## SDM Usage and Installation Instructions

**Prerequisites:**

1. Install [.Net Framework 2.0](http://www.microsoft.com/downloads/details.aspx?familyid=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displaylang=en) SP1.
2. Install [WordNet 2.1](http://wordnet.princeton.edu/obtain) in its default directory (C:\Program Files\WordNet\2.1).
3. Prepare application models in Visual Paradigm (version 6.0 and up)
   1. Check spelling
   2. Remove/change abbreviations
   3. Change relevant messages to be “procedures calls”
   4. Change lifelines specifications – select a corresponding class for the “base classifier”.
4. Export models to XMI 2.1 files
   1. Manually validate the “Collaboration” section: if there are sequence elements outside this section, move them to a correct “interaction” section
   2. Put the XMI files of a certain domain in a distinctive sub folder of the working directory, e.g., App\_PCS\_2 in the . The names of the folders should begin with the prefix “App\_”.

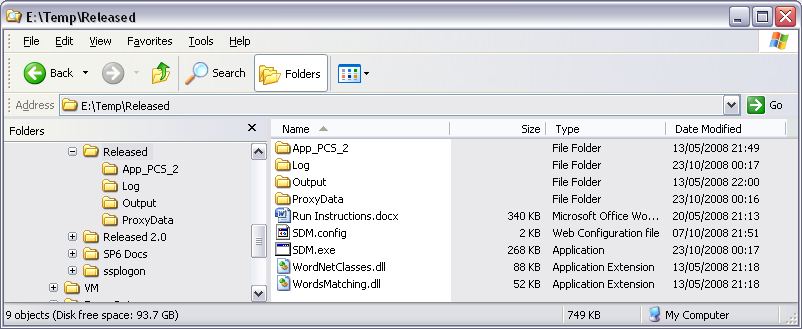


Figure 1. The SDM working directory screenshot.

**Running SDM:**

1. Execute SDM.exe and get the main SDM screen, as in . Press Parse XMI Files and then choose:
   1. 'Parse' – only application models in the selected folder are used.
   2. 'Parse All' – applications in all subfolders chosen in the combo list are used.

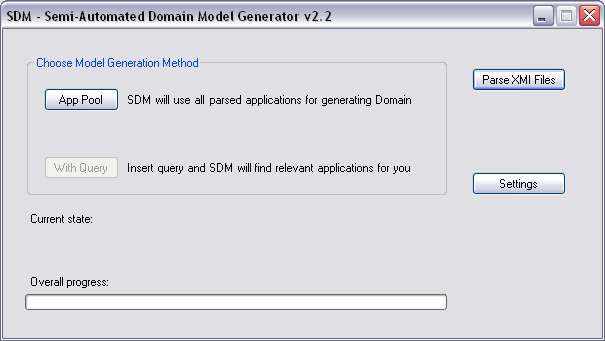


Figure 2. The main SDM dialog

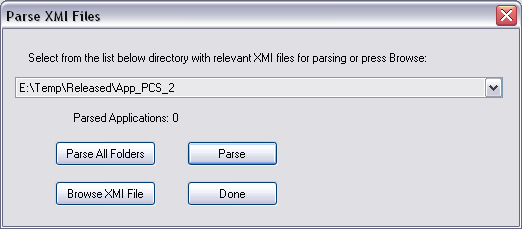


Figure 3. The parsing XMI files dialog

1. Wait for completion – you should see the numbers of the parsed applications, as depicted in . In this step SDM retrieves all relevant data from the applications in the domain.

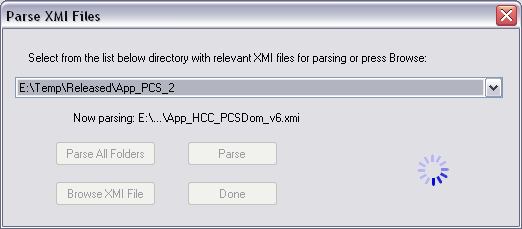


Figure 4. Running the parsing XMI files stage

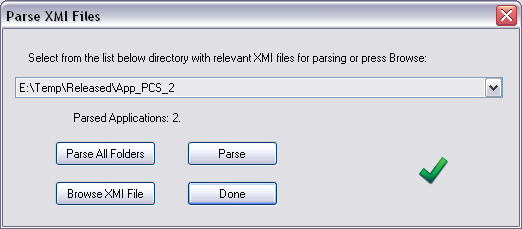


Figure 5. Successful completion of the parsing XMI files stage

1. Check SDM log file for parsing errors
   1. Find errors/warnings summary at the end of the log file
   2. All errors are critical, thus they should be fixed before you continue
   3. Warnings are not critical, but the output may improve if you fix them
2. Press Back to return to the main SDM screen.
3. Press 'App Pool' for generating the domain model. This process may take long, depending on the number of applications in the folder, the number of diagrams in each application, and the total number of elements.
   1. A detailed log of the execution will be created in the Log sub folder of the working directory (see and ). This log will include reports on parsing, matching and merging steps. At the end of the log you can find the errors and warnings summary.
   2. Most of the errors are critical, thus they should be fixed and rerun is needed
   3. Warnings are not critical, but the output may improve if you fix them
4. Check the output similarity values (Log/SDM\_Similarity\_DATE\_TIME.cvs)
   1. If unreasonable results are outputted, try to change the values of the different SDM parameters (using the 'settings' button) and rerun the tool.

