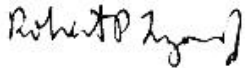


AESS Technical Panel Report to AESS BOG 24-25 Apr 09

Submitted by Robert P. Lyons, Jr.



VP Technical Operations

AESS Technical Panels	Panel Chair
Aerospace Control and Guidance Systems	Gary Balas
Gyro and Accelerometer	Randall Curey
Large Scale Systems	Barry Greenberg
Radar Systems	Hugh Griffiths
SAR and IED Detection	Mark Yeary
Space Systems	Marina Ruggieri
Target Tracking Systems	Dale Blair
GPS Navigation	TBD
UAV Ground Control & Autonomous Operation	TBD
Command & Control	TBD
Sensor Integration	TBD
Imaging Systems	TBD
Other	TBD

Aerospace Control and Guidance Systems

See report at Attachment 1.

Gyro and Accelerometer

See report at Attachment 2.

Large Scale Systems

Bob Rassa invited Barry Greenberg to chair the panel in late December. Barry finally received limited budget from Boeing to perform work for the panel. He was not involved in the panel prior to December 2008, but he has begun work on the mission statement, as well as the rest of the content for the Web page. When his drafts are finished, he will send them in for review and publication on the AESS website. I put him in contact with Paul Gartz to learn about the background of the panel and other interested parties.

Radar Systems

See report in Attachment 3.

SAR and IED Detection

Mark Yeary has not responded about a report for this new relatively new panel. I will continue to follow up on panel progress.

Space Systems

See report at Attachment 3.

Target Tracking Systems

Dale Blair responded that he is very busy this year, and that he will delay activity on the panel until next year when he can shed some of his other profession activities.

Attachment 1

23 April 2009

Re: Aerospace Control and Guidance Subcommittee Meeting 103 Report

Bob,

This is a brief synopsis of Meeting 103 of the Aerospace Control and Guidance Subcommittee (ACGSC) held on 25-27 February, 2009 in Seattle Washington. The complete report, being written by the ACGSC secretary, will be forwarded to you upon completion. The meeting was attended by 45 researchers from academics, industry and government laboratories. The registration fee for the meeting was \$200/person. The registration fee covers the facility charge, wireless access in the meeting room, a full breakfast on three mornings, two served lunches, drinks and snacks in the afternoon.

The meeting began, as usual, welcoming the participants and a round of introductions. The first morning consists of the General Committee Technical Session in which researchers from small businesses, universities and government agencies provide a brief 10 minute overview of on-going projects and future funding opportunities. The meeting continued with technical talks from industry, government labs and academics.

The ACGSC decided to reach out to new participants, students and young engineers by offering short courses before or after the meeting. Dr. Mark Tischler of the Army Rotorcraft Center at Moffet Field offered a short course on Aircraft and Rotorcraft System Identification and Flight Control Design using CIFER and CONDUIT. The course proved to be popular and had 8 participants.

A highlight of the meeting was a VIP tour of the Boeing Aircraft Company Everett assembly line. Dr. Brian Lee of the Boeing Company organized the tour which included visits to the 747, 757, 767 and 787 assembly lines. We appreciate the willingness of the Boeing Company to host the ACGSC at their facilities.

Attached is a copy of the final ACGSC Meeting 103 agenda. Please let me know if there is any further information you desire.

Regards

Gary J. Balas, Chair

Aerospace Control and Guidance Subcommittee

FINAL AGENDA

MEETING No. 103

AEROSPACE CONTROL AND GUIDANCE SYSTEMS COMMITTEE

**Renaissance Hotel
515 Madison Street
Seattle, WA
Feb 25-27, 2009**

**Thursday Night and
Friday Afternoon** **Aircraft and Rotorcraft System Identification and Flight Control
Design using CIFER[®] and CONDUIT**, Mark Tischler
26, 27-Feb-09 Location: James
7:00PM – 9:00PM,
11:00PM – 5:00PM

Tuesday **1.0 PLANNING ADVISORY BOARD MEETING**
24-Feb-09 Location: James
7:30 p.m.

