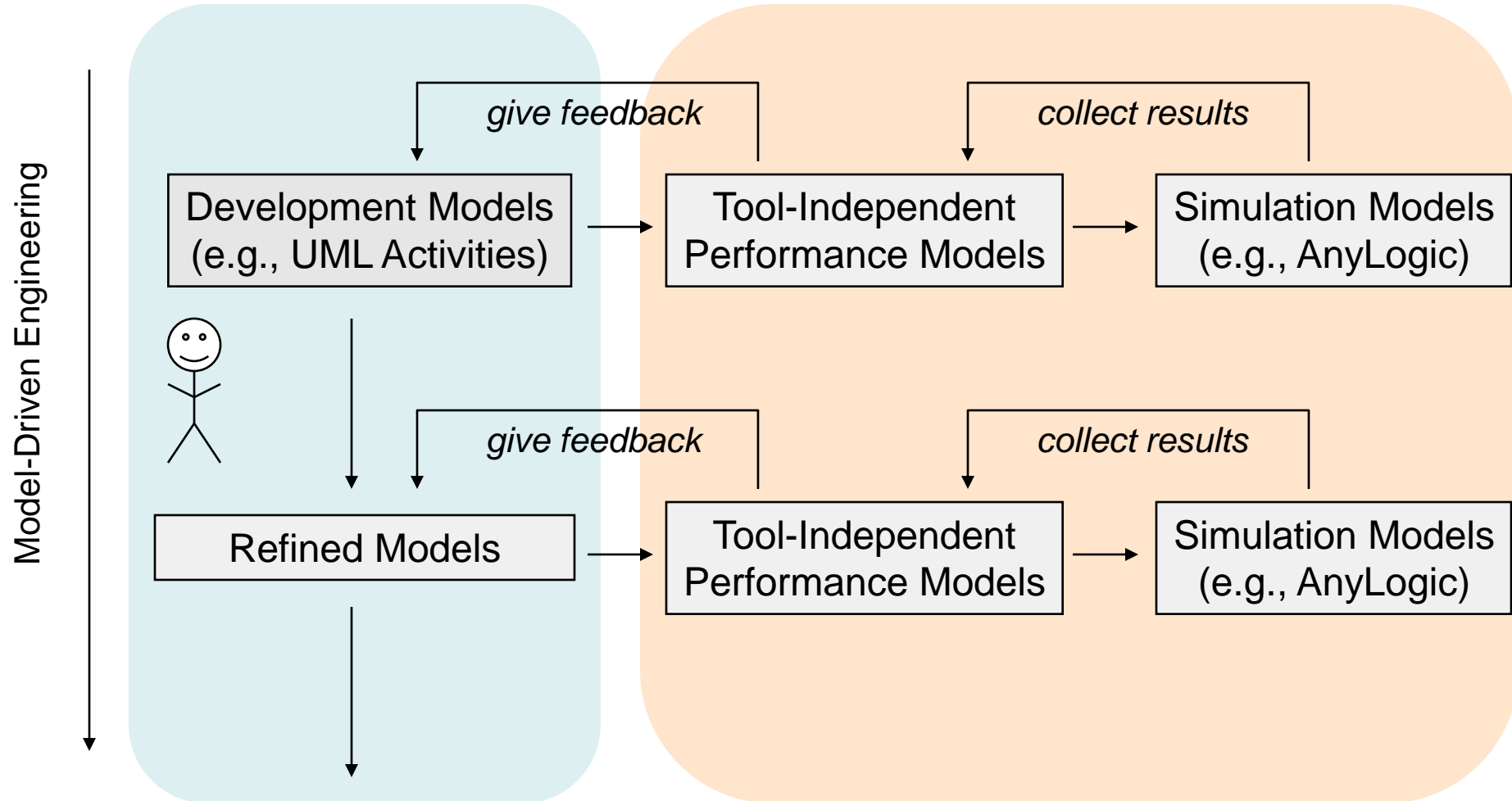


Model-Driven Performance Engineering in Complex Systems with MARTE

Mathias Fritzsche, Jendrik Johannes, Steffen Zschaler,
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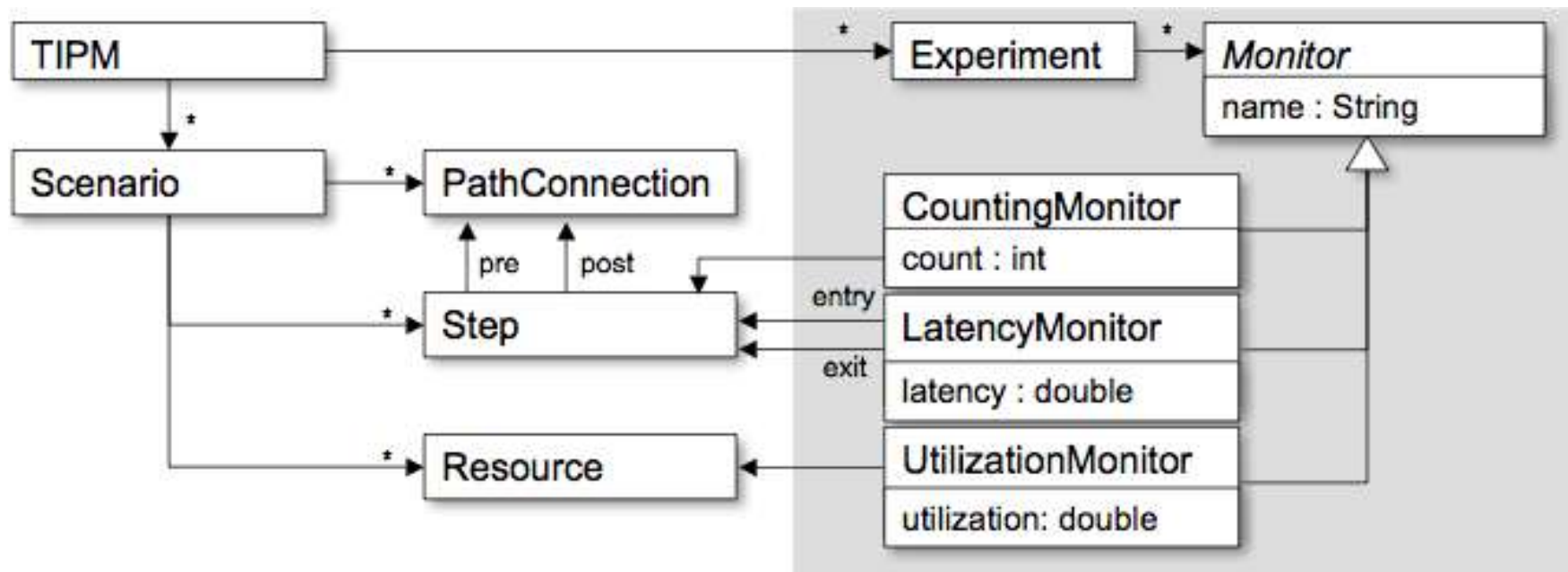
- Agenda
 - Model-Driven Performance Engineering (MDPE)
 - Applying MARTE in MDPE
 - Tool & Demo
 - Conclusion and Outlook

- Apply performance engineering at different abstraction levels
- Use MDE techniques to derive simulation models (e.g., AnyLogic) from development models (e.g., UML Activities with MARTE profile)
- Trace simulation results back to enable developers (who are not performance experts) to improve system design



*system definition
(based on CSM)*

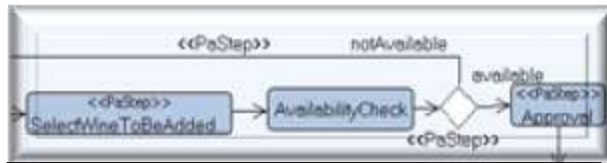
monitoring



UML Activity with MARTE

AvailabilityCheck : Action

execTime = (42, mean, ms)



execTime = (897, mean, ms)

TIPM

AvailabilityCheck : Step

processingDemand = 42

