

AESS Technical Operations Report to the Board of Governors

April 24th – 25th, 2007

1. Budget

Expenses to date for Technical Operations remain within budget. The budget for the Distinguished Lecturers Program is being adjusted with demand by the AESS President, Jim Leonard to encourage AESS membership growth.

2. Technical Panel Reports

Attachment 1 summarizes the present status of the technical panels.

Five (5) technical panels are active:

1. The Gyro and Accelerometer Panel (GAP) remains active under the leadership of Randy Curey. Refer to Attachment 1.A for Randy's report. Work on seven (7) IEEE Standards is in process.
2. The Large Scale Systems Engineering Panel is reorganizing and becoming active under the leadership of Paul Gartz. Refer to Attachment 1.B for Paul's report.
3. The Space Systems Panel remains active under the leadership of Marina Ruggieri. Refer to Attachment 1.C for Marina's report.
4. The Radar Systems Panel remains active under the new chair, Hugh Griffiths.
5. The Target Tracking Systems panel remains active under the leadership of Dale Blair.

I contacted Alan Jacobsen after his appointment by Jim Leonard as Chair of the newly constituted Human Machine Interface (HMI) Technical Panel to offer assistance in start up of the panel. See the attachment news article on Alan's activities that appeared in the Jan/Feb Issue of Aerospace Engineering.

3. Distinguished Lecturers Program

The activity of the Distinguished Lecturers program for the years 1999 through the present year 2007 is summarized in Attachment 2. The latter 6-month period for 1998 is also shown.

The average number of lectures per year over the 1999 through 2004 time frame has been approximately eight (8) with a peak of 12 in 2001 and a low of six (6) in 1999. A significantly greater number of 15 lectures were given in 2005 as some lecturers provided a number of talks during trips that included several locations.

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For the year 2006, ten (10) lectures were formally delivered. An additional two lectures were given in Missouri on an ad hoc basis for a total of twelve (12) for 2006. Expense for the DL Program in 2006 was \$ 7,286. The location of each of the lectures is also provided in Attachment 2.

For the year 2007, one (1) lecture has been given and four (4) lecturers are currently planned as summarized in Attachment 2. The anticipated cost to date for 2007 is \$6,500.

A new lecturer Dr. Surendra Paul has been added to the Distinguished Lecturers Program. He will lecture on Satellite Navigation Systems (GNSS). Surendra is Deputy Director at the ISRO Satellite Centre in Bangalore, India.

Another candidate lecturer Dr. Felix Yanovsky has been contacted as to his interest in joining the program. Felix is a Professor at the Institute of Information & Diagnostic Systems in the National Aviation University in Kiev, Ukraine. Dr. Yanovsky's Curriculum Vita is attached.

Thanks to Zafar Taqvi for recommending these two gentlemen for the program.

A motion will be put forth at the BOG Meeting to increase the reimbursement expense from \$500 to \$1,000 for lecturer travel in North America and from \$1,500 to \$2,500 for lecturer intercontinental travel. For lecturers based outside North America \$1,000 would apply for regional travel and \$2,500 would apply for intercontinental travel.

A new efficient process for handling expense reports has been instituted to take full advantage of E-Mail. The completed Excel expense report file will be E-Mailed along with scanned copies of the original supporting receipts in a PDF file to me and the treasurer for approval. These two approved documents will then be E-Mailed to Alyson Rupp at IEEE Headquarters to issue the reimbursement checks to the lecturer.

4. PLANS 2008

PLANS 2008 Conference

The AESS and the ION will co-sponsor the PLANS 2008 Conference after the successful PLANS 2006 Conference that returned a surplus of \$89,602 to each sponsoring organization. A final independent audit of the financial results will be available in June, 2007 and will be provided to the IEEE at that time.

This timing results as the ION fiscal year closes at the end of March and advantage can be taken of the ION audit which apparently will eliminate the need for an IEEE audit.

PLANS 2008 will take place at the Hyatt Regency Hotel in Monterey, CA on May 5th through May 8th, 2008. The Hyatt Hotel was the venue for PLANS 2004.

The Awards Lunch is scheduled for Thursday, May 8th and will be attended by the AESS Board of Governors.

The Gyro & Accelerometer Technical Panel will also meet in conjunction PLANS. Bob and Jim have graciously agreed to provide financial support for the GAP meeting.

Meeting rooms have been secured by the PLANS Meeting Coordinator, Lisa Beaty for the BOG and GAP Meetings on Thursday & Friday, May 8th & 9th at no cost.

Planning is well under way for PLANS 2008 with a meeting of the Executive Committee scheduled to take place at the Sonesta Hotel next Thursday, April 26th in Cambridge, MA after the ION Annual Meeting.

