DEVS modeling of Traffic in AToM3

Presented by

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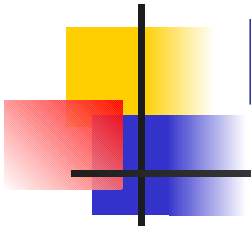
April 11, 2005



References

- [1] Bernard P. Zeigler, Herbert Praehofer, and Tag Gon Kim.
  Theory of Modeling and Simulation.
  Academic Press, 2000.
- [2] Hans Vangheluwe, Juan de Lara.
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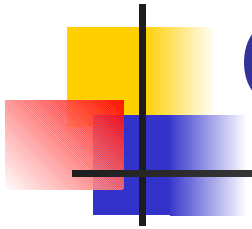
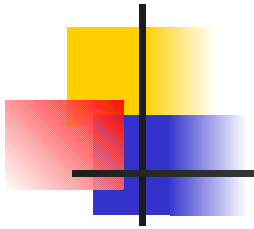
  Introduction to DEVS Modeling and Simulation with JAVA.
  http://www.acims.arizona.edu/SOFTWARE/software.shtml#DEVSJAVA



Outline

- Introduction
  - TimedTraffic Formalism
  - DEVS Formalism
- Map TimedTraffic to DEVS
  - Meta-Modeling
    - TimedTraffic Meta-Model
    - DEVS Meta-model
  - Model Transformation
  - Code Generation (Python and Java)
- Demo
- Conclusion



