

The logo features the word "AES" in blue with a grey arrow curving over it, followed by "VISION" in black. Below this, the year "2020" is written in large, bold, black numerals.

AES VISION
2020

Technical Operations – SMART Objectives

Review and Actions George Schmidt

September 28 and 29, 2018

Rome Marriott Park Hotel, Rome, Italy

Technical Operations SMART Objectives Review

- Stated Objectives:
 - Continue review of all Panels.
 - Develop a plan for a new IEEE Conference on UAV Technologies and Applications that would involve all Panels.
 - Develop an annual Systems article from each Panel that is a current Technology Assessment and Forecast for that area.
 - Develop a Panel best practices document covering the period from initial Panel proposal through actual Panel operations.
 - Complete GAP analysis relative to DLs and Panels and work with Education to include recommendations for DLs and for DLs to be members of Panels
 - Prepare a list of 2018 Panel Meetings, dates, and locations to see the geographical overlays with chapter locations for possible meetings with both groups

PANEL REVIEW/ HIGHLIGHTS/NEWS

- Avionics
 - Chair Kostek retiring end of 2018. No Panel decision yet on new Chair.
- Cyber Security
 - Systems Special Issue planned for 2019. Last Specials were published 11/2017 and 3/2017.
 - Cyber Security Engineering Curriculum Criteria approved by ABET Engineering Accreditation Commission (waiting for ABET Board of Delegates to approve for public release). K. Kramer on the IEEE subcommittee working with INCOSE and CSAB.
- Gyro and Accelerometer
 - Four standards were either revised or completed. Several more are in draft status.

PANEL REVIEW HIGHLIGHTS/NEWS

- Navigation Systems
 - Planning for PLANS have 2020 started. Considering starting an alternate year navigation conference.
- Radar Systems
 - Successful conferences in Oklahoma City and Brisbane. 41 Active Members, 12 Emeritis, Radar Summer School, Best Panel Award for 2017
- Space
 - Aerospace Conference, Metro Aerospace Conference

2018 UAS/UAV Panel Initiatives

Generate TP Traction



- The tech panel has big ideas for our growth strategy
 - Annual (2018) activities:
 - Create a regular cadence for Tech Panel meetings
 - Publish a global technology outlook
 - Grow participation in UAS standards in collaboration with non-IEEE organizations
 - Near-term (3-year) strategy:
 - UAS student programs (e.g. BYO drone, drone racing, UAS workshops)
 - IEEE-led UAS conference
 - Lead global standardization of UAS operations
 - Organizational goals:
 - Tech panel communication/coordination platform for collaboration
 - Grow membership to 20+ with global footprint coverage
 - Tech panel presence in AESS publication (e.g. “Dronetalk” in Systems Magazine)

A NEW UAS/UAV CONFERENCE- STRATUS 2019

- **S**ystems and **T**echnologies for **R**emote Sensing **A**pplications **T**hrough **U**nmanned Aerial **S**ystems
- Co-sponsor Geoscience and Remote Sensing Society (GRSS)
- Rochester, NY February 2019
- Focus on technology, regulations, and applications

Panel Volunteers for Systems Articles

AESS Panel	Authors
Avionics	Walter Rawle
Cyber Security	Kathleen Kramer and Erik Blasch (Editors)
Navigation Systems	Zak Kassas
Radar Systems	Willie Nel
Space Systems	Cosimo Stallo
UAV/UAS	Kai Lothan John and Sabrina John

DRAFT

IEEE AESS PANELS Policy and Procedures Fall 2018

Contents:

- 1) **Applying for Panel Approval**
- 2) **Forming an approved Panel**
- 3) **“Best” Panel operating procedures**

AESS PANEL DL AND CONFERENCE CONNECTIONS/GAPS

Technical Panels	Avionics Systems	Cyber Security	Gyro and Accelerometer	Navigation Systems	Radar Systems	Space Systems	Unmanned Aerospace Vehicles	No Panel
Chair	Paul Kostek	Kathleen Kramer	Randall Curey	Michael Braasch	Braham Himed	Cosimo Stallo	Vince Socci	
Conference Participation	DASC & ICNS	DASC & ICCST	PLANS	PLANS	Multiple	MetroAerospace Aerospace & RAST		
Distinguished Lecturer Coverage	1	0	0	2	11	5	2	3*

