Motto: ‘Complexity and the Role of Modeling and Simulation’

Important Dates:
- **Abstract submission**: December 30, 2014
- **Special Sessions Proposals (Workshops, tutorials, etc.)**: January 10, 2015
- **Paper Submission**: February 10, 2015
- **Notification of acceptance**: March 31, 2015
- **Work in Progress**: March 31, 2015
- **Camera ready**: April 12, 2015

Aims and Scope:
The Summer Simulation Conference 2015 (SummerSim’15) is SCS’s premier international conference in cooperation with ACM SIGSIM. The conference focuses on modeling and simulation, tools, theory, methodologies and applications and provides a forum for the latest R&D results in academia and industry. This year’s focus is on hybrid, discrete and continuous systems, and the role of M&S in addressing complexity. We encourage you to take this opportunity to experience the tutorials, tracks, and workshops that will be available.

Organizing Committee:
- **General Chair**: Saurabh Mittal, Dunip Technologies, LLC, Colorado, USA (smittal@duniptech.com)
- **General Co-Chair**: Floriano De Rango, University of Exeter, UK (derango@deis.unical.it)
- **Awards Chair**: Andreas Tolk, SimIS Inc., Virginia, USA (andreas.tolk@simisinc.com)
- **Program Chair**: José Luis Risco Martín, Universidad Complutense de Madrid, Spain (jlrisco@ucm.es)
- **Proceedings Chair**: Deniz Cetinkaya, University of Turkish Aeronautical Association, Turkey (dcetinkaya@thk.edu.tr)
- **Publicity Chair**: Justyna Zander, HumanoidWay, USA (justyna.zander@gmail.com)
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- **Tutorial Chair**: José Luis Risco Martín, Universidad Complutense de Madrid, Spain (jlrisco@ucm.es)
- **Poster Session and Student Colloquium Chair**: Miroslav Velev, Aries Design Automation, USA (mvelev@gmail.com)

Steering Committee:
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- Prof. Francesco Longo, University of Calabria, Italy (f.longo@unical.it)
- Prof. Pere Vila, University of Girona, Spain (pere.vila@udg.edu)
- Pieter J. Mosterman, MathWorks, Inc., USA (Pieter.Mosterman@mathworks.com)
- Justyna Zander, HumanoidWay, USA (justyna.zander@gmail.com)
A selected group of the best papers of SummerSim 2015 will be invited to be published in a Special Issue devoted to SummerSim 2015. At the moment, the committee is looking for appropriate venues of journal publications. All authors are encouraged to submit extended versions of their papers to the Special Issue according to the guidelines found on the webpage. Please see more details at: http://www.scs.org/summersim.

Authors of accepted papers are expected to attend the conference, present their work to their peers, transfer copyright, and pay a conference registration fee at the time their camera-ready paper is submitted. All papers will be included in the conference proceedings and archived in both the SCS digital library and the ACM Digital Library, and will be indexed in DBLP and SCOPUS.

SummerSim’15 includes the following events:

- **International Symposium on Performance Evaluation of Computer and Telecommunication Systems**
  Chairs **SPECTS 2015**:  
  - Franco Davoli, Univ. of Genoa, Italy  
  - Jose Marzo, Univ. of Girona, Spain

- **47th Summer Computer Simulation Conference 2015**
  Chairs **SCSC 2015**:  
  - Saurabh Mittal, Dunip Technologies, LLC, Colorado, USA  
  - Il Chul Moon, KAIST, Korea
47th Summer Computer Simulation Conference 2015 (SCSC 2015)

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- Andreas Tolk, SimIS Inc., Virginia, USA (andreas.tolk@simisinc.com)

Come to Chicago, IL, USA for SCSC 2015 to witness the 47th edition of this leading conference in the field of Modeling and Simulation. SCSC 2015 features varied tutorials, tracks and workshops. The conference focuses on modeling and simulation, tools, theory, methodologies and applications, providing the latest R&D results in academia and industry. In parallel with technical presentations, companies and research groups will be exhibiting their most recent products. Further increasing SCSC’s application focus, SCSC15 is adding to the conference program a set of with panels, hot topic sessions and invited industrial sessions. This year the program is organized into various tracks. More information is available at: http://duniptech.com/conference/summersim15.

