FSML in *EMF/XText*

Implementation

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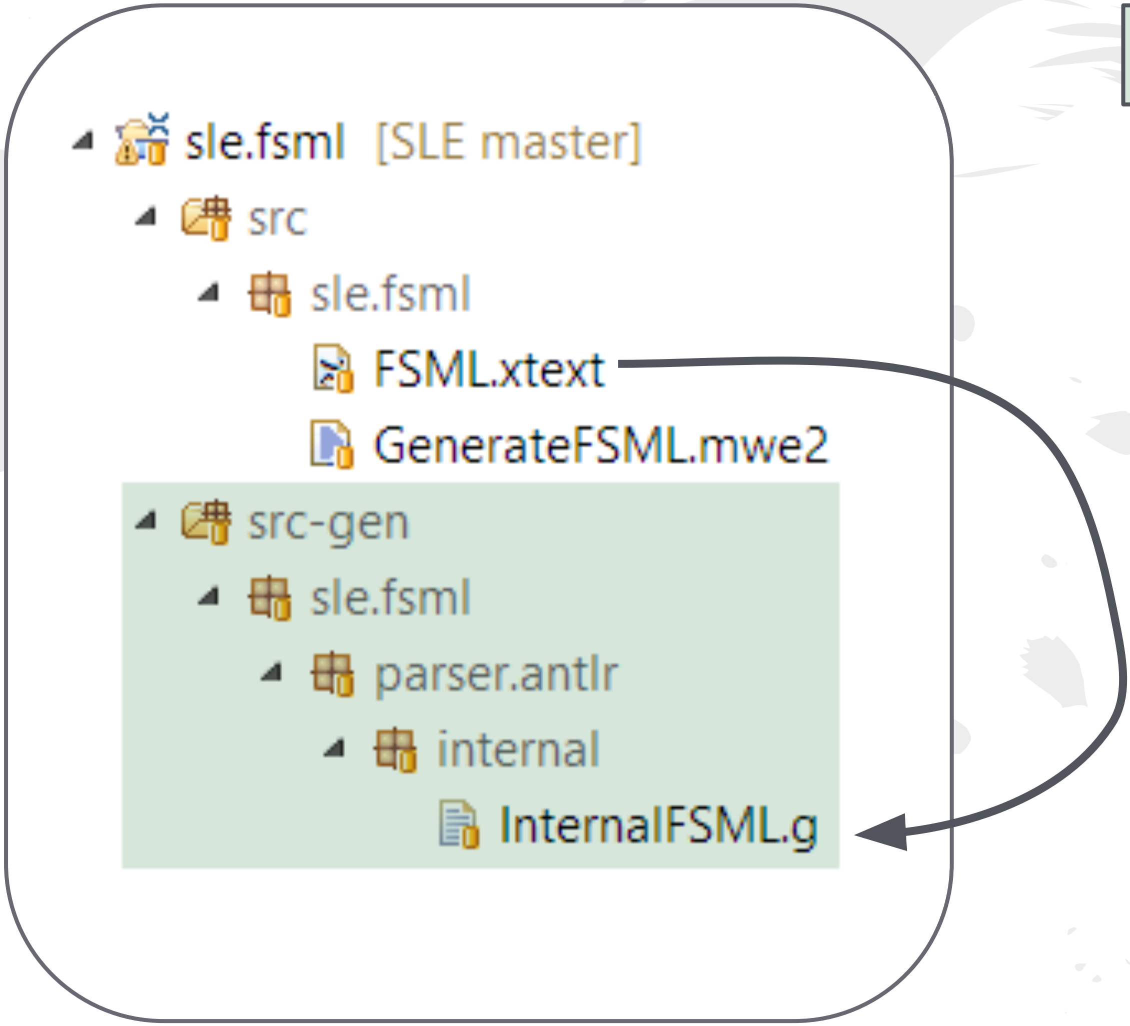
Outline

- Concrete Syntax
- Abstract Syntax
- Checking *FSM* constraints
- Simulating the *FSM*
- Positive and Negative Tests
- Generating *Java* code and the `dgl` file
- Graphical editing in *Papyrus*
- Extra Features
- Summary

