



IFAC 2017 World Congress, Toulouse, France

The 20th World Congress of the International Federation of Automatic Control, 9-14 July 2017

Open invited track:

Title : Open issues and Trends for Model Based Systems -and System of Systems- Engineering

IFAC Technical Committee for evaluation: TC 5.2 "Manufacturing Modelling for Management and Control"

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Abstract. Systems Engineering (SE) is an engineering discipline whose responsibility is creating and executing an interdisciplinary process to ensure that the customer and stakeholder's needs are satisfied in a high quality, trustworthy, cost efficient and schedule compliant manner throughout a system's entire life cycle (INCOSE 2015). Key characteristics of Systems Engineering processes are that they are collaborative, iterative, model-based. These processes may concern (or be adapted to) the design of systems with various levels of complexity including Systems of Systems (SoS). It is then called SoSE. SE and SoSE processes, methods and tools are either overlapped or interfaced with other domains such as project management or dependability.

A current trend in SE is to develop Model-Based approaches representing and highlighting how requested stakeholders' expectations and requested systems' values are taken into consideration, by means of operational, functional, logical, physical... "views". Model Based Systems Engineering (MBSE) enables designers to define and to manipulate various kinds of system models e.g. for analyzing system architecture or simulating the system behavior with interrelated models in order to verify that the requirements are met (INCOSE 2007).

The aim of this open invited track is to gather international state-of-the-art research results and case studies, and to explore new Systems Engineering and System of Systems Engineering directions and emerging trends. We invite authors to submit high quality contributions describing significant, original, and unpublished results.

The topics of interest include, but are not limited to:

- Model-Based Systems Engineering (MBSE), Model-Based System of Systems Engineering (MBSOSE)
- Requirements authoring and Verification: passing from Stakeholders' requirements to System requirements in MBSE or MBSOSE context
- From Stakeholders' expected values to Systems Values: how to evaluate?
- Architecting Systems to Address Multiple Stakeholder Values
- Model-Based Safety Assessment for SE
- Non Functional properties in Architecting and Design processes: issues on native Resilient, Robust, Interoperable, Safe and Maintainable Systems
- Product lines engineering (product family design) based on SE principles
- Early verification and early validation considering Value notion
- From system design to system realization: impact on MNSE to Integration, Verification, Transition and Validation (IVTV) plan generation and management in a Model Based System Realization context
- Early virtual IVTV. Transforming Virtual Model to Reality.
- Integration of human factors in SE
- Effective Decision Making for SE, applied to architecture evaluation and optimization and to project management
- Leveraging collaboration and interoperability to better integrate and validate complex systems
- A continuity of tools in system life cycle: impact or dependence between MBSE equipped approaches and PLM
- Essential systems thinking principles for systems and system of systems engineering
- Considering new methodologies and technologies: internet of things, user experience design ...

Submission shall respect the normal procedure: <https://www.ifac2017.org/submit>

The authors have to select « **open invited track paper** » as submission type and use the track code at the second step of submission.

If the theme of the paper is not suited to the track scope, the paper will be evaluated and considered for a regular session.

Please send an email with your intention to submit a paper to: eric.bonjour@univ-lorraine.fr and vincent.chapurlat@mines-ales.fr

Key dates

31 October 2016: Paper submission deadline

20 February 2017: Notification to authors

31 March 2017: Final paper submission deadline

15 April 2017: Early registration rates expire

9-14 July 2017: IFAC World Congress in Toulouse