CSER 2024

conference on systems engineering research

The 21st Annual

Conference on Systems Engineering Research

Research in the Desert with the World's First Department of Systems Engineering

MARCH 25-27, 2024

The University of Arizona

Tucson, Arizona

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CSER
conference on systems engineering research

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Shaping the future of Systems Engineering

The 21st Annual Conference on Systems Engineering Research (CSER 2024) is poised to push the boundaries of systems engineering, embracing a wide array of themes from its scientific underpinnings to the forefront of digital engineering transformation and the seamless integration of artificial intelligence within systems and software engineering. Delving into cutting-edge topics such as Model-Based Systems Engineering (MBSE), cybersecurity, and the management of uncertainty and complexity, CSER 2024 aims to tackle the varied challenges and seize the opportunities emerging in the field. The conference's commitment to blending theoretical insights with practical innovations makes it a pivotal event for the systems engineering community.

This year, CSER is hosted for the first time by the Department of Systems and Industrial Engineering at the University of Arizona, the oldest systems engineering program in the world and renowned for its historic role in laying the groundwork for systems engineering research. With an innovative conference format designed to maximize interactive engagement, CSER 2024 encourages lively participation across the spectrum of attendees, from seasoned industry veterans and scholars to emerging students. Through specially curated sessions, the event is set to facilitate a vibrant exchange of ideas, fostering a spirit of collaboration and mutual learning. This approach guarantees that every participant, regardless of their background, will find a valuable forum for exploring the most recent developments, research outcomes, and practices in systems engineering, solidifying CSER 2024 as a cornerstone event for the discipline.

CSER 2024 SCHEDULE

SEANET

INCOSE Systems Engineering and Architecting Doctoral Student Network (SEANET) 2024

INCOSE seeks to foster and accelerate doctoral research in the field of systems engineering by connecting student researchers through a network. The purpose of SEANET is to advance systems engineering research by providing a collegial support network, research resources, and contacts that will enable the completion of doctoral dissertations related to systems engineering. The INCOSE SEANET invites current and soon-to-be doctoral students to participate in this one-day workshop. Students will also have the option to exhibit a research poster.

The Systems Engineering & Architecting Research Network (SEANET) is an INCOSE sponsored organizational network of doctoral students working in the field of systems engineering and architecture. SEANET is aimed at fostering doctoral level research in systems engineering and contributing to the evolving intellectual agenda for systems engineering research.

All SEANET participants must register to be included in the workshops.

Dr. Paul Wach, Virginia Tech National Security Institute
Dr. Alejandro Salado, The University of Arizona

SEANET SCHEDULE
MONDAY, MARCH 25, 2024

Student Union Memorial Center

TIME	ACTIVITY	LOCATION
09:00 - 09:15	**Welcome - Remarks on SEANET and Doctoral Research, and Updates on Events and Topics of Interest to Doctoral Students**	*Rincon/Catalina*
09:15 - 09:30	**Brief Introductions**	*Rincon/Catalina*
09:30 - 10:30	**Opening Keynote- Decision Making in Teams** Dr. George Hazelrigg	*Rincon/Catalina*
10:30 - 10:45	**Break**	*Tucson/Santa Rita*
10:45 - 12:00	**From Here to There: Navigating Grad School and Preparing for What's Next** Dr. Taylan Topcu	*Rincon/Catalina*
12:00 - 13:00	**Lunch**	*Rincon*
13:00 - 15:15	**Research Roundtables with Academic Advisors**	*Rincon/Catalina*
15:15 - 15:30	**Break**	*Rincon/Catalina*
15:30 - 16:00	**Roundtable Outbrief - Discussion and Feedback**	*Rincon/Catalina*

SE T/TT Faculty Interest Group

This year, we are inaugurating a SE T/TT Faculty Interest Group workshop the day before CSER. We want to create a community that brings together junior and senior faculty in tenure/tenure-track positions with an interest in systems engineering research and education, who may generally be somewhat "isolated" in traditional engineering departments. We hope to facilitate mentoring opportunities, collaborations, support, and, in general, just a group of colleagues.