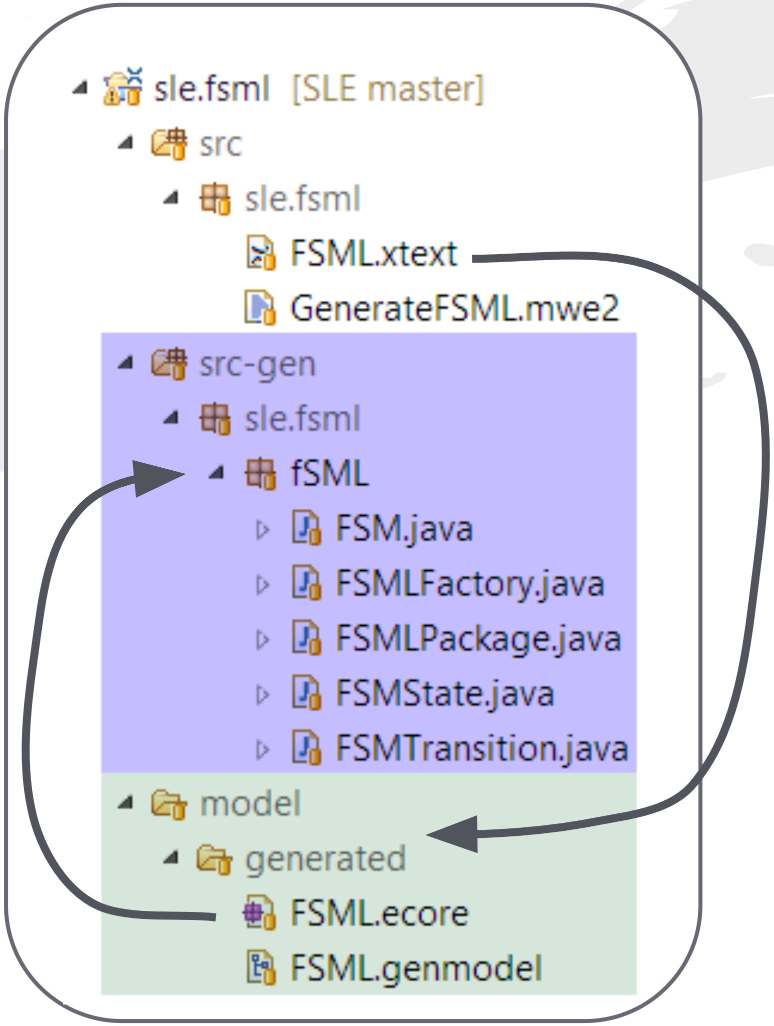
Concrete Syntax



```
sle.fsml [SLE master]
  src
    sle.fsml
      FSML.xtext
      GenerateFSML.mwe2
  src-gen
    sle.fsml
      parser.antlr
        internal
          InternalFSML.g
```

Generated

Abstract Syntax

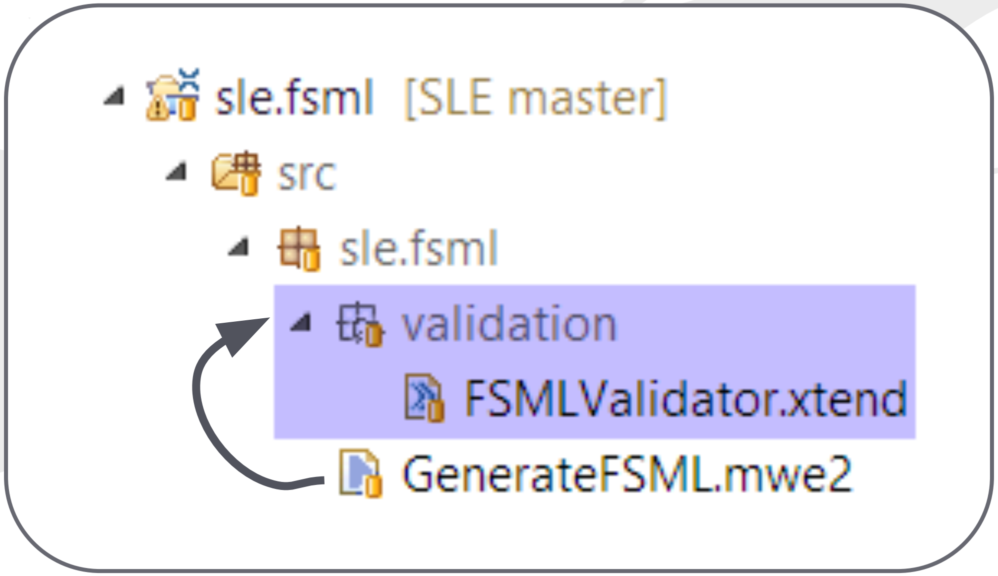


```
sle.fsml [SLE master]
  src
    sle.fsml
      FSML.xtext
      GenerateFSML.mwe2
  src-gen
    sle.fsml
      fSML
        FSM.java
        FSMLFactory.java
        FSMLPackage.java
        FSMState.java
        FSMTransition.java
  model
    generated
      FSML.ecore
      FSML.genmodel
```

