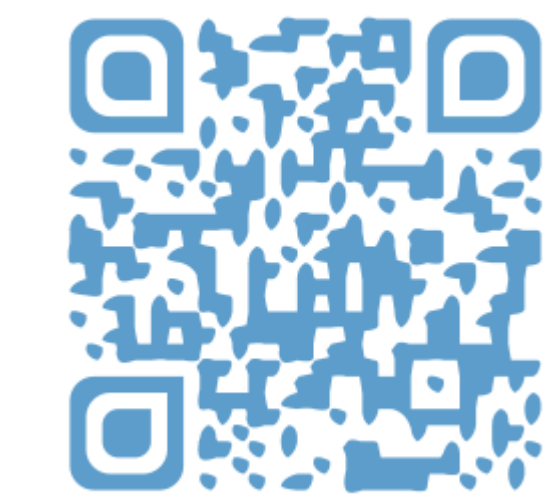


# COSTOTest : a Tool for Building and Running Test Harness for Service-Based Component Models Software

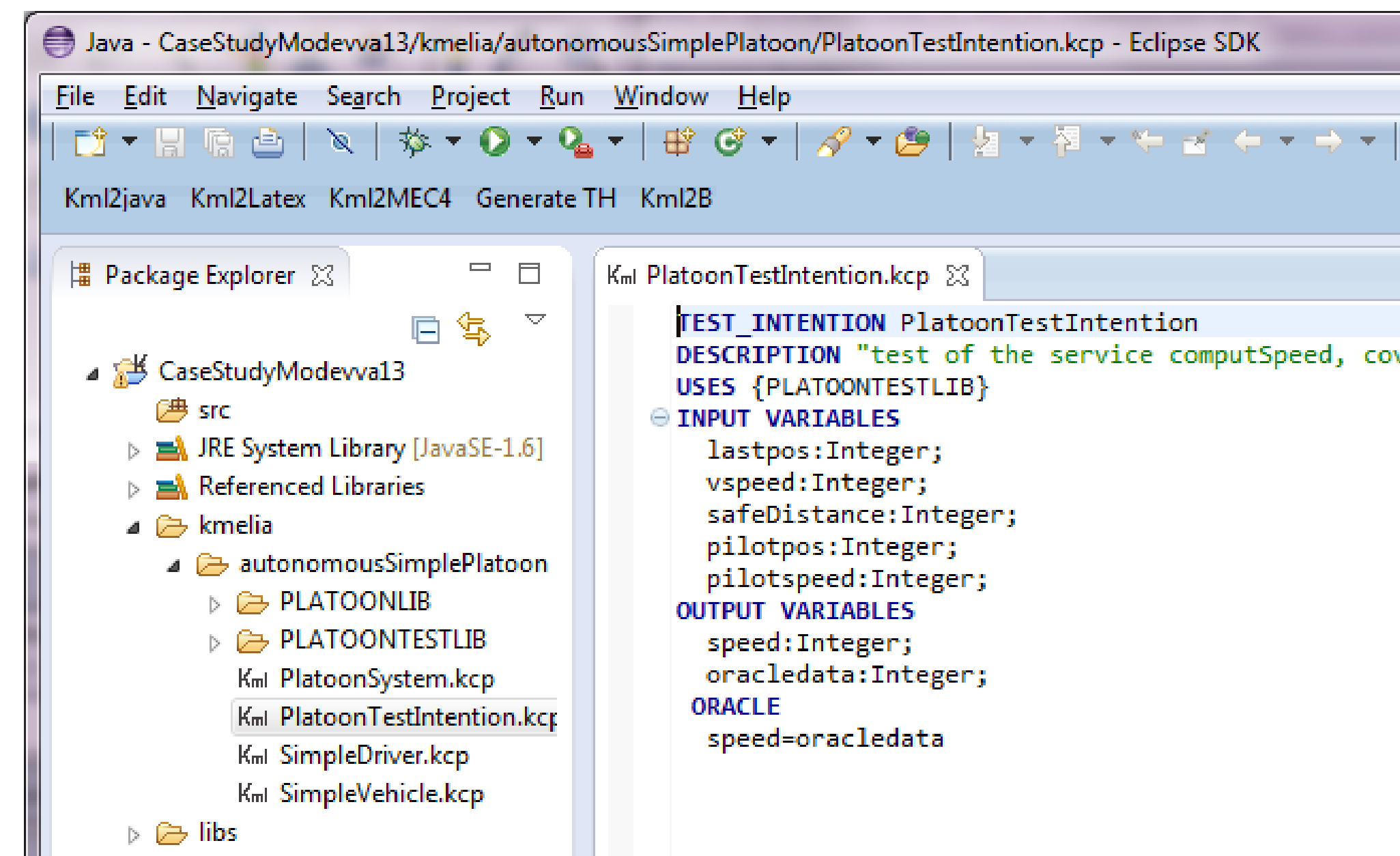


<http://costo.univ-nantes.fr/>

## Test Intention

The test intention describes test cases

