Simulation Exploration Experience 2018 Overview

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Overview of the Overview

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SEE Mission Statement and Purpose

• Mission: Join students, industry, academia, and professional organizations in breaking down barriers to employability by building modeling and simulation proficiency and developing career confidence

• Purpose: Create collaborative college-level modeling and simulation educational opportunities as highly-dispersed inter-university teams design, develop, test and execute simulated space exploration missions
What is SEE?

- The Simulation Exploration Experience (SEE) joins students, industry, professional associations, and faculty together for an annual modeling and simulation (M&S) challenge.
- Champions collaborative collegiate-level modeling and simulation by providing a venue for students to work in highly dispersed inter-university teams to design, develop, test, and execute simulated missions associated with space exploration.
- Participating teams gain valuable knowledge, skills, and increased employability by working closely with industry professionals, NASA, and faculty advisors.
- If you are a student, professor, M&S industry professional, or educator, SEE encourages you to become involved!
- Visit https://www.exploresim.com
What is SEE?
Benefits of SEE

• Student Benefits
  – SEE offers a unique opportunity for student teams to experience modeling and simulation (M&S) interoperability
  – Teams share a memorable interactive problem solving experience
  – Promotes the use of professional M&S methodologies along with extensive coordination among interdisciplinary, diverse and dispersed teams
  – Enhances a student’s employability & job readiness
  – Creates strong professional networks, valuable information resources and increases participant credibility and visibility in the job market

• Educators
  – Provides a venue for the application of M&S to relevant problems
  – Gives access to leading M&S practitioners in government, defense, academia and industry
Benefits of SEE (Continued)

- Mentors
  - An opportunity to share knowledge, expertise and lessons learned with the next generation of M&S practitioners

- Sponsors
  - An opportunity to expose the next generation of M&S practitioners to your industry leading applications and middleware
  - An opportunity to cultivate, identify and establish relationships with the next generation of M&S professional and potential employees
The Power of Partnership

- SEE relies on the participation and generosity of numerous partners
  - https://www.exploresim.com/partners
- They provide licenses, hosting, educational material, mentoring, etc.

Logos of various partners: SISO, Simulation Interoperability Standards Organization, PITCH, VT MAK, AEGIS Technologies, FORWARDSIM, MBDA Missiles Systems, GICSR, CRTN Solutions, LLC.
How to Participate

• **Student Teams**
  – Must have at least one college faculty advisor
  – Must have at least one student with knowledge of C++ and/or JAVA and readiness to learn HLA Evolved, use standards and participate in an inter-university international simulation experience
  – May join as a class, independent researchers, a departmental project, inter-department or inter-university undertaking
  – Must fill out and submit the team official interest form: https://www.exploresim.com/interest-form
  – Wait to be contacted by SEE General Manager - Stephen Paglialonga
  – Participate in technical meetings, tutorials, testing sessions and ultimately the SEE event

• **Educators**
  – Be a faculty advisor for a team
  – Use the SEE activities as part of a class design project
  – Co-author papers with student team participants

• **Mentors**
  – Volunteer through the Technical Committee
  – Will be connected with one or more student teams

• **Sponsors**
  – Contribute products, personnel, expertise, facilities, prizes, and/or funding

• **Leadership**
  – Volunteer to be on a SEE committee: Outreach, Planning or Technical
SEE Background and History

- Originally proposed as the SISO Simulation Smackdown at the SISO Fall 2009 SIW in Orlando, FL
- A core group worked to build consensus support through 2009 and 2010 with generous support from SISO and particularly Bill Waite
- Kicked off initial event planning and activities at SISO Fall 2010 SIW
- Held inaugural event at the 2011 SISO/SCS Spring Simulation Multi-Conference in Boston, MA
- Rebranded as the Simulation Exploration Experience (SEE) in 2014
- Hold events annually every Spring with most recent in April 2017
- Lunar exploration has been the core mission scenario since 2011
- Mission expanded to include a Mars surface exploration component in 2017
- Will hold 8th annual event as a distributed event in April 2018
Mission Elements

- Simultaneous operations
- Lunar Elements
  - Lunar landing craft, rovers and drones
  - Lunar communications network
  - Electromagnetic launcher
  - Waste management
  - Asteroid mining
  - Asteroid protection
- Mars Elements
  - Rovers, surveyors and harvesters
  - Fuel production
  - Maintenance and operations
Foundational Infrastructure

• Professional Products, Processes and Tools
  – VPN connectivity
  – Commercial RTIs hosted on cloud servers
  – Web based collaboration and knowledge management services
  – Video confferenced meetings
  – Industry standard distributed computing tools and products

• Guidance
  – Team of experienced mentors from NASA, academia and industry
  – Weekly technical exchange and support meetings (Jan – Apr)
  – Training and tutorial material
Success Stories

• Former Participants
  – ZuQun Li is an alum of the 2011, 2012 and 2013 SEE events. ZuQun is now working in the Simulation and Graphics branch at NASA’s Johnson Space Center
  – Paul Grogan is an alum of the 2011 SEE event and is now a professor at Stephens Institute and a SEE faculty advisor
  – Bingyang Wei is an alum 2012 and 2013 SEE events and is now a professor at Midwestern State University and SEE faculty advisor
  – Alberto Falcone is an alum of the 2012, 2013, 2014 and 2015 SEE events, was a mentor for the 2016 and 2017 SEE events. Alberto was a visiting researcher in the Simulation and Graphics Branch at NASA’s Johnson Space Center in 2016. He received his Ph.D. from the University of Calabria in July 2017
  – Many other former SEE alum are now M&S practitioners

• SISO Space Reference FOM
  – SEE and the FOM developed to support SEE was a stimulus for the development of the Space FOM
  – SEE is an active test activity for the Space FOM
Special Thanks to Bill Waite

1946 - 2015
Faculty say, “Nothing out there like it.”