* Systems Engineering - 1
Fusion - 2

Named DL versus Panel

	Avionics Systems	Cyber Security	Gyro and Accelerometer	Navigation Systems	Radar Systems	Space Systems	Unmanned Aerospace Vehicles
Maruthi Akella						X	
Yaakov Bar-Shalom					X		
Erik Blasch					X		
Eli Brookner					X		
Larry Chasteen	X						
Fred Daum					X		
Mark Davis					X		
Walt Downing						X	
Giuseppe Fabrizio					X		
Alfonso Farina					X		
Maria Sabrina Greco					X		
Hugh Griffiths					X		
Phillip Hall							X
Lorenzo LoMonte					X		
Wolfgang Koch					X		
Kathleen Kramer				X			
Surendra Pal						X	
Zhihua Qu							X
Bob Rassa							
Avid Roman-Gonzalez						X	
George Schmidt				X			
Michael Wicks					X		
Peter Willett							
Ji Wu						X	

Technical Operations Ongoing Action Items

- AESS-BOG-Spring '18, AI-0747 - Develop a plan for a new IEEE Conference on UAV Technologies and Applications that would involve all Panels. **George Schmidt, lead, working with Vince Socci and Mark Davis. End 2/2019**
- AESS-BOG-Spring '18, AI-0748 - Develop an annual publication from each Panel that is a current Technology Assessment and Forecast for that area. **George Schmidt, lead, working with Peter Willett. End 12/2018**
- AESS-BOG-Spring '18, AI-0749 - Develop a Panel best practices document covering the period from initial Panel proposal through actual Panel operations. **Mike Braasch, lead, working with George Schmidt. End 12/2018**
- AESS-BOG-Spring '18, AI-0750 - Prepare a list of 2018 Panel Meetings, dates, and locations to see the geographical overlays with chapter locations for possible meetings with both groups. **George Schmidt, lead. Completed.**
- AESS-BOG-Spring '18, AI-0751 - Complete GAP analysis relative to DLs and Panels and work with Education to include recommendations for DLs and for DLs to be members of Panels. **George Schmidt, lead, working with Kathleen Kramer. End 12/18**
- AESS-BOG-Spring '18, AI-0752 - Work with the Technical Panels and George Schmidt to stimulate Future Directions. **Leo Lighthart and George Schmidt. End 9/18.**

Questions/Comments

- Individual Panel reports are in the following charts for the minutes

PANEL REPORTS

AEROSPACE CONTROL and GUIDANCE

- Annual 1-day short course
- Competitive award lecture for young engineers
- Meeting locations to facilitate relevant tours when possible

- Invited talks across gov't, industry, universities
- Recent aerospace activity on Panel Topics of interest

- Aircraft and surface vehicles
- Missiles and Space
- Avionics and Systems
- Dynamics and Analysis
- Flight, Propulsion, Autonomous Control

Meetings

- 4/10-13/2018 in Tucson, AZ
- 10/10-12/2018 in Savannah, GA

Initiatives Updates

- Held 1-day short course on April 10, 2018
 - Topic: Next Possible FG&C Developments using Up-Front Function Integration to Achieve Improved Operational Safety, Performance Consistency Between Modes, Architectural Design Simplification, Reusability and Cost Reductions
- Expect next short course in April 2019
- Most recent competitive lecture award for young professionals (YPs) to be presented in October 2018 to Dr. Nisar R. Ahmed from the University of Colorado, Boulder
- April 2018 meeting included tour of Pima Air and Space Museum

Upcoming Meeting Plans

- Savannah, GA on October 10-12, 2018
 - Will have 3 days of committee short and full briefings within the indicated panel topic areas
 - The agenda is now being finalized
 - Will include next YP lecture competition winner
 - The meeting announcement with a preliminary agenda has gone out and is on the ACGSC web site
 - Will include a tour of the National Museum of the Mighty 8th Air Force

Avionics Systems Technical Panel

Paul Kostek

September 2018

Activities

- Avionics Systems Panel article written by Walter Rawle for Systems Magazine
- Panel meeting at 37th DASC (London, England)
- Exploring collaboration with Cybersecurity and UMS Panels
- New Chair for 2019 still in work

Cyber Security Technical Panel

Kathleen Kramer

Submitted to: George Schmidt, VP- Technical Operations

September 2018

Cyber Security (Technical Operations Panel)

■ Significant Accomplishment

- “Cyber Security Engineering” Criteria have been approved by the ABET Engineering Accreditation Commission with panel chair (Kramer) on subcommittee from IEEE to work with INCOSE and CSAB. (provided)
- Special Issue on Cyber Security in Aerospace Systems for SYSTEMS Magazine
 - Being proposed and promoted with E. Blasch. G. Thomas invited.
 - 2-part Special Issue November 2017 and March 2017 was a major/first accomplishment of panel. Thanks for Greco, Walsh, Thienissen. Drew from DASC and ICCST.