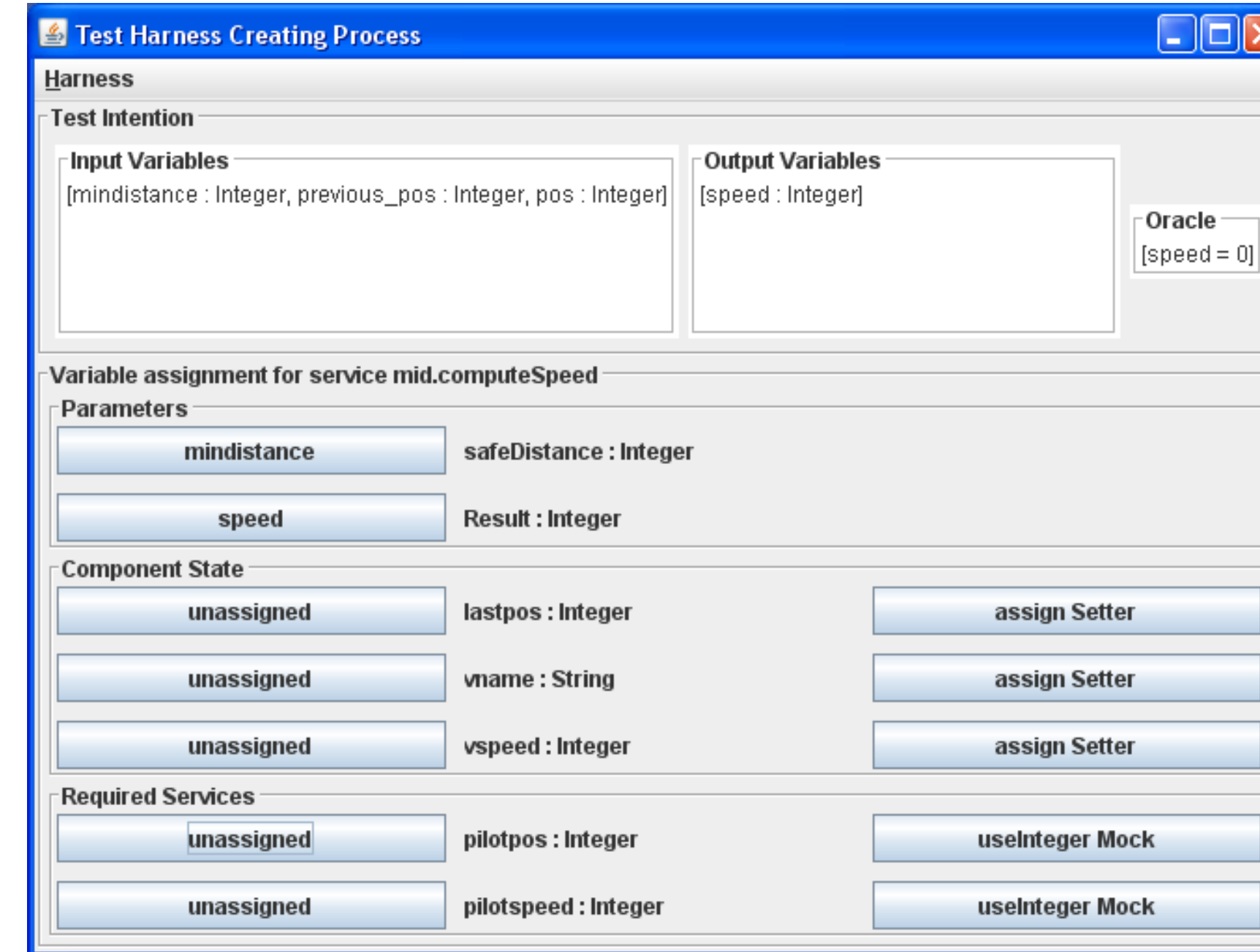
- Goal and meta information
- I/O variables
- Oracle
- Libraries



The test intention provides the list of which variables will be part of each test data, and what would be the oracle data..

