INTELLIGENT ELECTRICAL POWER GRIDS 2X: SMART GRIDS: MODELING MODULE 1

1. OBJECTIVES AND PREPARATION

This tutorial is meant to guide you through installing and setting OpenModelica. We will also install two additional libraries, Open iTesla Power System Library (OpenIPSL) and a library developed at TU Delft named DelMod. Follow the instructions to download all the packages and extract them to a new directory.

2. STARTING OPENMODELICA

To start OpenModelica, go to start [icon] and select OpenModelica Connection Editor [icon]. This opens up the main window of the OpenModelica software (hereafter referred to as OM), as in Figure 1. This is main OM window. On the left panel, a list of default libraries available can be seen. On top, below the menu bar, is the tools bar. User can select various functions like Simulation Setup, Simulation Debug, Model Instantiation with single clicks. These functions can also be selected from Menu bar.

OM provides a host of free libraries to model systems, not just electrical, but also thermal, mechanical, control, etc. In this course we will use the Open iTesla Power System Library (OpenIPSL) and a few components from a library developed at TU Delft named DelMod.
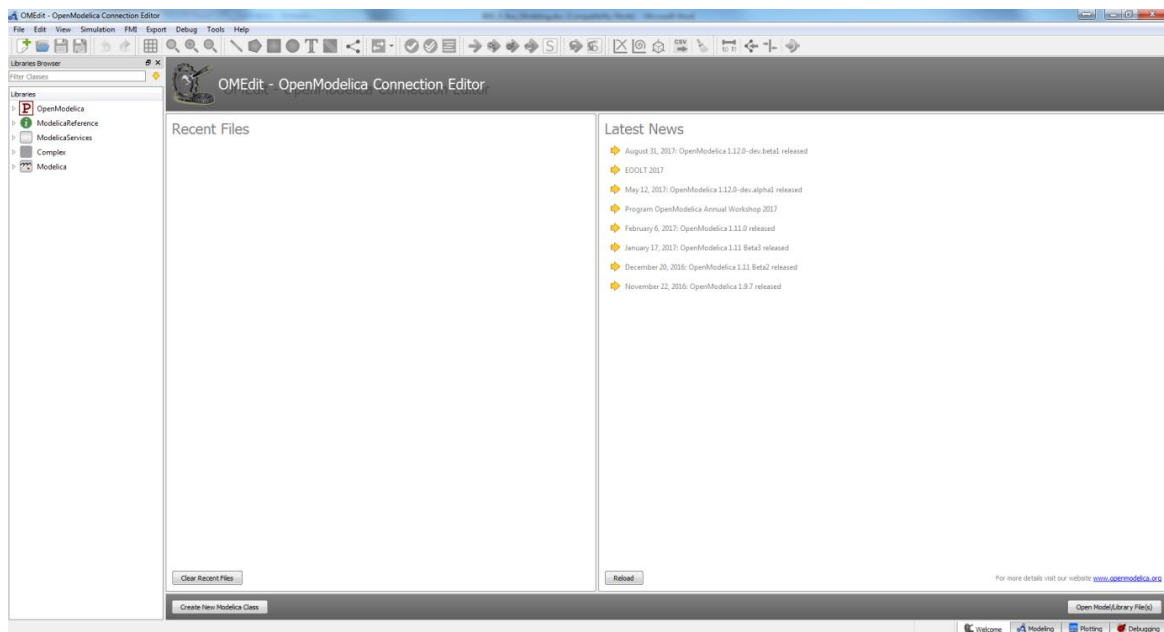

Figure 1: OpenModelica Interface

3. **IMPORTING THE LIBRARIES**

Please follow the given order to import the libraries.

   3.1.OPENIPSL

To load OpenIPSL, select ***File>Open Model/Library file(s).*** Now, browse to the location where the downloaded OpenIPSL library was extracted and select the OpenIPSL folder. Load the *package.mo* file located inside this folder. Now, on the left pane, OpenIPSL should be loaded. Right click the loaded library and **check the version under information. It should be 1.0.0. Make sure that you use only this version v1.0.0 of the software library (launched in Dec 16, 2016) since, all the videos and guides were prepared with this version. Else, you will run into issues!**

Please note: the latest version of OM comes pre-installed with a later version of OpenIPSL. This will result in the following warning, while importing v1.0.0.

> *[1] 21:47:45 Scripting Warning*
>
> *Requested package Modelica of version 3.2.2, but this package was already loaded with version 3.2.3. You might experience problems if these versions are incompatible."*

This warning can be ignored. The assignments of this course were framed with version 1.0.0, which is now successfully imported.

   3.2 DELMOD

Similarly, to import the DelMod library, select ***File>Open Model/Library file(s).*** Next, browse to the location where the DELMOD library was extracted and select *package.mo* file located inside this folder. Now, on the left pane, DELMOD library should be loaded as well. We now have all the required libraries for this course.

   IMPORTANT NOTE: Upon exiting OM, the imported libraries may not show up.

Anything that is loaded into the OpenModelica Library tab is considered read-only. In order to fix this, please follow the following steps:

1. Copy both the extracted libraries to C:\OpenModelica1.xx.1\lib\omlibrary (adjust as per your installation directory).

2. Next open OMEdit to load it by choosing ***Tools->Options***. Then in libraries add new library. Search for OPENIPSL and set its value to default.

3. Repeat the above steps for DELMOD library.

4. Restart OMEdit.