■ Objectives

- Two panel meetings per year incorporated into program of DASC and ICCST.
- Special Issue
- Add to Resource Center and DLs

■ Notes

- Unique application of knowledge and effort (cyber security of aerospace systems) of wide-interest topic for aspects specific to our fields of interest.
 - AIAA started “Protocol” newsletter nominally on this, but it has NO information specifically related to aerospace systems.

Cyber Security (Technical Operations Panel)

- **Committee Members (7+10)**
 - Kramer (Chair) - 16 others, including these 6 (2 BoG, 2 DASC TPCs, 2 ICCST chairs) and submitters to special issue from conference.
 - **Other opportunities and issues**
 - Membership is “open” – this allows interested members, particularly conference track and tutorial leaders in niche to be involved but also brings “volunteers” whose interest is self- and center-promotion and provides little organizing support.
- **Distinguished Lecturers**
 - Chair is one. Another DL is on panel, but security restricted. Need more coverage.
 - **Other opportunities and issues**
 - *EdCom working with TechOps on GapAnalysis for 9/18.*
- **Meetings:**
 - At 37th DASC in London September 2018 –session on Thursday, September 27, 2018. Panel member Alope Roy is Conference Chair in 2019 – San Diego.
 - At 2018 ICCST in Montreal October 2018 – Gordon Thomas (ICCST conference rep and panel member) requested.
 - **Other opportunities and issues**
 - DASC and ICCST are AESS conferences, but not as strongly affiliated as others. Panel has been beneficial to these ties, but...

Navigation Systems Panel (NSP)

Recent Activities:

- AESS-organized track at PLANS 2018
- Meetings held Apr 2018 and July 2018
- Engaged with ION to execute MOU and to form the executive committee for PLANS 2020

Near-term Plans:

- Submit technology assessment / state-of-the-art review article for SYSTEMS
- Solicitation of navigation papers for SYSTEMS and TAES
- Promote Senior Membership
- PLANS is biennial and always held in the US; considering an 'off-year' navigation conference to be held outside the US

Gyro and Accelerometer Panel (GAP)

■ Accomplishments

- The revision of Std 1293, “IEEE Standard Specification Format Guide and Test Procedure for Linear, Single-Axis, Nongyroscopic Accelerometers,” was successfully balloted and has been submitted to RevCom.
- A PAR has been obtained for Std 528, “IEEE Standard for Inertial Sensor Terminology.” Initial comments have been resolved.
- A draft of Std 952 has been completed. It needed to be recreated as the original word document was corrupted. Next step is to request a PAR for revision.
- Work continues on Std 1780, “Draft Standard for the Specification of Inertial Measurement Units (IMU).”

Gyro and Accelerometer Panel (GAP)

- Near term plans
 - Work with editors to publish revision of Std 1293.
 - Complete 100% of IMU document first draft by 1 November 2018.
 - Complete revision of Std 528.
 - Submit a PAR for 952 revision by the end of the year.

Radar Systems Panel

2018 Planned Activities

Braham Himed

2018 Planned Activities

- New Activities:
 - Cement Radar Summer School as part of RadarConf xxxx and Radar xxxx series (xxxx is the year)
- Panel Membership
 - 41 Active Members and 12 Emeritus Members
 - List sent to Judy
- Committees
 - Radar Conference Committee
 - Awards Committee
 - Standards Committee
 - Education Committee
 - Nomination and Appointments Committee
 - Waveform Diversity Committee
 - Civilian Radar Committee
- Panel Meetings
 - IEEE RadarConf 2018 in Oklahoma City, OK (April 2018)
 - Radar 2018, Brisbane, Australia (August 2018)
- Are you interested in participating with distinguished lecturer selections in your technical area? Yes
- Do you see any opportunities for inter-Panel collaboration: Yes, especially in Autonomy and Cyber
- Any issues/topics you wish to bring up in this space? No

Radar Systems Panel (RSP)

■ Organization:

- The Radar Systems Panel (RSP) is a technical panel of the IEEE Aerospace and Electronics Systems Society (AESS) and its activities are in line with the purposes of the AESS society
- Panel is composed of IEEE members who are representatives of industry, government, educational institutions, and professional societies, and who are active in the field of Radar

■ Purpose

- Sustain and oversee the program of IEEE Radar Conferences
- Manage the nomination and selection of candidates for IEEE Awards in the field of Radar
- Promote and support publications in the field of Radar
- Promote educational activities in the field of Radar
- Encourage the submission of nominations for IEEE Fellows and Senior Members in the field of Radar
- Provide periodic revision of IEEE Standards pertaining to the domain of Radar

