

Libraries and tools for SED-ML Harmony workshop April 2011

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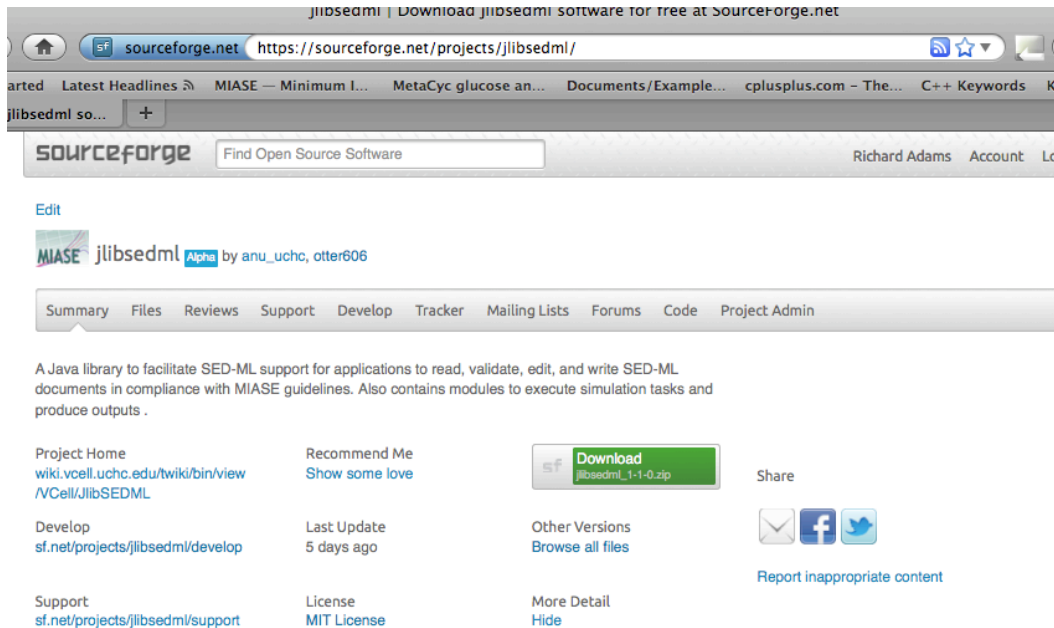
JlibSEDML – a Java library for SED-ML

- JlibSEDML update
- Application support

Aims and scope of JlibSEDML

- API to read/write and interpret SED-ML files.
- Native Java, light-weight, few dependencies.
- Two independent implementations from VCell and SBSI teams merged in Spring 2010.

JlibSEDML on Sourceforge...