## Test Harness construction

The model of the test harness is built interactively by matching intention and SUT elements.

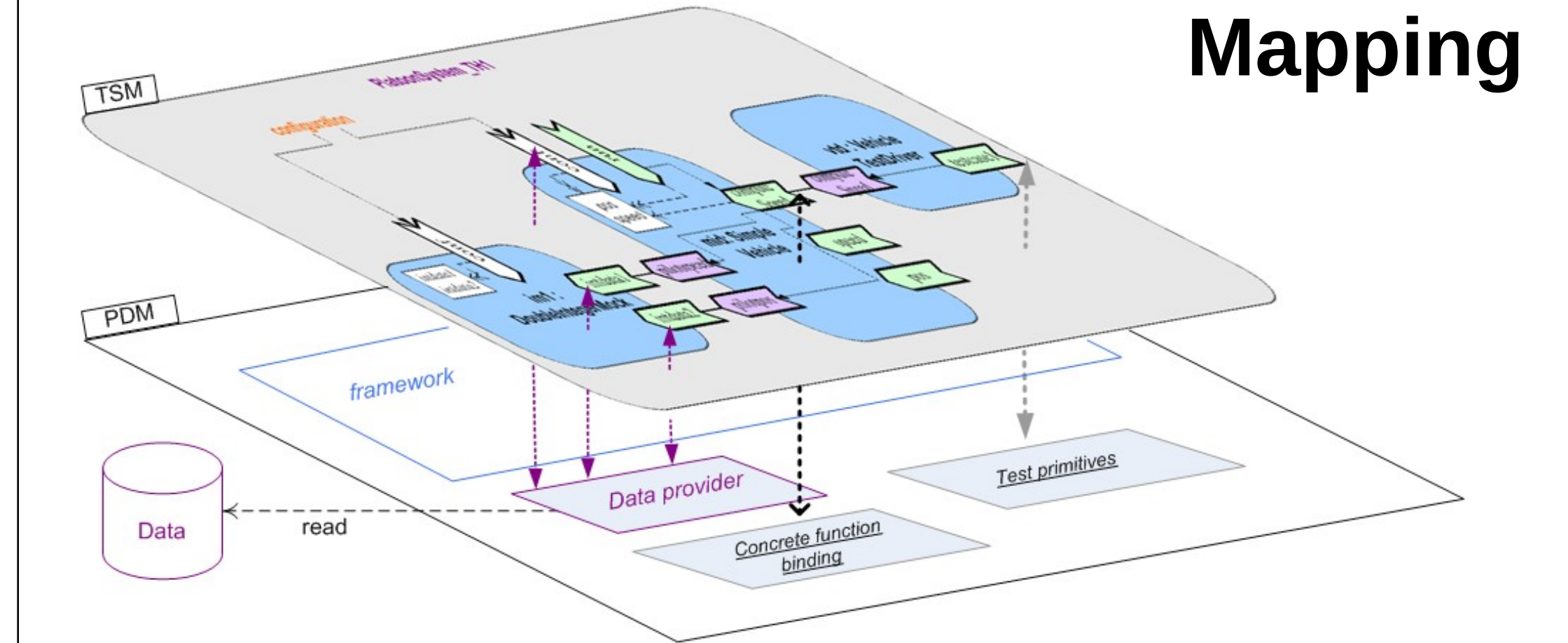


## Test data

COSTOTest assists the tester in managing the way the test data can be provided: some of them by the configuration service, other ones by mock components, and the oracle by a test driver.

