CPNet

Michael Westergaard

Monday, July 11, 2011

The CPNet package provides CPN loading and simulation ability inside ProM. The package is more aimed at developers, but contains simple functionality for demonstration purposes which may be useful for end-users.

Loading a model

A CPN model can be loaded using either the standard import facility or directly from CPN Tools. The two ways of loading are in many cases equivalent, but the models have subtle differences as outlines for each loading mode.

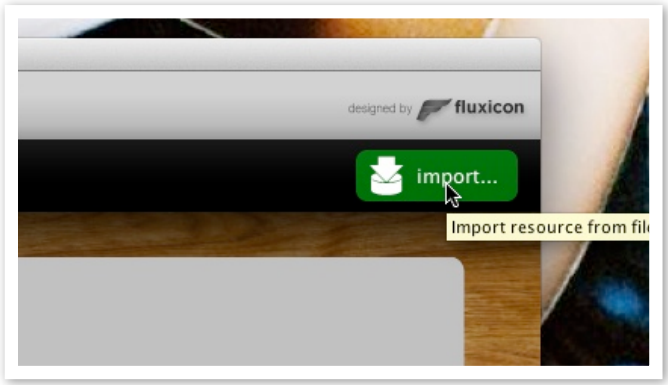
Simulating a model

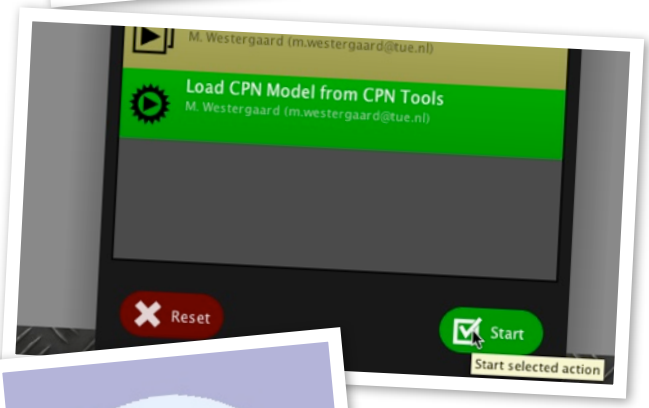
A loaded model can be simulated and a resulting log produced in the workspace. This functionality if only intended as a proof of concept.

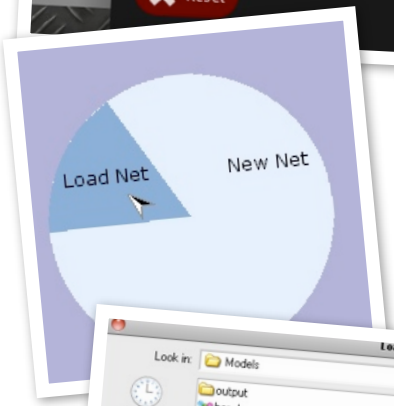
External references

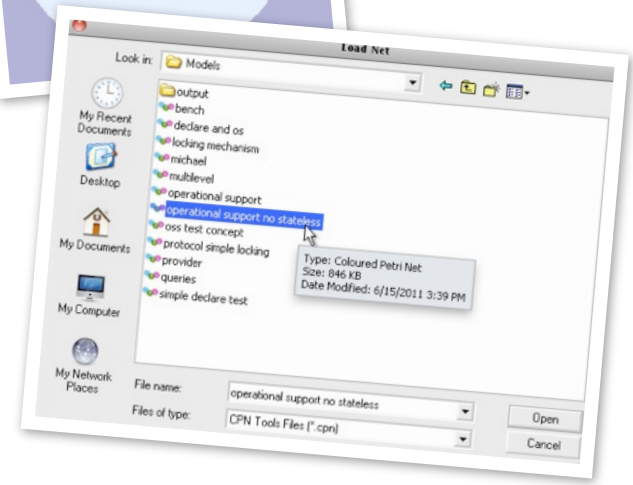
Demo of earlier version of package: http://westergaard.eu/2010/07/cpn-simulation-in-prom/