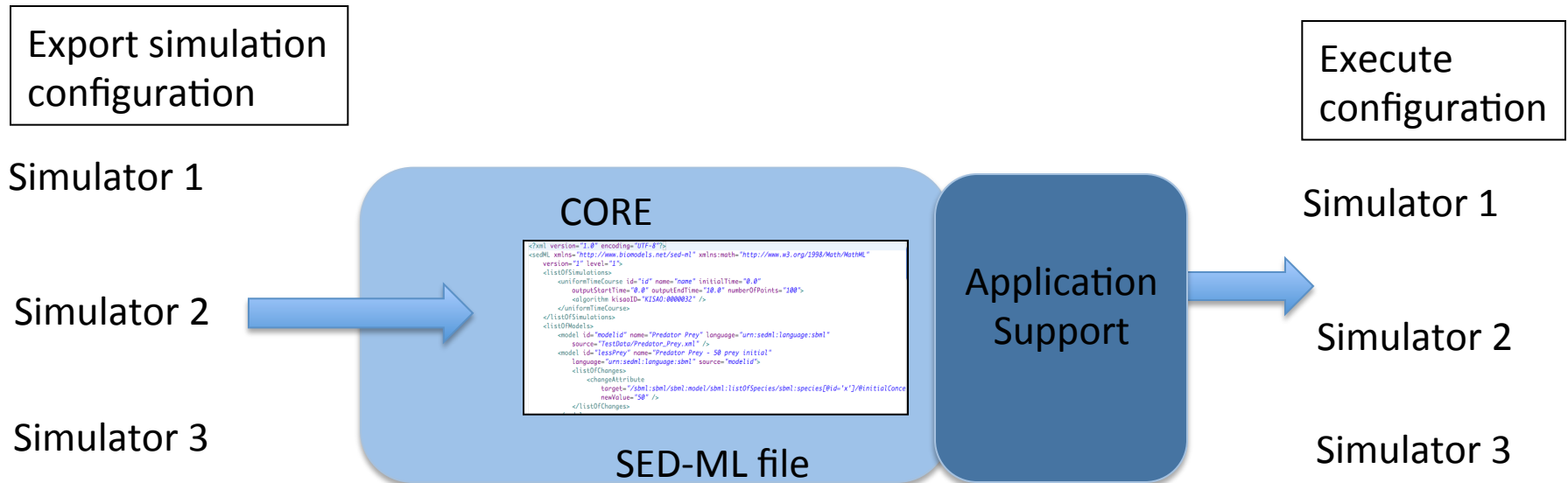
Java library for SED-ML

Open-source MIT license

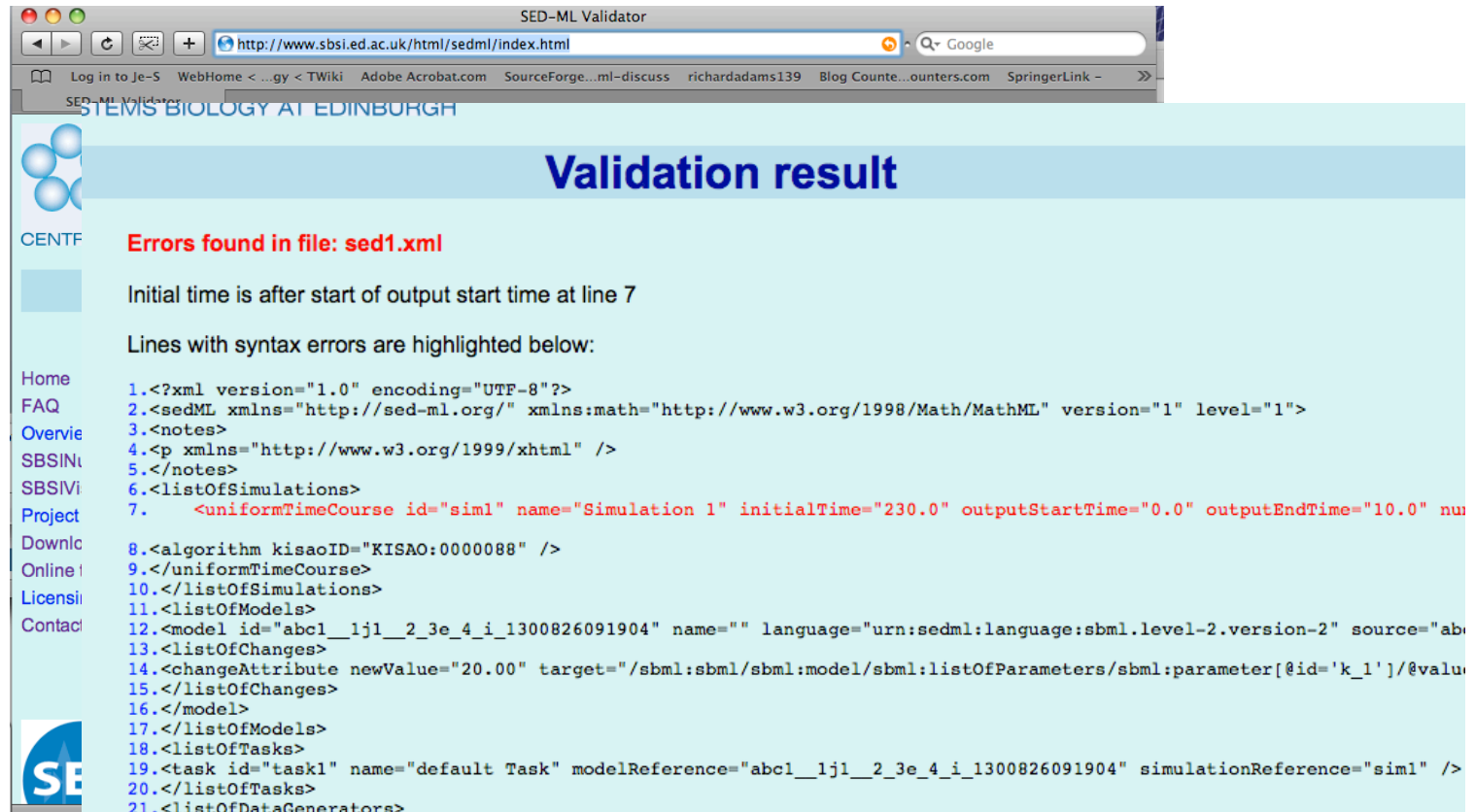
**Version 1.1.0 implements
SED-ML level 1 version 1**