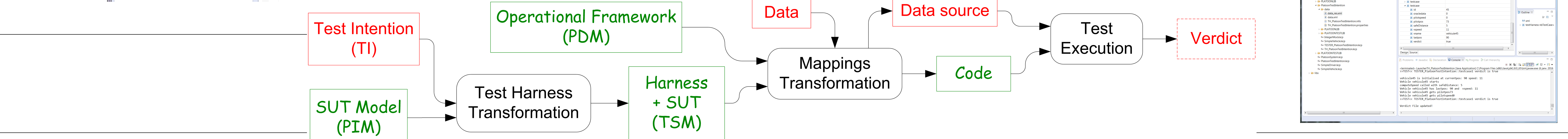
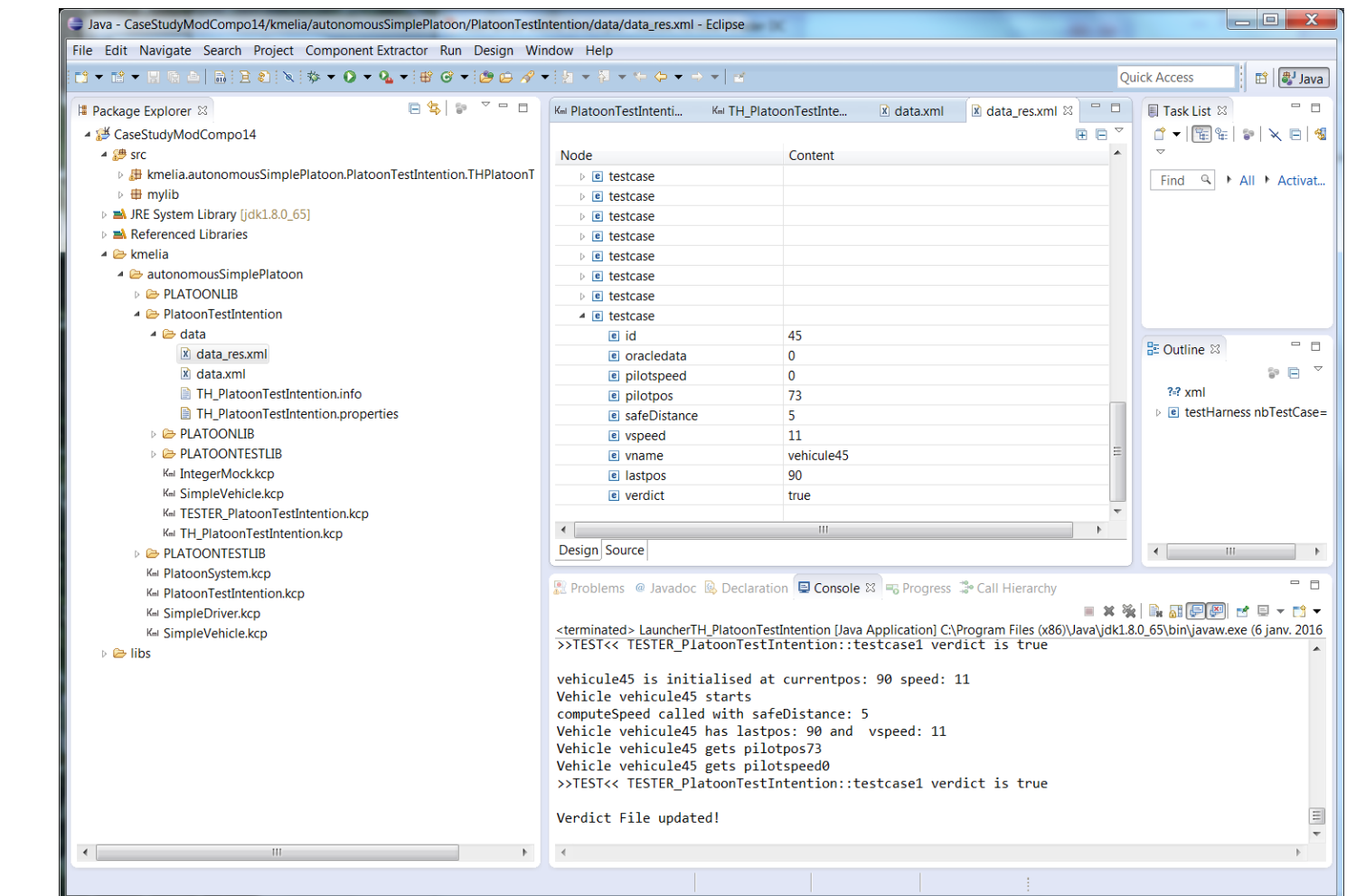
```
<?xml version="1.0" encoding="UTF-8"?>
<testHarness nbTestCases="45">
  <testcase>
    <id>1</id>
    <oracledata>130</oracledata>
    <pilotspeed>130</pilotspeed>
    <pilotpos>100</pilotpos>
    <safeDistance>72</safeDistance>
    <vspeed>121</vspeed>
    <vname>vehicule1</vname>
    <lastpos>27</lastpos>
    <verdict></verdict>
  </testcase>
  <testcase>
    <id>2</id>
    <oracledata>130</oracledata>
    <pilotspeed>130</pilotspeed>
    <pilotpos>78</pilotpos>
  </testcase>
</testHarness>
```