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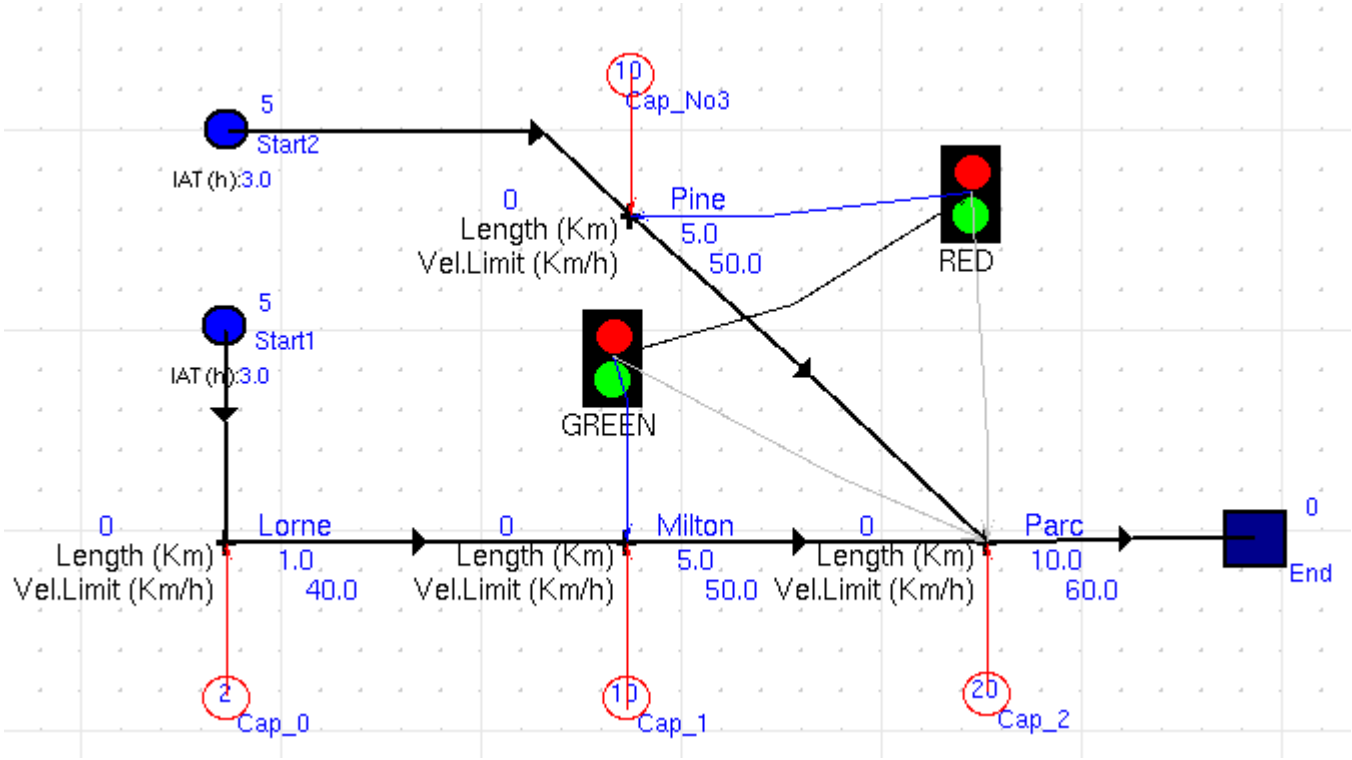
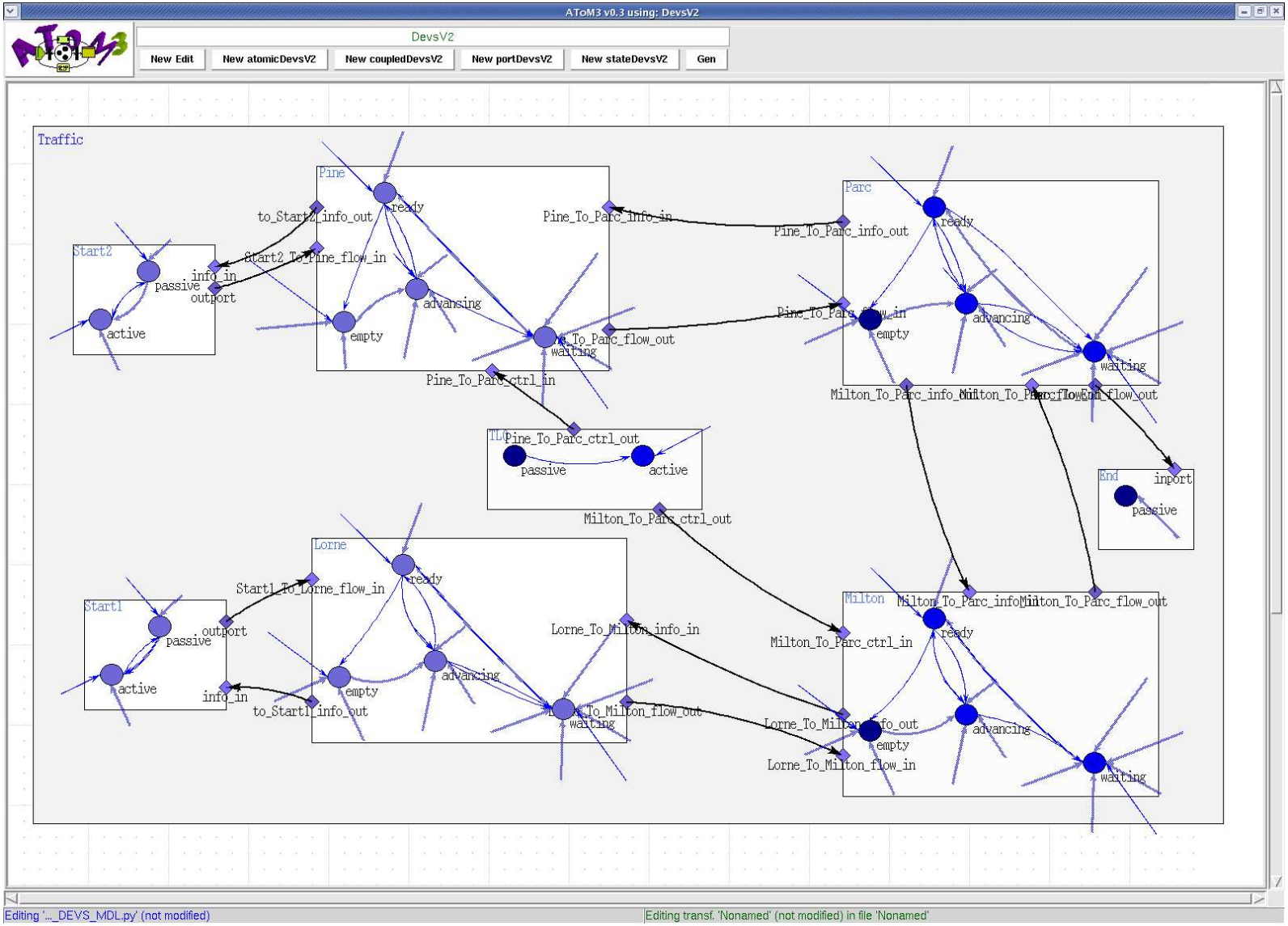
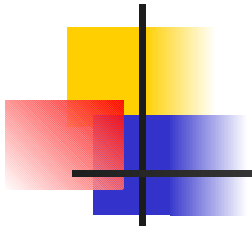
TimedTraffic Formalism



Based on models described in [2].

