

AESS – Education

Strategic Planning

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Overview

- **Strategy and Education**

Mission & vision, current status, strengths, weaknesses, and opportunities
Strategic objectives & initiatives

- **Distinguished Lecturers**

2015-2016 roster and lectures (technical panel alignment & geographic distribution)
DL activity for 2015

- **Video Tutorials**

Intend to expand offerings and access.

- **Recent New Initiatives**

1. Robert T Hill Memorial Award for Best Dissertation – Near complete
2. AESS Mentoring Pilot - Still in progress
3. AESS Short Courses - 1 course offered

- **Summary**



AESS Education - Mission and Vision

The mission of the AESS Education Committee is to:

- Develop and coordinate the educational activities of the Society to provide ***timely, relevant and interesting educational topics and delivery methodologies*** to our members and other members of the ***aerospace/defense community***.
- Provide the means to deliver ***high quality Distinguished Lectures and Tutorials*** to our audience.
- Address the needs of ***emerging engineers***.

Vision — AESS will be recognized for its leadership in serving as an essential professional forum for delivering world-class educational activities that advance our international technical communities and valued by AESS members.

[Jan 21, 2016]



Strategic Objectives

Overarching Goal:

Strengthen and grow AESS internationally and technically through education

Growth can mean increasing membership, but also could mean increasing revenue, influence and impact, or recognition.

What are our long-term strategic objectives?

1. Continue to improve existing education products and services
2. Provide more - *and expand the delivery of* - education benefits to attract and retain members
3. Advertise education benefits to members & potential members



Strategic Analysis – Current Status

Strengths and Opportunities

- Effective and efficient DL program (high usage, low cost, fast process, positive feedback).
- Core of excellent, mature and authoritative members willing to contribute to AESS education.
- Exciting new initiatives approved.
- Activities to improve in multiple areas, especially tutorials and increasing geographic reach of education activities, receive active support from BoG and other leaders.
- Technology community and industry base that values education and expert knowledge.

Weaknesses and Threats

- Small AESS membership base that is not growing, with lack of “future mature” involvement [YP/student] → **use our strengths to address**
- Lack of use of online tutorials despite high quality and relevance
- Communication infrastructure and media burdens and challenges.
- Reaching out to countries with low membership base and local budgets (e.g. Argentina).



Strategic Initiatives

1. Improve existing services

- Increase DL activity **and** reduce costs to benefit AESS and members
 - Introduction of two-year DL term with annual reviews and sent letters describing expectation of active DLs
 - Encouraged speakers to present DLs and promote AESS when compatible with other travel commitments
- Improve geographic distribution of DLs to enhance global participation
 - Established selection committee to review roster, recommend new DLs from Germany, Italy, Australia and Peru
- Standardize and streamline DL process – application, approval, funding, reporting
 - DL request form with guidelines, AESS promotional slides, attendance-registration and DL-evaluation forms
- [In-Progress/Rev] Provide opportunity to enhance DL-movement visibility for incremental-cost lectures
 - Allow DLs to indicate planned travel dates/locations on AESS website for potential DL hosts to capitalize on.
- [In-Progress] Expand tutorial offerings& broaden topics (Revised)
 - Provide some open access, implement & monitor feedback page, BoG Committee needs new members

Strategic Initiatives

2. Provide more benefits

- [In-Progress] Robert Hill award for Best Ph.D. dissertation – in cooperation with Erv Gangle
 - Developed award description with prize, eligibility, basis for judging, and motion for BoG approval in Oct 2013 and named with approval.
 - Success/progress in award in 2015
- [In-Progress/Rev] AESS Mentoring Program – implementation of pilot scheme
 - Identified chapter for pilot scheme (San Diego), formed mentor pair, working with R6
- [New] Introduction of AESS Short Courses for professional development across all sectors
 - Empower membership to offer short-courses in AESS fields of interest with potential for paying customers
 - Stakeholders are the organizing hosts, AESS, and presenter and any generated revenue would be shared
 - Additionally provides a mechanism for less developed chapters to raise funds for DL talks (e.g. Argentina)

3. Advertise education activities

- [New] Publicize revised DL page and DL activity report in AESS Magazine
- [New] Advertise Video Tutorials, New Award, Mentoring Scheme
- [New] QEBs should highlight at least one DL/Tutorial