## Mapping

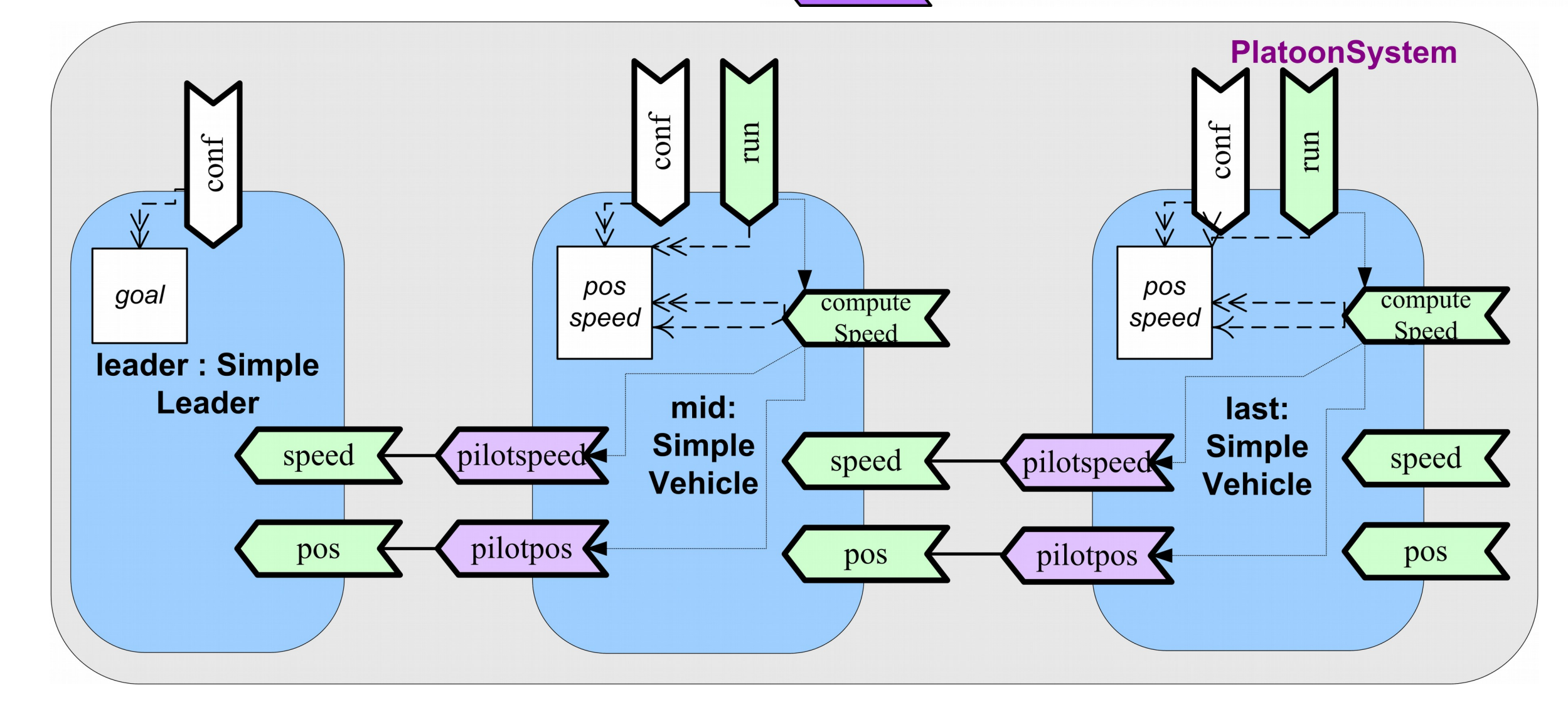
