Emerging Trends AND New Techniques FOR Engineering Modelling AND Simulation

DR. TOM LEE | Chief Evangelist, Maplesoft

Several key industries including automotive and aerospace sectors are questioning the viability of the traditional engineering modeling and simulation toolchain for emerging design challenges. Many are concluding that meeting these challenges require a rethinking of how we create and interact with engineering models. This seminar presents a case for a new approach that exploits some of the well-known advantages of symbolic computation ina way that accelerates the development of complex dynamic models and produces models of higher fidelity and real time performance.

As Chief Evangelist at Maplesoft, DR. TOM LEE is the principal external spokesperson for the company. He holds a PhD in Mechanical Engineering (Automation and Control) from the University of Waterloo. He has been with Maplesoft since 1989.

The software context for this seminar will be the Maplesoft product line. Best known for its math product Maple, Maplesoft has recently emerged as a key player in the engineering modeling software with the release of the milestone product MapleSim, a new modeling environment for high performance, multi-domain modeling of physical systems. MapleSim supports the interactive, drag and drop approach to system modeling and allows for rapid development of a wide range of models. Furthermore, through the application of Maple's symbolic computation algorithms, MapleSim automatically generates and provides access to all of the model equations of the system allowing for deeper exploration and greater flexibility in parameter studies. These symbolic tools also simplify model equations increasing simulation speeds by as much as an order of magnitude over traditional signal-flow based simulations.

This symbolic approach has already earned keen interest from automotive OEMs, and a broad range of academic engineering groups. Researchers project significant reduction in the effort required to develop model equations and potential for advancement in the analytical capabilities and are actively exploring its potential to become the new software framework for modeling research. Educators have also expressed optimism as it provides an intuitive environment to define and simulate models without sacrificing any of the rigor in the course as the system provides full access to the underlying model equations.

This seminar will provide an overview of the product MapleSim and its conceptual foundation. Several demonstration examples will illustrate its functionality and potential. An informal Q & A session will discuss implications in research and education.

Thursday, March 12, 2009

4:00 P.M. | ROOM BA 111

(LOCATED IN THE BRICKER ACADEMIC BUILDING)

Wilfrid Laurier University, 75 University Avenue West, Waterloo

This event is hosted by the CSASM Seminar Series
Website: www.mmcs.wlu.ca/csasm | Email: csasm@wlu.ca

CSASM Seminar Series Co-ordinators: Ilias Kotsireas and Roderick Melnik
CSASM Publicity: Maria Gallego and Shohini Ghose

Seminar Series Sponsors:

STEP — SCIENCE AND TECHNOLOGY ENDOWMENT PROGRAM

SHARCNET™

LAURIER Faculty of Science

SCIE-01-0641-08-324 Lee 25.02.09