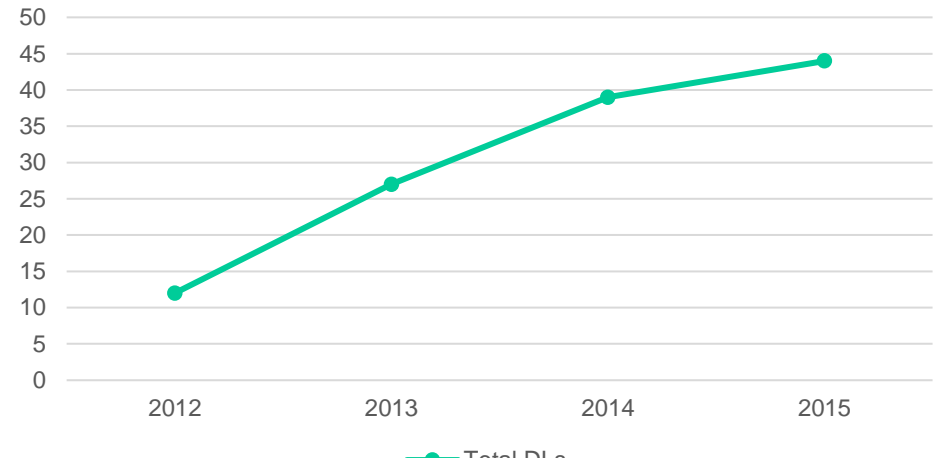


Distinguished Lectures

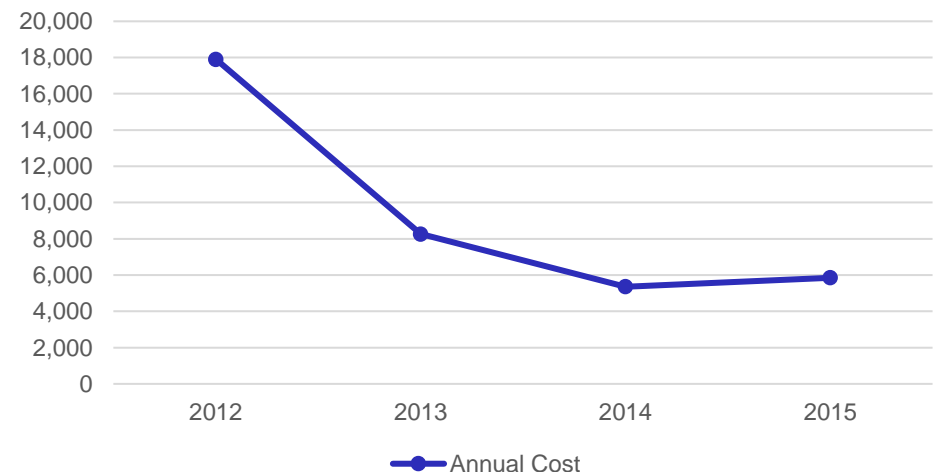
Model for Success Implemented in recent years (Joe!) with 6 strategic objectives and implemented initiatives:

- 1. Increase Activity** - Introduce two-year term, monitor activity & review DL list annually [Technical Panel Alignment]
- 2. Reduce Costs** - Encourage speakers to present AESS DLs when compatible with other travel [Advertising]
- 3. Enhance Accessibility** - Improve geographic distribution of DLs, increase max AESS limit, AESS short-course initiative
- 4. Standardize Procedure** - DL request form to clearly define event details and explain DL guidelines
- 5. Evaluate Benefit** - Provide DL evaluation forms to measure benefit perceived by participants
- 6. Promote AESS** - Promotional slide-pack and brochures to promote AESS to members and new customers

Total DLs by Year



Annual Cost to AESS (\$)



Distinguished Lectures – Geographic Distribution

Where are our DLs based?

United States	Canada	Europe	Other R8	South America	Australia	India	Other R10/ Asia
9	2	4	0	1	1	1	0

Where were our DLs given (funded and non-funded) in 2015?

United States	Canada	Europe	Other R8	South America	Australia	India	Other R10/ Asia
22	1	10	3	0	1	1	7

Where are our members and chapters? – Important to establish and reinvigorate AESS EDUCATION chapter activities where we have concentrations of members.

Using this info on non-USA by country: China (6), France(2), Israel (2), Tunisia(1), Singapore(1), Czech Rep (1), Switzerland (2), Germany (1), Finland (1), Australia (1), UK (1), Italy (1), Canada (1), Turkey (1).

Distinguished Lectures – Technical Panel Alignment

Important to ask AESS Technical Panels to nominate candidates

Technical panel “gap analysis” courtesy of Walt Downing

- Update roster and include lectures that cover all technical panels (one has no DLs)
- Selecting roster that distributes lectures evenly over all TPs may not serve membership optimally
- Some consideration should be given to the proportion of members aligned with the different TPs
- Consideration should also be given to selecting DLs that can grow membership aligned with a TP

	Gyro and Accelerometer	Radar Systems	Space Systems	Target Tracking Systems	Aerospace Systems Integration Engineering	Aerospace Control & Guidance Systems	Cyber Security	Unmanned Aerospace Vehicles	Avionics Systems	Other
Yaakov Bar-Shalom		?		?						
Erik Blasch				?		?				
Eli Brookner		?								
Larry Chasteen		?			?					
Fred Daum		?		?	?					
Mark Davis		?								
Saj Durrani			?		?					
Giuseppe Fabrizio		?								
Alfonso Farina		?								
Avid Roman Gonzalez			●							
Maria Sabrina Greco		?								
Hugh Griffiths		?								
Simon Haykin		?				?				
Wolfgang Koch				?	?	?				
Surendra Pal			●					●		
Tony Ponsford					?					
Bob Rassa					?					
George Schmidt	●				?	?		?	?	

Online Tutorials – Current Status

Available Online

- Bistatic & Multistatic Radar – Hugh Griffiths
- GPS/GNSS + Inertial Navigation – James Farrell
- Radar System Performance Modeling – Dick Curry
- Sea Clutter - Simon Watts & Keith Ward
- Fundamental Concepts in Radar Signal Processing - Mark Richards
- Introduction to Stealth – Dave Lynch
- **[NEW] High Level Information Fusion – Erik Blasch**

Under Discussion

- Foliage Penetration – Mark Davis
- Inertial System and GPS Technology Trends – George Schmidt
- **[NEW] RF Tomography – Mike Wicks**
- **[NEW] RF Photonics – Charles Cerny**

Observations Work

Ongoing to Address:

- Limited utilization
- Insufficient topic diversity
- Needs revitalization and publicity

Current status: Wide-ranging effort across DLs and leadership to address recognized issues and to support increased offering and delivery.

Online Education – Tutorials and More

Broaden Topics

- Better representation of AESS FOIs and search for emerging topics where AESS can provide home
- Reach out to AESS technical panel chairs and request at least 5 potential topics & presenter names

Open Access

- Tutorials site has been low traffic with short visits. Need to allow previews or limited portions of tutorials to be viewed by non-members

Advertise Services

- Advertise video tutorials in AESS magazine, website & QEB to raise awareness in members

Expand Resources

- Develop an indexed compendium of useful links to existing open source education information

Feedback Page

- Implement a feedback page to better understand online education needs of AESS members
- Regularly monitor page and adapt online education services based on member suggestions

Robert (Bob) T. Hill and IEEE Radar Community

Excerpt from IEEE A&E SYSTEMS MAGAZINE (April 2014)

Robert (Bob) Tyler Hill (1935 – 2014) was an electrical engineer who spent the majority of his career with the Naval Sea (NAVSEA) Command of the U.S. Navy, specializing in the development of ship-borne radar technology. Recognized as a leader and pioneer in development of phased array radar systems, Bob worked as a consultant and educator for various companies and educational institutions throughout the world after retiring from the Navy. He was a Life Fellow of the IEEE with the following citation: “For pioneering the development of ship-borne phased array radar, and fostering international cooperation between radar engineers”.



- **A. Farina, H. Griffiths and M. Wicks**

- The AESS and international radar community has sought to formally recognize and remember these pioneering contributions by establishing an IEEE AESS award in memory of Robert Hill.
- The general consensus was that the award should focus strongly on the themes of education, international participation and fundamental technical excellence.
- A number of proposals for this award were presented and discussed at the 2014 Spring AESS Board meeting and the board voted to name the Best Ph.D. Dissertation award in Bob’s honor.

IEEE AESS Robert T. Hill Best Dissertation Award

Description:

The Robert T. Hill Best Dissertation Award is an annual AESS award to recognize candidates that have recently received a Ph.D. degree and have written an outstanding Ph.D. dissertation in the field of interest of the Aerospace and Electronic Systems Society. Its purpose is to grant international recognition for the most outstanding Ph.D. dissertation by an AESS member.