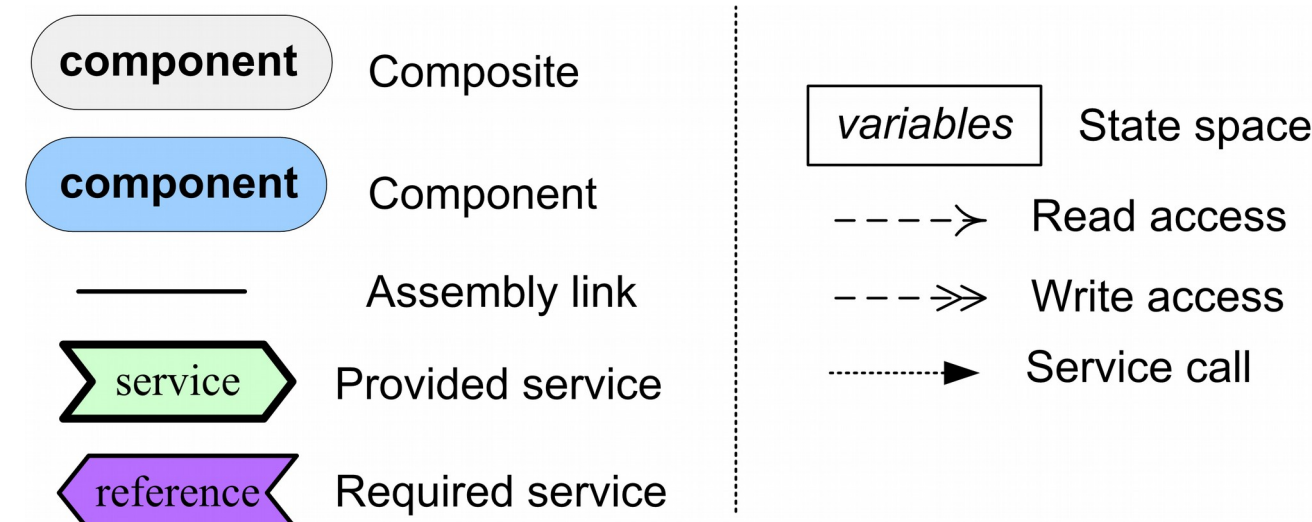