Current tracks include:

- **Agent-Directed Simulation (ADS’15)**
  - **Chairs:** Tuncer Ören and Levent Yilmaz

- **Grand Challenges in Modeling and Simulation (GCMS’15)**
  - **Chairs:** Ali Elkamel, Chandramouli R. Madhuranthakam, Hedia Fgaier

- **Modeling and Simulation for Intelligent, Adaptive and Autonomous Systems (MSIAAS’15)**
  - **Chair:** Saurabh Mittal and Marco Lützenberger

- **Modeling and Simulation for Sustainability (MSS’15)**
  - **Chair:** Björn Johansson

- **Modeling and Simulation for Energy Systems Integration and Smart Grid (MSEnSySG’15)**
  - **Chairs:** Vladimir Koritarov, Saurabh Mittal, Prakash R. Thimmapuram

- **Emergency Management Simulation (EMS ‘15)**
  - **Chair:** Francesco Longo

- **Computer Graphics for Simulation (CGS’15)**
  - **Chair:** John F. Richardson

- **Simulation in the Design Automation Flow (SEDAF’15)**
  - **Chair:** Alberto A. Del Barrio

- **Modeling and Simulation for Cyber Security and Assessment (MSCSA’15)**
  - **Chair:** Adam Bryant

- **Modeling and Simulation of Environmental Systems (MSES’15)**
  - **Chairs:** Ali Elkamel, Suad-Adwani

- **Modeling, Simulation, and Test for Cyber-Physical Systems (MST4CPS’15)**
  - **Chair:** Miroslav Velev

- **Modeling and Simulation in Medicine (MSM’15)**
  - **Chair:** Jacob Barhak

- **Work in Progress Session (WIP’15)**
  - **Chair:** Mohammad Raunak
Further, topics relevant to the scope of the conference also include (but are not restricted to) the following:

- Modeling and Simulation for Defense and Security
- Modeling and Simulation for Transportation
- Modeling and Simulation of Complex Social Systems

Tracks 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 Tracks or Workshops should be submitted by e-mail to José Luis Risco Martín (jlrisko@ucm.es)

Paper Formatting Guidelines for the conference are found at the following link: http://www.scs.org/summersim. For paper submission to SCSC please submit your complete papers electronically to: http://www.softconf.com/scs/SCSC15/
## INTERNATIONAL PROGRAM COMMITTEE

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Wei Wei  Xian University of Technology  China
The Agent-Directed Simulation (ADS) Track is the premier platform to explore all three aspects of the synergy of simulation and agent technologies. Hence, it has a special place within simulation and agent conferences, including agent-based (social) simulation conferences. Therefore the ADS track of sessions fills a gap in the agent community as well as the simulation community.

The purpose of the ADS track of sessions is to facilitate dissemination of the most recent advancements in the theory, methodology, application, and toolkits of agent-directed simulation. Agent-directed simulation is comprehensive in the integration of agent and simulation technologies, by including models that use agents to develop domain-specific simulations, i.e., agent simulation (this is often referred to as agent-based simulation - when other two important aspects are not considered), and by also including the use of agent technology to develop simulation techniques and toolkits that are subsequently applied, either with or without agents. Hence, agent-directed simulation consists of three distinct, yet related areas that can be grouped under two categories as follows:

- Simulation for Agents (agent simulation): simulation of agent systems in engineering, human and social dynamics, military applications etc.
- Agents for Simulation (which has two aspects): agent-supported simulation deals with the use of agents as a support facility to enable computer assistance in problem solving or enhancing cognitive capabilities; and agent-based simulation that focuses on the use of agents for the generation of model behavior in a simulation study.

Through the theme of agent-directed simulation, the track of sessions will bring together agent technologies, tools, toolkits, platforms, languages, methodologies, and applications in a pragmatic manner. In this track of sessions, researchers, educators, and students are encouraged to come together and discuss the benefits of agent technology in their use and application for simulation. It is a venue for practitioners to discuss why and how they have used agent technology in their simulations, and describe the benefit of having done so. The theme of ADS’15 is based on the observation of the following premises:

- The growth of new advanced distributed computing standards along with the rapid rise of e-commerce are providing a new context that acts as a critical driver for the development of next generation systems. These standards revolve around service-oriented technologies, pervasive computing, web-services, Grid, autonomic computing, ambient intelligence etc. The supporting role that intelligent agents play in the development of such systems is becoming pervasive, and simulation plays a critical role in the analysis and design of such systems.
- The use of emergent agent technologies at the organization, interaction (e.g., coordination, negotiation, communication) and agent levels (i.e. reasoning, autonomy) are expected to advance the state of the art in various application domains. However, modeling and testing complex agent systems that are based on such technologies is difficult. Using agent-supported simulation techniques for testing complex agent systems is up and coming field.
- To facilitate bridging the gap between research and application, there is a need for tools, agent programming languages, and methodologies to analyze, design, and implement complex, non-trivial agent-based simulations. Existing agent simulation tools are still not mature enough to enable developing agents with varying degrees cognitive and reasoning capabilities.