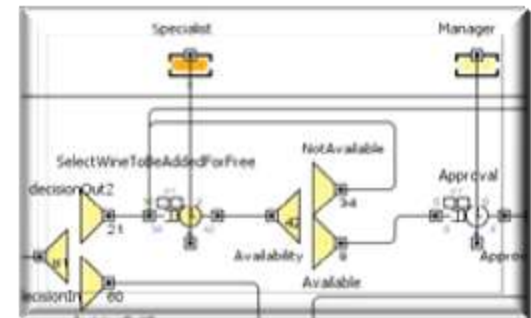
initial : Step

final : Step

latencyMonitor1:
LatencyMonitor

latency = 897

AnyLogic Simulation



- Integrated into Eclipse
 - Integrates with Eclipse-based UML Editors (here TOPCASED)
 - Developers can run simulation directly from their workbench
- Demo

- MARTE was successfully applied to annotate performance data and simulation results to UML models in an MDPE process
 - Developers can provide performance data
 - Simulation results are presented to the developers on the UML models
- Applicability will be evaluated in case-studies in MODELPLEX project
- Our work will be extended
 - Supporting more of UML and MARTE + other simulation/analysis tools
 - Further investigate MARTE's capabilities
 - Support non-UML models
 - Compare MARTE to other approach for
 - More decision support for domain experts
 - How does this combine with MARTE, how can MARTE be used here?

Questions?