Chairman	Gary Balas
Vice-Chairman	Dave Ward
Immediate Past Chairman	Dave Bodden
Treasurer	Roger Burton
Secretary	Jan De Luca

BOARD MEMBERS

G Jenney	L Knotts	M Steinberg
S Banda	B Lee	M Draper-Donley
S Donley	R Mehra	M Tischler
S Garg	J Paduano	J Weyrauch
P Hattis	S Pszczolkowski	K Wise
R Hess	H Rediess	
D Klyde		

Wednesday **2.0 REGISTRATION & Breakfast**
25-Feb-09 **Location : Municipal Room**
7:30-8:30 a.m.

Wednesday **3.0 GENERAL COMMITTEE BUSINESS MEETING**
25-Feb-09 **Location: Municipal Room**
8:30-9:15 a.m. Gary Balas, Chairman

Wednesday **4.0 GENERAL COMMITTEE TECHNICAL SESSION**
25-Feb-09 Jim Paduano and Marge Draper Donley, Co-Chairmen
9:15 a.m. -

11:25 p.m. **4.1 Research Institutions, Industry, and University Reports**

4.1.1 Research Institutes and Companies

- 4.1.1.1 Aurora Flight Sciences – Jim Paduano (abstract, presentation)
- 4.1.1.2 Barron Associates – David Ward (abstract, presentation)
- 4.1.1.3 Impact Technologies – Liang Tang (abstract, presentation)
- 4.1.1.4 Optimal Synthesis – P.K. Menon (abstract, presentation)
- 4.1.1.5 Systems Technology Inc. – David Klyde (abstract, presentation)

4.1.2 Universities

- 4.1.2.1 TUUH - Hamburg Technical University, Inst. of Aircraft Systems Engineering – Frank Thieleke
- 4.1.2.2 University of Colorado, Colorado Springs, Dave Schmidt (abstract, presentation)
- 4.1.2.3 University of Minnesota – Gary Balas (abstract, presentation)

4.2 Government Agencies Summary Reports

4.2.1 FAA

- 4.2.1.1 Tech Center - Stanley Pszczolkowski (abstract, presentation)

4.2.2 US Air Force

- 4.2.2.1 AFRL – James Myatt (abstract, presentation)

4.2.3 Department of Homeland Security

- 4.2.3.1 Department of Homeland Security – Herm Rediess (abstract, presentation)

4.2.4 NASA

- 4.2.4.1 Dryden – John Bosworth (abstract, presentation)

4.2.5 German Aerospace Center

- 4.2.5.1 DLR – Klaus-Uwe Hahn (abstract, presentation)

Wednesday
25-Feb-09
11:25-12:10
p.m.

5.0 SUBCOMMITTEE A – AERONAUTIC AND SURFACE VEHICLES

Lou Knotts, Chairman
Pat Stoliker & Dave Klyde, Vice Chairmen

- 5.1 "A Review of Fly-by-Wire Accidents," Dick Newman and Tony Lambregts, FAA (abstract, presentation)

Wednesday
25-Feb-09
12:10-2:00
p.m.

LUNCH – West

Wednesday
25-Feb-09
2:00-3:20 p.m.

5.0 SUBCOMMITTEE A – AERONAUTIC AND SURFACE VEHICLES

Lou Knotts, Chairman
Pat Stoliker & Dave Klyde, Vice Chairmen

- 5.2 "Applying Flight Test Lessons Learned On-the-Fly," David Klyde, STI (abstract, presentation)
- 5.3 "Boeing Commercial Airplanes Historical Talk ," Mike Garrett, Boeing Commercial Airplanes (abstract, presentation)

Wednesday **Break**
25-Feb-09
3:20-3:40 p.m.

Wednesday
25-Feb-09
3:40-4:20 p.m.

