

## 2013 年度 第2回 SICE プラントモデリング研究会

日時 : 2013 年 10 月 2 日、10:00-12:00

場所 : 秋葉原富士ソフトビル 6F, セミナー3( [会場アクセス](#) )

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研究 内容 :

米国のアルゴンヌ国立研究所の Dr. Larry Michaels が来日することになり、下記テーマに関する研究会を開催することになりました。

参加希望者 : JCUG メンバー、SICE 会員、プラントモデリング部会委員参加を希望される方は、大島までご連絡ください。[ [akira\\_ohata@mail.toyota.co.jp](mailto:akira_ohata@mail.toyota.co.jp) ] (メールアドレスが変わりました。)

タイトル : Plug&Play Software Architecture for System Integration and Simulation

講 師: Dr. Larry Michaels

[ 概 要 ] 米国アルゴンヌ国立研究所 (Argonne National Laboratory) が GM と開発した自動車シミュレーション環境に関する紹介とデモ。

Model Based System Engineering (MBSE) increases productivity by enforcing compatibility between systems (via reuse of standardized models), simplifying the design process (using models of recurring design patterns in the application domain), and promoting communication between individuals and teams working on the system (via a standardization of the terminology and the *best practices* used in the application domain). The discussion will focus on how Autonomie can be used to support MBSE. Autonomie is a Plug-and-Play Powertrain and Vehicle Model Architecture and Development Environment used to support the rapid evaluation of new component and powertrain/propulsion technologies to improve fuel consumption through virtual design and analysis in a math-based simulation environment.

During the presentation, the Autonomie Plug&Play architecture will be described, specifically, how the software greatly facilitates the construction of a component, propulsion system or vehicle model by automatically connecting the components and subsystems that comprise it. Several examples of diverse applications using different levels of model fidelity will then be introduced. Applications related to energy consumption, performance and cost of advanced vehicles will be described using longitudinal models. Then, using high fidelity plant models, a detailed example and demonstration will be provided for a virtual Hardware-in-the-Loop simulation capability, which creates a framework for the development of ECU software by providing a platform upon which embedded control algorithms may be developed, tested, updated, and validated. A key element of this technique is the software-in-the-loop (SIL) capability, which permits compiled production controller code to be incorporated into the simulation environment, thus allowing the inclusion of algorithm functionality for which no simulation models exist.

The software tool and methodology described in this presentation permits analysis and development to be performed early in the product design cycle, prior to the availability of vehicle and control system hardware.

※AUTONOMIE に関しては [URL](#) を参照ください。 アルゴンヌ国立研究所に関しては [URL](#) を参照ください。

[ その他 ]

午後、Dr. Larry Michaels は自動車技術会の SICE&JSAE 合同研究会の自動車制御とモデル研究会に参加するため、技術交流会はありません。