

## March 7 Software Performance Research Overview

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Carleton University, Minto Center (Engineering) Boardroom, Minto 2014

12.00 - 5.00 pm.

Wednesday March 7, 2007.

**Topic:** Specifying and Evaluating Software Performance in UML and URN  
(the PUMA strategic project)

**Summary:** Performance is an elusive property of software which sells some products and destroys others, and can be quite difficult to analyze before full deployment. To make analysis faster and cheaper, new concepts in UML allow designs to be annotated for performance behaviour. Our PUMA research (Performance by Unified Model analysis) creates models automatically and rapidly from annotated specifications and supports analysis. PUMA unifies all types of performance models with all UML tools and modelling styles and other design tools like UCM (Use Case Maps, part of the URN standard). Other research supports analysis of composed models (MDA and component technology) and design using aspects, for instance for security features.

PUMA is an NSERC strategic grant, joint between Carleton (Dorina Petriu, Murray Woodside) and Univ. of Ottawa (Daniel Amyot)

The new methods will be reviewed in this afternoon presentation. Demonstrations of model extraction from specifications in UML and UCM will be available.

### **Schedule:**

- 12.00 - 1.00 Lunch
- 1.00 UML profiles for performance annotations  
Murray Woodside and Dorina Petriu (the presenters participated in writing the original "SPT" profile and are working in its upgrade to "MARTE").
- 1.30 PUMA architecture and capabilities  
Petriu and Woodside.
- 1.50 Model creation, with an example of a web-based system  
Dorin Petriu, PhD student.
- 2.20 Model exploitation: assisted model analysis to find and eliminate bottlenecks  
Jing Xu, PhD student.
- 2.40 Model composition for component-based development and MDA  
Xiuping Wu, PhD student.
- 3.00 Break
- 3.30 Use Case Maps as a source of models, with an overview of URN, the User Requirements Notation standard at ITU.  
Daniel Amyot and his team from U of O.
- 4.00 Aspect composition and performance analysis of security features, the team.
- 4.30 Discussion to wrap up, led by Bran Selic of Rational Software
- 5.00 Close

The Minto Boardroom is next to the Minto Center entrance, which is opposite the O-train station on University Road. A campus map is found at <http://www.carleton.ca/cu/campus/>  
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