6.0 SUBCOMMITTEE B-- MISSILES AND SPACE

Phil Hattis, Chairman
John Weyrauch & Kevin Wise, Vice Chairmen

6.1 "Overview of the Navy Advanced Anti-Radiation Guided Missile (AARGM) Program," Austin Miller, ATK (abstract, presentation)

Wednesday
25-Feb-09
5:00 – 9:00
p.m.

Optional Event: Dinner – Ferry to Bainbridge Island

Location: Main Ferry Bldg, 801 Alaskan Way, Seattle (hotel is at 515 Madison Street, Seattle, 5 blocks from ferry)

We will go as a group to purchase tickets for the **5:30** Ferry to Bainbridge Island arriving at 6:10pm. We are in the process of finding a restaurant for dinner. Each person is responsible for their own ferry ticket and dinner expenses.

Thursday
26-Feb-09
7:30 – 8:30 a.m.

Breakfast - Municipal Room

Thursday
26-Feb-09
8:00 – 9:20 a.m.

6.0 SUBCOMMITTEE B-- MISSILES AND SPACE, Cont'd

Phil Hattis, Chairman
John Weyrauch & Kevin Wise, Vice Chairmen

6.2 "The SPHERES Experiment," Javier de Luis, Aurora Flight Sciences, (abstract, presentation)

6.3 "Personal Navigation System," John Scudiere, Draper Laboratory (abstract, presentation)

Thursday
26-Feb-09
9:20 - 10:00 a.m.

7.0 SUBCOMMITTEE C – AVIONICS AND SYSTEM INTEGRATION

Stan Pszczolkowski and Ramin Mehra, Co-Chairmen

7.1 "Challenges and Solutions for More-Electric Aircraft" – Frank Thielecke, TUUH - Hamburg Technical University, Inst. of Aircraft Systems Engineering (abstract, presentation)

Thursday
26-Feb-09
10:00-10:20 p.m.

Break

Thursday
26-Feb-09
10:20-11:40 a.m.

7.0 SUBCOMMITTEE C – AVIONICS AND SYSTEM INTEGRATION, Cont'd

Stan Pszczolkowski and Ramin Mehra, Co-Chairmen

7.2 "DHS Counter-MANPADS Program," Herm Rediess, Department of Homeland Security (abstract, presentation)

7.3 TBD, Rolf Rysdyk and Charlie Guthrie, Insitu (abstract, presentation)

Thursday
26-Feb-09
11:40-12:20 a.m.

8.0 SUBCOMMITTEE D-DYNAMICS, COMPUTATIONS, AND ANALYSIS

Ron Hess and Siva Banda, Co-Chairmen
Roger Burton, Vice Chairman

8.1 "Helicopter Flight Test with Active Side Stick / Slung Load," – P.O.C. Prof. Dr. ing. Klaus Uwe-Hahn, DLR Institute of Flight Systems (abstract, presentation)

Thursday
26-Feb-09
12:20 – 1:30 p.m.

Luncheon - West

PAB will meet for lunch & agenda planning for Meeting No. 104
Meeting attendees have open seating for lunch

Thursday
26-Feb-09
1:30 – 6:00 p.m.

Boeing Tour – Board Buses at Hotel

1:30 Bus arrives at hotel and heads to Everett 40-88 lobby for badges. Security must identify everyone. To get badges, we need: **Name, Company representing and citizenship.**

2:30 Walking tour of Everett factory. Absolutely NO cameras, including cell phones. This is guided tour and everyone will be given a headset so you can hear the guide.

4:00 Bus will pick up group and transport us to Future of Flight museum and Boeing gift shop.

5:00 Bus will leave gift shop and return to the hotel.

We need information on **Name, Company representing and citizenship** by close of business on 18 Feb 2009 to get badges for the tour.

Thursday
26-Feb-09
7:00 – 9:00 p.m.

Aircraft and Rotorcraft System Identification and Flight Control Design using CIPHER[®] and CONDUIT, Mark Tischler - Columbia Room, 4th Floor

Friday
27-Feb-09
7:30 – 8:30 a.m.