ADS 2015 will provide a leading forum to bring together researchers and practitioners from diverse simulation societies within computer science, social sciences, engineering, business, education, human factors, and systems engineering. The involvement of various agent-directed simulation groups will enable the cross-fertilization of ideas and development of new perspectives by fostering novel advanced solutions, as well as enabling technologies for agent-directed simulation.
Topics

Theory/methodology
- High-level agent specification languages for modeling and simulation.
- Agent programming and simulation modeling languages.
- Distributed simulation for multi-agent systems.
- Formal models of agents and agent societies.
- Advanced agent features for agent-directed simulation: e.g.:
  o Holonic agents for cooperation and coopetition modeling and simulation.
  o Agents with personality, agents with dynamic personality, agents with emotions, agents having different types of intelligence such as emotional intelligence, agents with multi-intelligence.
  o Influence of cultural backgrounds in agent-directed simulation.
  o Agents with several types of understanding abilities such as multivision and switchable understanding abilities, trustworthy agents, and moral agents in simulation.
  o Agent-based simulation to monitor multi-simulation studies.
  o Agents in design and monitoring of simulation experiments and analysis of results.
  o Verification, validation, testing; quality assurance; as well as failure avoidance in agent-directed simulations.

Technology, tools, toolkits, and environments
- Agent infrastructures and supporting technologies (e.g., interoperability, agent-oriented software engineering environments).
- Modeling, design, and simulation of agent systems based on service-oriented technologies, pervasive computing, web-services, grid computing, autonomic computing, ambient intelligence.
- Agent architectures, platforms, and frameworks.
- Standard APIs for agent simulation programming.

Applications
- Simulation modeling of agent technologies at the organization, interaction (e.g., communication, negotiation, coordination, collaboration) and agent level (e.g., deliberation, social agents, computational autonomy).
- Application of agent simulations in various areas such as biology, business, commerce, economy, engineering, environment, individual, group, and organizational behavior, management, simulation gaming/training, social systems.
- Conflict management simulation with holonic agents.
- Modeling and simulation of self-organizing systems and emergence.

Submission Guidelines

Contributed papers are 8-10 pages long. They will be peer reviewed and – if accepted and presented at the conference - submitted to the ACM Digital Library.

Posters will be peer reviewed and feedback will be provided. If accepted, they will be presented in the poster session of SummerSim’15. Poster authors are encouraged to submit a one page summary for inclusion in the proceedings, but they will not be submitted to an indexed archive.
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.

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 called intelligent systems as well. 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**

- Theory for adaptive and autonomous systems
- Intelligence-based systems
- Computational intelligence and cognitive systems
- Human-in-the-loop systems
- M&S Frameworks for intelligent behavior
- Methodologies, tools, and architectures for adaptive control systems
- Knowledge engineering, generation and management in IAAS
- Weak and Strong emergent behavior, Emergent Engineering
- Complex adaptive systems engineering
- Self-* (organization, explanation, configuration) capability and collaborative behavior in IAAS
- Applications to robotics, unmanned vehicles systems, swarm technology, semantic web technology, and multi-agent systems
- Netcentric IAAS
- Live, Virtual and Constructive (LVC) environments
- Simulator design for IAAS systems
- Modeling tools for IAAS design
- Modeling, engineering, testing and verification of complex behavior
- Development of distributed systems
- Testing of complex systems
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Simulations can consist of focused physical simulations to complex interconnected systems. Simulations can be used to produce numbers. Some simulations can produce theories of human behaviors. Other simulations test security while others investigate industrial control. In some cases the result is just a number or statistic. In many cases, the results are anthropomorphic. Many simulations use graphics to present the results. Many simulations use virtual objects to represent the input to simulations. In many cases, the simulation must be visualized to reveal useful patterns in processes and models.

