they have

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finished their work they bring back the replica to the project facilitator. He/She will synchronize the replicas with the design master.

The synchronization of the replicas with the design master is used to:
- Merge the changes made in each replica with the design master, so that a new set of replicas with all changes can be generated and distributed.
- Combine the changes made to two replicas, should it be necessary for two team members to combine their work.

4. Synchronize the replicas

To synchronize the replicas with the design master follow the next steps:
Step 1. Open the design master project file. Or a replica project.
Step 2. Select the Synchronize Replicas menu option. See figure 4.
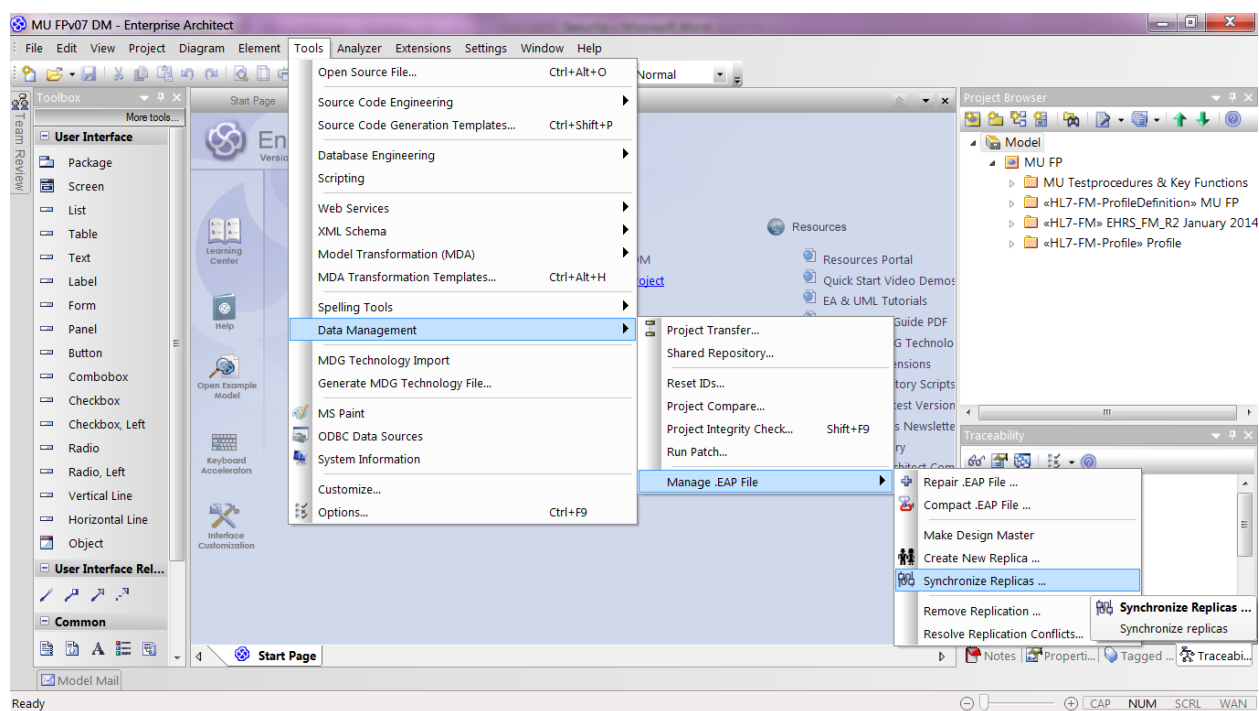

Figure 4. Synchronize Replicas menu option.