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Space Systems Technical Panel

Cosimo Stallo

September 2018

Space Systems Panel Topics

- Vision of the panel is to create a reference point for technical and scientific initiatives related to the space world. Panel members belong to (civil and military) institutions, industry and academia. The promotion and involvement of IEEE and AESS in space activities through the Panel is also aimed.
- In the frame of the Space Systems Panel, key topics related to space can be highlighted to the scientific and industrial community by the organization and development of the following:
 - Special Issues on Transactions and Journals
 - Conferences and Workshops
 - Editorial activities
 - Seminars, Courses
 - Books
 - Promotion and Standardization
 - Three Activities Areas:
 - Area 1 *Satellite Communications Systems*
 - Area 2 *Space Exploration and International Space Station*
 - Area 3 *Space-based Navigation Systems and Synthetic Aperture Radars*

Space Systems Panel

Near-Term Goals and Objectives

- Hold 2+ meetings/year
- Increase AESS reputation and visibility in space topics
- Relate to AESS Conferences, Meetings, Activities

AESS Activities

- Conferences – Aerospace Conference, MetroAerospace, with tracks related to panel are both fall.

Members

- Dario Schor (from University of North Dakota)
- Others – nice participation at Aerospace Conference

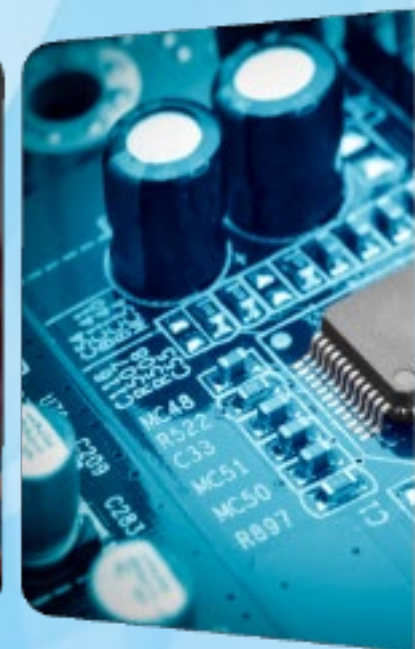
Journals and DLs:

Activities related to the role of Editor of Space Systems of the AES Transactions and for the Systems Magazine.
Foreseen 2 DLs in the space topics area.

Space Panel Report

- Activities related to the role of Editor of Space Systems of the AES Transactions and for the Systems Magazine.
- Organisation of training and thesis activities of students at the University of Roma Tor Vergata in the field of space systems.
- Activities related to the co-chairing of Track 2 Space Missions, Systems and Architecture of the 2013 IEEE Aerospace Conference that took place in Big Sky in March 3-10 2018.
- The 15th edition of the Master Course in “Advanced Satellite and Communications Systems” was concluded at the University of Rome Tor Vergata, while the 16th edition is ongoing.
- The 5th edition of the MetroAerospace conference took place in Rome on June 20-22, 2018.
- Activities related to projects, publications and teaching in the space system related topics.
- Development and publication of several papers about space systems in conference proceedings and journals.

- Support to **Durban University Technology** (DUT) in South Africa in order to establish an **Institute of Space Science** (<http://www.dut.ac.za/iss/>)
- Increase of technical activities in the field of satellite communications for LEO mission (Area 1)
- Initiative in the framework of Italian Space Agency for ExoMars mission (for Mars exploration) (Area 2)
- Increase of technical activities in the field of space navigation for intelligent transportation systems (rail, automotive, maritime) and related cybersecurity (techniques against jam, spoof and meaconing) (Area 3)
- New Members Affiliation
- **Call for identification of new chairs of each technical area of the Panel 2019-2022**



IEEE AESS UAS/UAV Tech Panel Progress Report – September 2018

Vince Socci, IEEE UAS/UAV Technical Panel Chair, National Instruments RTT BDM

3 Sept 2018

socci@ieee.org

2018 Initiatives

Generate TP Traction



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Recent Activities and Near-Term Plans

- Meetings
 - TP participated in FAA UAS symposium in March and Exponential in May
- Conferences
 - Working to participate in World Forum of IoT in 2019
 - Possible joint work in STRATUS and INTERDRONE
- Chapter Outreach – Need to get AESS Chapters chair involved
 - Supported chapter disc golf event
 - Held lecture on UAV technologies
 - Get UAV events to replicate in other chapters
 - Get AESS BoG chapters chair involved
- Publications – Phil and Kai working on articles
- Public Imperatives – Support ISO, ANSI, CTAP and IKO