The CSER workshop will consist of three sessions:

- A network session where junior faculty can meet senior faculty and get introduced into the community.
- Mentoring sessions to help the job.
- A tutorial on aspects that may be relevant to SE research and/or education.

SE T/TT Faculty Interest Group
MONDAY, MARCH 25, 2024

The Graduate Hotel

TIME	ACTIVITY	LOCATION
08:00 - 09:00	**Networking** Who's Who? "Speed-Dating" between Untenured and Tenured Faculty	*Ballroom*
09:00 - 11:00	**Mentoring** - Strategies for Time Management Selecting Students Research Goals for Each Year - Volunteering/External Service Securing Seminar Opportunities	*Ballroom*
11:00 - 12:00	**Lunch**	*The Moonstone (rooftop)*
12:00 - 16:00	**Tutorial** Implementing and Using AI/Large Language Models for Systems Engineering *Daniel Selva (Texas A&M University)*	*Ballroom*

DAY 2
TUESDAY, MARCH 26, 2024

TIME	ACTIVITY	LOCATION
08:00 - 09:00	**Breakfast**	*Grand Ballroom*
09:00 - 09:30	**Opening and Introductions**	*Grand Ballroom*
09:30 - 10:30	**Keynote** Mr. John Anderson (Blue Origin)	*Grand Ballroom*
10:30 - 11:00	**Break**	*Diamond Atrium*
10:30 - 11:00	**Tour Offerings** *Student Success District Tour*	*Main Library Entrance*
11:00 - 12:20	**Paper Session** (*See page 8 for detailed information*) **- MBSE / Digital Engineering** **- Problem Domain**	*Catalina* *Rincon*
12:20 - 13:30	**Lunch**	*Grand Ballroom*
13:30 - 15:00	Plenary Panel: **The Future of the Systems Academic Community** *Moderator:* Paul Grogan (Arizona State University) *Panelist(s):* Zoe Szajnfarber (George Washington University) Bryan Mesmer (University of Alabama in Huntsville) Taylan Topcu (Virginia Tech) Javier Calvo-Amodio (Oregon State University)	*Grand Ballroom*
15:00 - 15:30	**Break**	*Diamond Atrium*
15:00 - 15:30	**Tour Offerings** *Student Success District Tour*	*Main Library Entrance*
15:30 - 17:00	**Paper Session** (*See page 9 for detailed information*) **- Verification & Validation** **- Autonomy and Networks**	*Catalina* *Rincon*
17:00 - 18:00	**Poster Session**	*Grand Ballroom*
18:30 - 22:00	**CSER 2024 Award Banquet**	*Savoy Opera House*

DAY 3
WEDNESDAY, MARCH 27, 2024

TIME	ACTIVITY	LOCATION
08:00 - 09:00	**Breakfast**	*Grand Ballroom*
09:00 - 10:00	**Keynote** Dr. Terry Bahill (Emeritus, The University of Arizona)	*Grand Ballroom*
09:00 - 12:00	**Collaborative Conversations** *(See page 10 for detailed information)*	*Santa Cruz Room*
10:00 - 10:30	**Break**	*Diamond Atrium*
10:00 - 10:30	**Tour Offerings** *Engineering Design Center Tour*	*Main Library Entrance*
10:30 - 11:50	**Paper Session** *(See page 10 for detailed information)* **- Education** **- Systems of Systems** **- Special session: Paperless Presentations**	*Catalina* *Rincon* *Sabino*
12:00 - 13:00	**Lunch**	*Grand Ballroom*
13:00 - 14:20	**Paper Session** *(See page 11 for detailed information)* **- AI for System Engineering** **- Architecture & Biomimicry** **- Special session: Idea Exchange Unconference**	*Catalina* *Rincon* *Sabino*
14:20 - 14:50	**Break**	*Diamond Atrium*
14:20 - 14:50	**Tour Offerings** *Engineering Design Center Tour*	*Main Library Entrance*
14:50 - 16:00	**Paper Session** *(See page 12 for detailed information)* **- AI in System Engineering** **- Applications** **- Special session: Practice to Research Bridge**	*Catalina* *Rincon* *Sabino*
16:-00 - 16:15	**Closing**	*Grand Ballroom*