This paper track is designed to elicit papers that present novel results in simulation interoperability and visualization. The paper track focuses on several topic areas. The General Computer Graphics topic area is designed to solicit papers that apply state of the art graphics techniques to visualizing simulation results and simulation virtual environments. The Web3D / WebGL / HTML5 topic area is designed to extract from the research community, state of the art techniques for visualizing distributed simulations. Many physically based simulations require solutions of complex systems of equations that must have efficient computational grids to produce realistic results with minimal computer resources.

Many of the topic areas involve advanced computer graphics techniques and in some cases, art of high caliber. Authors are encouraged to attach supplementary high-resolution renderings to their submissions for presentation in an exhibition at the conference [Fame and Glory is the reward]. WebGL, GPGPU computing and HTML5 are now established hot topics in Computer Graphics heavily promoted at SIGGRAPH 2014 and previous Web3D, Graphics and SIGGRAPH conferences.

**Topics**

**General Computer Graphics**
- DEVS, simulation methodologies and computer graphics
- Rendering strategies and algorithms for architecture
- Modeling and animation of machinery simulations
- Modeling and animation support for industrial processes
- Solid modeling for simulation
- Visualizing gas, explosion and fluid simulation
- Volume visualization for simulation (medical, structural, geological, fluids, gases)
- Visualizing terrain effects on simulations (fluid, telecommunications, transport, security, military)
- Transportation visualization (structures, flight, vehicles, subways, tunnels, construction, security, military)
- Level of detail strategies for simulation visualization
- Massive virtual environments
- Time and memory complexity of scientific visualizations
- Interaction techniques and haptic devices for simulation
- Visualizing damage to military and civilian transport
- Realistic lighting for simulation

**Web3D / WebGL / HTML5 for Simulation**
- VRML/X3D for simulation and WebGL for distributed simulations
- COLLADA / OSG / KML / Game simulations / DEVS and CG / Coupled DEVS and CG
- SceneGraphs and strategies for simulation visualization optimization
- Collaborative medical simulation
- Data acquisition for simulation
- Distributed military simulation visualization
- Interoperability between military and civilian file formats
- NVIDIA CUDA, OpenCL [Open Compute Language for CPU/GPU Scheduling]
Computational Grids for Simulation / GPGPU Computing for Simulation

- 2-D and 3-D irregular grids for simulation
- Adaptive grids for simulation
- Parallel algorithms for computational grids
- Grids for very large virtual environments
- Mimetic methods

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Grand Challenges in Modeling and Simulation (GCMS'15)

Track Chair: Ali Elkamel, University of Waterloo, Canada, aelkamel@uwaterloo.ca
Track Co-Chairs: Chandramouli R. Madhuranthakam, University of Waterloo, Canada, cmmadhur@uwaterloo.ca
Hedia Fqaier, University of Guelph, Canada, hfgaier@uoguelph.ca

Modeling and simulation (M&S) have emerged to be invaluable tools for addressing and solving problems virtually and in real time in almost all fields. Research and development in M&S have been revolutionary in the late 20th century and 21st century which made M&S to be both intra and inter disciplinary. State of art M&S such as parallel and distributed simulations, supercomputing, grid computing, cloud computing, complex adaptive systems, data modeling, stochastic modeling and simulation, high speed optimization and network simulation are the different themes that are evolving on a continuous basis. The current research in M&S is very diverse mostly focusing on designing and implementing new methodologies, improving the existing methodologies and minimizing the limitations in terms of their applicability to multidisciplinary fields. This creates a challenge for authors seeking a venue to publish research contributions that would advance, facilitate and coordinate several aspects of M&S.

To address this need, we are instituting a special track dedicated to contributions in Grand Challenges in Modeling & Simulation. Authors are invited to submit their papers in the following areas:

- Modeling, simulation, and optimization of complex systems
- Simulation software environments
- Multi-party, multi-disciplinary techniques for dealing with uncertainty
- Model reduction
- Multi-level modeling
- High-speed real-time simulation
- Simulations of social systems and human behavior
- Agent based modeling
- Discrete-event modeling
- Data mining and visualization

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Nowadays continuous incidents, terrorist threats, catastrophic events have strongly underlined the need to plan and organize better responses to emergency situations.

The track offers the possibility to present scientific results and critical issues concerning emergency responses procedures using Modeling and Simulation.