At past PLANS Conferences, the President of the AESS has presented a "Plaque of Appreciation" to the General Chair. I recommend that such a presentation be made at PLANS 2008.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "J. M. Huddle". The signature is fluid and cursive, written in a professional style.

Dr. Jim Huddle
Vice President - Technical Operations

Attachments 1, 1.A, 1.B & 1.C

Attachment 1

Technical Panel Chairs ^[1]

Panel	Chair	E-Mail Telephone	Status	Remarks
Gyro & Accelerometer	Randall Curey	<u>Randall.Curey@NGC.com</u> 818-712-7131	Active	Attachment 1.A
Radar Systems	Hugh Griffiths	<u>h.griffiths@ee.ucl.ac.uk</u> +44-20-7679-7310	Active	
Space Systems	Marina Ruggieri	<u>Ruggieri@uniroma2.it</u> +39-06-7259-7451	Active	Attachment 1.C
Target Tracking Systems	Dale Blair	<u>dale.blair@gtri.gatech.edu</u> 770-528-7934	Active	
Large Scale Systems Engineering	Paul Gartz	<u>paul.e.gartz@boeing.com</u> 206-954-9616	Active	Attachment 1.B

^[1] Reviewed March 29th, 2007 – Dr. J. R. Huddle

REPORT OF THE IEEE/AESS GYRO AND ACCELEROMETER PANEL

March 2007

Panel Activity

Revised Std 647 "IEEE Specification Format Guide and Test Procedure for Single Axis Laser Gyros" was published on 18 September 2006.

P836 "IEEE Recommended Practice for Precision Centrifuge Testing of Linear Accelerometers" has completed the industry survey phase. The panel is in the process of addressing the comments that were received.

A PAR was approved to correct (via corrigenda) several errors in Std. 1293, "IEEE Standard Specification Format Guide and Test Procedure for Linear, Single-Axis, Nongyroscopic Accelerometers."

A PAR was approved to correct (via corrigenda) Figure 1 in Std. 1431, "IEEE Specification Format Guide and Test Procedure for Coriolis Vibratory Gyros."

P1559 "IEEE Standard for Inertial Systems Terminology" continues to be the focus of the panel. Slow but steady progress continues to be made. The remaining definitions and issues are turning out to be difficult to address.

Officers

At the November 2006 meeting, the following officers were elected for the year 2007:

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

Objectives

The panel established the following objectives at the meeting that was held on 15/16 January 2007:

Panel Objectives

1. Continue working on P1559, "IEEE Standard for Inertial Systems Terminology."
2. Obtain a PAR for and start working on an "IEEE Standard Specification Format Guide and Test Procedure for Inertial Measurement Units (IMUs)."
3. Expand membership.

Gyro Committee Objectives

1. Correct Figure 1 of IEEE Std. 1431, "IEEE Specification Format Guide and Test Procedure for Coriolis Vibratory Gyros."
2. Make the same correction to IEEE Std. 952, "IEEE Specification Format Guide and Test Procedure for Single-Axis Interferometric Fiber Optic Gyros."
3. Update IEEE Std. 952 to reconcile with changes already made to IEEE Std. 647, "IEEE Specification Format Guide and Test Procedure for Single-Axis Laser Gyros."

4. Fix model equation 6.3 in IEEE Std. 517, "IEEE Specification Format Guide and Test Procedure for Single-Degree-of-Freedom Rate-Integrating Gyros."
5. 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."

Accelerometer Committee Objectives

1. Finish revision of IEEE Std. 836, "IEEE Recommended Practice for Precision Centrifuge Testing of Linear Accelerometers" to fix g units.
2. Submit PAR for IEEE Std. 1293, "IEEE Standard Specification Format Guide and Test Procedure for Linear, Single-Axis, Nongyroscopic Accelerometers."
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."

Meetings

Since the last report (August 2006), the Panel has held three meetings:

Dates	Location	Host	Attendance
11/12 September 2006	Cambridge, MA	C.S. Draper	7
2/3 November 2006	Concord, CA	Systron Donner	10
15/16 January 2007	Huntsville, AL	Miltec Missiles	12

Future Meetings

Dates	Location	Host
15/16 March 2007	Phoenix, AZ	Honeywell
7/8 May 2007	Budd Lake, NJ	L-3 Communications
July 2007	Carson, CA	Ducommun

Membership

Since August 2006, 1 member and 2 info-only applications have been received. Annual membership renewal has completed. The current membership is as follows:

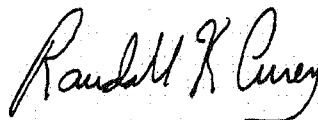
- 20 Members (5 Producers, 12 Users, and 3 General Interest)
- 37 Info Only (9 Producers, 14 Users, and 14 General Interest)

Other

At the Nov 2006 meeting, the panel voted to pursue obtaining a PAR to develop a "Standard Specification Format Guide and Test Procedure for IMUs."

