The GEMOC Studio
Breathing Life into your Modeling Languages

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http://gemoc.org/studio

Studio for Language Engineer Experts
"Integrated frameworks and protocols providing innovative Software Language Engineering tools and methods"

Context:
Heterogeneous modeling of complex software intensive systems

Why the GEMOC Studio:
- Extensible framework to support new approaches through well defined interfaces and protocols: Execution engines, editors, tools (execution space exploration, model testing, runtime monitoring...), frontends and backends
- Community with active members from academia and industry

Research questions:
- Modular language design and implementation
- Language interfaces (structural and behavioral)
- Integration of dedicated meta-languages for specific language concerns (e.g., concurrency)
- Protocols for executable modeling (e.g., debugging, animation, run-time monitoring)
- Language composition operators (e.g., reuse/variability management, behavioral coordination)

Expected outcome:
- Scientific and technological foundations on modeling language design, implementation and coordination
- Innovative frameworks and protocols for Software Language Engineering
- A cutting edge language workbench

Studio for Language Engineers
"A Language Workbench for configuring and building the tooling of Domain Specific Languages with a strong focus on their behavior and correctness."

Why the GEMOC Studio:
- Open source EMF-based technologies
- Supports several approaches for the concrete syntax of languages (Xtext, Sirius)
- Supports several approaches for the behavioral semantics of languages (ALE, Java, MOCCML, Henshin, xMOF)
- Assistance for language definition and building (wizards, checkers)
- Assistance to define the languages behavior (Runtime Data, observable steps, Behavioral interface)
- Syntactic and semantic language reuse (modeltype, Melange, revisitor)
- Language coordination patterns

Expected outcome: implementation of a large ecosystem of collaborative, interoperable and composable modeling languages from GEMOC partners and its community

Studio for Software and System Engineers
"A Modeling Workbench for Heterogeneous Modeling and Simulation of Complex Software-Intensive Systems"

Why the GEMOC Studio:
- Homogeneous user interface and tooling across all DSLs
- State-of-the-practice model editing support (incl. Textual and graphical model edition)
- Cutting edge model execution with animation and advanced debugging features
  - Interactive execution with forward and backward stepping
  - Runtime data analysis and visualization (Multidimensional Data timeline, Variable view, Trace comprehension operators)
  - Event management and concurrency analysis (Event timeline, Call stack view)
- Execution coordination of multiple models (incl. heterogeneous behavioral models expressed in different languages) and cosimulation

Expected outcome: Prototypes, demonstrators, and pilot projects

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