DEVS Formalism





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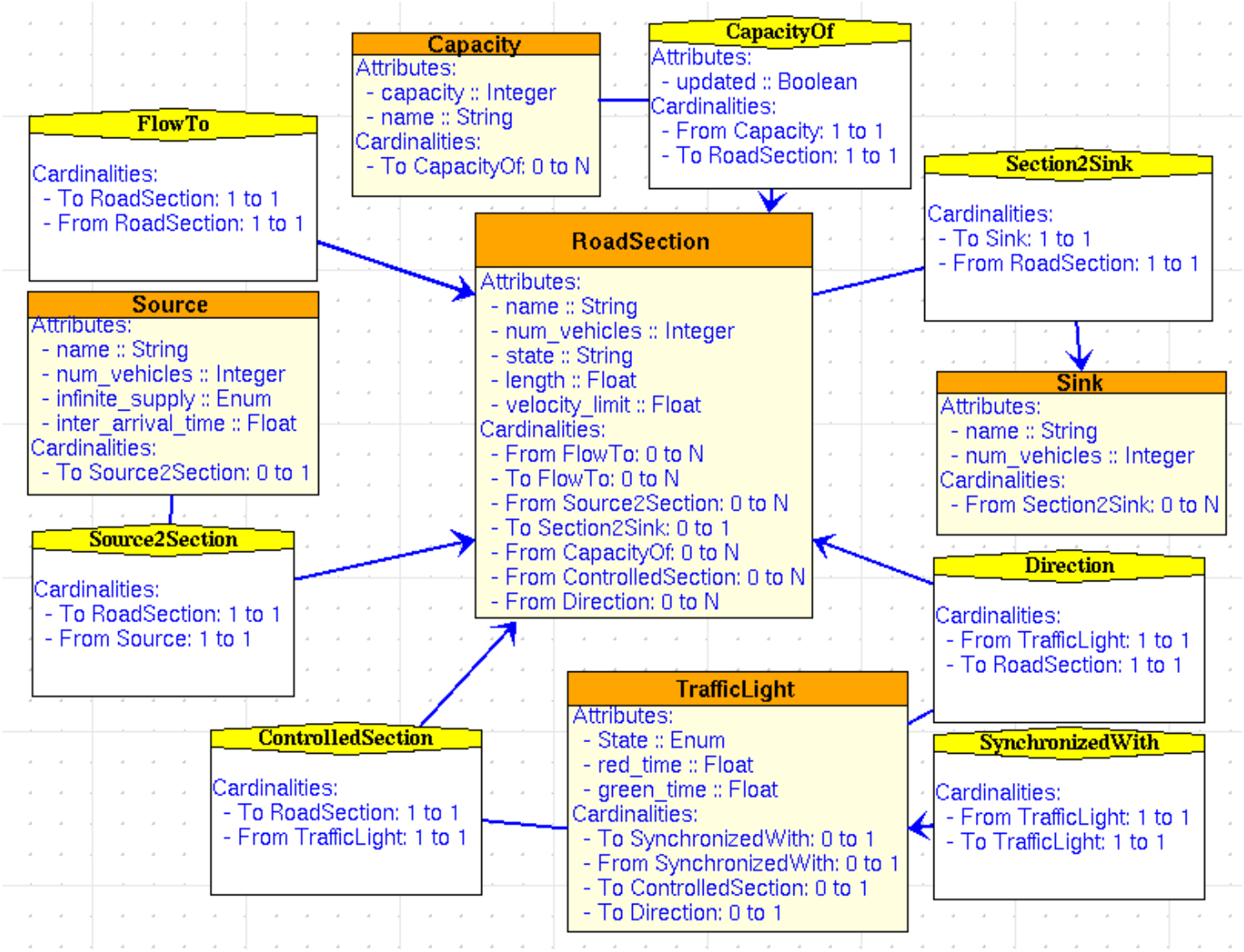
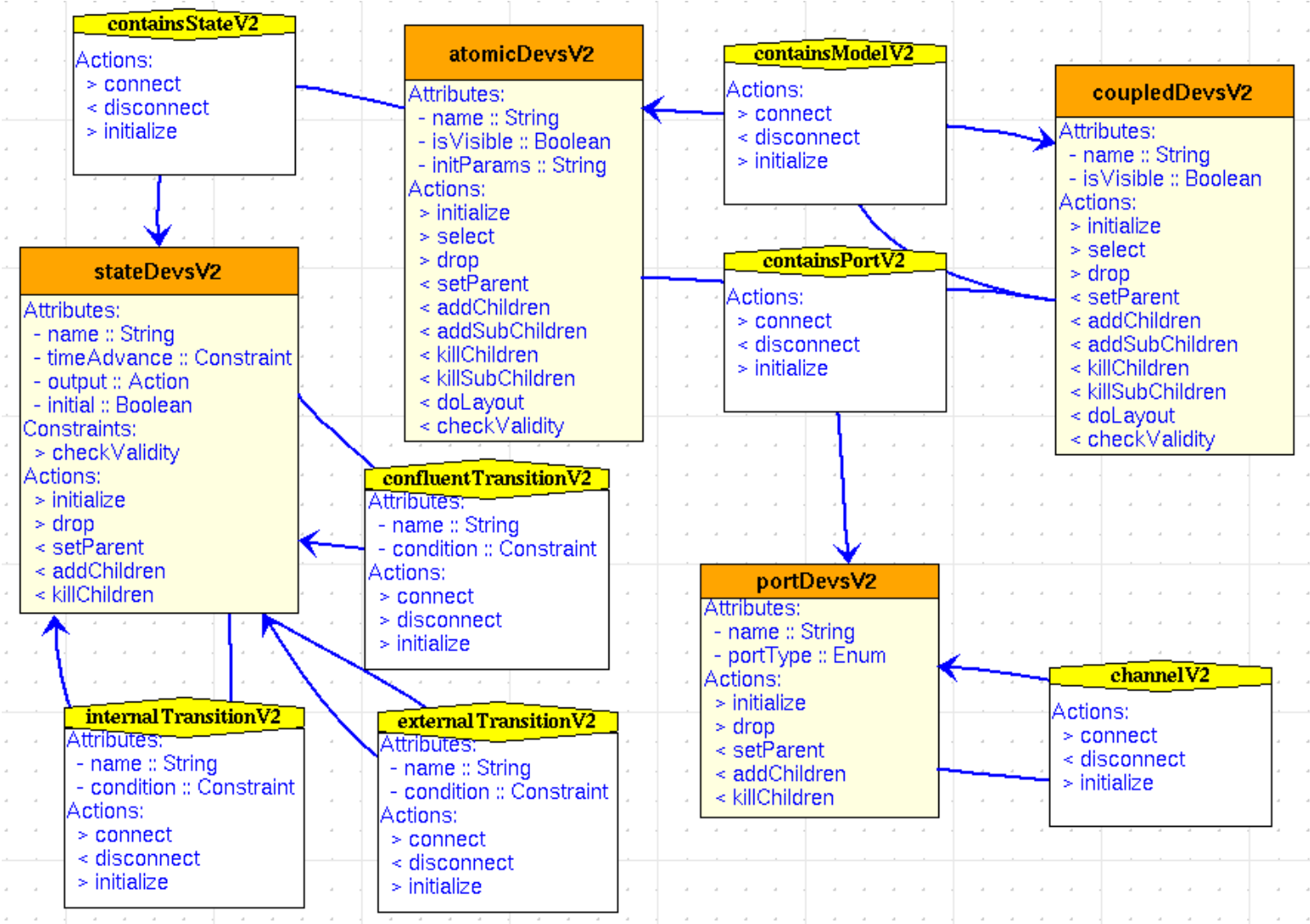
TimedTraffic Meta-Model

