

1 Configuration

The SHAPE Toolsuite already contains a preconfigured version of the PIM4Agents modelling tool. To assure that the PIM4Agents plug-in is properly working, do the following:

Step 1. Run SHAPE Toolsuite Eclipse bundle

Step 2. Open **File ► New ► Other...**

Step 3. There should be a section called “DSML4MAS” that contains the different diagram types of the PIM4Agents modelling tool (see Figure 1). The plug-in is properly working.

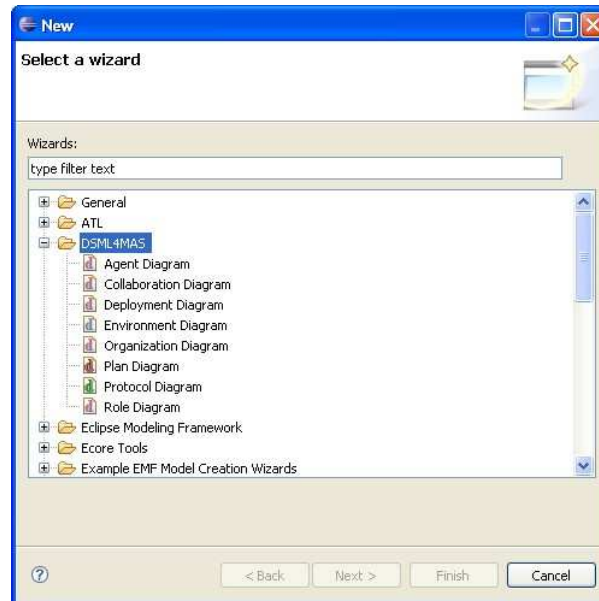


Figure 1 PIM4Agents diagrams.

Here is a short overview of the different diagram types:

- **Agent Diagram:** for modelling agents and their performed roles, capabilities, and behaviors
- **Role Diagram:** for modelling roles
- **Organization Diagram:** for modelling organizations and their roles, capabilities, behavior, instances, and protocols
- **Collaboration Diagram:** for modelling collaborations inside an organization
- **Protocol Diagram:** for modelling the message exchange between actors
- **Behavior Diagram:** for modelling the behavior of agents and organizations
- **Environment Diagram:** for modelling resources that can be accessed by agents
- **Deployment Diagram:** for modelling concrete agent and organization instances

2 Importing PIM4Agents projects

In this section we explain how to import the “SenderReceiver” PIM4Agents example project that is delivered with the SHAPE Toolsuite into the workbench. The example is kept simple and demonstrates the usage of the different diagram types of PIM4Agents.

Step 1. Run SHAPE Toolsuite

Step 2. Open **File ► Import ...**

Step 3. Select **General ► Existing Projects into Workspace** and click on **Next**

Step 4. Select the **Select archive file** option and click on **Browse**

Step 5. Choose the provided **<SHAPE_Toolsuite>/examples/example.zip** file and click on **Open**. **<SHAPE_Toolsuite>** is the installation folder of the SHAPE Toolsuite.

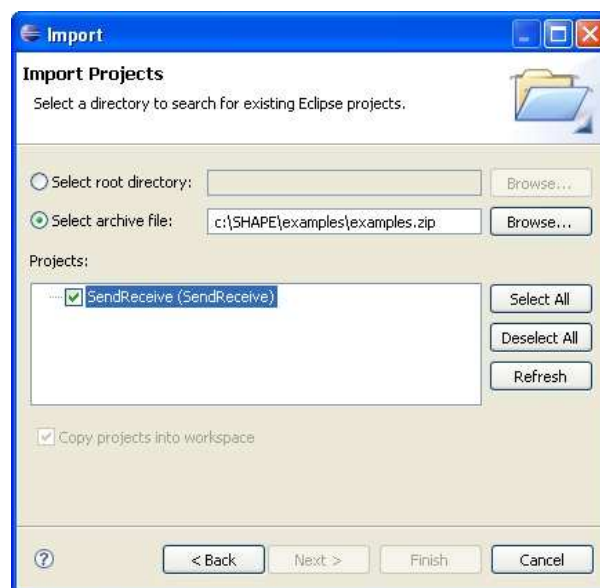


Figure 2 Import dialog.