Suggestion for extension of simulation facilities: http://westergaard.eu/2011/05/prom-plug-in-suggestion-cpn-log-extraction/





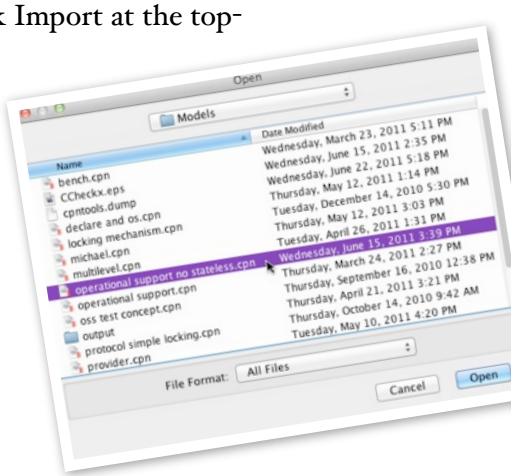




Loading CPN Models

Using standard import infrastructure

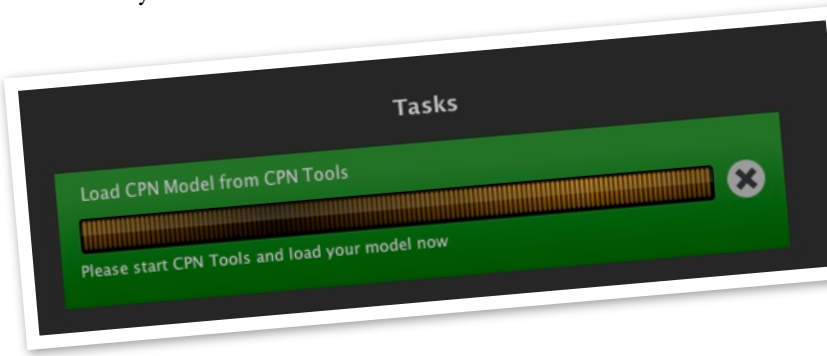
1. Open ProM and click Import at the top-right corner
2. Select the desired .cpn file
3. Click Open
4. There is no step 4



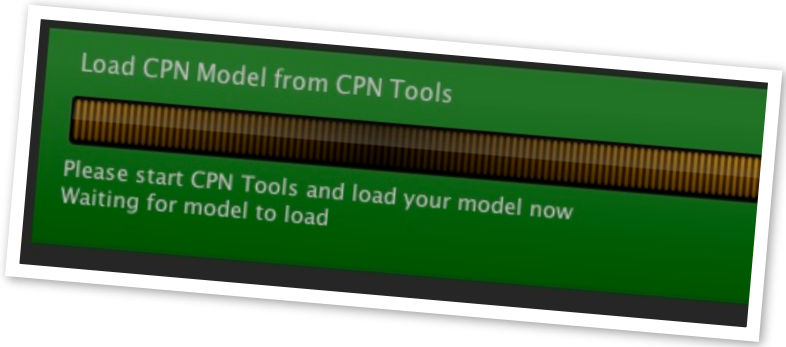
Models loaded using this method will not have support for monitoring.

Loading directly from CPN Tools

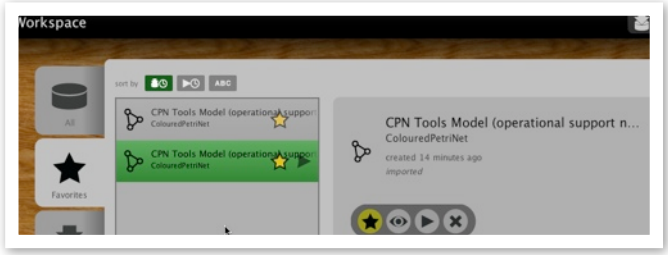
1. Switch to the Actions perspective
2. Select the "Load CPN Model from CPN Tools" plug-in and click with great care on the Start button. The button is designed to give you a superior user experience, so please treat it nicely.



3. ProM suggests you start CPN Tools and load your model. You can ignore it – it won't hold it against you – or you can do so.
4. After this exciting ordeal, ProM will helpfully inform you, it is waiting for the model to load.



5. The loaded model appears in your workspace. This is actually not even an action you have to perform, so consider this helpful information.

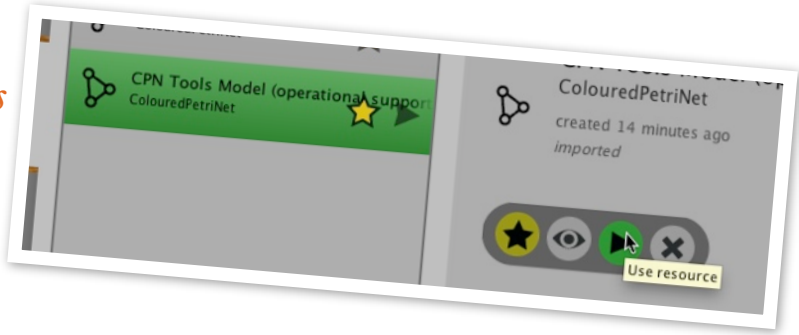


Models loaded using this method support monitoring, but cannot reliably be persisted between runs of ProM, so you may have to reload the model after closing ProM.

Simulation of CPN Models

Models loaded into ProM can be simulated. The procedure is as follows:

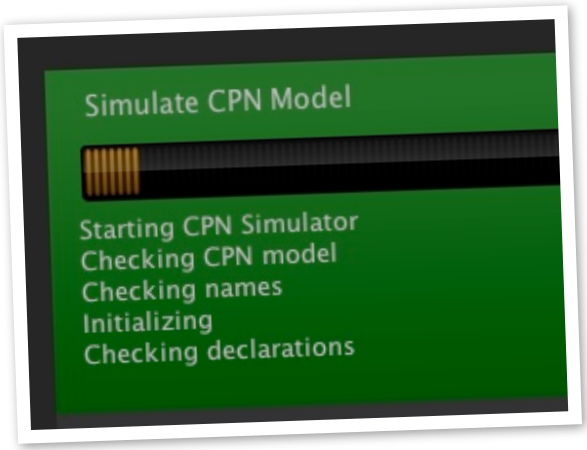
1. Make sure your desired model is selected in the workspace.



2. Dabble on the Use resource button. It is not labeled, but contains a triangle and a tooltip which will inform you of its use.

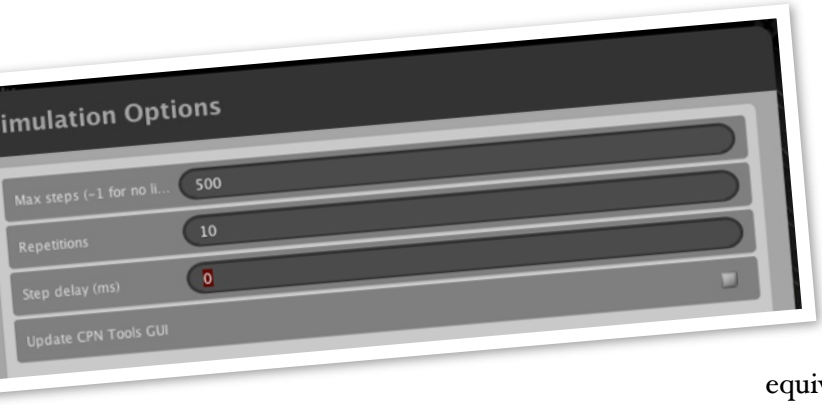
3. You will be taken to the Actions perspective. Pick one of the "Simulate CPN Model" plug-ins. One variant takes just a CPN model (right) and another additionally takes a starting state (below). As no plug-ins produces states, you'll probably want the first, which starts simulation in the initial state of the model. The two are otherwise functionally equivalent.