Generated

Generated & Modifiable

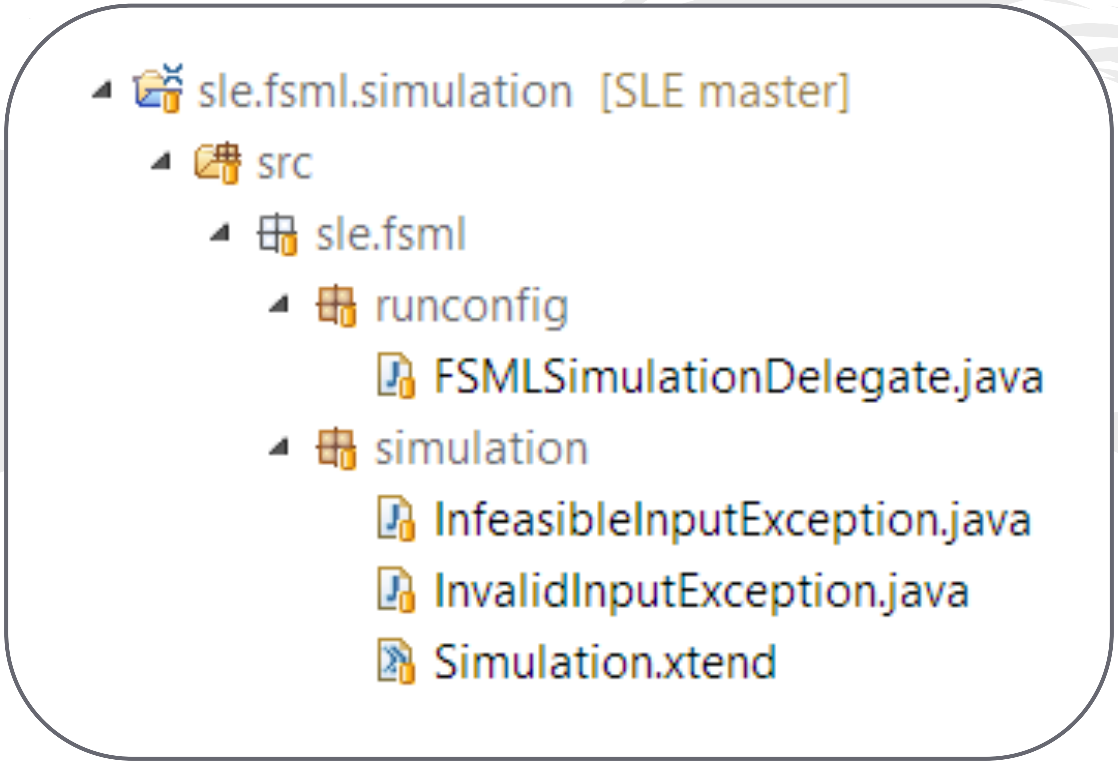
Checking *FSM* constraints



- sle.fsml [SLE master]
  - src
    - sle.fsml
      - validation
        - FSMLValidator.xtend
  - GenerateFSML.mwe2