Breakfast - Municipal Room

Friday
27-Feb-09
8:00 – 8:10 a.m.

4.0 GENERAL COMMITTEE TECHNICAL SESSION, Cont'd

Jim Paduano and Marge Draper Donley, Co-Chairmen

4.2.7 US Army

4.2.7.1 Army Rotorcraft Center – Mark Tischler (abstract, presentation)

Friday
27-Feb-09
8:10 – 9:20 a.m.

8.0 SUBCOMMITTEE D-DYNAMICS, COMPUTATIONS, AND ANALYSIS

Ron Hess and Siva Banda, Co-Chairmen
Roger Burton, Vice Chairman

8.2 "X-48B Flight Test Program," Ken Rossitto, Boeing (abstract, presentation)

8.3 " Maritime Helicopter Handling Qualities," Sean Roark, NAVAIR (abstract, presentation)

Friday
27-Feb-09
9:20 – 10:40 a.m.

9.0 SUBCOMMITTEE E – FLIGHT, PROPULSION, AND AUTONOMOUS VEHICLE CONTROL SYSTEMS

Marc Steinberg, Chairman
Sanjay Garg & Jan DeLuca, Vice Chairmen

9.1 "System Identification, Simulation Development, Control Law Development and Flight Test Experience with the MQ-8B FireScout Vertical Take-off Unmanned Aerial Vehicle (VTUAV)," Ron Prentice, Northrop Grumman (abstract, presentation)

9.2 "Propulsion Controlled Aircraft Recovery (PCAR)," Dick Stevens, Counter-MANPADS Program, Mantech-SRS and Bill Burcham, Consultant (abstract, presentation)

Friday
27-Feb-09
11:00 AM – 5:00
PM

Aircraft and Rotorcraft System Identification and Flight Control Design using CIFER[®] and CONDUIT, Mark Tischler - Columbia Room, 4th Floor

ACGSC Short Course on:

Aircraft and Rotorcraft System Identification and Flight Control Design using CIPHER[®] and CONDUIT[®]

Renaissance Hotel; Seattle, Washington; Tuesday, Feb 24, 8AM-5PM

Morning (8:00-12)

- Registration and introductions
- Overview of system identification
- Special challenges for application to flight test data
- Frequency response method
- Overview and demonstration of CIPHER[®] software
- Collection of flight test data and data consistency analysis
- Single input and multi-input identification
- Composite windowing
- Transfer function ID
- State-space identification and verification
- Higher-order models of flexible aircraft and rotorcraft
- Recent applications

Lunch (12-1:00)

Afternoon (1-5PM)

- Challenges of flight control design
- Flight control design using Multi-objective parametric optimization
- Why is this a good approach ?
- Overview and demonstration of CONDUIT[®] software
- Modeling requirements
- Selection of specifications
- Numerical scores of specification performance
- Multi-objective, multi-phase optimization method
- Design example for a simple case
 - Setup and convergence
 - Trade-offs
 - Including model uncertainty into design process
- Design example for state-of-art multi-mode flight control laws
 - Model validation using flight test data and system identification
 - Preliminary design
 - Optimization approach
 - Trade-offs
- Recent applications
- Course wrap-up

Biography

Mark B. Tischler is an Army Senior Technologist (ST) and Senior Scientist at the Army Aeroflightdynamics Directorate. He leads the Flight Control Technology group that conducts rotorcraft handling qualities and flight control research. Research applications include a wide variety of fixed-wing and rotary-wing aircraft and unmanned air vehicles (UAVs). He headed the development of two widely-used commercial tools for dynamics analysis and control (CIPHER[®] and CONDUIT[®]).

Dr. Tischler serves as Technical Project Officer for the US/Israel Memorandum of Agreement (MOA) on Rotorcraft Aeromechanics and Man-Machine Integration, and has primary responsibility for technical oversight, strategic planning, and national reporting. Dr. Tischler has authored or co-authored over 100 technical papers and reports, and has won numerous awards from the US Army and the NASA for his work in rotorcraft flight dynamics and control. He was the organizing editor and contributor to author to the book Advances in Aircraft Flight Control (AIAA and Taylor & Francis, 1996) and author of the textbook Aircraft and Rotorcraft System Identification (AIAA, 2006).

REPORT OF THE IEEE/AESS GYRO AND ACCELEROMETER PANEL

April 2009

Panel Activity

P836, "IEEE Recommended Practice for Precision Centrifuge Testing of Linear Accelerometers," has had its PAR extended until the end of this year and is in the process of being balloted. The ballot closes April 20th. All votes received to date have been affirmative.

P1559, "IEEE Standard for Inertial Systems Terminology," has been completed and is in the process of being balloted. The ballot closes April 18th. All votes received to date have been affirmative.

Progress had been made on P1780, "Standard Specification Format Guide and Test Procedure for IMUs. This is the main focus of the panel at this time.

The following three standards were reaffirmed:

- Std 671 "IEEE Standard Specification Format Guide and Test Procedure for Nongyroscopic Inertial Angular Sensors: Jerk, Acceleration, Velocity, and Displacement"
- Std 952 "IEEE Standard Specification Format Guide and Test Procedure for Single-Axis Interferometric Fiber Optic Gyros"
- Std 1293 "IEEE Standard Specification Format Guide and Test Procedure for Linear, Single-Axis, Nongyroscopic Accelerometers"

The following two corrigenda were published:

- Corrigendum for Std. 1293, "IEEE Standard Specification Format Guide and Test Procedure for Linear, Single-Axis, Nongyroscopic Accelerometers." This corrigendum fixes one equation in Annex K and two in Annex L.
- Corrigendum for Std. 1431, "IEEE Specification Format Guide and Test Procedure for Coriolis Vibratory Gyros." This corrigendum fixes Figure 1.

Officers

At the November 2008 meeting, the following officers were elected for the year 2009:

Panel Chair	Randall Curey
Panel Vice Chair	Reese Sturdevant
Accelerometer Committee Chair	Robert Martinez
Gyro Committee Chair	Cleon Barker

At the January 2009 meeting, the following officer was appointed for the year 2009:

IEEE Liaison	Robert Martinez
--------------	-----------------

Objectives

The panel established the following objectives at the meeting that was held on 12/13 January 2009:

Panel Objectives

1. Ballot and publish 1959 "IEEE Standard for Inertial Sensor Terminology."
2. Continue to develop and assign sections for homework for P1780 "IEEE Standard Specification Format Guide and Test Procedure for Inertial Measurement Units (IMUs)".
3. Expand membership with emphasis on IMU community.
4. Develop working group procedures by the end of 2009.

Attachment 2

- 5. Continue to compile new or revised system terminology to be incorporated in the next revision of IEEE Std. 1559, "IEEE Standard for Inertial Systems Terminology."
- 6. Take appropriate action to see that legacy documents are reaffirmed, revised, or withdrawn as necessary.

Gyro Committee Objectives

- 1. Continue to identify the required changes to IEEE Std 952, "IEEE Specification Format Guide and Test Procedure for Single-Axis Interferometric Fiber Optic Gyros", if any, in addition to the change required to correct Figure 1 (as was done in IEEE Std 1431).
- 2. Based on the findings of objective 1, obtain a PAR for either a revision or a corrigendum.
- 3. Continue to compile new or revised sensor terminology to be incorporated in the next revision of IEEE Std. 528, "IEEE Standard for Inertial Sensor Terminology."
- 4. Take appropriate actions to see that legacy documents are reaffirmed, revised, or withdrawn as necessary.