Step 3. Locate and select the (second) required replica to merge the open project and the replica. See figure 5.
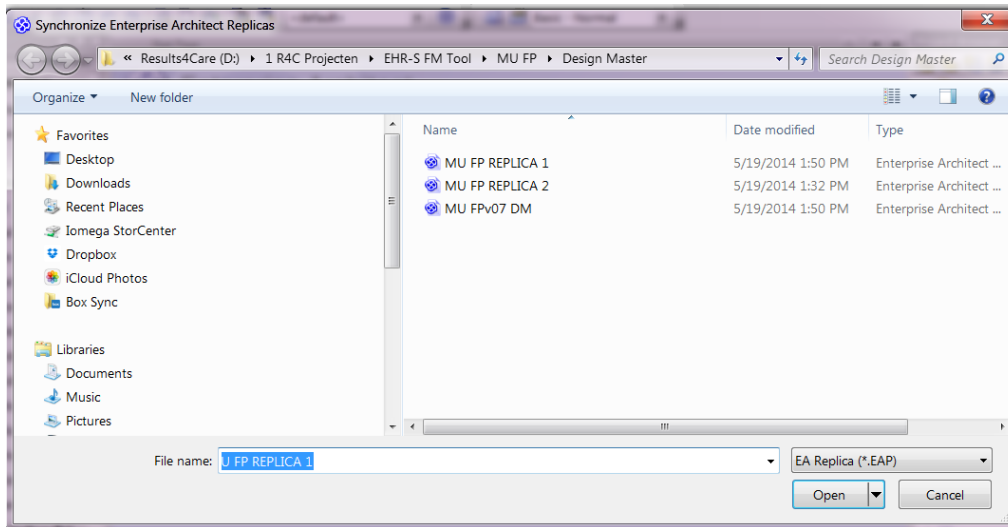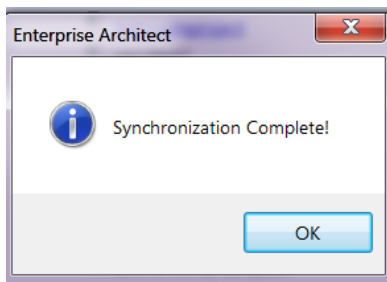
Figure 5. Select a replica for synchronization.

If you select 'Open', EA will synchronize the replica and the design master. When the synchronization is complete you will get the following message:

Notes:
- Information is copied both ways, including deletes, updates and new criteria or functions. Both Projects, design master and replica, end up containing identical information.
- If the synchronization process generates 'conflicting changes' errors, you should review and, if necessary resolve these conflicts.
- In the Corporate, Business and software engineering, system engineering and Ultimate editions of EA, if security is enabled you must have Manage Replicas permission to create replica.

6. Resolve conflicts

EA follows certain rules in merging. These rules are:
- Additions are cumulative. Example: if two replicas each created three new criteria in a function, this result in six new criteria after merging.
- Deletions prevail over modifications. Example: if one replica changes the optionality of a criterion and the other replica excluded the criterion, merging replicas results in both files losing the criterion.
- Conflicting modifications appear in the Resolve Replication Conflicts dialog.

If two or more people are working on the same part of the profile definition from the base model, for example one or more domain experts, in their respective replicas between synchronizations, the replication engine has problems in resolving which changes is the master.

It is unlikely that more domain experts work with their own replica, but if IT experts have their own replica and work independently on the RI section it can happen that there is a conflict when synchronize the replicas. Conflicts can appear also when people make changes in other sections then the section it was agreed to work on. Later in the user guide we describe the 'Security' functionality of EA to prevent this.