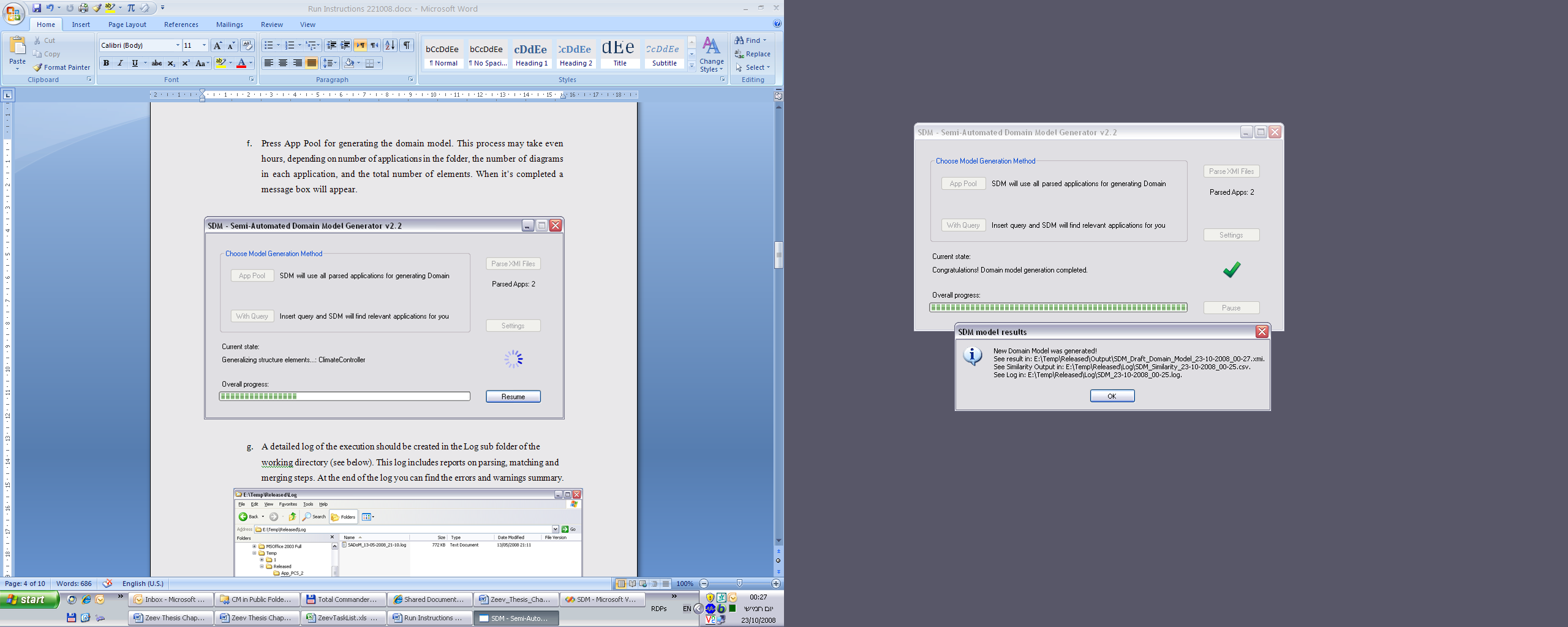


Figure 6. Successful completion of the SDM Model Generation

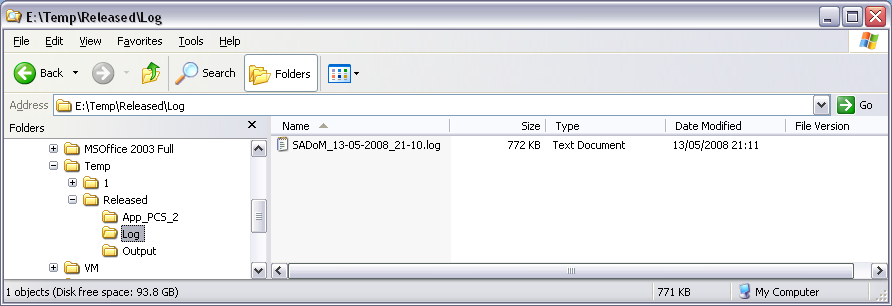


Figure 7. The SDM log folder

1. The output XMI file should be created in the Output sub folder of the working directory (see ).

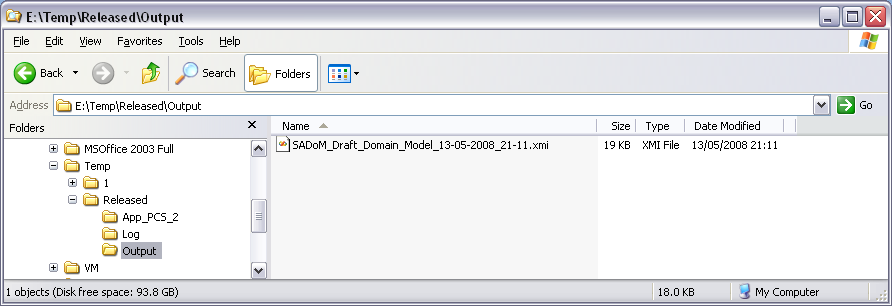


Figure 8. The output sub folder of the SDM working directory

1. Import this XMI file into a UML tool (e.g., Visual Paradigm version 6.0 and up).

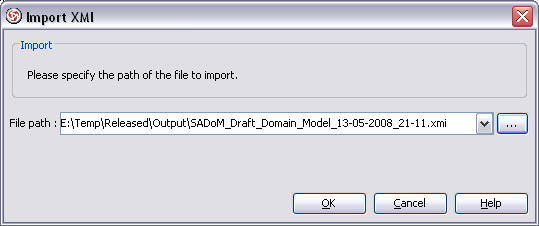


Figure 9. Importing XMI files in Visual Paradigm 6.1