High-level Test Specific Model (TSM) primitives are automatically connected to low level (Platform Description Model (PDM)) functions. These mappings are predefined in standard libraries or defined by the user.

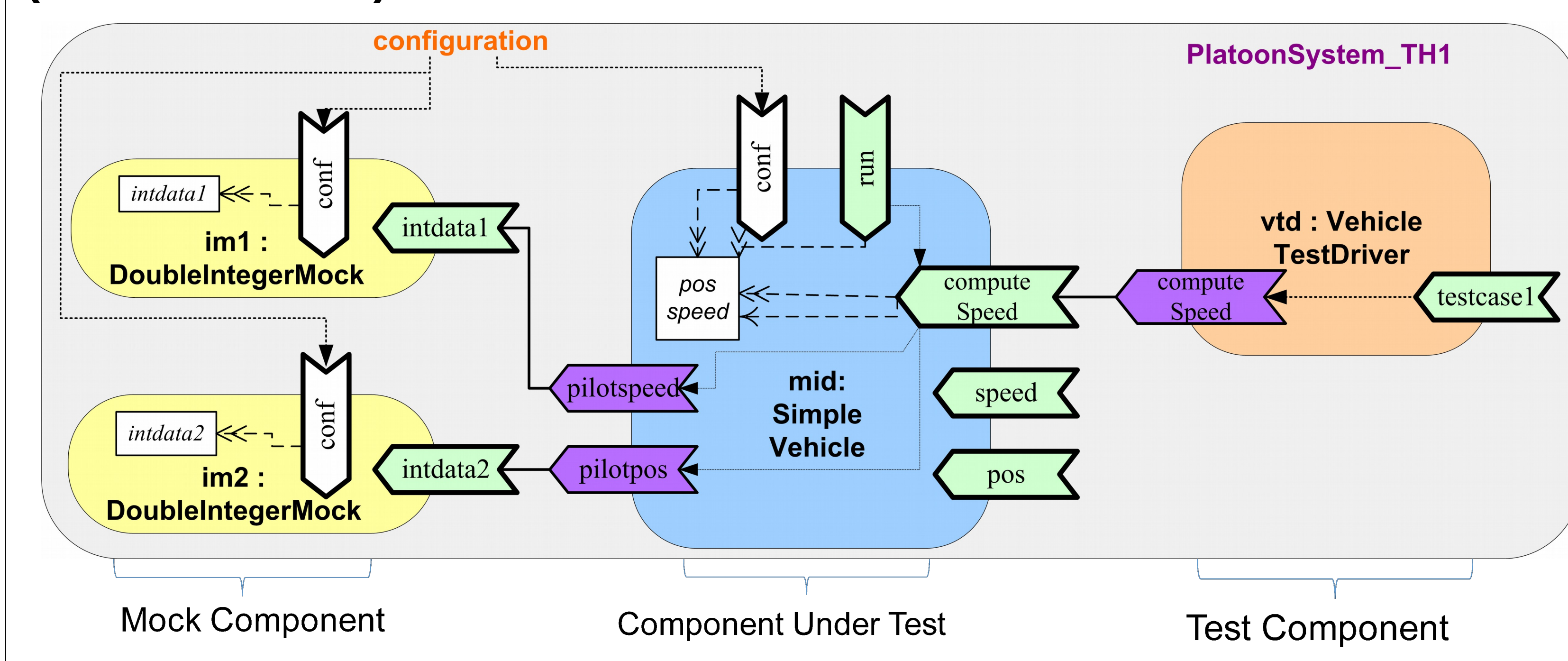
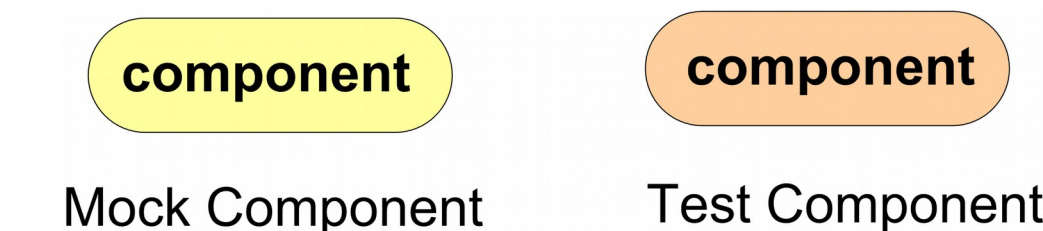
## Verdict



