2nd Workshop on

Analytic Virtual Integration of Cyber-Physical Systems

AVICPS '11 is held in conjunction with the
32nd IEEE Real-Time Systems Symposium (RTSS '11)
November 29 - December 2, Vienna, Austria

www.analyticintegration.org

The goal of this workshop is to explore architecture design patterns, tools and the theoretical analytical foundations for creating common system-wide composition models where key properties can be studied and guarantees provided before the start of actual development. Of particular interest are the case studies on the challenges of expressing the properties of the final product in terms of component properties and the architecture that governs their interactions. Both solutions and/or open problems are welcome. The outcome of the workshop is to better define the areas of *analytical models* where distributed components are "*virtually integrated*" before physical integration.

Looking ahead, the success of next generation Cyber-Physical Systems demand system-wide architecture design patterns and supporting technologies that can integrate legacy components, COTS components and co-designed new components in such a way that properties such as real-time, safety, fault tolerance and security can be analyzed and predicted before the systems are physically built. Moreover, it is necessary to have a system-wide composition model that integrates the different analyses into a single consistent semantic framework to avoid conflicting results. Studies in, but not limited too, avionics, medical devices, automotive electronics, industrial automation, energy systems are welcome.

This workshop focuses on analytical system composition technologies that include:

1) Composition technologies to automatically propagate the impact of modifications in one modeling domain into others.
2) Assumption resolution between modeling abstractions and constructs of different analysis domains.
3) Analytical techniques that leverage architecture abstractions to address scalability.
4) System-level schedulability optimization technologies that integrate constraints imposed by other analytic domains (E.g: security, mechanical stress, heat dissipation, etc.)
5) A quantitative and early analysis of the system architecture performance in an end-to-end fashion
6) Fault tolerance technologies and reliability analysis techniques that integrate the different natures of physical, hardware and software faults in a common, consistent framework.
7) Safety analysis such as model checking for mixed criticality CPS applications, for example, flight management systems and/or safe medical devices plug and play (MDPnP)
8) Security protocol development and verification techniques for CPS applications.
9) Models for describing/quantifying the environments where such systems must operate.

PAPER SUBMISSION

Submissions should be no more than 8 pages in two-column, single-spaced, 10 pt format. For more details please see http://www.analyticintegration.org

IMPORTANT DATES

Submission deadline:	September 15, 2011
Notification:	October 25, 2011
Camera-ready version:	November 3, 2011
Workshop:	November 30, 2011

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