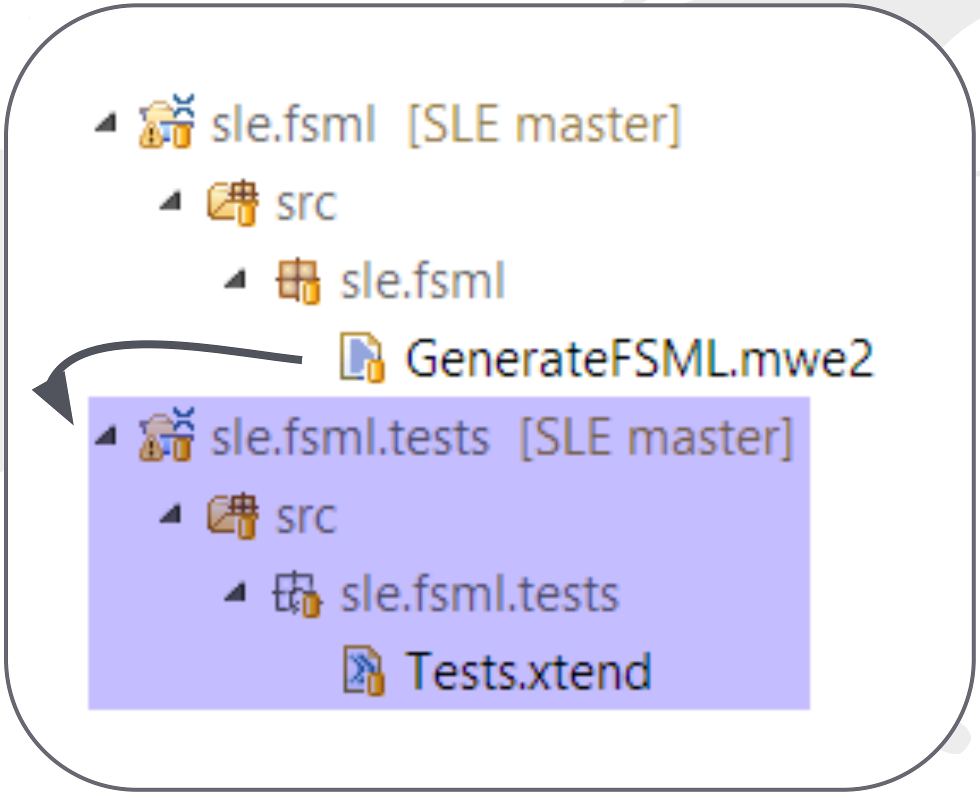
Generated & Modifiable

Simulating the *FSM*



- sle.fsml.simulation [SLE master]
  - src
    - sle.fsml
      - runconfig
        - FSMLSimulationDelegate.java
      - simulation
        - InfeasibleInputException.java
        - InvalidInputException.java
        - Simulation.xtend

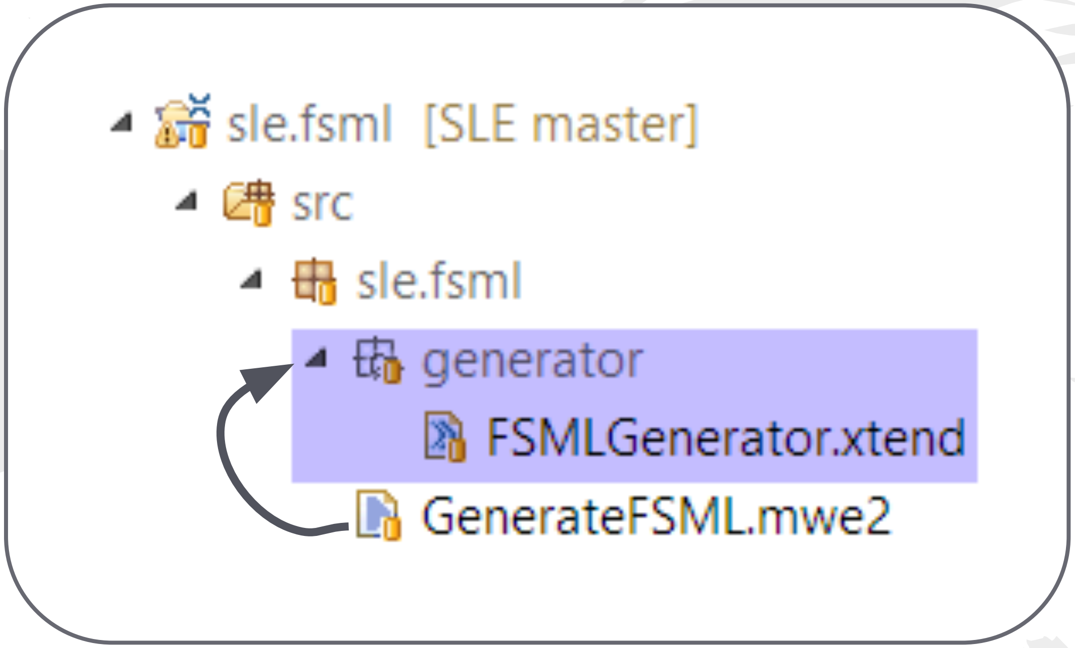
Tests



```
sle.fsml  [SLE master]
    src
        sle.fsml
            GenerateFSML.mwe2
sle.fsml.tests  [SLE master]
    src
        sle.fsml.tests
            Tests.xtend
```