<http://sourceforge.net/projects/jlibsedml/>

Scope of jlibSEDMML



Applications 1 - online SED-ML validator



The screenshot shows a web browser window titled "SED-ML Validator" with the URL <http://www.sbsi.ed.ac.uk/html/sedml/index.html>. The page header includes "STEMS BIOLOGY AT EDINBURGH" and a navigation menu with links like Home, FAQ, Overview, SBSIN, SBSIV, Project, Download, Online, License, and Contact. The main content area is titled "Validation result" and displays the following information:

Errors found in file: sed1.xml

Initial time is after start of output start time at line 7

Lines with syntax errors are highlighted below:

```
1.<?xml version="1.0" encoding="UTF-8"?>
2.<sedML xmlns="http://sed-ml.org/" xmlns:math="http://www.w3.org/1998/Math/MathML" version="1" level="1">
3.<notes>
4.<p xmlns="http://www.w3.org/1999/xhtml" />
5.</notes>
6.<listOfSimulations>
7.  <uniformTimeCourse id="sim1" name="Simulation 1" initialTime="230.0" outputStartTime="0.0" outputEndTime="10.0" nu
8.</algorithm kisaoID="KISAO:0000088" />
9.</uniformTimeCourse>
10.</listOfSimulations>
11.<listOfModels>
12.<model id="abc1_1j1_2_3e_4_i_1300826091904" name="" language="urn:sedml:language:sbml.level-2.version-2" source="ab
13.<listOfChanges>
14.<changeAttribute newValue="20.00" target="/sbml:sbml/sbml:model/sbml:listOfParameters/sbml:parameter[@id='k_1']/@valu
15.</listOfChanges>
16.</model>
17.</listOfModels>
18.<listOfTasks>
19.<task id="task1" name="default Task" modelReference="abc1_1j1_2_3e_4_i_1300826091904" simulationReference="sim1" />
20.</listOfTasks>
21.<listOfDataGenerators>
```

<http://www.sbsi.ed.ac.uk/html/sedml/>

Applications 2 - SED-ML web service

Provides the following methods:

// Applies changes to a model and returns the new model

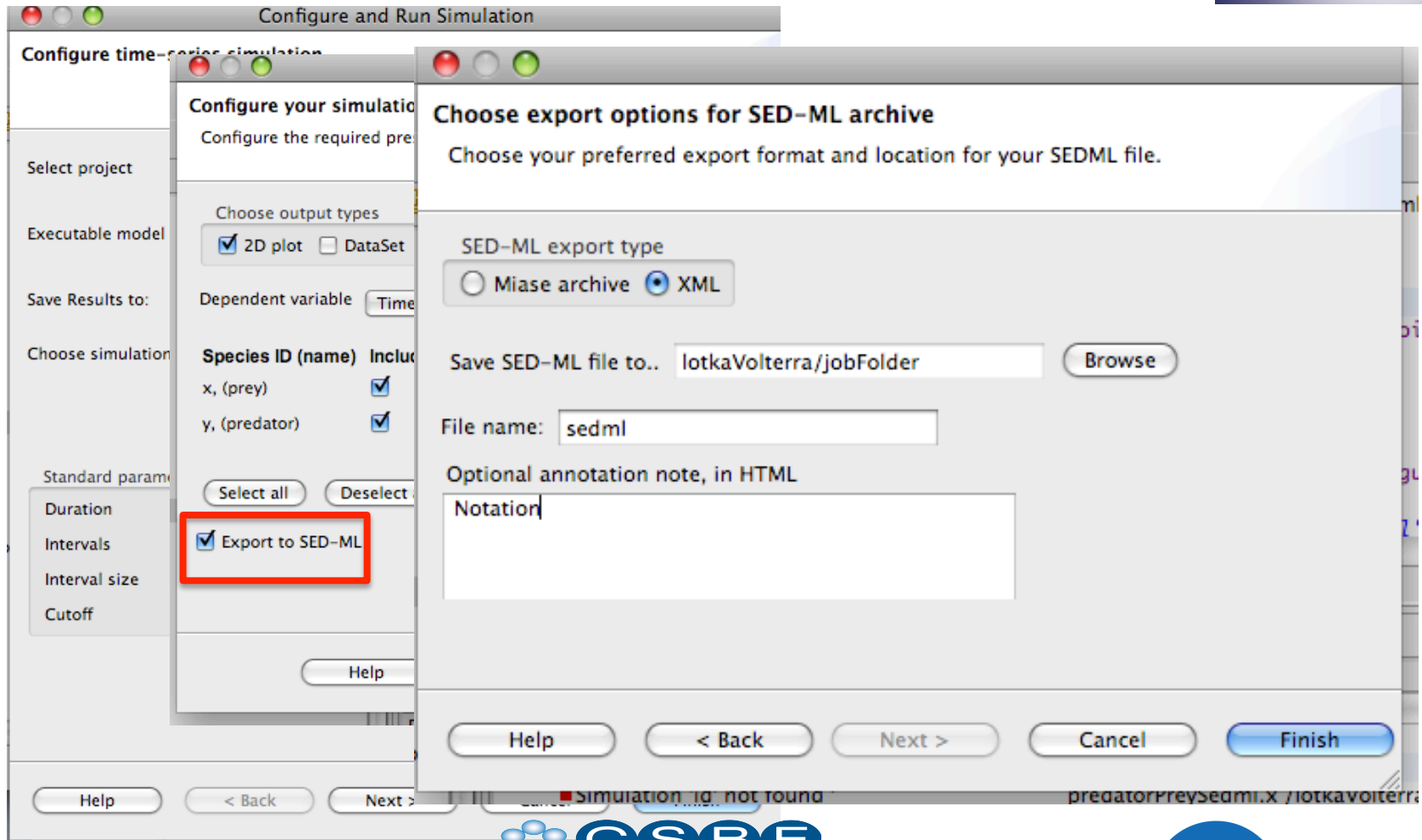
String applyChanges(String modelID, String originalModel, String sedML)

//Validates the SEDML document and returns errors

SedmlError validate (String sedMLDoc)