4. With abandon, hit the Start button.



5. If the model was loaded using the standard import facility, the model will now be syntax-checked. This happens only once until you quit (or crash) ProM.
6. You now get a configuration screen. It is surprisingly enough not used for configuration but for making coffee... Just kidding; alas, it's just for configuration.

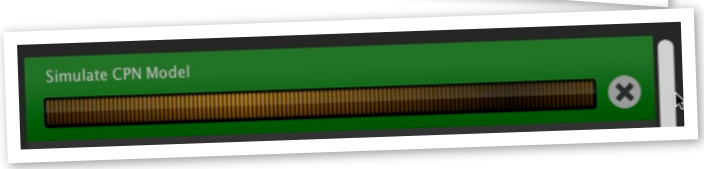
7. The configuration screen adapts to your model. In the simplest case, it looks as above. You have options for
   - how many steps to execute in each simulation (-1 for running simulation until a dead state is reached),
   - the number of simulations you want to do,



•how long to delay between steps (this is mostly useful with the next option), and

•whether to update the CPN Tools GUI after executing each step.

The last option updates the GUI of CPN Tools if the model was loaded thru CPN Tools. If not, selecting it is functionally equivalent to you shouting at the screen "Simsalabim". Try it and you will understand.



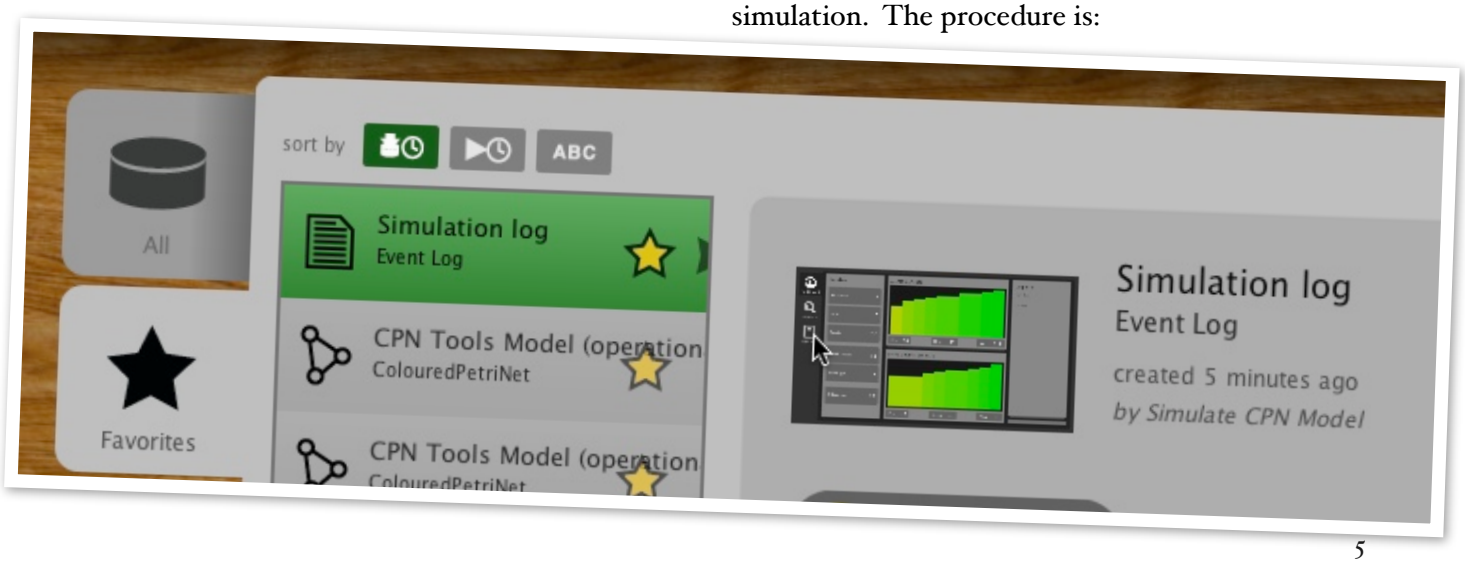
8. After picking the options that make you happy, you can use the pointy thing on the screen to activate the Continue button. Do that. The power of Greyskull commands you!