**Topics**

- Simulation and testing of emergency scenarios
- Personnel training through Simulation;
- Modeling & Simulation of human crowd behavior;
- Modeling & Simulation of critical incidents;
- Synthetic and Virtual Environments for emergency situations;
- Medical emergency Simulation;
- Police, fire emergency Simulation;
- Emergency response Simulation;
- Simulation games for incidents and threats management;
- Modeling & Simulation of terrorist attacks;
- Modeling & Simulation of natural disasters;
- Emergency management systems;
- Emergency response Simulation in supply chain and logistic networks.

**Submission Guidelines**

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Understanding, predicting, and managing the behavior of environmental systems is required at all practical scales. Modeling and simulation (M&S) allows to model complex, multimedia environmental systems. It pursues presentation of model evaluation, process identification and applications in various sectors of the environment. Different aspects related to the integrated modeling, assessment and management of environmental systems, quality assurance and evaluation of models, data and procedures are contributions that serve this field.

To communicate those outcomes to a wide scientific and professional audience, we are organizing a modeling and simulation of environmental systems theme. Authors are invited to submit their papers in the following areas:

- Environmental Systems Analysis and Modeling
- Time series modeling
- Artificial Intelligence (AI) techniques
- Modeling under uncertainty
- Decision support systems
- Interaction of energy and environmental systems
- Environmental accidents, prevention and emergency response
- Remote sensing
- Environmental Performance Monitoring
- Environmental and sustainability indicators
- Air pollution control and management
- CO2 capture technologies
- Environmental risk management

**Submission Guidelines**

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Modeling and Simulation for Sustainability (MSS’15)
Track Chair: Bjoern Johansson, Chalmers University, Sweden  bjorn.johansson@chalmers.se

The track Modeling and Simulation for Sustainability calls for contributions dealing with theory and practice in this area. Typical topics will be papers addressing sustainability by utilizing modeling and simulation by incorporating such as social, economic and ecologic aspects of sustainability for decision-making. The contribution could range from theoretical approaches/descriptions such sustainability awareness, sustainability frameworks, sustainability in research, to more applied, such as sustainability metrics, sustainability monitoring, sustainability applied in production. In particular a multidisciplinary approach is of interest for this track where two or more aspects on sustainability are combined in order to achieve better understanding of the total context of a problem/situation. Examples could be but are not limited to combinations of two or more of the following:

- **Economical:** Cost calculations, marketing, OEE, performance metrics.
- **Social:** Workplace design, ergonomics, social wellbeing, Social LCA.
- **Environmental:** LCA, Simplified LCA, Carbon footprint, ECO labeling etc.

Papers are solicited to address the above and related areas with focus on both the underlying methodological and theoretical foundations and practical applications.

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The goal of the MSCSA 2015 is to explore all areas related to the modeling and simulation of systems in cyberspace for the assessment of complex hardware, software, networked systems, complex sociotechnical systems, and the interactions between such that affect security, safety, usability, privacy, and mission assurance.

The problem:
Understanding, making decisions, and solving problems relating to cyber security is a challenging problem. This problem is made more challenging because cyber data is inherently abstract, cyber data exists at varying levels of abstraction, cyber data can be represented in multiple ways simultaneously, and cyber events involve the behavior of human actors as well as automated systems. Using modeling and simulation technologies to solve these problems is challenging because there is a lack of ground truth information, models are difficult to validate with real-world data (because it is inaccessible or unavailable). There is also a lack of best practice information for modeling cyber information, and for choosing the appropriate representation, scope, facets, data, and events to articulate the phenomena of interest in cyber.

Research solicited in this track is aimed at using modeling and simulation techniques to investigate the properties of systems, uncovering weaknesses in systems, discovering the rules by which systems interact with one another. Also of interest is research involving how humans interact with complex systems and particularly how the behavior of both humans and the complex systems they interact with affect security, safety, privacy, usability, and mission assurance.