PAPER SESSIONS - DAY 1

11:00 - 12:20	PAPER SESSION 1	CHAIR	LOCATION

MBSE / Digital Engineering

Joe Gregory
(The University of Arizona)

Catalina

Towards Deriving a Digital Ontology for Systems Engineering and Acquisition Groups
  Nil Ergin, Adrian Barb (Penn State Great Valley)

Digital Requirements Engineering with an INCOSE-Derived SysML Meta-Model
  James Wheaton, Daniel Herber (Colorado State University)

Towards Formalizing a Systems of Systems Core Ontology for Capability Configuration, a SysML Approach
  Joyce David Martin, Johan Cederbladh (MDU)

SysML v2 for Automated Co-Simulation from Systems Architecture Models
  Thomas Zimmermann, Kai Lindow, Marvin Michael Manoury (Fraunhofer Institute for Production Systems and Design Technology)

11:00 - 12:20	PAPER SESSION 2	CHAIR	LOCATION

Problem Domain

Hanumanthrao Kannan
(The University of Alabama in Huntsville)

Rincon

Exploring Dynamic Preferences in Systems Engineering
  Christopher White, Casey Eaton, Meredith Bates, David Perner (The University of Alabama in Huntsville); Bryan Mesmer (University of Alabama in Huntsville)

Evolution of an Elicitation Methodology for Relative Influence
  John Richards, Willie Brown, George Gallarno, Titus Rice (USACE Engineer Research and Development Center)

Developing a KPI-Driven Framework to Systematically Align Companies with the EU Taxonomy
  Sahar Roustaei, Henri Giudici, Kristin Falk (University of South-Eastern Norway)

Enhancing Industrial Energy Management: Improving Efficiency and Stakeholder Satisfaction
  Catalina Klarissa Mae Tagavilla Gaza, Henri Giudici, Kristin Falk (University of South-Eastern Norway)

15:30 - 17:00	PAPER SESSION 3	CHAIR	LOCATION

Verification & Validation *Paul Wach* Catalina
(Virginia Tech National Security Institute)

Graph Complexity Measures as Indicators of Verification Complexity
Sukhwan Jung, Alejandro Salado (University of Arizona)

An Ontological Foundation for the Verification and Validation of Complex Systems in the Age of Artificial Intelligence
Michael Halvorson, Sampson Gholston, Jessica Landberg, Robert Paul Lewis, Ryan O'Neill, Cameron Bentley, Tamia Neal, Prithiv Sriman, Samantha Rawlins, Shreyas Raghu (University of Alabama in Huntsville); Noah Moyers (Auburn University); Lawrence Dale Thomas (University of Alabama in Huntsville)

Developing a Theoretical Basis for Validation in Systems Engineering
Hanumanthrao Kannan, Brian Davis (The University of Alabama in Huntsville); Mayuranath Sureshkumar (Virginia Tech)

Towards a Rigorous Metric for Measuring Inconsistencies in Stakeholder Preferences in Systems Engineering
Hanumanthrao Kannan (The University of Alabama in Huntsville)

15:30 - 17:00	PAPER SESSION 4	CHAIR	LOCATION

Autonomy and Networks *Tom McDermott* Rincon
(Stevens Institute of Technology)

Self-Organizing Evolutionary Complexity: Implications for Systems Engineering
Jon Wade (University of California, San Diego)

Simulating the Emergent Social Networks of Army Units
Jd Caddell, Anam Bayazid, Roshanak Nilchiani (Stevens Institute of Technology); Paul Grogan (Arizona State University)

Predictive and Prescriptive Analyses of Autonomy Integration into the System of Systems
Mohammadreza Torkjazi, Ali K. Raz (George Mason University)

A New Multi-Agent System Consensus Algorithm Inspired by Synchronous Turtle Hatching Behavior
Austen Pallen, Bryan Watson (Embry-Riddle Aeronautical University)

PAPER SESSIONS - DAY 2

WEDNESDAY, MARCH 27, 2024

09:00 - 12:00	LOCATION

Engineering Exchange: Collaborative Conversations — Santa Cruz Room

Engage in dynamic discussions and record your insights on advancing systems engineering practices. Whether you're a seasoned expert or a fresh thinker in the field, this is your opportunity to contribute ideas, exchange perspectives, and spark creativity with fellow peers.

10:30 - 11:50	PAPER SESSION 5	CHAIR	LOCATION

Education — *Eric Specking (University of Arkansas)* — Catalina

Lessons Learned from Teaching Systems Practices in an Art Studio Format
Tom Mcdermott (Stevens Institute of Technology); Molly Nadolski (Georgia Institute of Technology); Kara Ebbutt (Agnes Scott College)

Developing an Academic Case Study to Advance Digital Engineering
Paul Wach (Virginia Tech); Nicole Hutchison (Stevens Institute of Technology); Megan Clifford (Systems Engineering Research Center)

A Digital Engineering Factory for Students
Joe Gregory (University of Arizona); Alejandro Salado (The University of Arizona)

Is your Systems Engineering Knowledge and Practice Ready for the New Types of Systems Emerging Today?
Tom McDermott (Stevens Institute of Technology)

10:30 - 11:50	PAPER SESSION 6	CHAIR	LOCATION

Systems of Systems — *Shamsnaz Bhada (Worcester Polytechnic Institute)* — Rincon

System of Systems (SoS) Approach for Improving Quality of Kidney Transplant Decision-Making Support for Transplant Surgeons
Rachel Dzieran (Missouri University Science & Technology); Lirim Ashiku, Richard Threlkeld, Cihan Dagli, Robert Marley (Missouri University of Science and Technology, Rolla MO)

Social Systems of Systems Thinking to Improve Decision-Making Processes Towards the Sustainable Transition
Gerrit Muller, Henri Giudici (University of South-Eastern Norway)

Sustainable Systems: Measuring Carbon Emissions of Navy Ships
Ronald Giachetti, Hyatt Moore VI (Naval Postgraduate School)

13:30 - 14:20	PAPER SESSION 7	CHAIR	LOCATION

AI for Systems Engineering

Gabriel Apaza
(Texas A&M University)

Catalina

Can Large Language Models Accelerate Digital Transformation by Generating Expert-Like Systems Engineering Artifacts? Insights from an Empirical Exploration
Mohammed Husain (Grado Department of Industrial and Systems Engineering, Virginia Tech); Paul Wach (National Security Institute, Virginia Tech); Taylan Topcu (Grado Department of Industrial and Systems Engineering, Virginia Tech)

How Digital Twins could Support Systems Engineering Processes? Insights from Literature Review
Aleksander Buczacki (Warsaw University of Technology)

AI-Enabled Policy Content Modeling - a Systems Approach
Soham Aserkar, Shamsnaz Virani Bhada (Worcester Polytechnic Institute)

Identification of Variables Impacting Cascading Failures in Aerospace Systems: A Natural Language Processing Approach
Hossein Basereh Taramsari (Stevens Institute of Technology); Balaji Rao (Stevens Insitute of Technology); Roshanak Nilchiani, Carlo Lipizzi (Stevens Institute of Technology)

Integrating Edge Computing and Machine Learning for Thermal Anomaly Detection: A Space Systems Engineering Architecture
Carmen Misa Moreira (University of Luxembourg); Andreas M. Hein (SnT, University of Luxembourg)

13:30 - 14:20	PAPER SESSION 8	CHAIR	LOCATION

Architecture & Biomimicry

Gerrit Muller
(University of South-Eastern Norway)

Rincon

Dynamic Reconfiguration of Software Systems Using Smart Contracts
Anton Hristozov (Software Engineering Institute)

On Families of Systems Architecture
Loïc Le Sauce, Julien Cazalas, Daniel Krob, Jérôme Gui (Center of Excellence on Systems Architecture, Management, Economy & Strategy (CESAMES))

A New Biological Inspired Resource Allocation Algorithm for Distributed Multi Agent Systems with Limited Knowledge
Julia Gorthey, Fayruz Maysha, Bryan Watson (Embry-Riddle Aeronautical University)

From Plant-Pollinator to Product-Customer: Bio-Inspired Network Modularity Analysis in Design for Market Systems
Pawornwan Thongmak, Yinshuang Xiao (The University of Texas at Austin); Astrid Layton (Texas A&M University); Zhenghui Sha (The University of Texas at Austin)

Satellite Network Architecture Performance: Setting the Stage for Bio-Inspired Network Design
Alexander P. Duffy, Astrid Layton (Texas A&M University)

PAPER SESSIONS - DAY 2

WEDNESDAY, MARCH 27, 2024

14:50 - 16:00	PAPER SESSION 9	CHAIR	LOCATION

AI in Systems Engineering

Ali Raz
(George Mason University)

Catalina

Enabling Understanding of AI Model Behavior Through Visualization
Christine Krueger, Justine Manning, Robert Pless, Zoe Szajnfarber (George Washington University)

Addressing Safety in AI-Based Systems: Insights from Systems Engineering
Reginald Holmes (University of Alabama in Huntsville); Hanumanthrao Kannan (University of Alabama in Hunstville)

Implementing Artificial Thinking Autonomy with Model-Based Systems Engineering
Mitchell Kirshner (University of Arizona)

Towards Transparent Operations and Sustainment: A Conceptual Framework for Causal Interpretable Machine Learning Models for System Health Prognostics and Maintenance
Jannatul Shefa (Grado Department of Industrial and Systems Engineering, Virginia Tech); Taylan Topcu (Virginia Tech)

14:50 - 16:00	PAPER SESSION 10	CHAIR	LOCATION

Applications

Bryan Watson
(Embry-Riddle Aeronautical University)

Rincon

Analyzing Heat Related Injuries at Fort Moore
Anthony Beger, Eric Specking, Gregory Parnell, Edward Pohl (University of Arkansas); Randy Buchanan, William Andesron, George Gallarno, John Richards (United States Corps of Engineers Engineer Research and Development Center)

Toward Improving User Experience and the Adoption of mHealth Apps for Mental Health: An Exploratory Study
Melik Ozolcer (Stevens Institute of Technology); Ye Yang (Amazon Inc.); Swaraj Kate (Skyworks Solutions Inc.); Pinkani Samant (Amazon Inc); Sang Won Bae (Stevens Institute of Technology)

Factory in Space – Considerations and Feasibility for Low Earth Orbit
Farouk Abdulhamid, Brendan Sullivan, Sergio Terzi (Politecnico di Milano)

Safeguarding End-to-End Service Continuity when Connecting Safety-Critical Systems to the Cloud
Teun Hendriks, Sezen Acur (TNO-ESI)

SPECIAL SESSIONS

21st Annual CONFERENCE on
SYSTEMS ENGINEERING RESEARCH

WEDNESDAY, MARCH 27, 2024

10:30 - 11:50	SPECIAL SESSION 1	CHAIR	LOCATION

Paperless Presentations — *Casey Eaton (University of Alabama in Huntsville)* — Sabino

A Systems Theoretic Perspective of the Outer Alignment Problem
Daniel Gossman (The University of Alabama at Huntsville; US Army); Hanumanthrao Kannan (The University of Alabama at Huntsville)

Failure Mode and Effects Analysis (FMEA) and V-Model Based Systems Design: Criticisms and Solutions
Dan Perreault, Erika Gallegos, Vincent Paglioni, Thomas Bradley (Colorado State University)

