STTT2025 Guide

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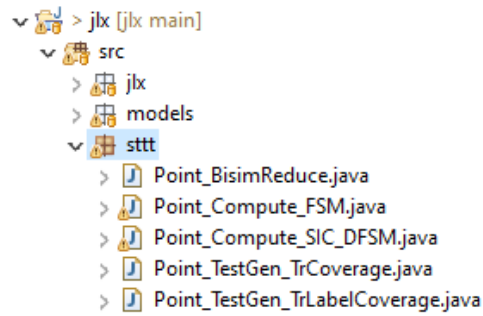
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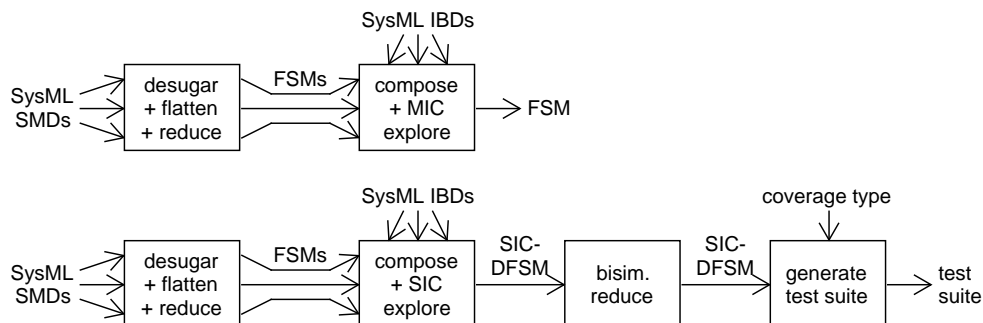## 1 How to set up the software framework
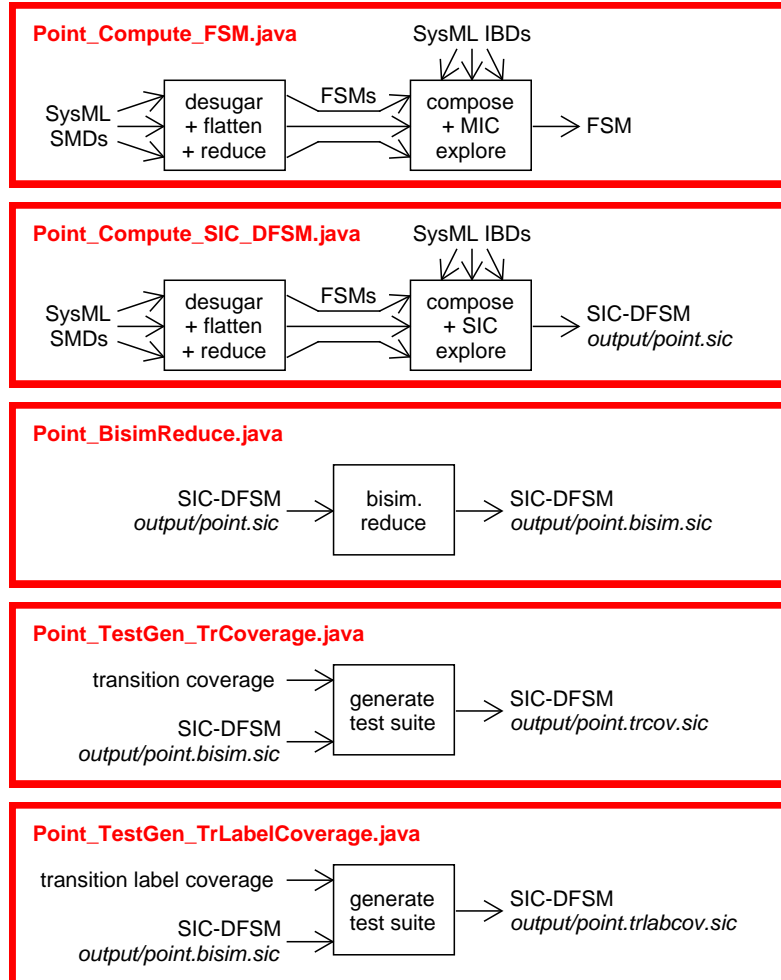
See *SETUP.pdf*.

2 How to run the pipelines

In the paper, two pipelines are described from EULYNX specifications to FSMs/SIC-DFSMs. These pipelines can be run by using the files in the 'sttt' package:

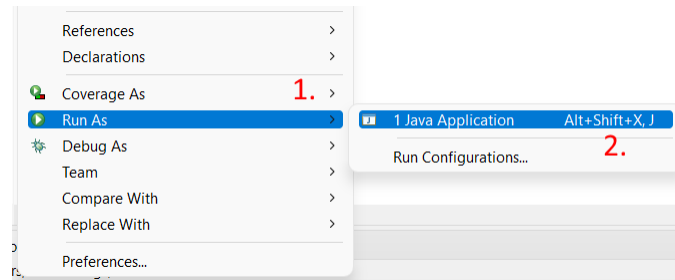There are two pipelines, one for the FSM and one for the SIC-DFSM:

This image maps to the files in the 'sttt' packages as follows:

Point_Compute_FSM.java

SysML SMDs → desugar + flatten + reduce → FSMs → compose + MIC explore → FSM
SysML IBDs → compose + MIC explore

Point_Compute_SIC_DFSM.java

SysML SMDs → desugar + flatten + reduce → FSMs → compose + SIC explore → SIC-DFSM *output/point.sic*
SysML IBDs → compose + SIC explore

Point_BisimReduce.java

SIC-DFSM *output/point.sic* → bisim. reduce → SIC-DFSM *output/point.bisim.sic*

Point_TestGen_TrCoverage.java

transition coverage → generate test suite → SIC-DFSM *output/point.trcov.sic*
SIC-DFSM *output/point.bisim.sic* → generate test suite

Point_TestGen_TrLabelCoverage.java

transition label coverage → generate test suite → SIC-DFSM *output/point.trlabcov.sic*
SIC-DFSM *output/point.bisim.sic* → generate test suite

We make several comments:

- The FSM that is computed by 'Point_Compute_FSM.java' is *not* used (it is not even saved to disk).

- The SIC-DFSM that is computed by 'Point_Compute_SIC_DFSM.java' is saved to disk under the name 'point.sic'.

- 'Point_BisimReduce.java' loads 'point.sic', reduces it, and saves the result under the name 'point.bisim.sic'.

- 'Point_TestGen_TrCoverage.java' loads 'point.bisim.sic', generates tests, and creates a new SIC-DFSM file named 'point.trcov.sic' (which contains the generated tests).

- 'Point_TestGen_TrLabelCoverage.java' loads 'point.bisim.sic', generates tests, and creates a new SIC-DFSM file named 'point.trlabcov.sic' (which contains the generated tests).

To run one of the files in the 'sttt' package, right-click it. A context menu appears:

Navigate to the 'Run As' sub-menu, open it, and click the 'Java Application' option.
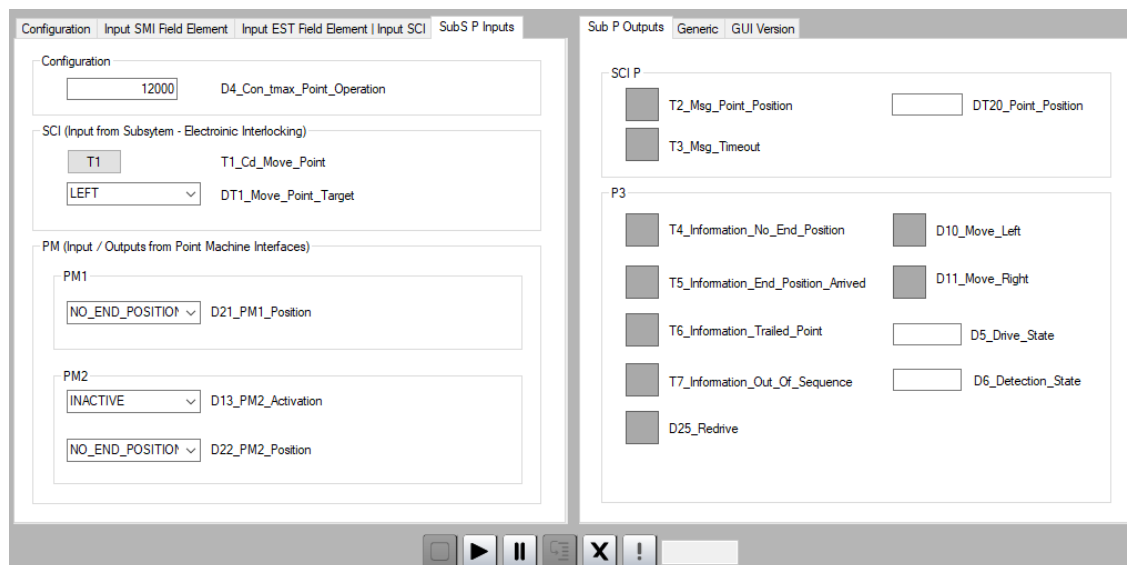
3   How to run the simulator

The software simulator runs on Windows 10 or above only.
The software simulator can be run in two ways:

- In manual mode.

- In test mode.

3.1   Manual mode

"Manual mode" is the mode for which the software simulator was developed. It is started by running the executable '/point_simulator/bin/Debug/SubS_P_SR.exe'. A GUI appears:

Inputs are available on the left-hand side of the GUI; outputs are displayed on the right-hand side of GUI.

3.2 Test mode

"Test mode" is what we added to the software simulator code base to perform automated model-based testing. It is started by running the executable '/point_simulator/bin/Release/SubS_P_SR.exe' from CMD, with the '.sic' file as a parameter:

Discrepancies are summarized in a file called 'discrepancies.txt', found in the same location as the executable: