



IEEE Aerospace Electronic Systems 50th Anniversary Celebration

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Officers meeting

February 14 & 15, 2022



Objective #4 – 50th AESS anniversary initiatives

- ▶ S – Debates, possible initiatives and set up people in charge.
- ▶ W – Set up regular meetings to be able to implement initiatives.
- ▶ O – Most feasible Initiatives to be implemented are magazine special issue, dedicated event at a major conference, gadgets, promotional video, AES logo contest, corporate sponsorship/partnership and “quizz” challenge. Divided in three categories:
 1. Commemorative events
 2. Promotional activities
 3. Members engagement
- ▶ T – Industry relation, member services, finance and conferences support needed.

Objective #4 – 50th AESS anniversary initiatives

50th Anniversary Magazine Special Issue – Commemorative events

IDEA – *A showcase of AESS past 50 years of history.*

PLAN – *Book or Special issue that reflects the impact/history of AESS or talk about our next 50 years and have The dedicated Special Issue could include:*

- *Retrospective article on the history of the society*
- *Article on the vision for the next years*
- *Recollections and photos of past conferences, past AESS presidents etc.*
- *Reflection interview or statements of key persons*
- *Invite specific autor/key person to write an article*

TIME – *To be available by January 16th, 2023.*

PEOPLE – *Publications, Conference, Awards, Member Services + + people who have played an important role in AESS (Alfonso, past presidents, Hugh + Wolfgang guest editor).*

COST – *TBD.*

IN CHARGE – *Different expertise (avionics, navigation, radar).*

- Roadmap from Dr. A. Farina: LFIEEE, FREng, FIET, Fellow of EURASIP, Member of the European Academy of Science, Real Academia de Ingenieria, Senior VP and CTO at Selex ES (retired) - Consultant Land & Naval Systems Division, Leonardo Company.

- Introduction
- Before 1973
- Today
- Tomorrow

A showcase of IEEE AESS past 50 years of history: Introduction

- The Institute of Electrical and Electronics Engineers (IEEE) is a non-profit group founded in **1963**, geographically parsed into 10 regions, aimed at **fostering innovation** in Science Technology Engineering and Mathematics (**STEM**), focusing on fields related to **electrical engineering and computer science** and thematically divided into societies.



- The Aerospace and Electronic Systems Society (AESS) is a **professional organization** founded in **1973** within the IEEE that focuses on the **advancement of integrated electronic systems and large-scale integrated interoperable systems** and disseminates its **culture** predominantly via **publications and conferences with a worldwide footprint** (as well as via technical panels, special interest groups, distinguished lectures, short courses, networking, and mentoring programs).
- In particular, the AESS is a **professional home** for engineers, physicists, and mathematicians from **Academia, Industry, and Research Centers** including **leading authorities** for Naval, Ground-based, Airborne, Spaceborne, and Underwater **Inference Systems**.



A showcase of IEEE AESS past 50 years of history: Before 1973

- **Two professional societies: the American Institute of Electrical Engineers (AIEE), founded in 1884, and the Institute of Radio Engineers (IRE), founded in 1912.**
- **Expansion of electrical engineering and computer science under U.S. leadership within the framework of World War II, the Marshall plan to rebuild Europe, the Cold War, the space age.**
 - **Needs for analysis, design, develop, integrate, and test large, complex systems.**
 - *Works on telemetry systems, sensor systems (radar, guidance, navigation), avionics, space systems (manned and unmanned spacecrafts), military systems, power systems, auto-test systems.*
- **The IRE allows forming Professional Groups with their own meetings and transactions.**
 - **1950: Professional Group on Radio Telemetry and Remote Control (PGRTRC); 1955: Professional Group on Telemetry and Remote Control (PGTRC); 1959: Professional Group on Space Electronics and Telemetry (PG-SET).**
 - **1951: Professional Group on Airborne Electronics (PGAE); 1953: Professional Group on Aeronautical and Navigational Electronics (PGANE); 1961: Professional Group on Aerospace and Navigational Electronics (PGANE); 1963: Professional Technical Group on Aerospace and Navigational Electronics (PTGANE); 1964: Group on Aerospace and Navigational Electronics (G-ANE).**
 - **1955: Professional Group on Military Electronics (PG-MIL).**
- **The AIEE allows forming Committees.**
 - **1959: the Aerospace Instrumentation Committee (ASIC) and the Aerospace Transportation Committee (ASTC); 1963: ASIC and ASTC form Group on Aerospace (G-AS).**
- **1963: the IRE and the AIEE merge to form the IEEE.**
- **1965: PG-SET , G-ANE , PG-MIL , and G-AS merge to form the Group on Aerospace and Electronic Systems (G-AES); 1973: AESS.**

A showcase of IEEE AESS past 50 years of history: Today

- As of today, the AESS is a **vibrant society** whose activities are presented at <http://iee-aess.org> with plenty of neatly structured information including:
 - Governance (e.g., Constitution, Board of Governors, Strategic Plan, Officers, History, Liaisons,...).
 - Conferences (e.g., the flagship conference IEEE RadarConf, workshops, ...).
 - Education (e.g., Distinguished Lectures, Tutorial Programs, Videos, ...).
 - Awards (e.g., AESS Awards, Panel Awards, Publication Awards, ...).
 - Member Services (e.g., mentoring programs, student activities, chapters activities, lists, memorials, ...).
 - Publications (e.g., from 1973 IEEE Transactions in Aerospace and Electronic systems; from 1986 IEEE Aerospace and Electronic Systems Magazine).
 - Technical Operations (e.g., Technical Panels for dedicated fields such as radar systems, navigation systems, cyber security, ...).
 - Industry Relations (e.g., fruitful news, networking, liaisons, opportunities, ...).

- The AESS comprises a significant number of **IEEE Fellows** which provide the Society with technical excellence and leadership according to the IEEE motto: *“Advancing Technology for Humanity.”*
 - A partial list of AESS fellows from 1971 to 2019 can be found at:
https://en.wikipedia.org/wiki/List_of_fellows_of_IEEE_Aerospace_and_Electronic_Systems_Society
 - A partial list AESS fellows from 2007 to 2021 can be found at:
<http://ieeee-aess.org>
- The AESS community shares the development of its culture by mingling every year in the U.S. during its flagship conference: the **IEEE RadarConf**.
 - Interestingly, in the past 50 years only 2 IEEE RadarConfs have been held outside the U.S., namely, the 2008 IEEE RadarConf in Rome, Italy, and the 2020 IEEE Radarconf in Florence, Italy.
- The AESS community has contributed to the establishment of a number of **IEEE Milestones**, e.g.,
 - Christian Hülsmeier’s Radar Predecessor, 1904: Cologne, Germany (dedicated 19 October 2019).
 - Gravitational-Wave Antenna, 1972-1989: LA, Richland, WA, Santo Stefano a Macerata - Cascina (Pisa), Italy (dedicated 3 February 2021).
 - First Digitally Processed Image from a Spaceborne Synthetic Aperture Radar, 1978: Richmond, BC (dedicated 9 September 2014).

- The AESS comprises a significant number of individuals whose extraordinary accomplishments have been celebrated with prestigious **awards** (see <http://ieee-aess.org>).
 - AESS Awards (IEEE AESS Organizational Leadership Award, Exceptional Service Award, IEEE **AESS Robert T. Hill Best Dissertation Award**, IEEE AESS Judith A. Resnik Space Award, IEEE AESS Industrial Innovation Award, IEEE AESS Early Career Award, **IEEE AESS Pioneer Award**).
 - Chapter Awards (IEEE AESS Chapter of the Year Award).
 - Other Awards (**IEEE Dennis J. Picard Medal**, IEEE AESS Engineering Scholarship, IEEE Michael C. Wicks Radar Student Travel Grant).
 - Panel Awards (Warren D. White Award, **Fred Nathanson Memorial Radar Award**, IEEE AESS Technical Panel of the Year Award).
 - Position, Location and Navigation Symposium (PLANS) Awards (Richard B. Kershner Award, Walter R. Fried Award).
 - Publication Awards (**M. Barry Carlton Award**, Harry Rowe Mimno Award).
- Remarkably, the AESS includes individuals awarded with the highest recognition of the IEEE (see https://en.wikipedia.org/wiki/IEEE_Medal_of_Honor).
 - The IEEE Medal of Honor (e.g., R. Kalman, 1974; B. Parkinson, 2018).

- The AESS addresses **Ethics and Culture** as pillars of its core values.
 - Remote sensing can provide tools to **influence a sustainable economy and safety of planet Earth**.
 - On January 31, 2022, at 6:11 p.m. EST, **SpaceX Falcon 9** launched the Italian **COSMO-SkyMed Second Generation FM2 X-band Synthetic Aperture Radar** to low Earth orbit from Cape Canaveral. Artist's illustration of a COSMO-SkyMed Second Generation satellite in orbit. Credit: ASI.



COSMO-SkyMed Second Generation FM2 X-band SAR

- The AESS addresses **Ethics and Culture** as pillars of its core values.
 - Pondering the ethical, legal, and social dimension of technology from the conceptual design to the final use.
 - *“The use of technically uncontrollable technology is immoral per se.”* W. Koch.
 - Excerpt from “On Ethically Aligned Information Fusion for Defence and Security Systems” by W. Koch:

The future of digitization in defense and security does not choose between man and AI, but lies in a scalable combination of man and AI to ensure the best possible performance of tasks. This includes an ethical dimension in digital systems engineering. Since we feel that there might be a broader consent within the Information Fusion community to these considerations, we are closing with some recommendations.

- 1) Ethically aligned systems design is a fundamental capability that we need to develop systematically in order to be able to use digital technologies in such a way that harm for humanity is prevented. In particular, consideration should be given to systematically develop ethical competence along with technological progress in defense and security at all stages.
- 2) In addition to their operational benefit in closing capability gaps, expanding the range of capabilities, and developing corresponding concepts, procedures, and organizational measures, ethical competence of military and police forces in dealing with digital technologies as well as personal and societal acceptance needs to be achieved. This would enable successful innovation in defense and security.
- 3) Digitization projects should be accompanied by ongoing analyses of technical controllability and personal accountability in a publicly visible and verifiable manner. Otherwise, the paradigm shifts and material efforts associated with Artificial Intelligence and Technical Automation based on Information Fusion would hardly be politically and socially enforceable.

- The AESS addresses **Ethics and Culture** as pillars of its core values.
 - Remote sensing can provide tools to **explore the universe**.

- *"We succeeded in taking that picture, and, if you look at it, you see a dot. That's here. That's home. That's us. ...Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity – in all this vastness – there is no hint that help will come from elsewhere to save us from ourselves. It is up to us. It's been said that astronomy is a humbling, and I might add, a character-building experience. To my mind, there is perhaps no better demonstration of the folly of human conceits than this distant image of our tiny world. To me, it underscores our responsibility to deal more kindly and compassionately with one another and to preserve and cherish that pale blue dot, the only home we've ever known."* Carl Sagan, 1994 speech on Pale Blue Dot at Cornell University, Ithaca, NY.



Pale Blue Dot

A showcase of IEEE AESS past 50 years of history: Today

- The AESS addresses **Ethics and Culture** as pillars of its core values.
 - A **continuous-learning-mentality** is needed to cope with complex systems.
 - *“The bells which toll for mankind are – most of them anyway – like the bells on Alpine cattle; they are attached to our necks, and it must be our fault if they do not make a cheerful and harmonious sound”* (The Future of Man: The BBC Reith Lectures 1959). Sir Peter Brian Medawar, 1960 Nobel Prize in Physiology or Medicine.
 - *“The future of humanity is bound to the future of science and hinges on how successfully we harness technological advances to address our challenges. If we are to use science to solve our problems while **avoiding its dystopian risks**, we must think rationally, globally, collectively, and optimistically about the long term. Advances in biotechnology, cyber technology, robotics, and artificial intelligence—if pursued and applied wisely—could empower us to boost the developing and developed world and overcome the **threats humanity faces on Earth, from climate change to nuclear war**. At the same time, further advances in space science will allow humans to explore the solar system and beyond with robots and AI. But there is no “Plan B” for Earth—no viable alternative within reach if we do not care for our home planet”* (<https://www.amazon.it/Future-Prospects-Humanity-Martin-Rees/dp/069118044X>). Martin Rees.
 - *“Each generation that discovers something from its experience must pass that on, but it must pass that on with a delicate balance of respect and disrespect...It is necessary **to teach both to accept and to reject the past with a kind of balance that takes considerable skill**. Science alone of all the subjects contains within itself the lesson of **the danger of belief in the infallibility of the greatest teachers of the preceding generation.**”* Richard Feynman.

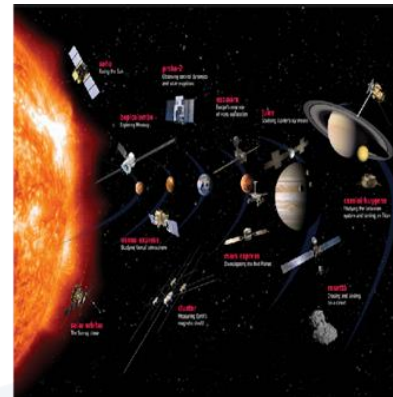


A showcase of IEEE AESS past 50 years of history: Tomorrow

- **Paramount STEM challenges** (such as Mars Exploration, GNSS, Smart Cities, Robotics, Homeland Protection, Complex Logistics and Transport, Genomics, and the like...) do require continuous financial and intellectual efforts.
 - Such efforts entail an harmonious administration and structured plans conceivable solely by huge techno-productive organizations.
- The AESS can have a paramount role in several specialties for contributing to such STEM-related challenges, e.g.:
 - As a consulting reference representing *The Shoulders of Giants* and *The Leading Authority*.
 - **Endorsing liaisons** between industries, research centers, and universities (e.g., sponsoring selected PhD works and summer schools).
 - Issuing **quality stamps** for research-grants.



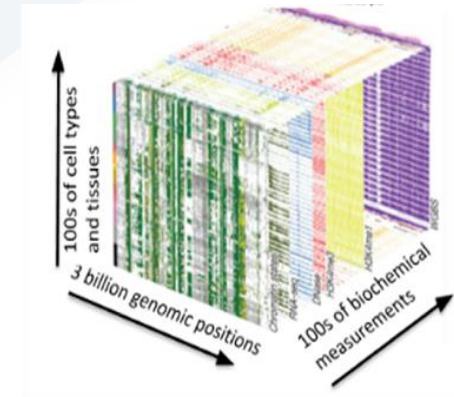
Atlas Robots



Space Probes



Homeland Protection



Healthcare Challenges

Objective #4 – 50th AESS anniversary initiatives

Dedicated event at a major conference –

Commemorative events

IDEA – *To hold a special event at one of the major AESS conferences (e.g. the IEEE Radar Conference in San Antonio) where key-persons of the AESS are invited to commemorate the past 50 years and talk about the future.*

PLAN – *Identify people to be invited to give a plenary speech and a chairman to organize the event.*

TIME – *TBD.*

PEOPLE – *Member Services, Conferences, Finance + key people (past presidents, people who got an award or achievement), invite people from all areas*

COST – *TBD.*

IN CHARGE – *TBD.*

Objective #4 – 50th AESS anniversary initiatives

Special 50th Anniversary Gadgets – promotional activities

IDEA – *To create special gadgets/materials to be distributed across Chapters and at AESS major events throughout 2023.*

PLAN – *Design/select the gadgets/materials and have them ordered as soon as possible. Industrial partners might be engaged to sponsor the initiative while including their logo on the gadgets. High value gadgets to be sent to key-persons in the AESS history (Presidents, Founders, etc.)*

TIME – *TBD.*

PEOPLE – *Member Services, Industry, Finance.*

COST – *TBD.*

IN CHARGE – *TBD.*

Objective #4 – 50th AESS anniversary initiatives

50th anniversary promotional video – promotional activities

IDEA – *Create a commemorative video, including interviews of AESS members sharing their vision on the past and the future of the society.*

PLAN – *Use the major commemorative event to create the commemorative video with the AES members and also including the key-persons of the AESS*

TIME – TBD.

PEOPLE – *The entire BoG should be involved in the organization + people who have played an important role in AESS.*

COST – TBD

IN CHARGE – TBD

Objective #4 – 50th AESS anniversary initiatives

50th anniversary AESS logo contest – promotional activities

IDEA – Create a dedicated AESS logo, to be used throughout 2023.

PLAN – A contest for AESS members to create the best 50th anniversary AESS logo. The selected logo will be used throughout 2023 in official emails, official flyers, gadgets etc.. A selection process and a prize for the winner chapter should be defined

TIME – To be concluded before Summer 2022.

PEOPLE – AESS members.

COST – \$3k  **MOTION PASSED**. The amount should cover:

- Prize for the winner and giveaways for all participants (+shipping costs)
- Logo professional production
- Advertisement strategies other than AESS channels (if any)

IN CHARGE – Fabiola/Francesca + BoG for logo selection

Objective #4 – 50th AESS anniversary initiatives

Create a dedicated webpage

Identify the logo production company

Deadline for submissions



Explore IEEE rules!

- Define the submission and selection process (how to, timing)
- Identify suitable prizes (number, entity)

Advertise the contest

Select the winner

- Announce the winner
- Distribute prizes
- Logo production
- Use the logo for the design of gadgets/giveaways for 2023

Use the logo in any official webpage/event/presentation/material

► Main rules:

- Submissions via email at admin@ieee-aess.org
- Deadline: 30 April 2022
- Prize: USD 500
- Both digital logos and hand drawn sketches are welcome.
The selected logo will be then edited by a professional designer.



Objective #4 – 50th AESS anniversary initiatives

Corporate Sponsorship/Partnership Program – **Member engagement**

IDEA – *To offer exclusive partnership opportunities to one or a few sponsors for our 50th anniversary.*

PLAN – *Depending on what levels we currently have (ex: gold, silver, bronze, etc.) we can offer a few exclusive partnership at a different cost.*

TIME – *TBD.*

PEOPLE – *Industry Relations, Member Services, Finance.*

COST – *TBD*

IN CHARGE – *TBD.*

Objective #4 – 50th AESS anniversary initiatives

IEEE AESS Challenge – Member engagement

IDEA – AESS “quiz” challenge

PLAN – Simple version: *Challenge members to answer a series of questions about AESS, where the info is available on the IEEE or the AESS website. Harder version: Challenge members to answer a series of questions about technologies associated with AESS (mainly I’m thinking about historical-type questions, but could be technical questions). Host a virtual awards ceremony with some kind of prizes.*

TIME – 1 month to distribute questions and collect answers.

PEOPLE – AESS BoG to submit questions. This committee to select questions to be used. AESS leadership to host awards ceremony

COST – Minor cost for awards – maybe AESS tshirts or hats? Or a plaque. <\$1k

IN CHARGE – Laila/Sarana

Objective #4 – 50th AESS anniversary initiatives

INITIATIVE PRIORITY LEVEL

CAN BE DONE IN PARALLEL:

- 1) *Logo contest and Magazine special issue*
- 2) *Anniversary gadgets/material and Corporate Sponsorship/Partnership Program*

NEED TO BE DONE AFTER PRIORITY:

- 1) *Logo contest and Magazine special issue*
- 2) *Anniversary gadgets/material and Corporate Sponsorship/Partnership Program*
- 3) *Dedicated event at a major conference*
- 4) *Promotional video*
- 5) *AES quiz challenge*