
Khalil Drira, Flavio Oquendo, Axel Legay, Thais Batista

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Editorial Message

Track on Software-intensive Systems-of-Systems (SiSoS) of the 33rd ACM/SIGAPP Symposium On Applied Computing (SAC 2018)

Khalil Drira, LAAS-CNRS – Univ. Toulouse, France
Flavio Oquendo, UMR CNRS IRISA – Univ. Bretagne Sud, France
Axel Legay, INRIA, France
Thais Vasconcelos Batista, DIMAp – UFRN, Brazil

Scope

Pervasiveness of networks has made possible to interconnect systems that were independently developed, operated, managed, and evolved, yielding a new kind of complex system, i.e. a system that is itself composed of systems, the so-called System-of-Systems (SoS). Software-intensive SoS (SiSoS) has become a hotspot in the last years, from both the research and industry viewpoints. Indeed, various aspects of our lives and livelihoods have progressively become dependent on some sort of Software-intensive SoS. This is the case of SiSoS found in different areas as diverse as energy, healthcare, manufacturing, and transportation; and applications that address societal needs, e.g. environmental monitoring, distributed energy grids, emergency coordination, global traffic control, and smart cities. Moreover, ubiquitous platforms such as the Internet of Things and nascent kinds of SoS such as Cyber-Physical SoSs are accelerating the deployment of Software-intensive SoS in the near future. Definitely, the unique characteristics of Software-intensive SoS raise a grand research challenge for the future of software-reliant systems in our industry and society due to its intrinsic features, among which evolutionary development and emergent behavior.

Statistics

The SiSoS Track received 22 regular paper submissions and 3 SRC submissions. Each submission was reviewed by three members of the Track Program Committee. The Track Program Committee selected 5 full papers out of the 22, giving an acceptance rate of 23%. These papers were selected based on originality, quality, soundness, and relevance to this conference track. Moreover, 2 poster papers have been accepted for publications in the proceedings of the conference.

Key Topics

This track fosters (but is not limited to) submissions in the following topics:

- **SiSoS Mission**
  - Specification and analysis
  - Formal contracts, contract-based approaches
  - Goal-orientation, task orientation
  - Ontologies, reasoning
  - Relationships with emergent behaviors

- **SiSoS Modeling**
  - Model-driven engineering
  - Models-at-runtime
• Model-based approaches
  • Formal modeling foundations

• **SiSoS Design**
  • Architectural and detailed design
  • Design evaluation
  • Correction by design
  • Design for evolution, scalability or
  • Design for emergent behavior

• **SiSoS Verification and Validation**
  • Testing
  • Compositional/statistical model checking
  • Simulation, co-simulation
  • Simulation of emergent behaviors

• **SiSoS Construction and Evolution**
  • Evolutionary development
  • Correction by construction
  • Techniques & technologies for SoS engineering
  • Service-orientation
  • Component and middleware frameworks

• **SiSoS Security and Privacy**
  • SoS cybersecurity
  • SoS privacy and trust
  • Security against emergent behaviors in SoS

• **SiSoS Experience**
  • Reports from real projects
  • Case studies in real-scale projects
  • Controlled experiments
  • Experience from SoS stakeholders

• **SiSoS General issues**
  • Taxonomies, ontologies
  • Software processes
  • Project management
  • Acquisition in the development of SoS

• **SiSoS Applications**
  • Energy
  • Transportation
  • Global traffic control
  • Emergency coordination
  • Environmental monitoring
  • Smart grids
  • Healthcare
  • Manufacturing
  • Smart cities
  • Any other application domain

• **Future perspectives, challenges, and directions**

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**Track Program Committee**
Nicola Accettura, LAAS-CNRS, France
Jesper Andersson, Linnaeus University, Sweden
Paris Avgeriou, University of Groningen, The Netherlands
Jakob Axelsson, SICS Swedish ICT, Sweden
Muhammad Ali Babar, University of Adelaide, Australia
Fabrizio Biondi, INRIA, France
Ismael Bouassida Rodriguez, REDCAD, Univ. Sfax, Tunisia
Jan F. Broenink, University of Twente, The Netherlands
Henry Broodney, IBM Watson IoT, USA
Everton Cavalcante, Federal University of Rio Grande do Norte, Brazil
Carlos E. Cuesta, Rey Juan Carlos University, Spain
Remco de Boer, ArchiXL, The Netherlands
Flavia C. Delicato, Federal University of Rio de Janeiro, Brazil
Remo Ferrari, Siemens Industry, USA
Juan Garbajosa, Technical University of Madrid, Spain
Gilles Geeraerts, Université libre de Bruxelles, Belgium
Bernhard Josko, OFFIS, Germany
John Klein, Software Engineering Institute, USA
Charles Kremer, IRT SystemX, France
Patricia Lago, Vrije Universiteit Amsterdam, The Netherlands
Kim G. Larsen, Aalborg University, Danmark
Nazim H. Madhavji, University of Western Ontario, Canada
José Carlos Maldonado, University of Sao Paulo, Brazil
Tiziana Margaria, University of Limerick & Lero, Ireland
Raffaela Mirandola, Politecnico di Milano, Italy
Elisa Yumi Nakagawa, University of Sao Paulo, Brazil
Linda Northrop, Software Engineering Institute, USA
Alvaro Oliveira, Smarter City Services, Portugal
Roberto Passerone, University of Trento, Italy
Patrizio Pelliccione, Chalmers Univ. & Univ. of Gothenburg, Sweden
Jennifer Pérez, Technical University of Madrid, Spain
Paulo Pires, Federal University of Rio de Janeiro, Brazil
Jean Quilbeuf, IRISA - University of South Brittany, France
Ralf Reussner, KIT / FZI, Germany
Heinrich Schmidt, RMIT University, Australia
Sarah Sheard, Software Engineering Institute, USA
Bedir Tekinerdogan, Wageningen University, The Netherlands
Louis-Marie Traonouez, INRIA, France
Petra Tuma, Charles University, Czech Republic
Danny Weyns, KU Leuven, Belgium
Brian White, CAU-SES, USA
Xiwei (Sherry) Xu, Data61 / CSIRO, Australia
Uwe Zdun, University of Vienna, Austria
Huibiao Zhu, East China Normal University, China
Andrea Zisman, The Open University, UK