1. Verify that the XMI importing was completed successfully. Drag the elements from the Diagram Navigator to the drawing area.

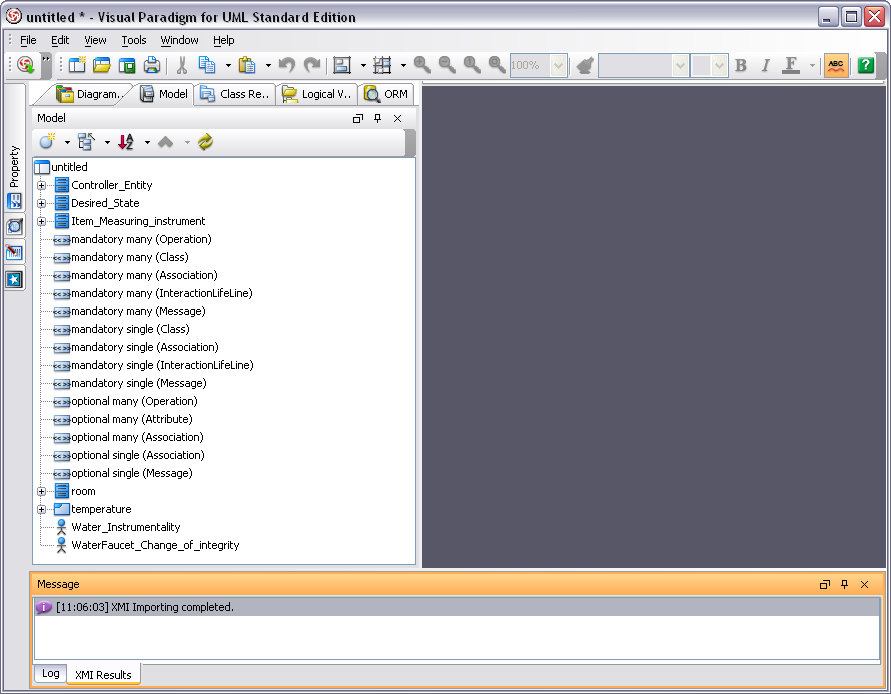


Figure 10. Successful XMI Import in Visual Paradigm 6.1

**Customizing SDM Parameters:**

SDM allows parameter customization in order to improve the tool outcomes. The different parameters, which are listed in Appendix D along with their role in the SDM approach, are divided into three categorized: structure, behavior, and general.

1. Select Settings in the main screen of SDM.
2. Set the parameters for the current execution (note that they are not saved for the next execution).
3. Run SDM with the new parameters.