<http://mook.inf.ed.ac.uk:8848/SedMLWebService/sedmlws?wsdl>

SED-ML support in SBSI- www.sbsi.ed.ac.uk



SED-ML support in SBSI – viewing SEDML

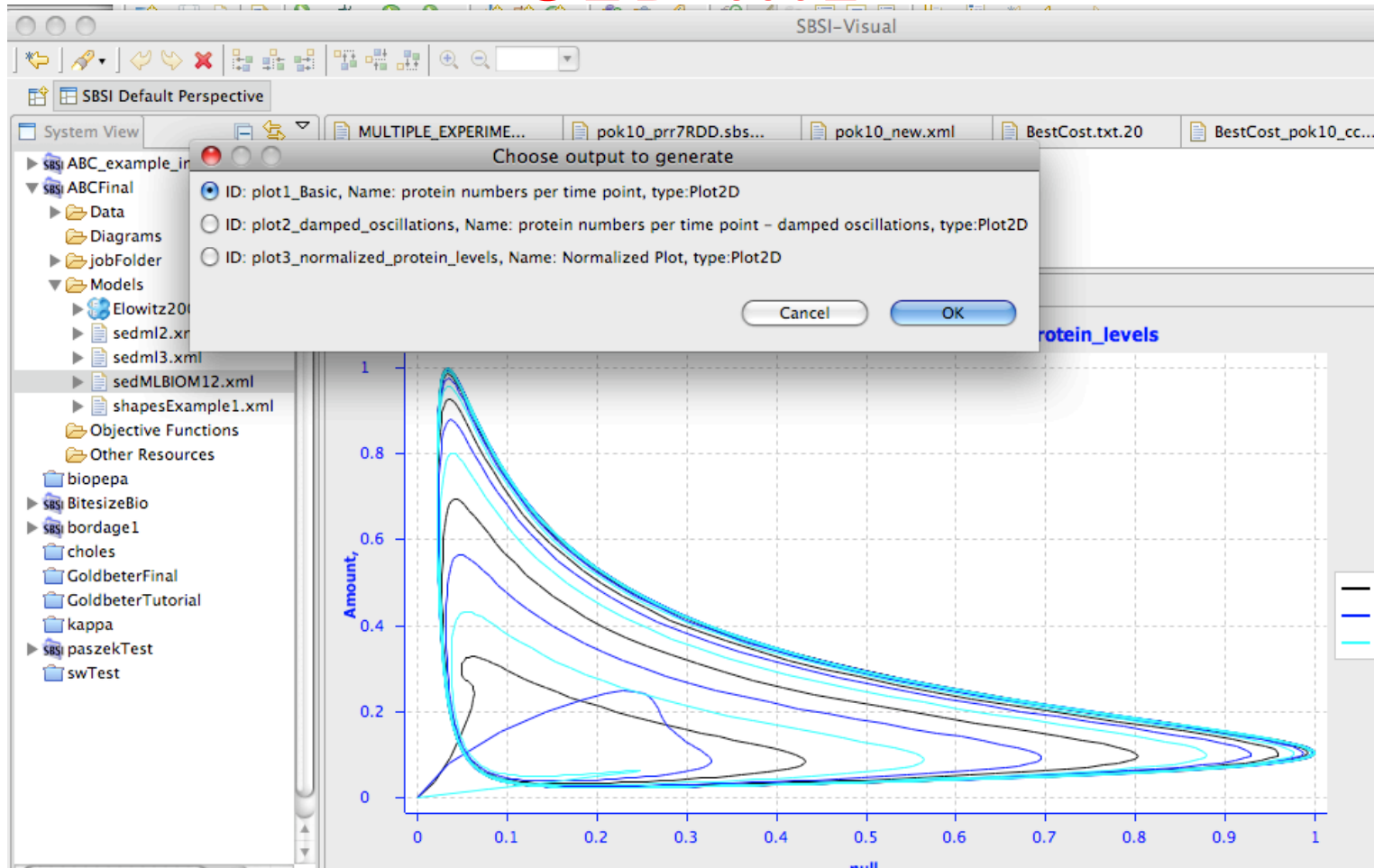
The screenshot shows the SBSI-Visual application window. On the left, the 'System View' tree shows a project structure with folders like 'Data', 'Diagrams', 'jobFolder', and 'Models'. Under 'Models', the file 'predatorPreySedml.xml' is selected. The main window displays the XML code for the simulation, which includes a 'listOfSimulations' section with a 'uniformTimeCourse' and a 'listOfModels' section with a 'model' element. The bottom panel shows a list of errors and warnings, including '2 errors, 8 warnings, 0 others'. The errors are related to the SEDML problem marker, specifically 'Simulation 'id' not found'.

```
<?xml version="1.0" level="1">
<listOfSimulations>
  <uniformTimeCourse id="id2" name="name" initialTime="0.0"
    outputStartTime="0.0" outputEndTime="100.0" numberOfPoints="2000"
    <algorithm kisaoID="KISA0:0000019" />
  </uniformTimeCourse>
</listOfSimulations>
<listOfModels>
  <model id="modelid" name="Predator Prey basic model " language="urn:s
    source="Predator_Prey.xml" />
  <model id="lotkaPrey" name="Predator Prey 50 prey initial" />
</listOfModels>
</?xml>
```

