

**GRAND CHALLENGES ON MODELING AND SIMULATION FOR  
INTERNATIONAL COOPERATION ON CRISES AND RISKY ENTERPRISES  
(GCMS-ICCRE2010)**

**GCMS-ICCRE2010 is the first Grand Challenge Conference to specifically address modeling and simulation applied to planning, development, and operation of complex, consequential, geographically dispersed international teams and components.** These challenges range from technology to language, behavior, politics, culture and other boundary issues that impact effective response to major human-caused and natural disasters as well as commitment to the long-term, life cycle success of massively complex multi-decadal international projects.

**GCMS-ICCRE2010 invites papers, panels, invited presentations and demonstrations** with particular attention to building on and improving international cooperative efforts that join and integrate geographically separated and heterogeneous modeling and simulation resources to solve complex—highly consequential-- problems.

**GCMS-ICCRE2010 will address barriers, research needs and solutions:**

- **Present and Past Lessons Learned from cooperative international applications of modeling and simulation:** aerospace exploration and other massively-complex projects, military-civilian emergency exercises, management of financial crisis, safety, security, and environmental degradation, preparing and responding to earthquakes, storms, fire, flood, tsunamis, biological and chemical accidents or sabotage, potential asteroid impact and major cross-boundary criminal attacks.
- **Life cycle: Modeling and simulation for massively complex, multi-decadal projects** (land, sea, undersea, below ground, air and space). From initial concept to final evaluation or disposal: highly dispersed teams, remote locations, analog rehearsal, virtual exploration, events coupling real equipment with distributed simulation and, also, need for first-time expert performance.
- **Crisis: Effective decision support systems for emergencies and dangerous risk enterprises.** Prevention, mitigation, recovery: planning: simulation of effects of accidents and crises, potential counter-measures, communication and rapid response to situations requiring unplanned-for-remote- training and assistance
- **Technical Challenges, Basic research barriers and proposed solutions for high-risk distributed simulation:** wide area network latency, interoperability mechanics and integration, synchronization of algorithms or other approaches to address ease of use, transparent adaptability, scalability, conceptual versatility and “look ahead” problem.
- **Future: Promising trends and interest to support complex cooperative action:** true “plug and play”, augmented reality, standards that reinforce reuse and information usability beyond ontologies, role of personal computing devices, game technology, ambient networks and, especially, innovative ideas to address the end user’s expectation of instant, easy and robust communication, support and, even, rescue.