Generated & Modifiable

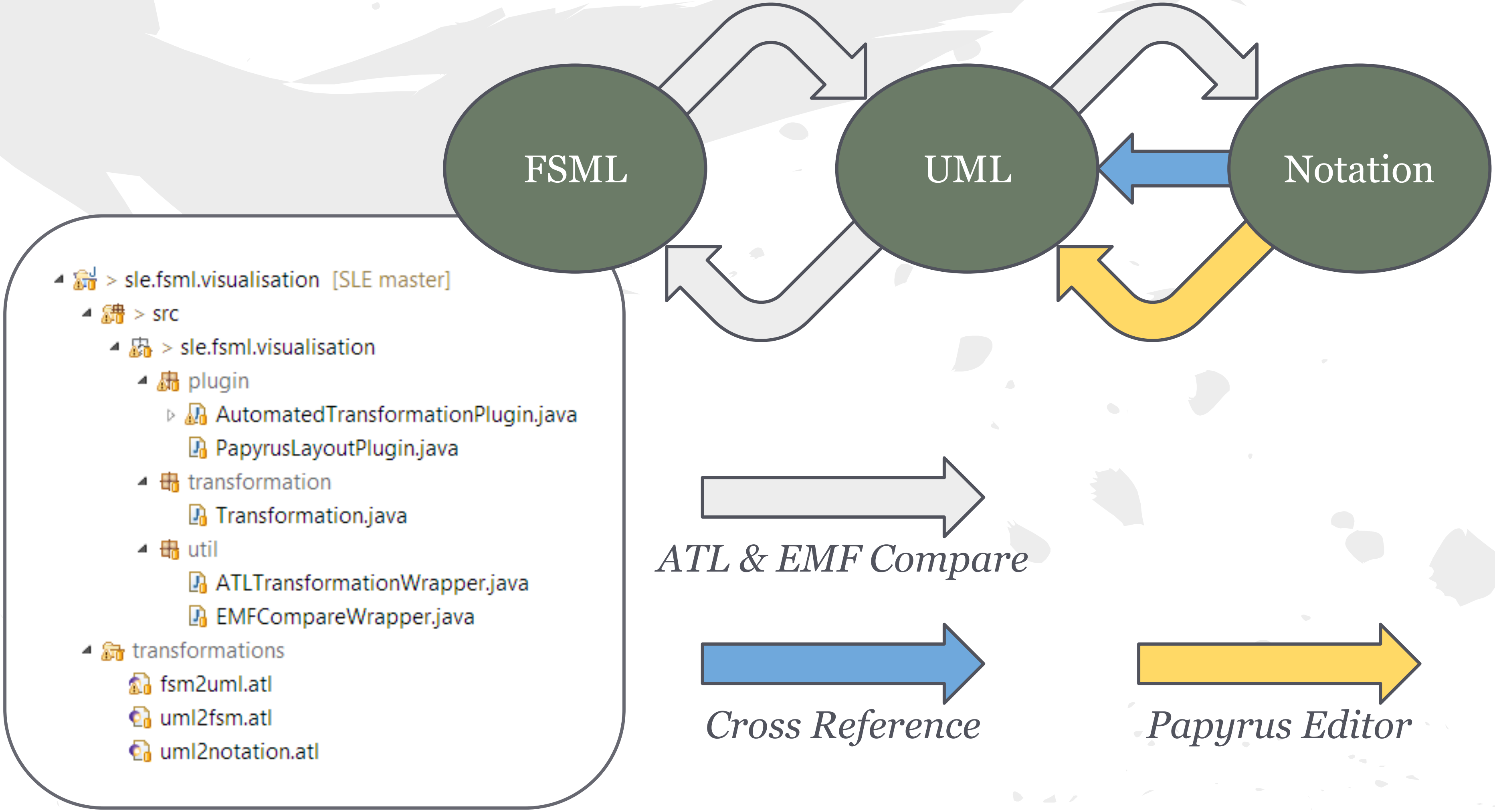
Generating



```
sle.fsml [SLE master]
  src
    sle.fsml
      generator
        FSMLGenerator.xtend
      GenerateFSML.mwe2
```