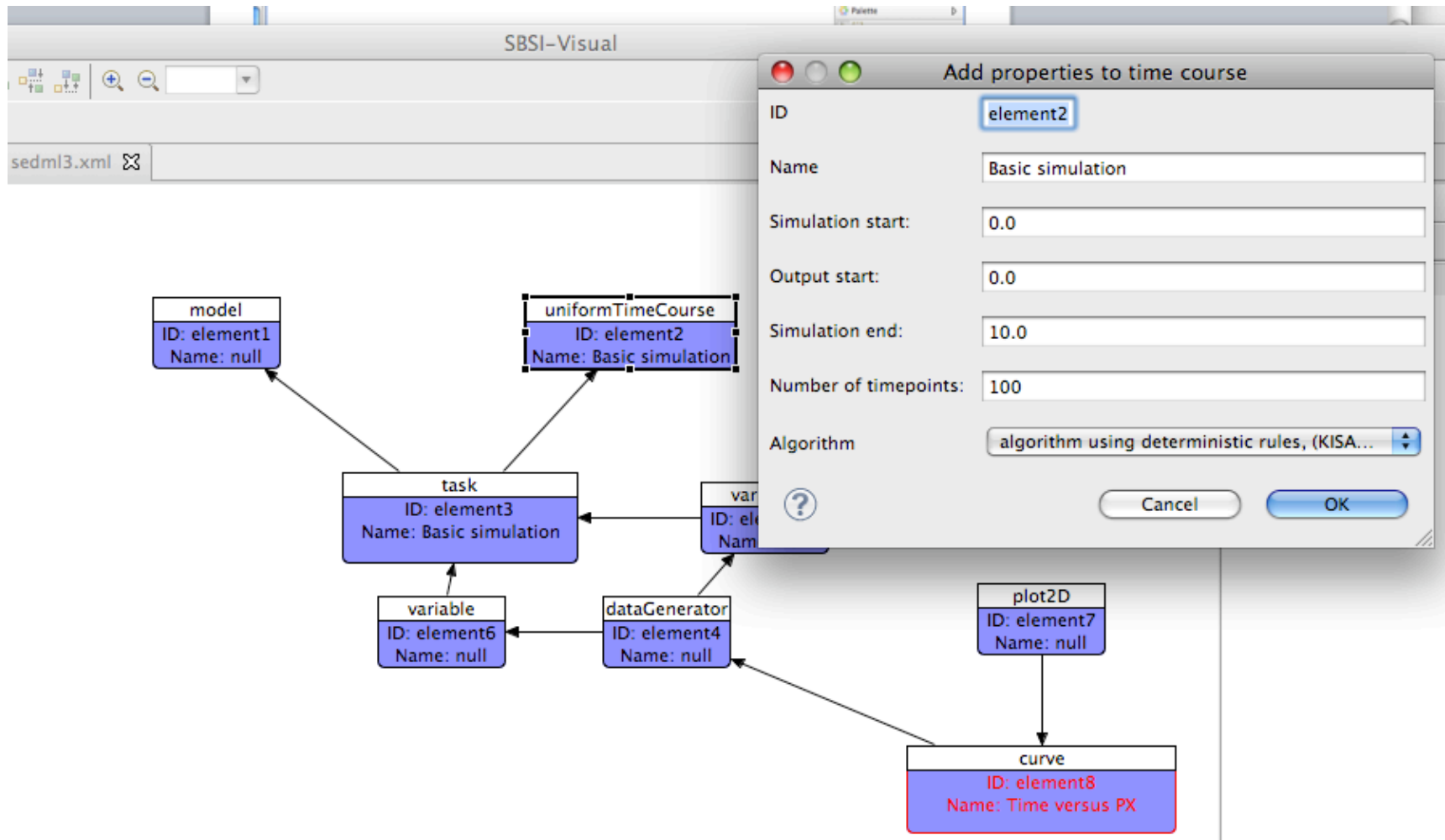
2 errors, 8 warnings, 0 others

Description	Resource	Path
SBML (8 items)		
SEDML Problem Marker (2 items)		
Simulation 'id' not found '	predatorPreySedml.x	/lotkaVolterra/Models
Simulation 'id' not found '	predatorPreySedml.x	/lotkaVolterra/Models

SED-ML support in SBSI – executing SED-ML



A SED-ML editor



Future implementation work

- Jlibsedml
 - Bugfix /maintenance releases
- Providing executable SED-ML through web service
- SBSI (www.sbsi.ed.ac.uk)
 - Rich editor for editing and annotating SED-ML

Acknowledgements

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