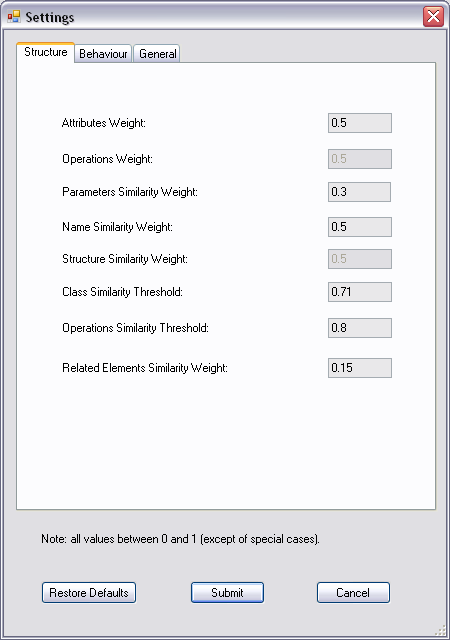


Figure 11. SDM Structure-related Parameters

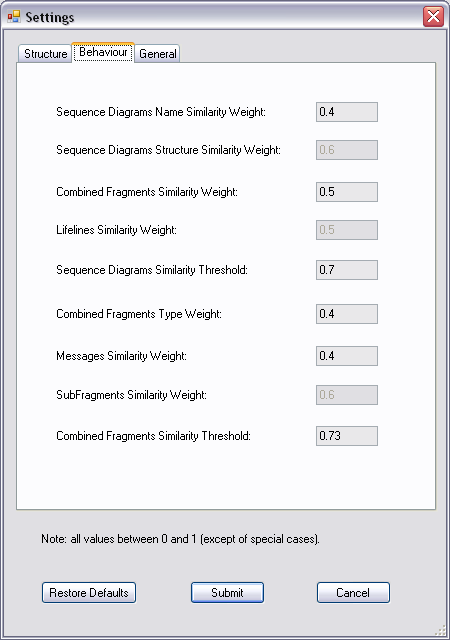


Figure 12. SDM Behavior-related Parameters

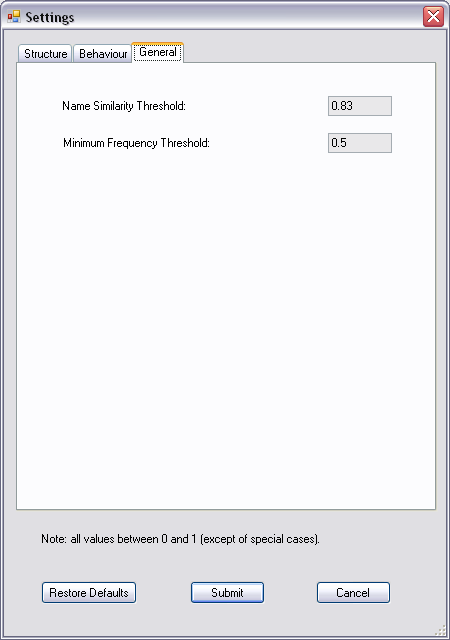


Figure 13. SDM General Parameters

**Known problems and overcoming them:**

1. You will not see elements in the diagrams, since no presentation algorithm is carried out. Thus, drag the elements from the Diagram Navigator to the drawing area in the relevant diagram.
2. In order to see the messages in the sequence diagram, you should add them manually to the sequence diagram. Stay on the Model tab, select the lifeline specifications, and select the Relations tab. Now you will see all the messages that this lifeline sends or receives. In order to know the messages order, open each message specification and see “Sequence no.” value (see below).
3. Similarly to (2), add combined fragments manually to the sequence diagram.

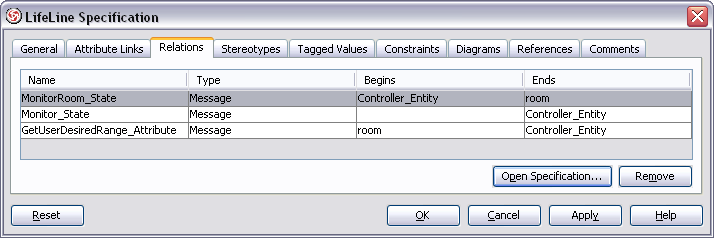


Figure 14. Lifelines Relation Description

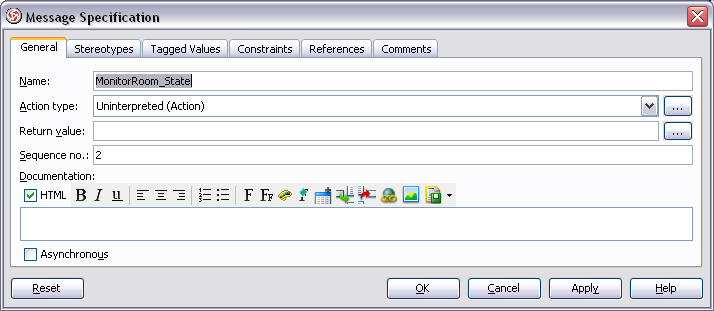


Figure 15. Message Specification