An eligible candidate must be a graduate of an accredited university which requires a dissertation to receive a Ph.D. degree. The nominee should be an IEEE/AESS member for more than one year at the time of nomination. Preferentially, the nominee should have been awarded the Ph.D. degree in the last 12 months prior to the nomination. The Ph.D. dissertation has to be deemed to have made a particularly noteworthy contribution in the AESS Field of Interest.

Prize: \$1,000 honorarium and a plaque

Funding: Funded by the IEEE Aerospace and Electronic Systems Society

Eligibility: Graduate of accredited university requiring a dissertation to receive a Ph.D. degree and IEEE/AESS member for more than one year at the time of nomination.

Basis for Judgement: Noteworthy contributions in the AESS field of interest

Presentation: At an appropriate AESS or IEEE conference



Progress and Schedule

Goal was to achieve at least three nominations

- Four nominations received (submission deadline 30 September)
- Two nominations from US, one from Europe and one from South Africa

Remaining Steps

- As Chair of the award, VP Education will establish a selection committee for judging
- Awards Chairman to organize presentation of plaque & honorarium to the recipient

Proposed Schedule

- Applications close September 30
- Selection committee established October 7
- Evaluation completed January 7, 2016
- Final ranking of candidates January 31, 2016
- **Announcement of winner February 1, 2016**
- Presentation at appropriate AESS or IEEE conference

In excellent position to honour Bob in the best possible way in this inaugural year of the award

AESS Mentorship Program

Background & Motivation

- Students and young professionals are often left to their own after joining the AESS
- Structured scheme to help young members integrate quickly into AESS community
- Access to this professional mentoring program is only available to AESS members

Strategic initiatives:

- Develop a detailed process including participant guidelines & information briefs
- Implement and promote a pilot scheme for the San Diego Chapter (K. Kramer)
- Adapt the implementation based on the received feedback
- If successful, progressively roll out to other AESS chapters
- Publicize this new service in the AESS Magazine and QEB

Financial assessment: Promotional costs (workshops and flyers) estimated at \$2000

Measure of success: Level of participation (particularly young mentees) and feedback

Relationships and Goals

Successful Mentoring Relationships

- Proactive and Intentional
- **(AESS)** Suggested pairings based upon profile/interests
- Protégé/mentee selects, mentor accepts
- **(AESS)** Guided discussions. Suggested prompts/ activities with beginning and end.

Successful New Career Mentoring...

- Getting oriented to the industry **(AESS)**
- Excelling technically **(AESS)**
- Navigating information on practical aspects of career/industry.
- Managing expectations for performance; developing a track record; soliciting feedback.
- Finding collegiality and community (building substantive, career-enhancing relationships).
- Creating balance between professional roles and also between work and family life

Pilot Program Plan – San Diego AESS Chapter

1. Chapter meeting presentation “Introduction to the AESS Mentoring Program”
 - Slide pack to introduce AESS mentoring scheme has been generated
 - Two or more mentoring pre-meeting presentations given, 1 pair formed
2. Registration of interest for AESS members
 - Mentor and mentee registration forms will be available online
3. Mentoring workshop by invitation only
 - Budget of \$2k has been requested and approved for holding one or more workshops
4. Supported self-matching process
 - Mentor profiles and contact details to be posted on website when received
5. Guidelines for mentors and mentees
 - Information brief developed to help guide interactions
6. Evaluation and feedback
 - Invite participant feedback to measure effectiveness and identify issues

IEEE AESS Short Courses – New Initiative

Motivation:

- Growing chapters in locations with a low membership base can be a challenging task
- Local chapters do not have effective mechanisms to raise revenue to benefit members

Approach:

- AESS has an excellent core of mature members willing to contribute to education activities
- Chapters can raise funds by empowering members to offer fee-paying AESS short-courses

Participants:

- Industry, government, and academia with training budgets for staff professional development
- Stakeholders are the IEEE, the organizing local AES chapter, the Society, and the presenters

Status:

- A one-day IEEE AESS workshop has been organized to test the idea in Adelaide

AESS Short Course in Australia



IEEE IEEE South Australia Section
Control & Aerospace and Electronic Systems Chapter

