

Update: The paper titled " [DEVSMML 2.0: The Language and the Stack](#) " was presented at DEVS Symposium, Spring Simulation Multiconference 2012 at Orlando, FL and the latest version of DEVSMML 2.0 is [here](#) .

DEVSMML is an acronym for DEVS Modeling Language. This work is built on the JAVAMML research done by Vladimir for DEVSMML. It was pursued independently by Jose Luis Martin that resulted in DEVSMML with small behavioral support. The present work aims to integrate these two approaches and provide complete behavioral support to DEVSMML by implementing the proposed universal Atomic and Coupled DEVS schemas at Dunip. We look forward towards standardization of these schemas with DEVS Standardization committee so that models across the web can participate in Dynamic Modeling & Simulation over Net-centric web services.

DEVSMML is a novel way of writing DEVS models in XML language. This DEVSMML is built on JAVAMML, which is infact, XML implementation of JAVA. The current development effort of DEVSMML takes its power from the underlying JAVAMML(earlier work by Vladimir) that is needed to specify the behavior of atomic models. We now have the capability to write DEVS models in DEVSMML, both atomic and coupled through the developed DTDs. The DEVSMML models are tranformable back'n forth to java and to DEVSMML. It is an attempt to provide interoperability between various models and create dynamic scenarios. The key concept is shown in the figure below:

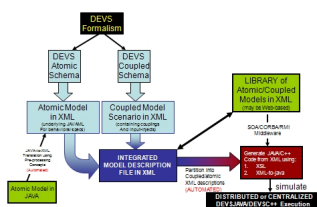


Figure 1: Basic concept with respect to Automation of DEVS models using DEVSMML

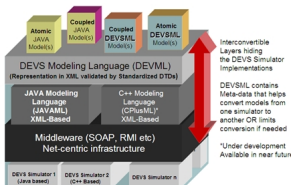
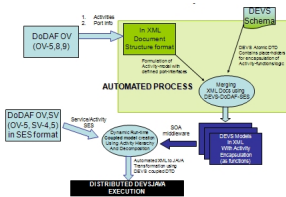


Figure 2: DEVS Transparency &Net-centric Model Interoperability using DEVSMML Layered Architecture

The concept shown above is based on DEVSMML Layered architecture that promotes DEVS transparency. The basic concept is a part in overall web enabled infrastructure where such atomic models are dynamically coupled and simulated over SOA. Development is underway to make the DTDs SOA capable. The figure below shows various other acronyms like DoDAF, which is Department of Defense Architecture Framework. The present work aims to empower DoDAF with a repository of 'interoperable' models defined under DEVS Formalism. More details on the approach can be found in references section.



**Figure 3:** Process Methodology showing how automated modeling using XML can provide M&S to DoDAF documents

Finally this work is a part of the overall DEVS-DoDAF Testing & Evaluation Strategy where M&S is integrated enough to be a part of design process.

The initial concept (done in 2006) is available at [DEVSMML-Automation using XML for DEVS-Based Testing and Evaluation](#)

**Related References**

- C.9: Bernard P. Zeigler, Saurabh Mittal, Xiaolin Hu, [Towards a Formal Standard for Interoperability in M&S/Systems of Systems Engineering](#), Critical Issues in C4I, AFCEA-George Mason University Symposium, May 2008
- C.8: JL Risco-Martin, Saurabh Mittal, et.al, [From UML Statecharts to DEVS State Machines using XML](#), Multi-paradigm Modeling, IEEE/ACM International Conference on Model-Driven Engineering Languages and Systems, Nashville September 2007, among Best papers invited to Transactions of SCS.
- C.7: Saurabh Mittal, JL Risco Martin, Bernard P. Zeigler, [DEVS-Based Web Services for Net-centric T&E](#), Summer Computer Simulation Conference (SCSC'07), San Diego, July 2007
- C.6: Saurabh Mittal, JL Risco Martin, Bernard P. Zeigler, [DEVSMML: Automating DEVS Execution over SOA Towards Transparent Simulators](#), Special Session on DEVS Collaborative Execution and Systems Modeling over SOA, DEVS Integrative M&S Symposium DEVS' 07, Spring Simulation Multi-Conference, March 2007
- C.5: JL Risco-Martin, Saurabh Mittal, et.al, [A W3C XML Schema for DEVS Scenarios](#),

DEVS Integrative M&S Symposium DEVS' 07, Spring Simulation Multi-Conference, March 2007

- C.4: Saurabh Mittal, Amit Mitra, Amar Gupta, Bernard P. Zeigler, [Strengthening OV-6a Semantics with Rule-Based Meta-models in DEVS/DoDAF Based Life-cycle Architecture Development](#)

IEEE-Information Reuse and Integration (IRI06) Conference, Special section on DoDAF, Hawaii September 2006

- C.3: Bernard P. Zeigler, Saurabh Mittal, [Enhancing DoDAF with a DEVS-based System Lifecycle Development Process](#), In Proceedings of IEEE International Conference on Systems, Man and Cybernetics, SMC05, Hawaii 2005