A Functional Decomposition Summarizing Eusocial Insect Parasite Resistance: A Tool for Biologically Inspired Design
James Hand and Bryan Watson (Embry-Riddle Aeronautical University)

Investigating Early Validation to Capture Stakeholder Expectations and Needs in Complex Systems
Gerrit Muller, Maria Osa Furmyr, Kristin Falk (University of South-Eastern Norway)

13:30 - 14:20	SPECIAL SESSION 2	CHAIR	LOCATION

Idea Exchange Unconference — *Jon Wade (University of California at San Diego)* — Sabino

Join us for an innovative session at our conference where spontaneity meets scholarship in our "Idea Exchange Unconference." Designed to harness the dynamic energy and fresh insights from Tuesday, this session invites participants to sign up and share their emerging thoughts, nascent projects, or spontaneous ideas on Wednesday. Whether it's a reaction to a presentation, a new research question, or a collaborative venture, the Idea Exchange Unconference is your platform to engage with peers in real-time, foster quick feedback, and ignite conversations that could shape the future of our field. This is a unique opportunity to bring your early-stage ideas to the forefront, engage in meaningful dialogue, and potentially find collaborators, all within the lively and supportive environment of our conference. Don't miss out on this chance to be part of a vibrant community of thinkers and innovators shaping the discourse on the spot.

14:50 - 16:00	SPECIAL SESSION 3	CHAIR	LOCATION

Practice to Research Bridge — *Stephanie Chiesi (Blue Origin)* — Sabino

Step into our "Practice to Research Bridge" session, a dynamic forum at our conference where the agenda is crafted by you, the participants, on Day 1. This session is tailor-made for professionals, practitioners, and academics keen on transforming real-world challenges into research questions. On Day 2, individuals who signed up will take the stage to spotlight the practical problems they face in their fields, inviting the collective brainpower of the conference to brainstorm, dissect, and propose future research paths. It's an unparalleled chance to bring pressing issues from the trenches of professional practice into the academic limelight, catalyzing potential research projects and fostering collaborations across disciplines. Whether you're eager to present a conundrum from your work, connect with scholarly expertise for future exploration, or immerse yourself in the fusion of practice and research, the "Practice to Research Bridge" session is your conduit to turning everyday challenges into tomorrow's research endeavors.

KEYNOTE SPEAKERS

Building the Road to Space

ABSTRACT: Blue Origin's motto for what drive's its business - the presentation will cover what Blue Origin is all about, and how they are building the road to space through radically reducing the cost of access to space, to allow harnessing of its vast resources and to inspire and mobilize future generations. The talk will describe how Blue Origin is using its investments in New Shepard's sub-orbital launch system to refine re-usable system designs, New Glenn to access earth orbit and beyond, our engine programs that power our and other vehicles, and out Lunar Permanence efforts leading to a permanent habitation on the lunar surface. The talk will also explore the Systems Engineering challenges associated with "New Space" development activities.

BIOGRAPHY: Mr. Anderson currently is employed as a Chief Engineer and Vice President of Engineering and Program Management at Blue Origin in Kent, WA and is building the road to space by perfecting the design and operation of reusable launch vehicles and engines. His 35 years of professional engineering experience have been in the aerospace industry.

John started his career as a commissioned US Air Force officer assigned to the Air Force Space & Missile Command, where he led an effort to train Blue-Suit satellite control officers to stand-up Air Force control of DoD space assets. Upon his departure from the Air Force, he worked four years with Naval Space Command as a Civil Servant in standing up satellite operations and control facilities. Following this, he joined Motorola SATCOM, where he served as the Iridium Satellite Program's Operational Test & Evaluation (OT&E) Team Lead. John then worked for over two decades at Raytheon Missile Systems in Tucson AZ serving in various technical leadership roles including Chief Technologist for Applied Systems Engineering and Chief Engineer of several missile defense and proprietary programs.