One Day Workshop Introduction to HF Over-the-Horizon Radar (OTHR)

The IEEE South Australia Section and CAES Chapter invites you to attend a unique one day workshop by IEEE Distinguished Lecturer Dr Joe Fabrizio - Defence Science and Technology Group (DSTG)

About the workshop:

The workshop introduces the fundamental principles of OTHR design and operation in the challenging HF environment to motivate and explain the architecture and capabilities of modern OTHR systems. It describes conventional and adaptive processing techniques for clutter and interference mitigation in addition to emerging applications, including HF passive radar, blind signal separation and multipath-driven geolocation. A highlight of the workshop is the prolific inclusion of experimental results to illustrate the practical application of advanced signal processing to real-world OTHR systems. The workshop is expected to benefit students, researchers, engineers and practitioners working in the OTHR field.

About the presenter:

Dr Giuseppe (Joe) Fabrizio has been with the Australian Defence Science and Technology Group since 1994 and currently leads the EW and signal processing section of the HF radar branch. He is a senior member of the IEEE and has authored over 50 peer-reviewed journal and conference publications. He is a co-recipient of the prestigious M. Barry



Participants receive the text book "High Frequency Over-the Horizon Radar", McGraw-Hill, NY, 2013

Time: 9:00 am - 5:00 pm



IEEE

IEEE South Australia Section, CAES Chapter
Introduction to Over-the-Horizon Radar

Course Content

- Fundamental Principles
- Practical Applications
- Propagation Mechanisms
- System Design
- Nominal Capabilities
- Resource Management
- Signal Environment
- Surface-Wave Radar
- Array Data Models
- Conventional Processing
- Adaptive Beamforming
- Real-time STAP
- CFAR Detection
- HF Passive Radar
- Blind Signal Separation
- Multipath-Driven Geolocation

**\$15,600 surplus – half to chapter
26 paying attendees**

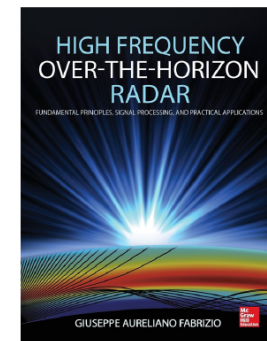
High Frequency Over-the-Horizon Radar: Fundamental Principles, Signal Processing and Practical Applications Hardcover (June 2013)
Dr. Giuseppe Fabrizio (Author)

★★★★★ 5 customer reviews
#1 Best Seller in Radar Technology

<http://www.amazon.com/High-Frequency-Over-Horizon-Radar/dp/007162127X>

Product Details

Hardcover: 944 pages
McGraw-Hill Professional
First edition (June 18, 2013)
Language: English
ISBN-10: 0387231900
ISBN-13: 978-0387231907
ASIN: 007162127X
Dim: 7.7 x 2.1 x 9.1 inches
Audience: College, Higher Education, General/Trade, Professional and Scholarly



Follow on – AESS Short Courses

Formalize Process:

- Chapter responsible for identifying training needs, organizing course and local arrangements
- Work with IEEE Section or AES Society for seed funding and for concentrated banking in US

Technical Panels:

- Consult with technical panels to identify course presenters in AESS FOIs (not limited to DLs)
- Request course descriptions and presenter biographies & post these on Education webpage

Implement Initiative:

- Guidance on how to handle financial aspects – registrations, reimbursements, use of surplus
- Carefully clarify distinction between Distinguished Lectures, Video Tutorials & Short Courses

Advertise Program:

- Promote the short course initiative on the Education webpage and AESS Magazine, QEB
- Write letters to local chapters to run short courses matched to interests of local institutions

Education Summary

Growing and Strengthening the AESS

- Important to do more than simply advertise existing services and benefits
- Growth requires the implementation of new member- and potential-member-focused strategies

Strategy for AESS Education

- **Improve existing services and delivery means:** Distinguished lecture program, online tutorial and education
- **Increase type of benefits:** new short-course initiative, mentorship scheme, Bob Hill Award
- **Grow technically:** creating a professional home for alternative/emerging fields of interest

Progress in Education

1. Distinguished lecture program is working well (efficient process and effective benefits)
2. Video tutorials being revitalized with funding to expand offerings
3. Bob Hill award on track for success in inaugural year and short course piloted.
4. Mentoring has actionable plan, materials, process for pilot scheme