How to deal with conflicts:
* Avoid the problem: ensure that each team member always work in a separate area (section or part of a section of the base model) of the profile definition within their replica.
* Check for conflicts: after synchronizing replicas, open the Resolve Conflicts dialog and check if there were any conflicts. See figure 6.
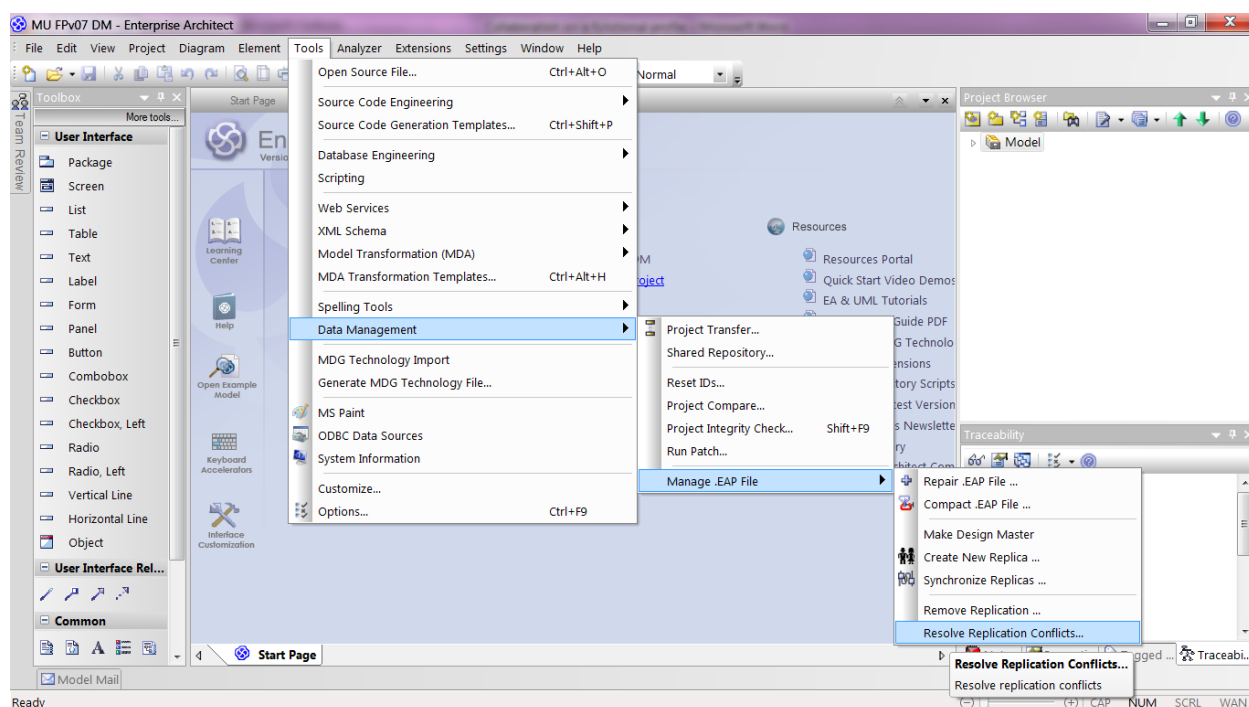

Figure 6. Resolve Replication Conflicts menu option.

The result is the following window in EA:

Figure 7. Resolve Synchronization Errors.

- Click on each entry in the Conflicting Records list.
- When the lost information appears in the Conflict Details list, click on the Overwrite with Conflict button.
- In the Conflict Records list, you can also copy each Row ID to the clipboard by right-clicking on the row and select the Copy to Clipboard menu option.
- You can locate the conflict in the Project Browser, by right-clicking on it and select the Find in Project Browser menu option. See figure 8.
- If you want to find the conflict in a diagram select the Find in all diagrams option. Can also be seen in figure 8.
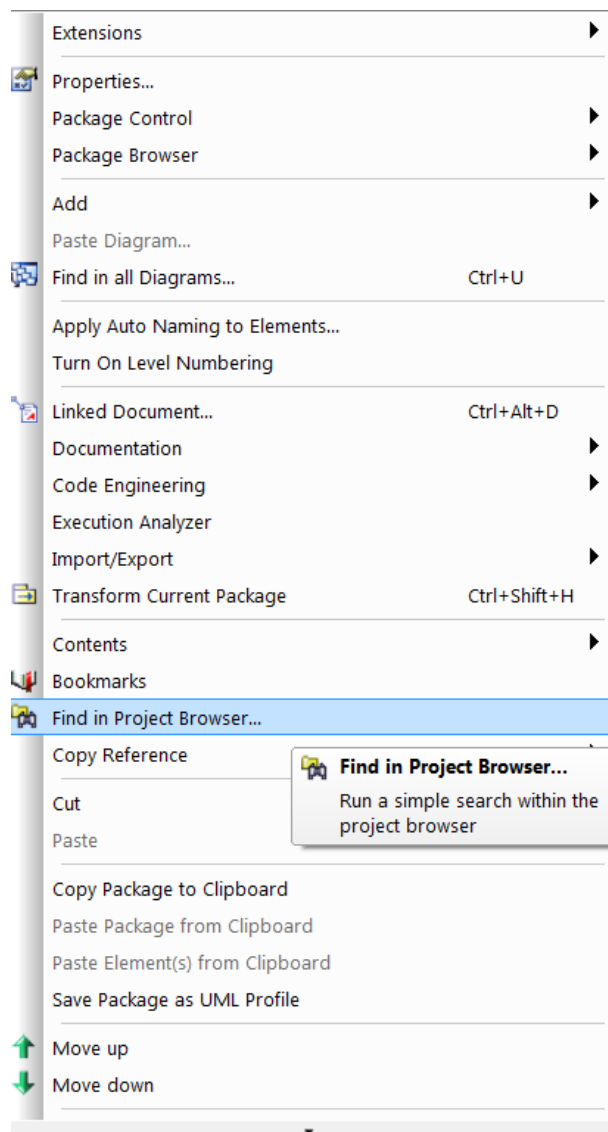
Figure 8. Locate the conflict in the Project Browser.