Accelerometer Committee Objectives

- 1. Ballot and publish the revision to IEEE Std. 836-2001, "IEEE Recommended Practice for Precision Centrifuge Testing of Linear Accelerometers" by the end of 2009.
- 2. Develop corrigenda for IEEE Std. 671-1985, "IEEE Standard Specification Format Guide and Test Procedure for Nongyroscopic Inertial Angular Sensors: Jerk, Acceleration, Velocity, and Displacement"
- 3. Continue to compile new or revised sensor terminology to be incorporated in the next revision of Std 528, "IEEE Standard for Inertial Sensor Technology"
- 4. Take appropriate actions to see that legacy documents are reaffirmed, revised, or withdrawn as necessary.

Meetings

Since the last report (Sept 2008), the Panel has held four meetings:

Dates	Location	Host	Attendance
8/9 September 2008	Pittsburgh, PA	Acutronic	6
6/7 November 2008	Woodland Hills, CA	Northrop Grumman	6
12/13 January 2009	Huntsville, AL	Miltec Missiles	8
12/13 March 2009	Walnut Creek, CA	Systron Donner	4

Future Meetings

Dates	Location	Host
4/5 May 2009	Piscataway, NJ	IEEE Headquarters
16/17 July 2009	Redmond, WA	Honeywell Aerospace
14/15 Sept 2009 *	Budd Lake, NJ	L-3 Communications
12/13 Nov 2009	Las Cruces or Alamogordo, NM	Lee Theilman (Retired)

* Meeting location and host are tentative

Other

No other activities to report.

Respectfully submitted,

Attachment 2

A handwritten signature in black ink that reads "Randall K. Curey". The signature is written in a cursive style with a prominent initial 'R' and a distinct 'K'.

Randall Curey

Chair, IEEE/AESS Gyro and Accelerometer Panel

Radar Systems Panel

Report to AESS BoG meeting, April 24/25 2009

The Panel met on September 3 2008 at the Adelaide International Radar Conference.

1. Radar Systems Panel Charter

A draft Charter was put forward, adjusted slightly as a result of comments, and is appended to these minutes.

2. Conferences

Mark David will no doubt report separately on this, but the following is a summary:

- (i) The report and accounts for RADARCON 2008, held in Rome, Italy, May 26–30, have been submitted. The General Chair of the conference was Dr Alfonso Farina. It will be recalled that, exceptionally, this event was held outside of the USA. The conference was a truly outstanding success, and generated a surplus of 57,651€ (approx \$75,200). Some other statistics:
 - 650 registered participants
 - 623 submissions from 46 countries
 - 411 papers accepted
 - 9 oral special sessions, 27 oral regular sessions, 6 poster sessions
 - 16 tutorials, 343 tutorial attendees
 - student paper competition
- (ii) The RADAR 2008 Conference took place in Adelaide, Australia, September 2–5. The organisers noted particularly the success of the policy with ‘no shows’, such that the DVD provided to conference delegates is not the final conference record; thus any paper that is not presented is not included in the final conference record, and hence cannot be counted as a proper publication.
- (iii) RADARCON 2009 will take place May 4–8 2009 in Pasadena, CA, with the theme: Radar: From Science to Systems, with Dr Paul Rosen as General Chair.
- (iv) The RADAR 2009 Conference will take place in Bordeaux, France, October 12–16 2009.
- (v) RADAR 2010 will take place in Washington DC, May 9–14 2010. The theme is ‘Global Innovation in Radar’. A special session will be devoted to the important issue of spectral allocation.

- (vi) Two high-quality proposals were received to host the 2011 IEEE Radar Conference (RADARCON 2011) from Kansas City MO and from Atlanta, GA. The proposals were discussed at the Panel meeting, but since relatively few panel members attended the Adelaide conference it had been agreed that the decision would be taken after a ballot of panel members. Following this ballot it was agreed that the 2011 IEEE Radar Conference should be held in Kansas City MO, and that Atlanta GA should be invited to host the 2012 IEEE Radar Conference.