The types research sought:
- Modeling human behavior in the cyber domain
- Modeling user interfaces of cyber security system
- Modeling macro-level game theoretic aspects of computer network attack and defense
- Modeling low-level security-relevant properties of system architectures, software, protocols, human interaction, and security goals
- Modeling unit tasks in cyber security for HCI purposes
- Modeling cognitive and automation processes in cyber security
- Using models to investigate security-relevant properties of large or complex systems
- Simulation to examine the weakness profile of complex or simple systems
- Investigating methodologies for improving simulation inputs to systems
- Investigating methodologies and techniques for testing and verifying complex models without ground truth data
- Investigating methods to improve other aspects of modeling and simulation in areas related to cyber security

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The track will focus on (but is not limited to) the following topical areas:

- Modeling and simulation for Cyber-Physical Systems (CPS)
- Modeling and simulation of emergent behavior in CPS
- Test, validation, and verification for CPS-specific features
- Multi-definition of computation in the context of modeling and simulation
- Roadmap on computational applications in CPS
- Connection of modeling and simulation with hardware—theory, application, and practice
- Modeling, simulation, and computation for solving human grand challenges in the CPS context
- Application of modeling, simulation, and computation to solve human-related problems
- Addressing problems of current computation theory and practice in the context of modeling and simulation (e.g., semantics, reliability, accuracy, timing, verification and validation)

Focus should be on practical application of the described concepts including novel methodologies, innovations, cross-technologies, and tools. Case studies and demonstrations are warmly invited.

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Modeling and Simulation in Energy Systems Integration and Smart Grid (MSEnSySG’15)

Track Chair: Vladimir Koritarov, Argonne National Lab, USA koritarov@anl.gov
Track Co-Chairs: Saurabh Mittal, National Renewable Energy Lab, USA saurabh.mittal@nrel.gov
Prakash R. Thimmapuram, Argonne National Lab USA prakash@anl.gov

The electricity grid is the most complex system existing today and significant investments are being made to improve its reliability and resiliency by transforming it into a smart grid. As part of the overall energy system, the electric sector is also subject to interdependencies with other energy and communication infrastructures. Integration and optimization of various parts of the energy system will be needed to lower costs, improve system resilience, and reduce environmental impacts. With advances in computer technologies and software engineering, modeling and simulation allows us to gain kinds of insights into the dynamics of this complex system behavior which often would be either impossible or too risky to implement in the real-world. This track aims to highlight the role of modeling and simulation as a key enabler for energy systems integration and smart grid design by providing an overview of various aspects of complex energy systems and how modeling and simulation can be applied to each aspect.

Topics

- Technologies for Energy System Integration (ESI)
- Modeling tools for ESI
- Simulation approaches for ESI
- Smart grid design and engineering
- Energy systems engineering, verification and validation
- Modeling and simulation of infrastructure interdependencies
- Agent-based approaches for energy markets
- Renewable energy integration
- Grid-scale energy storage systems
- Modeling and simulation of microgrids

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Modeling and Simulation in Medicine (MSM’15)
Track Chair: Jacob Barhak, USA jacob.barhak@gmail.com
Honorary Chair: Jerzy Rozenblit, University of Arizona, USA jr@ece.arizona.edu

Aims and Scope
We are seeking submissions for presentation in Modeling and Simulation for Medicine. Topics include computational work related to healthcare, surgery, dentistry, mental health, pharmaceuticals, or medical education.

Specific examples of desired submissions include:
- Virtual Reality applications for surgery or education for nurses/doctors
- Numerical simulation for skeletal and organ modeling, including Finite Element Analysis, finite difference analysis, Computational Fluid Dynamic, and computational dynamics
- Statistical models including Monte Carlo Simulations related to clinical information
- Haptic feedback applications for education and training
- Machine vision for extraction of health information for modeling purposes including CT/MRI or other 3D scanning devices
- 3D printing applications for medical purposes
- Population Modeling including Predictive modeling such as Disease Modeling or Discrete Event Simulation
- Molecular computational modeling for pharmaceutical purposes
- High Performance Computing and Big Data applications directed at healthcare modeling
- Machine learning and Evolutionary computation for modeling medical data
- Natural Language Processing for extraction and analysis of medical information
- Software application, especially mobile device applications or medical device applications that include computational models.
- Multi Scale Modeling for healthcare
- Other computation modeling and simulation related to biological systems that can be tied to applications in healthcare, surgery, dentistry, mental health, pharmaceuticals, or medical education

Papers fitting the conference topic "Complexity and the Role of Modeling & Simulation" will receive special consideration. Shorter papers briefly describing the work will be preferred, and authors are encouraged to submit a short online video to support the work instead of writing long text whenever applicable. Reproducible papers linking to open source software implementation are encouraged. Non blind Public open review will be used to provide feedback for papers in this track.