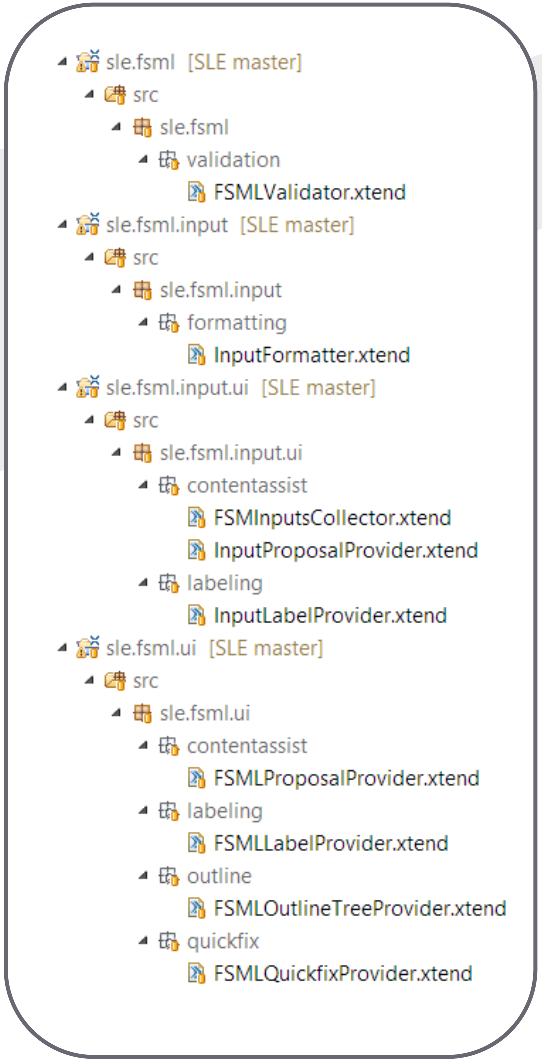
Generated & Modifiable

Graphical Editing



- sle.fsml.visualisation [SLE master]
  - src
    - sle.fsml.visualisation
      - plugin
        - AutomatedTransformationPlugin.java
        - PapyrusLayoutPlugin.java
      - transformation
        - Transformation.java
      - util
        - ATLTransformationWrapper.java
        - EMFCompareWrapper.java
  - transformations
    - fsm2uml.atl
    - uml2fsm.atl
    - uml2notation.atl

Extra Features



```
sle.fsml  [SLE master]
  src
    sle.fsml
      validation
        FSMLValidator.xtend
sle.fsml.input  [SLE master]
  src
    sle.fsml.input
      formatting
        InputFormatter.xtend
sle.fsml.input.ui  [SLE master]
  src
    sle.fsml.input.ui
      contentassist
        FSMInputsCollector.xtend
        InputProposalProvider.xtend
      labeling
        InputLabelProvider.xtend
sle.fsml.ui  [SLE master]
  src
    sle.fsml.ui
      contentassist
        FSMLProposalProvider.xtend
      labeling
        FSMLLabelProvider.xtend
      outline
        FSMLOutlineTreeProvider.xtend
      quickfix
        FSMLQuickfixProvider.xtend
```

Summary

- **CS** in *XText* grammar
- **AS** in *EMF* model
- Checking with *XText Validators*
- Simulation in *JVM*
- Tests with *JUnit 4*
- Generation in *XTend*
- Graphical Editor in *Papyrus* synchronised by *ATL* and *EMF Compare*
- Additional usability with *Completion* and *Quickfix* features