

PIPE 2.7 – Enhancements

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Abstract:

PIPE is an open source, platform independent tool for creating and analyzing Petri nets including GSPNs. It is implemented entirely in Java and provides an easy-to-use graphical user interface that allows creating, saving and loading of Petri nets conforming to the PNML interchange format. The enhancements of this latest version comprise: an increase in modeling power through server semantics, new import/export modules for the automatic transformation between different performance models, and various improvements in the simulator, as for example the computation of more performance indexes, and some new interface features.

Modelling Power

- Places, immediate & timed transitions, arcs & tokens
- Rate and marking parameters
- Inhibitor arcs
- Capacity restriction of places
- Priority for immediate transitions
- Server Semantics for timed transitions
 - Single, multiple & infinite

Simulation

Performance indexes:

- Average number of tokens
- New throughput of timed transitions
- New token density probability
- New utilization of places

Modules

Structural analysis

- Minimal siphons & minimal traps
- Place and transition invariant analysis
- Reachability/coverability graph
- Incidence & marking

GSPN analysis

- Average number of tokens
- Utilization of places
- Throughput of timed transitions
- Token probability density

Editor

- Cut/copy/paste
- Undo/redo
- Labels
- Quick editor mode
- Shortcuts to all editor options

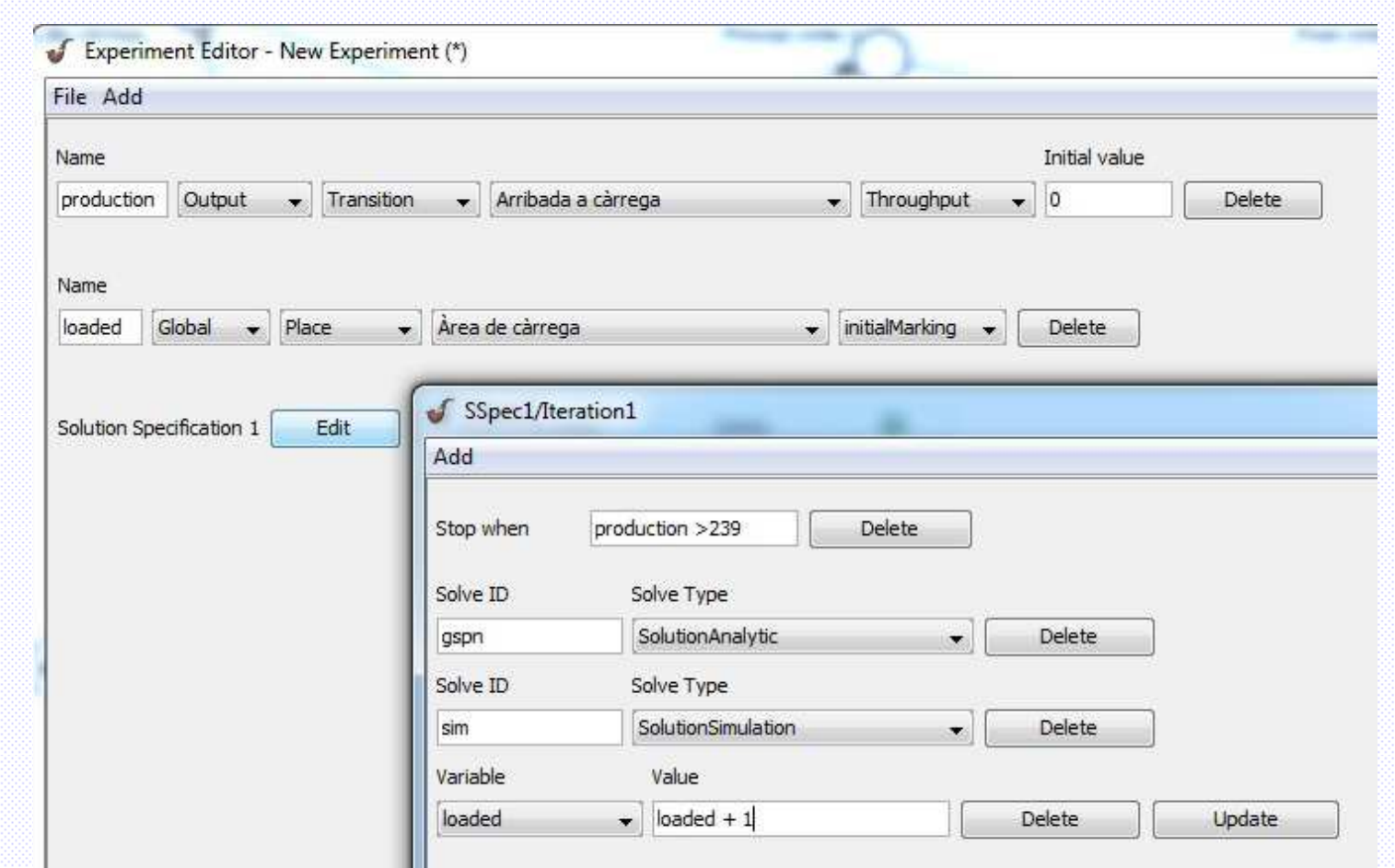
Import/Export & Transformations

- Export to graphical formats: Postscript & PNG.
- Export & import to Timenet format
- PMIF import using M2M transformation