- Response to conflicts.

When a project record has been modified in different ways by different users, the replication engine selects one of the conflicting values based on rules within the replication manager. However, the replication engine stores the discarded changes and flags the conflict on the Resolve Conflicts dialog (figure 7) so that you can choose to roll in the discarded change instead.

Normally it is not necessary or desirable to examine conflicts, since they represent relatively inconsequential pieces of information that can very easily be modified through the normal Enterprise Architect interface; for example, by moving a diagram element.

The only case in which the Resolve Conflicts dialog should be used is where a substantial piece of information has been overridden by a user, and you want to retrieve it.

Example: if one group of IT experts is working on the RI section and made also changes in the TI sections (and this was not agreed on) you can restore this part by using the Resolve Conflicts dialog, see figure 7.

3. Development of a new functional profile *with* the use of Enterprise Architect and the EHR-S FM Tooling extension and the use of the EA functionality 'Security'.

As described in chapter 2 of this document team members can work independently in their own replica. However, that doesn't prevent them from working in another area of the model (profile definition) then agreed on.

Role-based (user) security in EA helps the project facilitator to control access to various editing functions by requiring that authors log in to the functional profile project with certain privileges. It also allows the project facilitator to lock elements per-user or per-group. This can help to improve collaborative work by preventing different users unintentionally editing the same information at the same time. It also limits the possibility of inadvertent model changes by users not designated as model authors.

For example: different groups of the project team can work independently on parts of the Profile Definition by using a replica of the Design Master. In this way domain experts can work on the section Care Provision and security experts can work on the section Trust Infrastructure. The section Trust Infrastructure can be 'locked' for the domain experts and the section Care provision can be 'locked' for the security experts by using role based user security.

