

# CALL FOR PAPERS

## 2018 M&S and Complexity in Intelligent, Adaptive and Autonomous Systems Symposium (MSCIAAS'18)

### Spring Simulation Multi-Conference 2018 Baltimore, Maryland

April 15, 2018 – April 18, 2018

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Heterogeneous systems are the norm today. A system deployed in a netcentric environment eventually becomes a part of a system of systems (SoS). This makes design, analysis and testing for the system at-hand a complex endeavor in itself. Testing in isolation is not the same as a real-system operation, since the system's behavior is also determined by the input, which evolves from the environment. This exact factor is difficult to predict, due to an ever-increasing level of autonomy. Advanced Modeling and Simulation (M&S) frameworks are required in order to facilitate SoS design, development, testing, and integration. In more particular, these frameworks have to provide methods to deal with intelligent, emergent, and adaptive behavior as well as autonomy. As humans become an integral part of such SoSs, these systems become complex adaptive systems.

The subject of emergent behavior and M&S of emergent behaviors takes the center-stage in such systems as it is unknown how a particular system responds in the face of emergent behavior arising out of interactions with other systems. Intelligent behavior is also defined as an emergent property in some complex systems. Consequently, systems that respond and adapt to such behaviors may be

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called intelligent systems as well.

Complexity is a multi-level phenomenon that exists at structural, behavioral and knowledge levels in such SoSs. Emergent behavior is an outcome of this complexity. This track aims to focus on M&S of these aspects of complex SoS engineering and aims to bring researchers, developers and industry practitioners working in the areas of complex, adaptive and autonomous SoS engineering that may incorporate human as an integral part of SoS operations.

## Topics

The cutting edge research is invited in the following topical areas but not limited to employing M&S for:

- Complexity in Structure: network, hierarchical, small-world, flat, etc.
- Complexity in Behavior: Micro and macro behaviors, local and global behaviors, teleologic and epistemological behaviors
- Complexity in Knowledge: ontology design, ontology-driven modeling, ontology-evaluation, ontology transformation, etc.
- Complexity in Human-in-the-loop: artificial agents, cognitive agents, multi-agents, man-in-loop, human-computer-interaction
- Complexity in intelligence-based systems: Situated behavior, knowledge-based behavior, mnemonic behavior, resource-constrained systems, energy-aware systems
- Complexity in adaptation and autonomy
- Complexity in architecture: Flat, full-mesh, hierarchical, adaptive, swarm, transformative
- Complexity in awareness: Self-\* (organization, explanation, configuration)
- Complexity in interactions: collaboration, negotiation, greedy, rule-based, etc.
- Complexity in Live, Virtual and Constructive environment
- Complexity in Artificial Systems, Social systems, techno-economic-social systems
- Complexity in Model Engineering of complex SoS
- Complexity in Model Specification using modeling languages and architecture frameworks such as UML, PetriNets, SysML, DoDAF, MoDAF, etc.
- Complexity in Simulation environment engineering: distributed simulation, parallel simulation, cloud simulation, netcentric parallel distributed environments
- Complexity in Testing and Evaluation tools for SoS engineering
- Complexity in Heterogeneity: Hardware/Software Co-design, Hardware in the Loop, Cyber Physical Systems, the Internet of Things
- Metrics for Complexity design and evaluation
- Verification, validation and accreditation of Complexity in SoS
- Application of Complexity aspects in domain engineering: Financial, Power, Robotics, Swarm, Economic, Policy, etc.
- SoS Failure due to Complexity

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## Submission Guidelines

Original, high-quality technical papers are solicited for review, possible presentation and subsequent publication in the conference proceedings. For further instructions, please refer to the Submission Instructions in the SCS Conference Proceedings Management System web site. Contributed papers are 12 pages long with single column format. They will be peer reviewed and – if accepted and presented at the conference - possibly submitted to the ACM and IEEE Digital Library. Papers must not have appeared before (or be pending) in a journal or conference with published proceedings, nor may they be under review or submitted to another forum during SpringSim'18 review process. At least one author of an accepted paper must register for the symposium and must present the paper at the symposium. For author guidelines on how to submit a paper please see <http://scs.org/authorskit/>.

It is also possible to submit to the Work in Progress (WIP) or Posters tracks; more details will be announced on the website (<http://www.scs.org/springsim>). A submission may be rejected for paper presentation, but it may be suggested for submission and presentation as a work in progress or poster. At least one author must register and present the WIP/poster at the symposium.

## Symposia or Workshops Proposition

A call for Symposia or Workshops is open (see important dates), to raise visibility on topics of focused interest in a particular scientific or applications area. Proposals for special Symposia or Workshops should be submitted by e-mail to [smittal@mitre.org](mailto:smittal@mitre.org).

## Important Dates

**Abstract submission:** Sept 15, 2017

**Workshop Submission:** Sept 29, 2017

**Full Paper submission:** Nov 23, 2017

**Notification of Acceptance:** Jan 12, 2018

**Camera-ready Paper:** Feb 23, 2018

## Contact

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