Create and Play your PacMan Game with the GEMOC Studio

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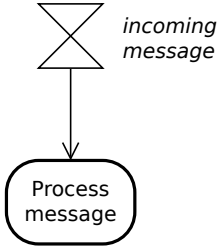
Context

- Behavioral models often need to **interact with the outside world** during their execution, eg. to process incoming domain-level event occurrences
- Adds complexity to the operational semantics of a DSL:
  - impacts content and scheduling of execution rules,
  - requires an interruption mechanism,
  - requires an interface allowing external actors to send events.



Tedious and error-prone task that must be repeated for each executable DSL

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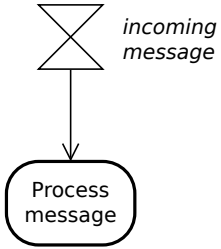

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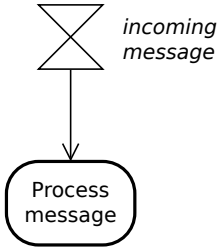

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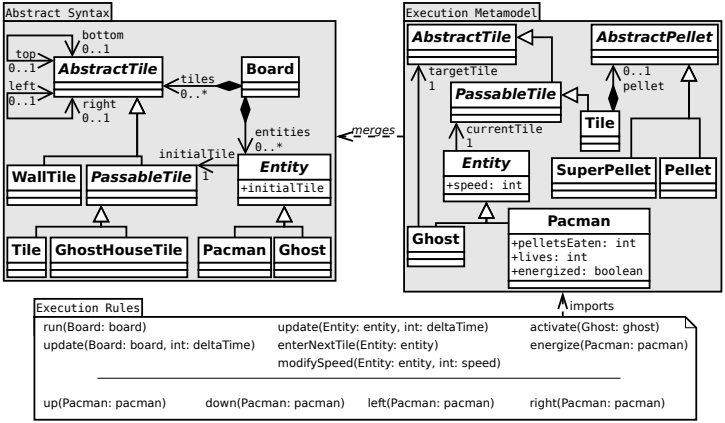
Example: The PacMan DSL



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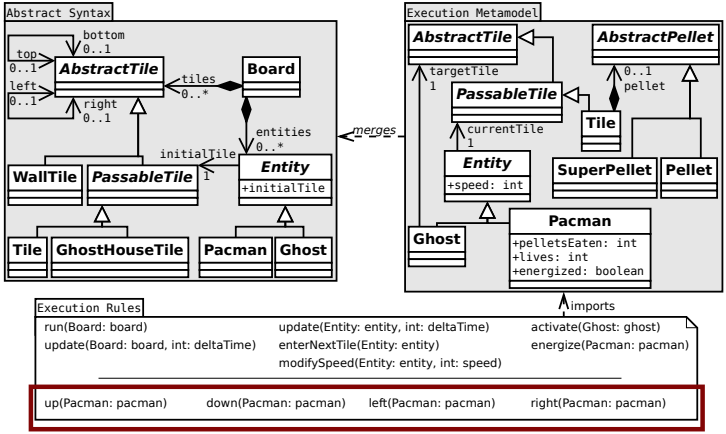

How to safely call these execution rules, while main execution loop of the game is ongoing?

Problem and Idea

How to avoid rewriting operational semantics to define **domain-specific events** that may safely **interrupt** the execution flow?

Idea

Take the tedious and repetitive part out of the hands of the language engineer by providing:

- An annotation mechanism to easily define events,
- The generation of an interface to send events at runtime,
- Generic event management reusable across DSLs.

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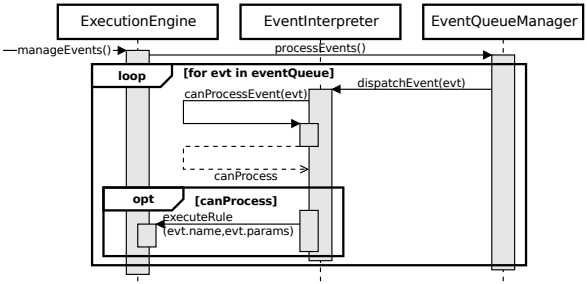
Summary of the Approach

- A generative approach to obtain a ***domain-specific*** **event language** and its interpreter from annotated execution rules,
- A ***generic*** **event queue manager**, incorporating event queuing and dispatch into the execution loop.



Event Metamodel and Interpreter Generation

- The generative approach relies on *annotated execution rules* to locate **event handlers** and **event preconditions**.
- **Event metaclasses** are generated from event handlers to populate the event metamodel.
- An **event interpreter** mapping instances of event metaclasses to event handler and precondition calls is generated.

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Demo

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Conclusion & Future Work

- Adapting semantics to event handling is difficult
- Proposed solution:
  - non-intrusive annotation of execution rules and generation of a
  - generation of an interface to inject event occurrences
  - reuse of an event queue and interruption mechanism

- **Eclipse Research Consortium GEMOC**: sustains the GEMOC studio as a research platform to experiment on the globalization of, possibly executable and heterogeneous, modeling languages
- Contributors are welcome!

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