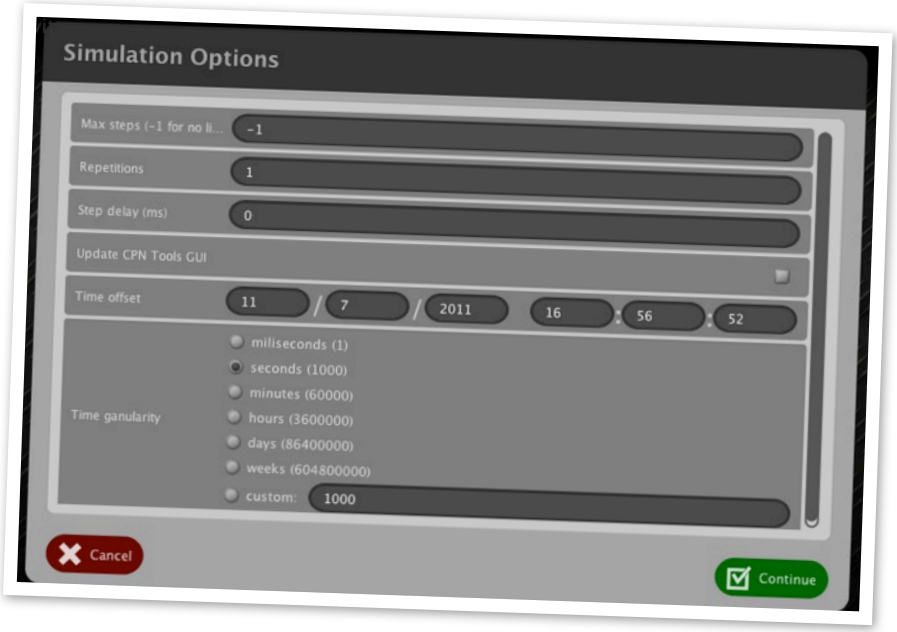
9. ProM will ProMptly show you a progress bar – if you entered an upper bound of steps, it will give you an estimate of when it finishes simulation, otherwise you get an indeterminate dialog. You possess the power to control which you get! Doesn't that make you feel special?

10. You now get a nice log, you can use to build a log cabin or as input for process mining. It appears in a colorful window like the one to the left and also in your workspace, where it is marked as a favorite (but don't tell the other logs, they'll just be jealous).

Timed Simulation

Timed simulation is just like untimed simulation, except you get a few more options. The plug-in automatically recognizes if you are doing timed simulation. The procedure is:





1. Load a model as before; the model should have at lease one timed color set.
2. Thru interpretive dance (or the mouse and keyboard), start the "Simulate CPN Model" plug-in on your CPN model.
3. You get the spiffy panel above. Marvel at its beauty.
4. In addition to the four options you know an love from the untimed case, you also have a time offset and a time granularity for your perusal.

The time offset is the wall clock time corresponding to time stamp 0 in the CPN model. It by default contains the current time. The time granularity is the amount of time each time unit in the CPN model corresponds to in wall clock time. In the example above, time stamp 0 corresponds to July 11, 2011, 16:56:52 and time stamp 17 corresponds to July 11, 2011, 16:56:09.

5. The generated log contains time stamps.

Known Limitations

- Monitoring not supported when loading a model without CPN Tools
- Persistence of models not supported when loading a model with CPN Tools
- Real time stamps not supported
- Priorities not supported
- Fair simulation modes not supported