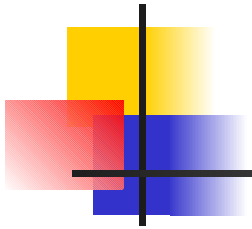


Based on the meta-model described in [2].

DEVS Meta-Model

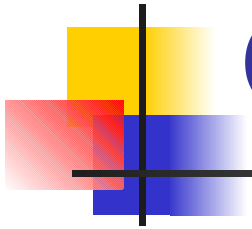


Based on the meta-model described in [3] and the work done by Denis Dube (http://moncs.cs.mcgill.ca/people/hv/teaching/MSBDesign/presentations/050324.DenisDube.pdf).



TimedTraffic to DEVS Transformation Rules

- See automatically generated document from AToM3

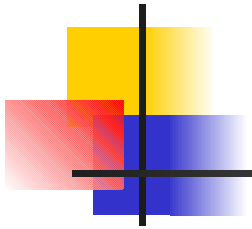


Code Generation

- Simulator in Python (PythonDEVS)

  Based on the work described in [3].

- Simulator in Java (DEVSJAVA)



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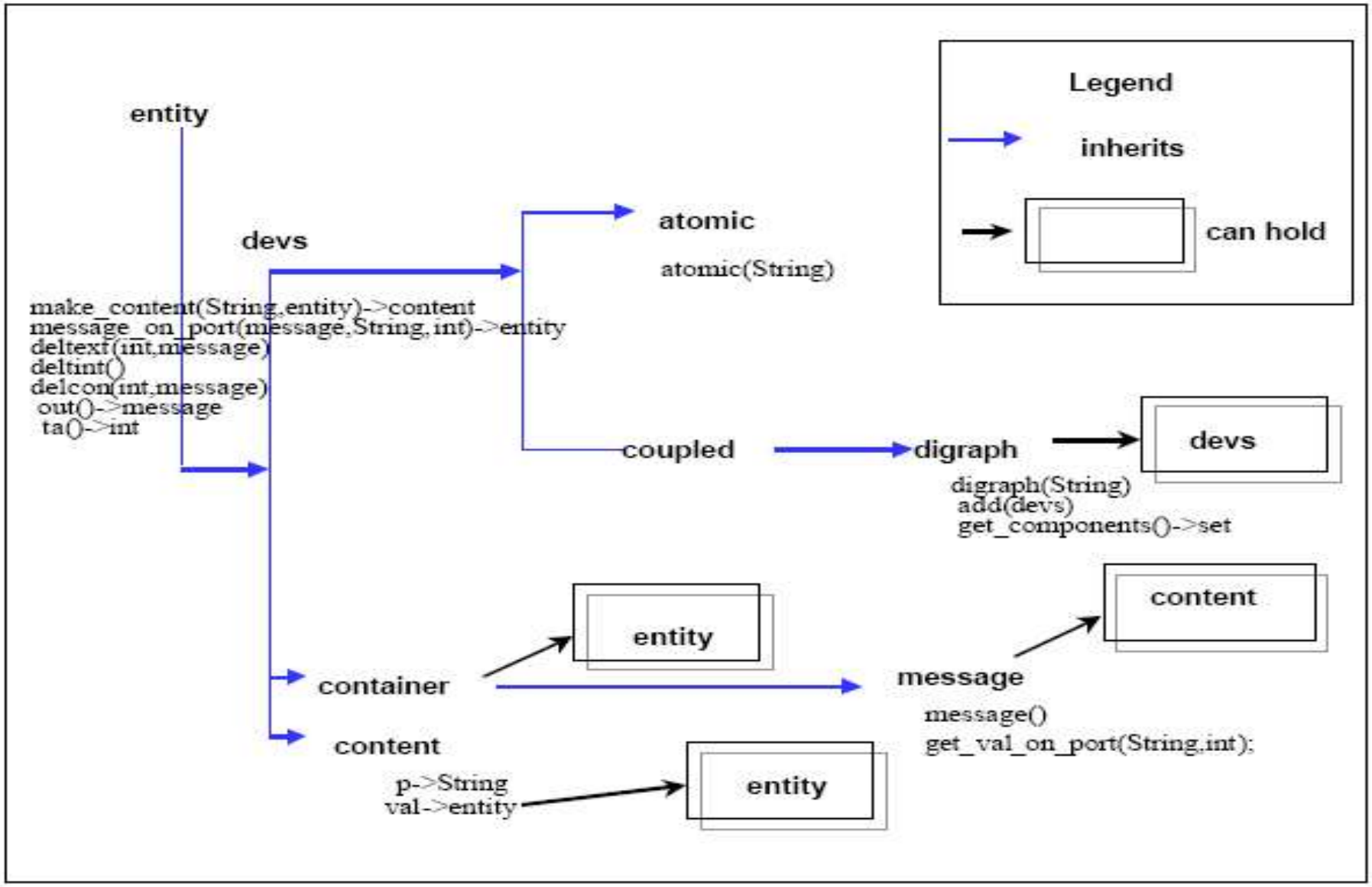
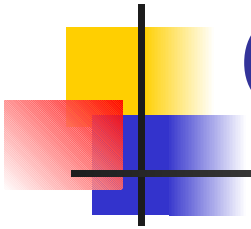
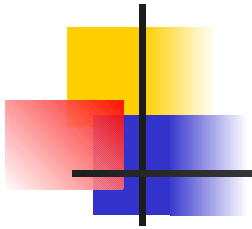
DEVSJAVA Class hierarchy of DEVS classes





Conclusion

- AToM3 is an amazing tool!
- Pure graphical translation from DEVS or other formalism to a real programming language such as Python or Java?
- Using neutral language to describe specific cases in transformation rules?



Thank you!