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This track is specially intended to those works tackling the simulation problem during the entire design flow for electrical circuits. In the last few years, simulations have become an important mechanism to detect errors in the earlier design stages, allowing the designers to correct them and accelerate the *time to market* of their circuits. Most commercial and academic EDA tools make use of simulations to help designers find flaws and debug the incorrect behavior of the target hardware.

Simulations during the design stage can be mainly classified into three categories: behavioral, structural and post-route, each of them with a different accuracy/runtime tradeoff. It is a major challenge to optimize this relationship either with new models or utilizing hardware platforms to increase the simulation speed without losing or sacrificing very little precision.

Simulation methods also depends on the selected architecture. Thus, the centralized or distributed nature of the datapath controller determines the model and how to simulate it. Works dealing with unconventional non-centralized architectures are especially encouraged in this track. Another important factor is the presence of dynamic events, such as delay variations or variable latency blocks. Hence, the introduction of external sources of variability or the module libraries, on which the designs are based, are also critical. Conventional simulators use to be static, so simulation engines able to handle with these unexpected events are also encouraged.

Many of the topic areas involve a deep knowledge about simulation, Design Automation, High-Level Synthesis and in general computer architecture. Modeling, distributed simulations or GPU and FPGA simulating platforms are among the hot-topics of ACM-SIGSIM, and have been heavily promoted at WSC’14 or ACM-SIGSIM PADS.

**Topics**

High-quality papers in all aspects of simulation during the Design Automation flow are solicited, including (but not restricted to) the following areas:

- Advanced modeling techniques in High-Level Synthesis, and their execution using novel simulation algorithms.
- Parallel algorithms and high performance simulation during the synthesis, placement and routing stages.
- GPU, FPGA and hybrid architecture acceleration.
- Simulation based on distributed controllers.
- Process and delay variation modeling and simulation in datpaths.
- Radiation effects simulation in reliable circuits.
- Datapaths based on variable latency blocks simulation.
- Power and energy simulations to evaluate the design automation algorithms.
- Temperature and aging simulations during the design flow.
- MPSoCs and 3D chips simulation during the synthesis, placement and routing stages.
- Simulation during the Design Space Exploration.
- Simulation visualization techniques to help debug designers.
Submission Guidelines

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We are seeking original submissions for presentation in a Work in Progress (WIP) session at the 2015 Summer Simulation Multi-conference (SummerSim ’15). These papers should present work that is currently in progress or not quite ready for full-length articles.

Student papers are especially welcome as this track provides an excellent forum for Graduate students to present and get feedback for thesis, project or dissertation work. All papers will undergo a review by the Symposium Chairs and accepted papers in this track will also be published in the SummerSim ’15 conference proceedings.

**Topics**

Paper submission for SummerSimWIP’15 is encouraged in any modeling and simulation related areas including but not limited to the below:

- Computer/Communication Networks with Special Emphasis on Modeling and Simulation
- Numerical Simulation and Optimization as Applied to Business and Industry
- Use of Modeling and Simulation in the Area of Computer Security
- Modeling and Simulation in the area of Neural Networks
- Modeling and Simulation related to Image/Video Compression/Processing and Robotic Vision
- Any Aspect of Modeling and Simulation related to the Military Modeling, Analysis and
- Simulation of Telecommunication Systems
- Web-based Modeling and Simulation
- High-performance Computing and Simulation
- Network/Internet Traffic Modeling and Workload Characterization
- Simulation Languages, Tools, and Environments
- Simulation Verification, Validation, and Accreditation
- Simulation of Parallel Systems, Distributed Systems and Databases
- Simulation of Clusters, Grids and Wireless Systems
- Simulation of Multimedia Applications and Systems
- Modeling and Simulation of Real-Time and Embedded Systems
- Simulation Methodology, Theory and Philosophy
- Parallel and Distributed Simulators and Simulation Techniques
- Application of Modeling and Simulation in Biology
- Discrete Event Modeling and Simulation

**Deadline:** March 31, 2015

**Submission Guidelines**

Papers are 4-6 pages long using the Paper Formatting guidelines for the conference. Each paper must have *(WIP)* in the title. All final submissions are to be made electronically via the SCS Conference Management system (http://www.softconf.com/scs/SCSC15/)