The first step in using the functionality 'Security' is to enable Security in EA. How to do this is wel described in the Help content of EA. Search for Enable Security in the help content. You need to go to the Sparx website, http://www.sparxsystems.com/, and then to the Registered users option.
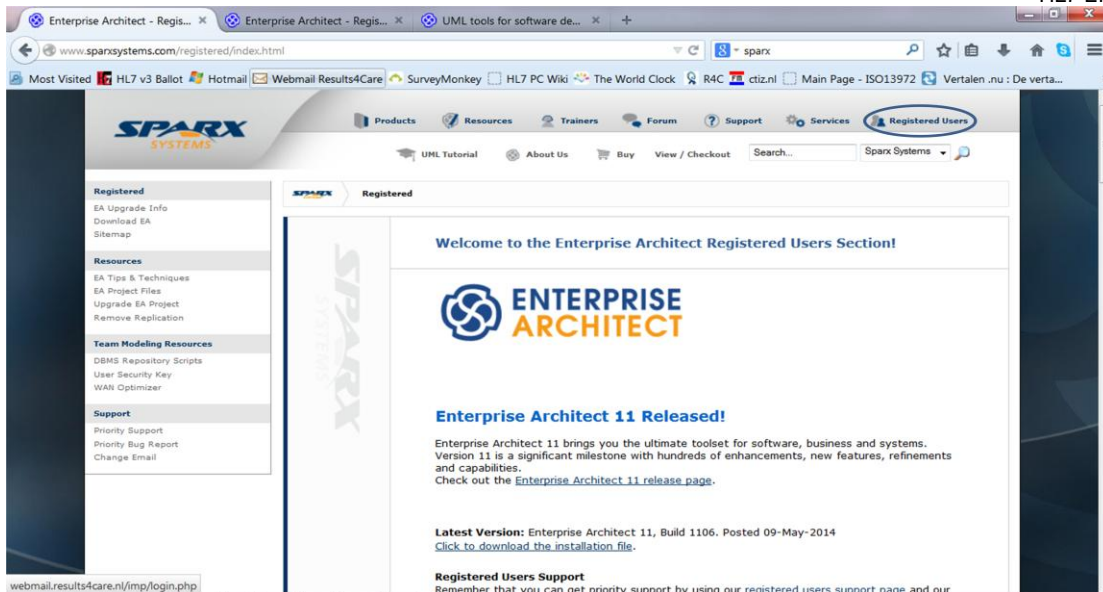
Figure 9. Sparx website with option Registered users.

Together with your license for EA you received your user ID and password that gives you access to the registered user section of our website. This area contains important information about latest releases, product updates and support.

To use the EA functionality 'Security' you need to enable security in EA. This because the user security is not enabled by default in EA, the project facilitator must enable it using an Authorization key obtained from the Sparx Systems website as described above. When you received the Authorization key follow the next steps[2]:

- Select Project in the top level navigation, select Security and then Enable. The Enter authorization dialog displays.

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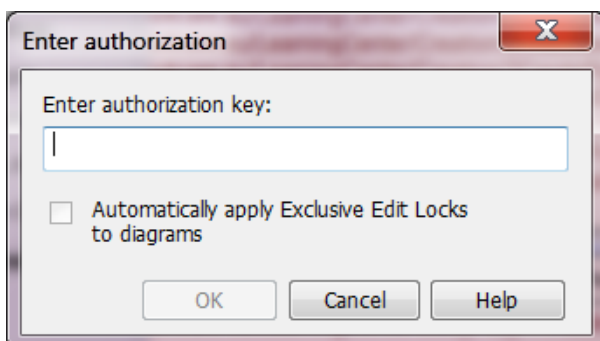
[2] Not all the described steps are explained in detail, because this is well described in the Help of EA. Another reason is that when you are going to use the Security functionality the assumption is that you know how Ea works.

Figure 10. The Enter authorization dialog.

- In the **Enter authorization key** field, type the authorization key from the Sparx Systems website. If required, select the **Automatically apply Exclusive Edit Locks to diagrams** checkbox. This option is ignored in *Require User Lock* security mode. In standard (*User/Group Locking*) mode, this option blocks multiple users from simultaneously attempting to modify the same diagram (see *Notes* below). For more details see the Help of EA, chapter 'Security Policy'.

- Click on the **OK** button. Security is enabled, and an **Admin** user and user group are created with all access rights and a password of **password**. For more details see the Help of EA, chapter 'List of Available Permissions'.

- Select the Project | Security | Login as Another User menu option, and log in as **Admin** with the initial password of **password**. If required, you can change the Admin password. For more details see the Help of EA, chapter 'Change Password'.

- Set up users and permissions as required. For more details see the Help of EA, chapters 'Maintain Users', 'Assign User To Groups', 'Set Up Single Permissions', 'Maintain Groups' and 'Set Group Permissions'.