Step 6. Make sure that the “SenderReceiver” project is selected. Otherwise click on **Select All** (see Figure 2)

Step 7. After clicking on **Finish**, you have imported the example project into your workspace. Figure 3 depicts the structure of the imported “SendReceive” project. The *.pim4agents file contains the actual PIM4Agents model. The diagram files provide different views on the PIM4Agents model.

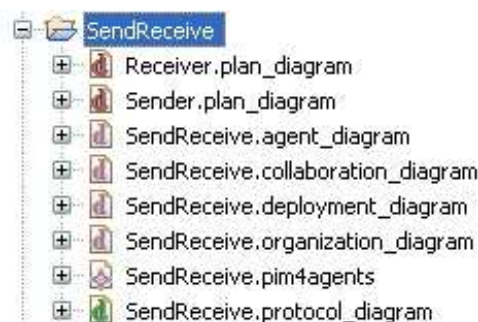


Figure 3 SendReceive project structure.

Step 8. The different views can be opened by double-clicking on the diagram files. Figure 4 shows the agent diagram of the SendReceive example. We can see the two agent types “SenderAgent” and “ReceiverAgent” that perform different roles and have different plans. The lower part of the figure depicts the properties view of the SenderAgent which can be opened by right-clicking on a diagram element and selecting **Show Properties View**. The properties view allows the user to edit all (also not visualized) properties of a selected diagram element.

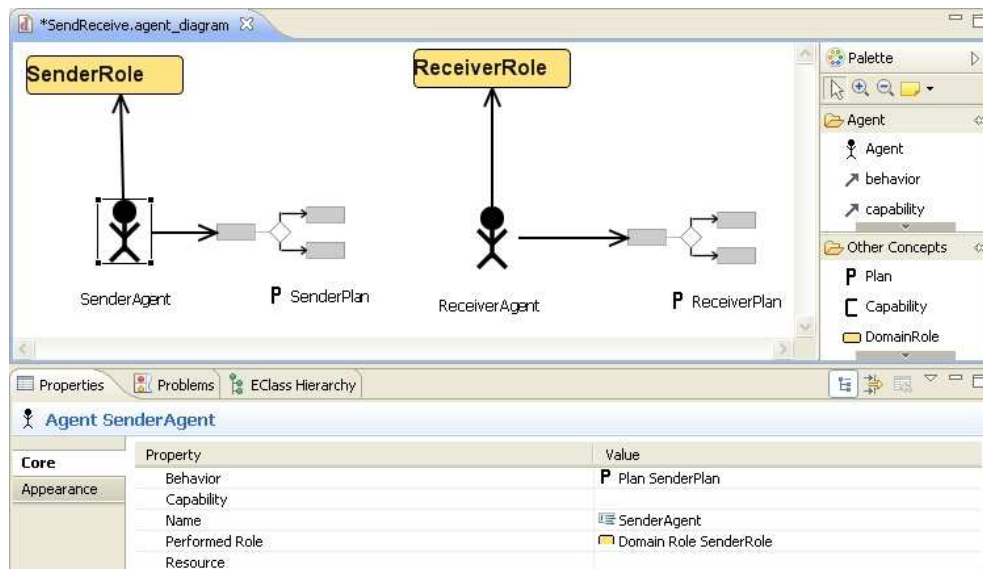


Figure 4 PIM4Agents agent diagram.

3 Creating a new PIM4Agents project

Unfortunately, we currently do not provide an own project type for PIM4Agents. Therefore, it is necessary to create an ordinary project and adapt some settings.

