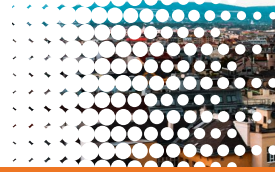




# IEEE ISSE 2022

8<sup>th</sup> IEEE International Symposium on Systems Engineering  
Vienna, Austria | October 24-26, 2022



## CALL FOR PAPERS

### GENERAL CHAIR

**Bob Rassa**  
Raytheon (Retired), USA

### TECHNICAL PROGRAM CHAIR

**Paolo Carbone**  
University of Perugia, Italy

**Rob Vingerhoeds**  
ISAE-SUPAERO, France

**Chris Zhang**  
University of Saskatchewan,  
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**Haifeng Zhu**  
Smart Machinery Laboratory, USA

**Vania Estrela**  
Fluminense Federal University  
(UFF), Brazil

### IMPORTANT DATES

#### JUNE 25, 2022

Abstract (Industry papers)  
Manuscript (Academic/  
Research papers) Submittal  
Special Session Proposals  
Deadline

#### JULY 15, 2022

Acceptance Notification

#### JULY 30, 2022

Final Paper Submission

This symposium seeks to create an interactive forum for the advancement of the practice of systems engineering across the multiple disciplines and specialty areas associated with the engineering of complex systems. The symposium will provide a venue for systems engineering practitioners, managers, researchers, and educators to exchange innovative concepts, ideas, applications and lessons learned addressing:

- » Applications-oriented topics on large-scale systems and systems-of-systems in topics noted below
- » Systems engineering, education, standards, processes and methodologies for the system-of systems environment
- » Research opportunities and results relating to systems-of-systems

### TOPICS

- » System Architecture and Architectural Frameworks
- » Engineering Systems-of-Systems
- » Risk Management of Complex Systems Environment
- » Systems Reliability
- » Engineering Processes for Complex Systems - Includes Process
- » Improvement and Quality Management
- » Product Lifecycle Management Processes and Tools for System-of-Systems - Includes Configuration Management
- » (CM), Requirements Management, Data Management Strategy
- » (CMS) and Integrated Logistics Support
- » Service Oriented Architectures
- » Cyber Security Issues and Approaches for Complex Systems
- » Enterprise Systems Engineering
- » Modeling and Simulation
- » Agile Development Methods of System-of-Systems
- » Model-Based Systems Engineering
- » Systems Verification and Validation
- » Systems Engineering Competency, Education and Training
- » Program/Project Management for Complex Systems
- » "Systems Thinking" Benefits
- » Technology Transfer Between Academia and Industry
- » Societal and Political Impacts of Systems and Systems Design
- » Diagnostics, Prognostics, and Enterprise Health Management
- » Research in Systems Engineering
- » Software Systems Engineering
- » System-Level Design
- » HW/SW Co-Design
- » Virtual Prototyping

### SYSTEMS CONSIDERATIONS ABOUT

- » Autonomous Systems
- » Energy Management and Sustainability, Including Renewable Energy
- » Space and Communications Systems
- » Medical Systems
- » Transportation Systems
- » Gaming and Entertainment Systems
- » Sensors Integration and Application for a Net-Centric Environment
- » Disaster Response
- » Global Earth Observation
- » Large-Scale Systems Integration (in any application area)



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## SPECIAL SESSIONS

### Reliability, Availability, Maintainability, and Safety (RAMS) in Systems Engineering : new perspectives for research and industry

LORENZO CIANI, UNIVERSITY OF FLORENCE, ITALY

Nowadays in many contexts it is mandatory to fulfill performance of Testing and Diagnostics, Reliability, Maintainability, Safety and Risk assessment. Such tasks play a fundamental role in different fields of application (energy, transportation, information and communication technology, logistics, etc.) and are considered as fundamental in high-tech industry and plants. This Special Session represents an interesting opportunity for engineers and researchers who work in this area to meet and discuss about live issues. In particular, useful and beneficial discussion can be promoted with the aim to provide an increasing of knowledge and an easier diffusion of the most recent developments.

**Topics:** Prospective authors can provide original contributions in this topic which can cover, but not only, the following aspects:

- Condition monitoring and maintenance of industrial process, plants and complex systems
- Fault detection and diagnosis in Systems Engineering
- Evaluation of Reliability, Availability, Maintainability and Safety (RAMS), Risk assessment and management for Systems Engineering
- Impact of RAMS requirements in systems application devoted to Life and Society, environment and new energy sources
- Testing and Diagnostics (Destructive and Non-destructive Testing, Vibration monitoring, Built-in Test Equipment and Automatic Test Equipment, etc.) in the design of complex systems

### Theoretical Foundations of System Engineering (THEFOSE)

OMAR HAMMAMI, ENSTA PARISTECH, FRANCE

System engineering has experienced multiple successes over the years in various industrial projects with a strong emphasis in defense and aerospace. Recently, system engineering has gained several contributions from theory however the field still lacks a strong theoretical foundation. This request for more theoretical foundations come from both academia and industry in order to make the best of system engineering practices and experience in increasingly multidisciplinary projects. Several research topics need to be addressed such as formal definitions of system engineering terms and concepts, systems semantics, complexity theory of multidisciplinary systems, formal analysis of system engineering processes and standards but also all theoretical computer science impacts on languages (e.g. SysML) and tools used by system engineers. This session contributors will also provide papers discussing the integration of quantitative methods into MBSE methods and processes. Examples of quantitative methods include formal methods, value-driven design, petri-nets, design space optimization, etc. This session will also accept papers on the integration of the quantitative methods into SysML and its variants. Finally, the session will also call for papers proposing new research directions and tutorial papers in the theoretical foundations of system engineering.

The special session's organizer is Omar Hammami from ENSTA ParisTech which is located at 828, Bvd des Maréchaux 91762 Palaiseau cedex FRANCE. If you have any questions please contact him at [hammami@ensta.fr](mailto:hammami@ensta.fr).

Submission procedure Research and application papers: These are long manuscripts addressing novel ideas and theoretical issues. For this category, authors should submit either the full manuscript (up to 8 pages in length) or, alternatively, an extended abstract of at least four (4) pages. A clear statement of contribution is required. The papers should also include an introduction, background, theory, results, and validation. All papers and abstracts should be submitted electronically to the EDAS IEEE ISSE 2022 submission portal at <http://edas.info/N25708>.

