

NeuroML Editorial Board Meeting 2016

Editorial Board meeting after Janelia Collab. Modelling workshop, 21st Sept 2016

In attendance:

Padraig Gleeson, Sharon Crook, Andrew Davison, Upi Bhalla, Eilif Muller, Salvador Dura-Bernal, Robert McDougal, Marianne Bezaire, Armando Romani, Matteo Cantarelli, Angus Silver

Not present:

Robert Cannon

*NeuroML Editors at time of meeting in **bold***

[Last year's minutes](#)

1) Review of NeuroML/LEMS progress since last year

SUMMARY OF ACTIVITY:

- Official release of beta 4:
<https://sourceforge.net/p/neuroml/mailman/message/35215911/>
- Improvements to website, one location for all links, documentation etc.
<https://neuroml.org/getneuroml>
- pyNeuroML is now a viable alternative to jNeuroML in Python:
<https://github.com/NeuroML/pyNeuroML>
- Significant development of conversion of models to NeuroML 2 on Open Source Brain and making them more accessible with the [Geppetto](#) visualisation backend:
<http://www.opensourcebrain.org>
- Framework for testing NeuroML (and NEURON, PyNN, NEST...) models on OSB (or elsewhere): <https://github.com/OpenSourceBrain/osb-model-validation>;
<https://travis-ci.org/OpenSourceBrain>
- Work towards "LEMS 2": <https://github.com/borismarin/org.lemxml.model>

2) NeuroML 2 Release beta 5

Current plans for what to include: <https://github.com/NeuroML/NeuroML2/milestone/4>
See discussion of LEMS below.

Some key work areas discussed during the meeting:

[Single, cleaner format for specifying connections](#)

Briefly discussed. It was agreed that a consistent/logical set of element/attribute names for network construction elements are required to avoid confusion and aid software support for the language.

[Update mapping NeuroML2 to & from PyNN](#)

ACTION ITEM: Eilif and Andrew organize virtual meeting to discuss formats for network connectivity which they are dealing with already. (PyNN, NetPyNE, Allen, Blue Brain, NeuroML)

[Improve support for Brian/Brian2](#)

Google Summer of Code worked on Brian to LEMS but we need someone to work on the other direction. Issue could also be posted at Brian mailing list.

[Allow free points & paths in cell definitions](#)

Not discussed in detail.

[Add synapse centred network description](#)

Perhaps something for Crook lab to put into the schema now. Could be helpful for visualization. Catmaid connectomics wants this. Other people use this and Andrew might be interested in contributing to this. Use case Blue Brain NEURON cell files vs NeuroML implementation.

NML development process documentation

Described here:

<https://docs.google.com/document/d/1Z9PNayuBzg8AMUDUN1QXCZjlrEUnaMDDriDk0FoyMLI/edit#>

Suggestions for how to get more people contributing to these issues

Discussed briefly.

Version 2.0 official release

Discussed briefly. There was general agreement that a v2.0 release should be attempted in the coming year.

3) LEMS development - Java and Python support

There are still some shortcomings in the current state of LEMS. How to express heterogeneous parameters from a distribution should be a priority. There should also be work to allow for distributions for parameters so that you can have a population of cells with same structure but different parameters taken from a distribution.

Work is ongoing for this in [jLEMSDev](#) (by Robert Cannon) and [org.lemsml.model](#) (by Boris Marin). Robert and Boris will continue parallel developments, keeping in communication & will coordinate updates to the core jLEMS. This work will also benefit the core NeuroML2 Java APIs.

We had some discussion of reference implementations for future versions of LEMS. We also discussed a few details of problems with LEMS. Agreed ideally these issues covered will be fixed before 2.0 release.

4) NeuroML website/ NeuroML DB

[NeuroML main website](#) has been redesigned in the past year. Under development on GitHub [here](#). Comments/suggestions/bug reports can be added [here](#). Arizona State University will continue to host neuroml.org.

Work is continuing by Sharon Crook and Justas Birgiolas on the NeuroML Database.

The current version of this is live at <http://neuroml-db.org>, and the infrastructure for this is under development at <https://github.com/scrook/neuroml-db>.

Robert points out that it would be useful to get ModelDB pointing out to OSB and NeuroML-DB. Need to update to version 2 files.

5) Editorial board process - elections 2016

Replacing Pdraig, Robert and Sharon. Late start to the process this year.

Someone needs to go through terms/element names for the NeuroML before NeuroML v2.0 stable release. Do we need a big specification? We need to assign roles for adding further documentation in the LEMS documentation.

6) Relationship with NineML and other initiatives

Update on current publication: getting close to publication of paper on NineML.

Future plans for NineML: Andrew Davison and Tom Close still active in this.

Relationship with COMBINE: NeuroML is now an official COMBINE standard, joining SBML, CellML, SED-ML etc.

7) Future developments of NeuroML

Salvador brought up issue of inefficiency of using NeuroML to describe very large networks. NetPyNE and Moose use JSON based description. NeuroML has been using an HDF5 based approach. Blue Brain and Allen have also been discussing this. Allen has a nice index into their network in HDF5. Blue Brain has a document on the issues. There is discussion of NeuroML maintaining the high level description (but this would have to be procedural). Upi says that an equation for the specification of network connections would be required. Upi advocated for NeuroML only providing the high level description and then let the simulators decide how to implement it. NeuroML could have a reference implementation. But perhaps we have a good opportunity to start practicing the proposal to extend NeuroML. It will be good to have drafts that others can consider in their development that can lead to a more mature description to be included in NeuroML in the future. We discussed creating a procedure for extending the schema.

Need something (table or checklist) so that simulators can say what part of NeuroML they support. Pdraig pointed out there is a check on this in jNeuroML; it will throw a detailed error when a user tries to convert a model to a specific format (specific unsupported features in that simulator be highlighted).

More generally, do we need to consider higher level descriptions (generative descriptions) for many different mechanisms in order to have more concise descriptions? This seems premature for networks. Let this be driven by the community.

Nicolas Cain and Marc de Kamps talking about describing models like those in DiPDE. We can point them toward the extension approach. Some general discussion of extending LEMS to PDEs. This is wanted by Avrama, Erik, etc for reaction-diffusion systems. INCF has seed funding for this type of thing.

Robert proposed a GUI for building LEMS channel models, maybe something simpler than neuroConstruct.

8) Other points

There was a suggestion to schedule quarterly Google hangout meetings which was agreed to be a good idea.

Some discussion also about how to make merge process from development into master a bit more formal. Documentation about how to contribute and how merges are done needs to be more obviously available (e.g. Contribute.md) and should include info about automated tests, how to run them, etc.

How can we get people on the mailing lists (and others) involved with NeuroML at Github?

We need to update our documentation on how to contribute to/extend NeuroML. Put this on [Get NeuroML](#).

Angus brings up that the Board should have a long term view and consider where the field is going.

Padraig brought up having a JSON document format that was compatible with NeuroML, i.e. one to one mappings of elements, just in JSON format (easier to edit?).

There was also the suggestion of “Associated Community Standards”, ad-hoc standards that are being worked on in the community that NeuroML as an initiative can flag, promote, and when they are stable enough, incorporate into the core standard. Examples include:

JSON based, shorthand (generative) format for specifying neural networks

As used by NetPyNE, R-Designeur, etc.

Reaction diffusion based specification

As required by NEURON RxD, STEPS