Step 1. Open **File ► New ► Project...**

Step 2. Select **General ► Project** and click on **Next**

Step 3. Insert a <project_name> and click on **Finish**

Step 4. Right-click on the new project and select **New ► Folder**

Step 5. Enter the **Folder name** “models” and confirm with **Finish**

Step 6. Right-click on the just created models folder and select **New ► Others...**

Step 7. Select **DSML4MAS ► Agent Diagram** and click on **Next** (see Figure 1)

Step 8. Enter the <diagram_name> of the diagram (see Figure 5).

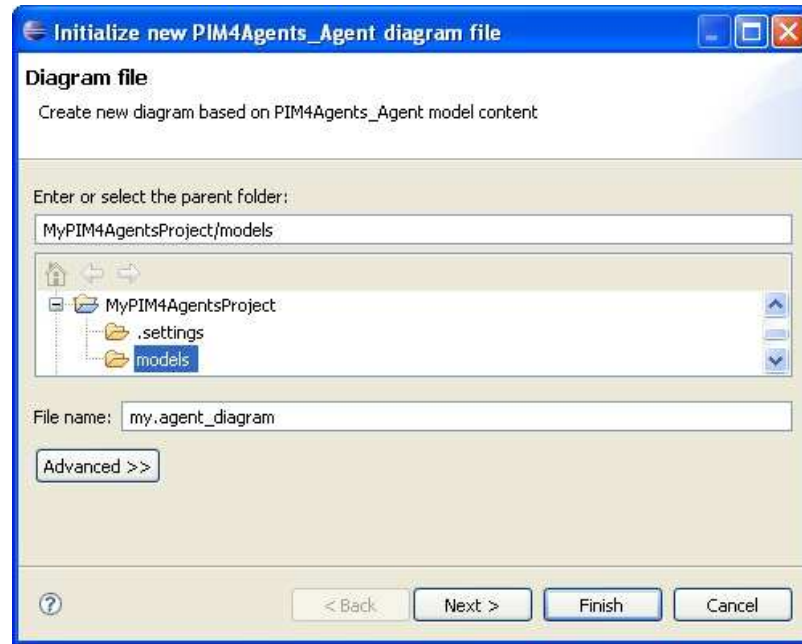


Figure 5 New agent diagram wizard.

Step 9. Click on **Next**

Step 10. Now, you have to enter the name of the model file. The name should be similar to the project name since the model contains all model elements of the modelled multiagent system.

Step 11. Click on **Finish**

Step 12. To initialize a new diagram/view for the same model file we just created, right-click on the **.pim4agents** file (see Figure 3).

Step 13. Select **Initialize <type> diagram file**, where **<type>** is one of the PIM4Agents diagram types introduced in Section 1 (see Figure 6).

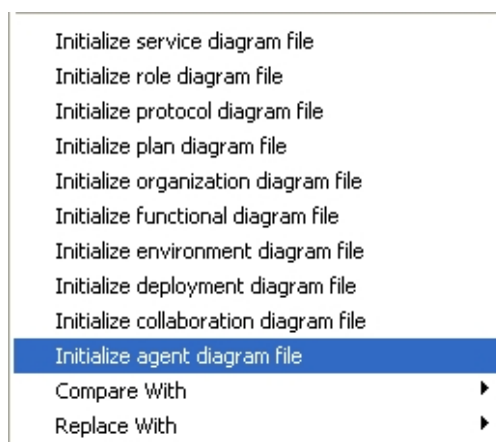


Figure 6 Initialization of new diagrams.

Step 14. Enter the name of the new diagram

Step 15. Click on **Finish**

4 Importing SoaML models

This section is to be completed once the SoaML transformation is completed. However, expected steps are as follows:

1. A function to import a SoaML model
2. A function to transform a SoaML model into a PIM4Agents model
3. Modification and refinement of the generated PIM4Agents model
4. A function to transform the PIM4Agents model to the agent execution platforms