Mr. Anderson has been an instructor for the Johns Hopkins University Whiting School of Engineering since 2009, and teaches courses in their master's degree program in Systems Engineering.

Mr. John Anderson

Chief Engineer and Vice President of Engineering and Program Management

Blue Origin

Tuesday, March 26
9:30 - 10:30

Location:
Grand Ballroom

Model-based Systems Engineering: Wymorian Origins

ABSTRACT: This keynote presentation takes a fascinating look at the origins of theoretical foundations in systems engineering, focusing on the early efforts led by Wymore. It explores why these foundational ideas weren't widely adopted in the past, despite emerging several decades ago. By examining the social and technical context of earlier times and prevailing attitudes, it uncovers the reasons behind the reluctance to fully embrace these theories. Drawing parallels with today's landscape, it suggests that we may now be in a better position to revisit and build upon these foundational concepts. Through this historical lens, attendees gain insights into why the current moment might be ideal for reviving and expanding upon these fundamental principles in systems engineering. The presentation encourages reflection on this journey as a means to reimagine the future of the field, where the groundwork laid by pioneers like Wymore can contribute to a more robust and innovative approach to engineering systems.

BIOGRAPHY: Terry Bahill is an Emeritus Professor of Systems Engineering and Biomedical Engineering at the University of Arizona in Tucson. He served nine years in the United States Navy and resigned as a Lieutenant. He received his Ph.D. in electrical engineering and computer science from the University of California, Berkeley. He is the author of eight engineering books and over two hundred and fifty papers, over one hundred of them in peer-reviewed scientific journals. Bahill has worked with dozens of high-technology companies. He presented seminars on Systems Engineering, worked on system development teams, and helped them describe their Systems Engineering processes. He holds a U.S. patent for the Bat Chooser™, a system that computes the Ideal Bat Weight™ for individual baseball and softball batters. He was elected to the Omega Alpha Association, the systems engineering honor society. He received the Sandia National Laboratories Gold President's Quality Award. He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), of Raytheon Missile Systems, of the American Association for the Advancement of Science (AAAS), and of the International Council on Systems Engineering (INCOSE). He is the Founding Chair Emeritus of the INCOSE Fellows Committee.

Dr. Terry Bahill

Emeritus Professor

The University of Arizona

Wednesday, March 27
9:00 - 10:00

Location:
Grand Ballroom

Tuesday, March 26
13:30 - 15:00

**Location:
Grand Ballroom**

Paul Grogan
Arizona State University
Moderator

Zoe Szajnfarber
George Washington University

Bryan Mesmer
University of Alabama in Huntsville

Taylan Topcu
Virginia Tech

Javier Calvo-Amodio
Oregon State University

The Future of the Systems Academic Community

BIOGRAPHY:

Paul Grogan is an Associate Professor with the School of Computing and Augmented Intelligence within the Fulton Schools of Engineering at Arizona State University. He holds a Ph.D. in Engineering Systems and S.M. degree in Aeronautics and Astronautics from the Massachusetts Institute of Technology and a B.S. degree in Engineering Mechanics from the University of Wisconsin-Madison. Grogan leads research on engineering design of distributed and decentralized systems with applications to Earth-observing space missions, resource-intensive terrestrial infrastructure, and campaign logistics for space exploration. His work builds on theory and tools in design science, economics, and information science to understand and improve collaborative design across organization boundaries. His group develops and uses models, simulations, and games to understand how individuals and teams interact during early conceptual design activities.

Zoe Szajnfarber is a Professor of Engineering Management and Systems Engineering (EMSE) and of International Affairs at the George Washington University and the inaugural Director of Strategic Initiatives for GW Engineering. She is the most recent past-chair of the EMSE Department. She currently serves as Chief Scientist of the DoD System Engineering Research Center's and as the Chair of the Council of Engineering Systems Universities

Dr. Szajnfarber studies the design and development of complex socio-technical systems, primarily in the aerospace and defense sectors. Dr. Szajnfarber is the PI and Co-Director of the Designing Trustworthy AI Systems, NSF NRT, a traineeship focused on educational innovation to advance transformational research in areas of AI and the future of work. Her interdisciplinary work has been supported by multiple federal agencies and foundations and has appeared in top journals spanning engineering, management, and policy.