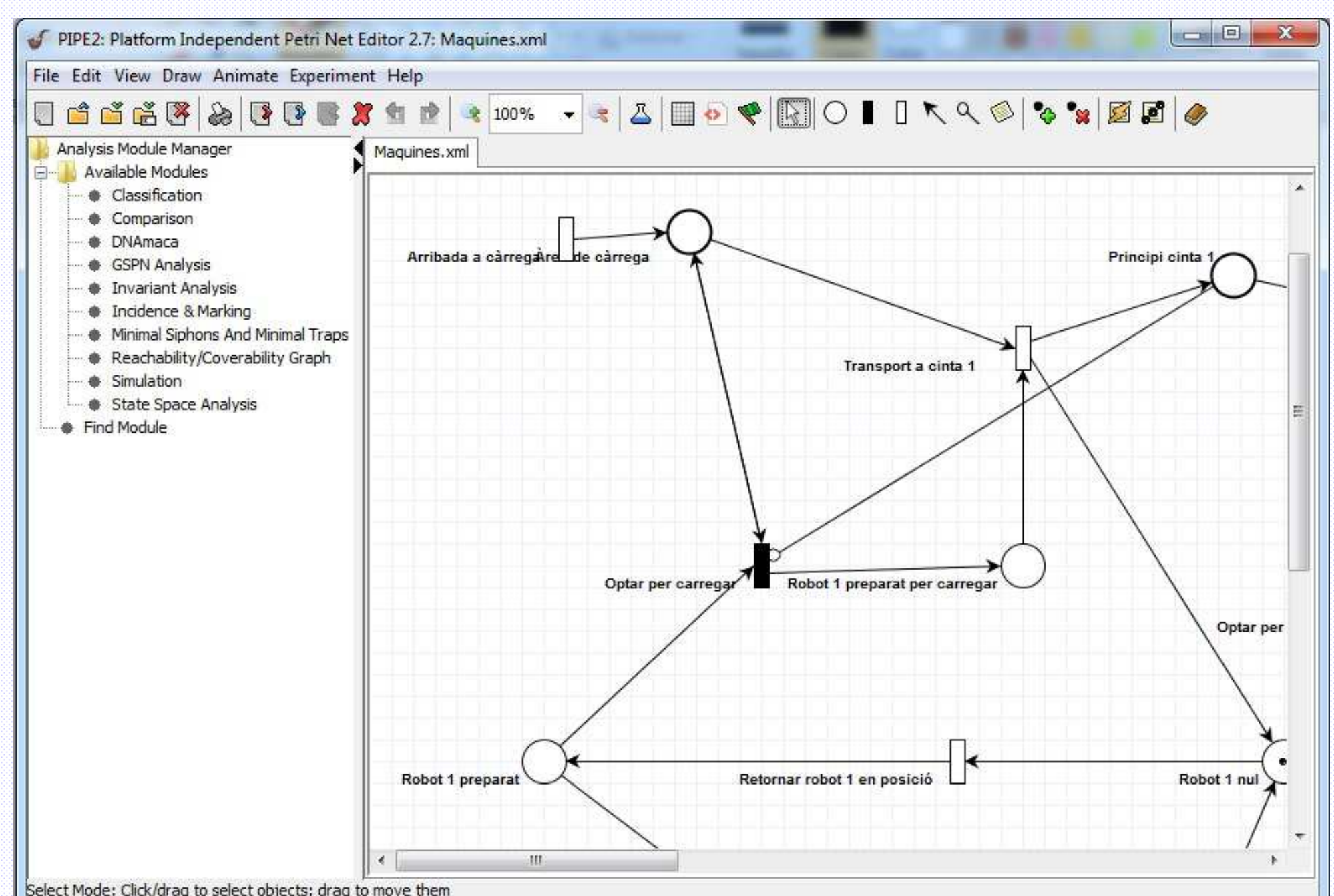
Experimenter

- Complies with the Experiment Schema Extension specification (Ex-SE) which defines a set of model runs and the output desired from them providing a way of specifying performance studies that is independent of a given tool paradigm.

- Experiment editing, validation and execution
- Results on xml format and Excel



PIPE 2.7 GUI



References

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- [3] P. Bonet, C. Lladó, R. Puigjaner & W. Knottenbelt. PIPE v2.5: a Petri Net Tool for Performance Modeling. Conferencia Latinoamericana de Informática. 2007.
- [4] PIPE - pipe2.sourceforge.net