INCOSE | Crossroads of America

Chapter Meeting

6:00 PM, Tuesday April 14, 2020   www.incose-coa.org

Program:

Integrating SysML and Agent-based Simulation for Rapid Architecture Evaluation

In the face of the changing operational requirements and demands for new capabilities, it often is necessary for systems architects to make substantial changes in a system's architecture. However, traditional systems engineering processes, where architects finalized architecture during the initial concept development stages and engineers develop system simulations during later lifecycle phases, do not support a rapid architecture evolution. In this work, we propose a model-based systems engineering (MBSE) process to facilitate the rapid evaluation of changes in systems architecture and/or design artifacts for complex systems. This process specifies the minimum set of information that the engineers need to include in systems architecture using SysML diagrams with traceability between the diagrams and the agent-based simulation (ABS) models of a complex system. By integrating SysML and ABS models early in the development lifecycle, teams can readily trace any future evolution of systems architecture represented by the SysML diagrams to changes in an ABS model and hence can rapidly evaluate the impact of architectural evolution. We demonstrate the application of the proposed process using a NASA-sponsored case study for developing *ab initio* architectures of the National Airspace System (NAS) where we achieved significant time savings in developing an ABS model of evolving NAS architecture based on SysML-ABS integration.

Speaker: Apoorv Maheshwari

Apoorv Maheshwari is a PhD student in the area of Aerospace Systems at Purdue's School of Aeronautics and Astronautics. Apoorv holds a B.Tech. and MS in Aerospace Engineering and a joint MS in Computer Science and Statistics. He is currently a member of Purdue's Center for Integrated Systems in Aerospace and Product Lifecycle Management Center. His research interests include developing methodologies to model complex systems, such as, air transportation systems, integration of model-based systems engineering with product lifecycle management, and the application of machine learning approaches to novel aviation applications.

Meeting Location / Host Site (see included directions and map to host site and parking)

No physical site this month. Please join via GlobalMeet.

Satellite Site

No physical satellite site this month

Remote Access: Please join us remotely:

Web Address: https://incose.pgimeet.com/INCOSE_GMTwo
Access Number: 1-719-457-6209
Guest Passcode: 519 731 6920
Dial In Numbers *(if you don't use Computer VOIP)***:**
USA : 1-605-475-5604
USA : 1-719-457-6209

Meeting RSVP

Not required!

Event Schedule

5:00 – 6:00	CoA Board Meeting
6:00 – 6:15	Break
6:16 – 6:30	CoA Chapter Business Meeting (all welcome)
6:30 – 7:30	Program
7:31 PM	Adjourn

Business Meeting:

- Call to Order
- Announcements
- Treasurer's Report
- Old Business
- New Business