



Recent Developments in libSBML & JSBML

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On behalf of the SBML Team

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LIBSBML

API Library for: Reading

```
#include <sbml/SBMLTypes.h>

...

SBMLDocument* document = readSBML(filename);
Model* m = document->getModel();

for(unsigned int i=0; i < m->getNumSpecies(); ++i)
{
    Species* sp = m->getSpecies(i);
    ...
}

...

delete document;
```



API Library for: Writing

```
#include <sbml/SBMLTypes.h>

SBMLDocument document;
Model* m = document.createModel();
m->setId("model1");
Compartment* c = m->createCompartment();
c->setId("c1");
c->setSize(1.0);
Species *s = m->createSpecies();
s->setCompartment("c1");
s->setInitialConcentration(1.0);

...

writeSBML(&document, filename);
```



API Library for: Validation

```
#include <sbml/SBMLTypes.h>

SBMLDocument* document = readSBML(filename);
document->checkConsistency();
cout << " found " << document->getNumErrors() << " errors. "
      << endl;
document->printErrors(cerr);
...
```



LibSBML

Includes Language Bindings for:

SWIG Generated: C# / .NET, Java, Perl, Python, Ruby

Manually wrapped: Matlab, Octave

Source and Binary Releases for all major operating systems available from:

<http://sf.net/projects/sbml/files/libsbml>

released under LGPL



NEW DEVELOPMENTS

R Interface

- As of libSBML 5.6.0 a R interface for libSBML is available:
 - Including support for SBML L3 packages
 - Available as binary installers
- To be installed with:

```
R CMD INSTALL <filename>
```



R Interface

- SWIG generated, mirrors the C API

```
> library(libSBML)
> doc = readSBML('BorisEJB.xml')
> model = SBMLDocument_getModel(doc)
> for(i in seq_len(Model_getNumSpecies(model))) {
>   sp = Model_getSpecies(model, i-1);
>   cat("species: ", Species_getId(sp), "\n")
> }
```



R Interface

- SWIG generated, mirrors the C API

```
> library(libSBML)
> doc = readSBML('BorisEJB.xml')
> model = SBMLDocument_getModel(doc)
> for(i in seq_len(Model_getNumSpecies(model))) {
>   sp = Model_getSpecies(model, i-1);
>   cat("species: ", Species_getId(sp), "\n")
> }
```

LibSBML uses zero based indices while R uses one-based indices!



Python Improvements

Before:

```
doc = readSBML(filename)
model = doc.getModel()

print "Model id: ", model.getId()
print "Number of species:", model.getNumSpecies()

species = model.getSpecies(0)
species.setInitialconcentration(1.0)
```

After:

```
doc = readSBML(filename)
model = doc.model

print "Model id: ", model.id
print "Number of species: ", model.num_species

species = model.species[0]
Species.initial_concentration = 1.0
```



- Instead of calling get / set functions, these are exposed as properties.
- Available for Python 2.x for the time being

SBML L3 Package Implementations

- Implementations are available for:
 - comp, fbc, groups,
layout, render, req,
spatial, qual
- Support for binding languages is available
- Binaries available for all platforms

SBML L3 Package Implementations

Home / [libsbnl](#) / [5.6.0](#) / [experimental](#) / [2012-08-07](#)

Name ↕
↑ Parent folder
 binaries
 src

SBML L3 Package Implementations

Home / libsbml / 5.6.0 / experimental / 2012-08-07

Name ↕
↑ Parent folder
📁 binaries
📁 src

Home / libsbml / 5.6.0 / experimental / 2012-08-07 / binaries

Name *
↑ Parent folder
📁 R interface
libSBML-5.6.0-win-matlab-fbo-x64.exe
libSBML-5.6.0-win-matlab-fbo-x86.exe
libSBML-5.6.0-win-py3.2-packages-amd64.exe
libSBML-5.6.0-win-py2.7-packages-amd64.exe
libSBML-5.6.0-win-py2.6-packages-amd64.exe
libSBML-5.6.0-win-py3.2-packages-x86.exe
libSBML-5.6.0-win-py2.7-packages-x86.exe
libSBML-5.6.0-win-py2.6-packages-x86.exe
libSBML-5.6.0-win-py2.5-packages-x86.exe
libSBML-5.6.0-packages-Linux-x86.deb
libSBML-5.6.0-win64.zip
libSBML-5.6.0-win32.zip
libSBML-5.6.0-Darwin.dmg
libSBML-5.6.0-packages-Linux-x86.rpm
README.txt
libSBML-5.6.0-packages-Linux-x64.deb
libSBML-5.6.0-packages-Linux-x64.rpm

SBML L3 Package Implementations

Home / libsbml / 5.6.0 / experimental / 2012-08-07

Name ↕
↑ Parent folder
binaries
src

Home / libsbml / 5.6.0 / experimental / 2012-08-07 / src

Name ↕
↑ Parent folder
libSBML-5.6.0-Source.tar.gz
comp-5.6.0-beta-2.zip
render-5.6.0-beta-1.zip
spatial-5.6.0-beta-1.zip
fbc-5.6.0-beta-1.zip
qual-5.6.0-beta-1.zip
groups-5.6.0-beta-1.zip
req-5.6.0-beta-1.zip

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JSBML

JSBML

- Native Java implementation of the SBML OM
- A first stable version (Version 0.8) will be available during COMBINE!
 - It supports all levels and versions of SBML
 - it propagates events each time the model is changed (modified `TreeNodeChangeListener`)

Version 1.0

- Features of Version 0.8, along with support for several SBML L3 packages and a compatibility module with libSBML.
- First snapshots available:
 - Maven: <http://tinyurl.com/9m63s32>
 - Complete L3 Package code for:
 - Layout, render, qual, fbc, groups
 - Incomplete:
 - multi, spatial, (comp, distrib)
- Stable Release expected at COMBINE 2013

Thank You!

- Latest stable libSBML release:
 - <http://sf.net/projects/sbml/files/libsbml/5.6.0>
- More information:
 - <http://sbml.org/Software/libSBML>
 - <http://sbml.org/Software/JSBML>