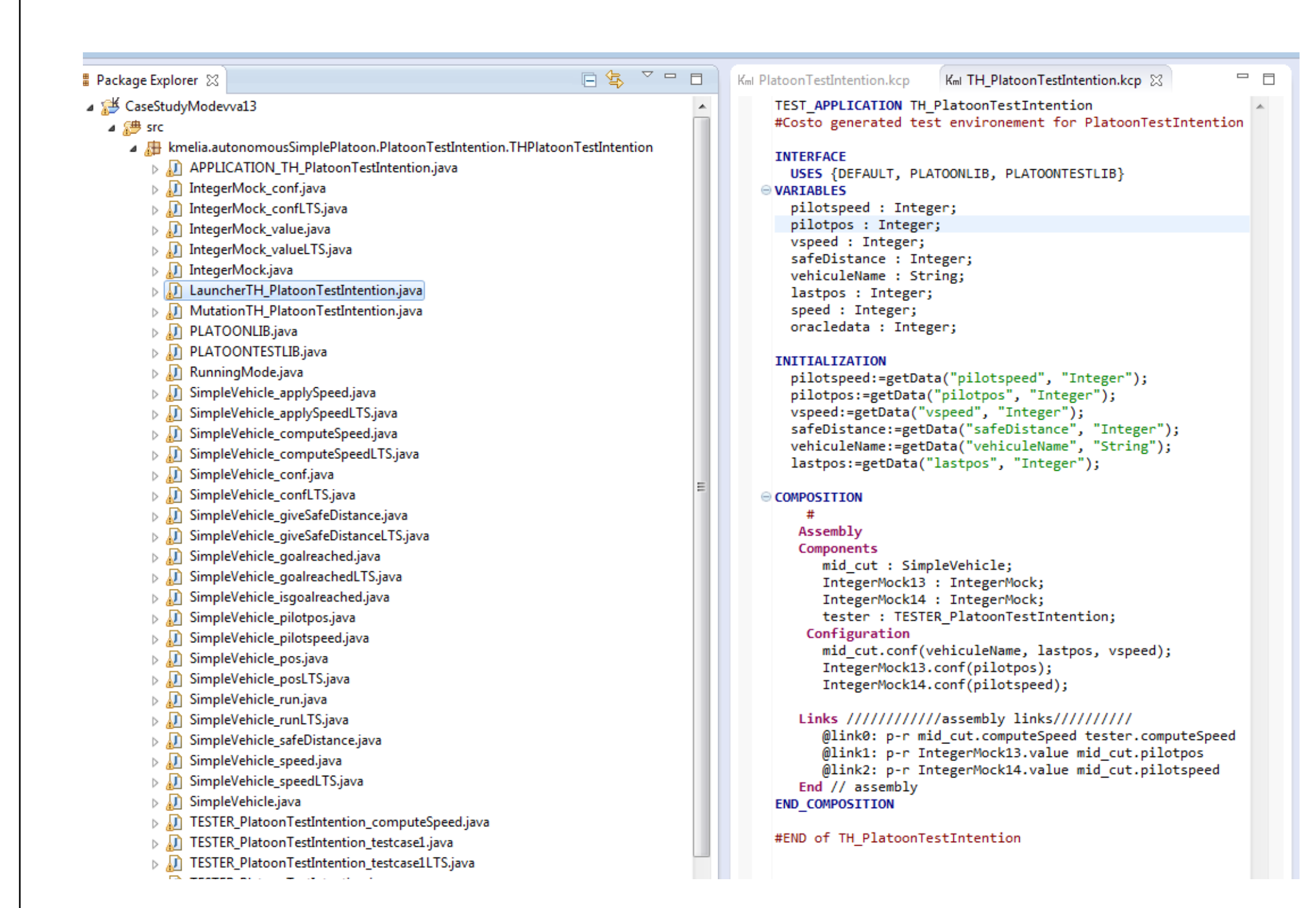
## System Under Test (a Kmelia model)



## Test Harness (a Kmelia model)



## Java code



## Abstract

Early testing reduces the cost of detecting faults and improves the system reliability. In particular, testing component or service based systems during modeling frees the tests from implementation details, especially those related to the middleware. COSTOTest is a tool that helps the tester during the process of designing tests at the model level. It suggests the possibilities and the lacks when (s)he builds test cases. Building executable tests is achieved thanks to model transformations

## Some Publications

- Pascal André, Gilles Ardourel, and Christian Attiogbé. Denying Component Protocols with Service Composition: Illustration with the Kmelia Model. In SC'07, volume 4829 of LNCS. Springer, 2007.
- Pascal André, Gilles Ardourel, Christian Attiogbé, and Arnaud Lanoix. Using assertions to enhance the correctness of kmelia components and their assemblies. Electronic Notes in Theoretical Computer Science, 263:5 – 30, 2010. Proceedings of FACS 2009.
- Pascal André, Jean-Marie Mottu, Gilles Ardourel. Building Test Harness From Service-based Component Models. In the Proceedings of the Workshop MoDeVva 2013 associated with Models2013, pp. 11-20, Miami, USA, 2013.

## Key features

- Component and Service
- Required service context
- Contract and Protocols
- Assembly and mappings
- Model Transformation
- Model Testing
- Model-checking
- Theorem proving
- Test Harness
- Mutation

## For further information

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