3. The future of the International Radar Conference Series

Bob Hill led a discussion on this topic at the Adelaide Panel meeting. He recalled a discussion at the RADAR 99 Conference in Brest, France, at which it had been decided to continue with the present five-year cycle. The time was now right to reconsider the issue, and Bob suggested that there are essentially three options:

- (i) continue with the present five-year cycle
- (ii) extend the cycle to (for example) seven years
- (iii) double up some years (RADAR XX East / RADAR XX West)

But if option (i) is chosen it should be a conscious decision rather than by default.

Hermann Rohling stated that the five-year cycle has a strong identity which in his opinion should not be changed. Simon Watts suggested that an alternative approach is that the sequence of future conferences should simply be guided by market forces. But if quality were perceived to be compromised that would provide a reason to exert control. Jim Armitage stated that the present (and likely future) high cost of air travel is one factor in favour of local conferences with specific themes. Further inputs to this debate have been sought, with a view to taking a decision at the Bordeaux conference in 2009.

4. Future business

- (i) A side meeting is to be held at the Pasadena Radar Conference to discuss the very important issue of radar spectrum allocation. Many radars, particularly those for defense applications, require greater and greater bandwidth. At the same time there is ever-greater pressure on spectrum from communications and broadcast services, and the only thing that can be said for certain is that the problem will get worse. Yet the effects of mutual interference are poorly understood. There is therefore a need for well-argued inputs to the debate, and for technical approaches that may help mitigate the problem. As noted above, a special session on this topic will be held at the RADAR 2010 Conference.

- (ii) A one-day workshop was held in London, UK, April 17 2009, to discuss and identify priorities and initiatives in multistatic and MIMO radar. The event was also kindly supported by ONR Global. The event was very successful, with participants from 6 countries, and a report is in preparation.
- (iii) It will be recalled that a two-day conference was held in Lerici, Italy in September 2006 on the theme of Synthetic Aperture Radar and Synthetic Aperture Sonar, intending to bring together the two communities, and covering such issues as
- Imaging algorithms
 - Operation from autonomous vehicles
 - Target classification and recognition
 - Interferometry and change detection
 - Bistatic and Multistatic operation
- There is substantial demand to repeat this event, and this is being planned for September 2010, organized by the Institute of Acoustics but with technical co-sponsorship of IEEE AES (i.e. no financial commitment, but member-rate registration for AES members in return for publicity).
- (iv) I have continued to invite some highly-active, younger radar engineers to join the Panel, including Dr Shannon Blunt (U. Kansas), Dr Long Teng (China), Dr Xavier Neyt (Belgium), Dr Pierfrancesco Lombardo (Italy), Dr Brian Rigling (Wright State University).
- (v) I will be handing over the Chair of the Radar Systems Panel to Dr Michael Wicks.

Hugh Griffiths
Chair, AES Radar
Systems Panel

CHARTER

1. The Radar Systems Panel is a Technical Panel of the IEEE Aerospace and Electronics Systems Society.
2. The purpose of the Panel is:
 - (i) to oversee the program of IEEE Radar Conferences;
 - (ii) to manage the nomination and selection of IEEE Awards in the domain of radar;
 - (iii) to promote and support publications in the domain of radar;
 - (iv) to promote educational activities in the domain of radar;
 - (v) to encourage the submission of nominations for IEEE Fellows in the domain of radar;
 - (vi) to provide periodic revision of IEEE Standard 686 'Standard Radar Definitions' and IEEE Std 521 'IEEE Standard Letter Designations for Radar Frequency Bands'
3. The Panel is composed of representatives of industry, government laboratories, educational institutions and professional societies who are active in the domain of radar systems.

ORGANIZATION

The Radar Systems Panel meets at least annually at one of the IEEE Radar Conferences. Further discussions are held by email, and decisions taken as appropriate. The Panel elects a Chairman, whose term of office is normally three years.