Dr. Szajnfarber received a Ph.D. in engineering systems from the Massachusetts Institute of Technology in 2011. She also holds dual master's degrees in Aeronautics and Astronautics and Technology and Policy from MIT.

Dr. Bryan Mesmer is an Associate Professor in the Department of Industrial and Systems Engineering and Engineering Management at the University of Alabama in Huntsville. He completed his Ph.D. in August 2012 at the State University of New York at Buffalo in Mechanical Engineering. His research reimagines systems engineering using approaches that span traditional areas of decision theory and modeling and non-traditional areas of communication arts and psychology.

Dr. Taylan G. Topcu is an Assistant Professor of Systems Engineering at Virginia Tech, in the Grado Department of Industrial and Systems Engineering. At Virginia Tech, he also serves as the Director of Systems Engineering Master's of Science Degree and the Coordinator of the Mission Engineering Graduate Certificate Programs. His research integrates systems engineering, microeconomics, and data-science to study socio-technical measurement issues in the context of design and management of complex systems. He holds a BS in Aerospace Engineering from the Middle East Technical University, a MS in Systems Engineering from the University of Alabama in Huntsville, and a PhD in Industrial and Systems Engineering from Virginia Tech. He is a member of INCOSE, ASME, CESUN, IISE, and the Design Society.

Javier Calvo-Amodio is an associate professor of Industrial and Manufacturing Engineering at Oregon State University, where he directs the Change and Reliable Systems Engineering and Management Research Group (CaRSEM). His research focus is on developing fundamental understanding of how to integrate systems science into industrial and systems engineering research and practice to enable better engineering of organizations. Javier serves as INCOSE's Systems Science Working Group chair and Deputy Editor of Systems Research and Behavioral Science Journal. He is a Fellow of the American Society for Engineering Management.

CSER History:

2024 - 21st Annual CSER – The University of Arizona, Tucson, AZ

2023 – 20th Annual CSER – Stevens Institute of Technology, Hoboken, NJ

2022 – 19th Annual CSER – Norwegian University of Science and Technology, Virtual

2020 – 18th Annual CSER – University of Southern California, Los Angeles, CA

2019 – 17th Annual CSER – Stevens Institute of Technology / Virginia Tech

2018 – 16th Annual CSER – University of Virginia

2017 – 15th Annual CSER – University of Southern California, Los Angeles, CA

2016 – 14th Annual CSER – University of Alabama in Huntsville, AL

2015 – 13th Annual CSER – Stevens Institute of Technology, Hoboken, NJ

2014 – 12th Annual CSER – University of Southern California, Los Angeles, CA

2013 – 11th Annual CSER – Georgia Institute of Technology, Atlanta GA

2012 – 10th Annual CSER – Missouri University of Science and Technology, St. Louis, MO

2011 – 9th Annual CSER – University of Southern California, Los Angeles, CA

2010 – 8th Annual CSER – Stevens Institute of Technology, Hoboken, NJ

2009 – 7th Annual CSER – Loughborough University, UK

2008 – 6th Annual CSER – University of Southern California, Los Angeles, CA

2007 – 5th Annual CSER – Stevens Institute of Technology, Hoboken, NJ

2006 – 4th Annual CSER – University of Southern California, Los Angeles, CA

2005 – 3rd Annual CSER – Stevens Institute of Technology, Hoboken NJ

2004 – 2nd Annual CSER – University of Southern California, Los Angeles, CA

2003 – Inaugural CSER – Stevens Institute of Technology, Hoboken NJ

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MARCH 25-27, 2024
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Tucson, Arizona

COLLEGE OF ENGINEERING
Systems & Industrial
Engineering