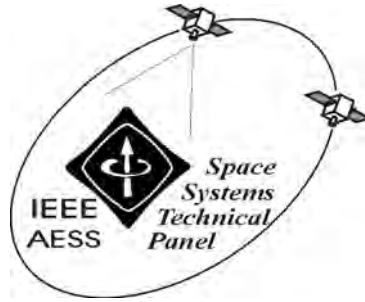
OBJECTIVES

The panel established the following objectives for the forthcoming year at the meeting that was held on 3 September 2008:

Panel Objectives:

1. To reaffirm IEEE Std 521 'IEEE Standard Letter Designations for Radar Frequency Bands'
2. To reach a decision on the future of the cycle of international conferences

Last Updated 10 September 2008



REPORT OF IEEE/AESS “SPACE SYSTEMS” PANEL

April 21, 2009

The activities of the Panel have been deeply integrated with those of the AESS Operations Directorate for Italy-Western Europe that the Panel Chair is coordinating.

The following activities have been carried out in the period October 2008-April 2009:

Meetings for extending the existing links between AESS (in particular in Italy-Western Europe) and AFCEA (Armed Forces Communications & Electronics Association), Rome Chapter and AFCEA International.

ooo

Publication of the book (October 2008) *Aerospace Technologies and Applications for Dual Use - A New World of Defense and Commercial in 21st Century Security* – the first on the topic - by River Publishers (P.Finocchio, R.Prasad and M. Ruggieri, Eds’). The book moves from the main results of the International Symposium (Roma, Italy, September 12-14, 2007) on *Aerospace Technologies and Applications for Dual Use*, organized by the AFCEA Rome Chapter with the technical co-sponsorship of AESS. The book chapters are derived from the key-note speeches, invited lectures, panel discussions and conclusions of the Symposium.

Book publication has been announced on various websites, including AFCEA, AESS, ESA.

Presentation of the book worldwide. In the presentation the link between AESS and AFCEA on dual use established by the signed Memorandum of Agreement is underlined. The book has been presented, in particular, in the following places:

- European Space Agency (ESA) Headquarter, Paris (December 2008)
- AFCEA WEST 2009, San Diego, CA (February 2009)
- AESS Aerospace Conference, Bik Sky, MT (March 2009)
- SatExpo 2009, Rome (March 2009).

ooo

Activities related to the co-chairing of Track 2 *Space Missions, Systems and Architecture* of the **2009 IEEE Aerospace Conference**, that took take place in Big Sky in March 2009, and preparation of the Track for the **2010 IEEE Aerospace Conference**.

ooo

Activities related to the **CTIF_Italy** structure and launch of activities in the aerospace field. Promotion of the center worldwide. In 2007 CTIF has opened another node in India and a second Danish node in Copenhagen. A new node has been opened in Japan in October 2008. Personnel from the Danish and the Italian nodes have moved temporarily to the new Japanese node to establish a close cooperation link. In the CTIF Joint Network, CTIF_Italy is strongly characterised for the aerospace activities.

ooo

Participation to the activities for the development of the **educational satellite** EDU_SAT.

ooo

Organisation of **training** and thesis activities of students at the University of Roma Tor Vergata in the field of space systems.

ooo

Development of the 6th edition of the **Master Course** in “Advanced Satellite and Communications Systems” at the University of Roma Tor Vergata.

ooo

Activities related to the role of **Editor** of *Space Systems* of the AES Transactions and for the Systems Magazine.

ooo

Development of successful **proposal** for research projects in the field of satellite navigation, EHF (Q/V and W) payloads, NavCom systems, Data Relay Satallite (DRS), SDR, advanced satellite constellations and related applications.

ooo

Development and publication of several **papers** about space systems in conference proceedings and journals.

Among the envisaged activities:

- Activities related to the role of Editor of *Space Systems* of the AES Transactions and for the Systems Magazine.
- Activities related to the 2009 and 2010 Conferences/Workshops/Events.
- Activities related to projects, publications and teaching in the space system related topics.

Prepared on April 21, 2009 by: Marina Ruggieri