The IEEE editors are resolving (via errata) problems that were found in Std. 517, "IEEE Standard Specification Format Guide and Test Procedure for Single-Degree-of-Freedom Rate-Integrating Gyros." These problems were caused during the process of converting the original paper document to an electronic format.

Respectfully submitted,



Randall Curey

Chair, IEEE/AESS Gyro and Accelerometer Panel

AESS Board of Governors

Large-scale Systems and Systems Engineering Panel Report
2007-03-26

The principle focus over the last reporting for this panel is to continue to expand in the area of Systems-of-Systems both into existing AESS activities and into new domains, especially transnationally, and in working with the IEEE Systems Council to assure AESS partners with them on this subject. Significant activities center around GEOSS, the Global Earth Observation System-of-System.

-Support was given to the AESS Director, Western European Operations to get a European-centric and SoS approach to the next step in her penetration of this market for AESS. This included US top generals and GEOSS leads in Europe including the Secretary of all of GEOSS. This appears to be going very well under Prof. Ruggieri's leadership. Director Hugh Griffiths is also involved in this activity and supportive of Prof Ruggieri.

-Meetings were had with the leaders of the AESS Aerospace Conference to establish a GEOSS track at this conference. A 2007 experiment to start this in March worked well and further expansions are in the works for 2008.

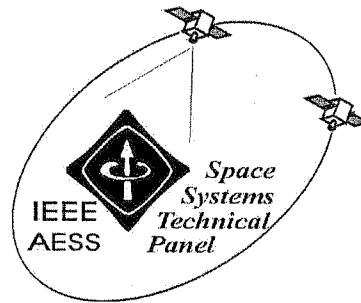
-Meetings were had with most of the top IEEE leaders at the February Board Series in LA. The goal was to "deepen, broaden and raise" IEEE's commitment to GEOSS. The meetings with the Past, Current and Next IEEE President as well as RAB, TAB and Standards Board VPs went exceedingly well. A draft MOU between RAB and TAB is in review circulation as is a proposal for a new IEEE BoD-level GEOSS Ad Hoc Committee.

-Work continues with other transnational directors to expand in SoSs, but a bit slower than above. In particular India on ATM and Australia on ATM SoSs are making good progress.

-Advocacy for a joint AESS/Systems Council research project to discover the best in class of systems engineering is still underway but has not reached a point of action. A leader is needed to push this study. This is unlikely to mature until 2008, but when it does it will be significant as this has not yet been done in the industry...to "discover" rather than "tell" "how systems are best developed by industry-by-industry case studies.

Respectfully Submitted,

Paul E. Gartz, Chair
AESS Large-scale Systems and Systems Engineering Panel



REPORT OF IEEE/AESS "SPACE SYSTEMS" PANEL

March 23, 2007

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. In particular an effective relationship has been established with AFCEA (Armed Forces Communications & Electronics Association), Rome Chapter.

In December 2006, the Panel Coordinator has been nominated *Vice-President of AFCEA_Roma Chapter*. This new role will certainly contribute to connect more deeply AESS and AFCEA interests and mutual benefits.

The following activities have been carried out in the period September 2006-March 2007:

- Meetings for preparing the International Event, that will take place in Roma on September 12-14, 2007, on "**Aerospace Technologies and Applications for Dual Use**", organised by AFCEA_Rome Chapter and technically co-sponsored by AESS, System Council and IFIP. The Event envisages speakers from the AESS and a tight connection between the two associations.
- Activities related to the co-chairing of Track 2 *Space Missions, Systems and Architecture* of the **2007 IEEE Aerospace Conference**, that took place in Big Sky in March 2007. The event involved an interesting number of papers and attendees from Europe as well as more volunteers from Italy for organising sessions in the following editions. During the event the Judith Resnik Award 2007 has been assigned and the Robert Profet Award presented for the first time and launched.
- Activities related to the co-chairing of Track 2 *Space Missions, Systems and Architecture* of the **2008 IEEE/AIAA Aerospace Conference**, that will take place in Big Sky in March 2008. Moving from the success of the session on GEOSS introduced in the 2007 edition, a broader participation of the GEOSS topic in the Conference has been envisaged for the next year with 2 sessions in Track 2 plus a panel and - possibly - a dedicated plenary talk. Coordination meetings have taken place to this respect during the 2007 Conference. Additional sessions have been also added in Track 2 on other topics.
- Deployment of an AESS chapter in Denmark, in the frame of a deep convergence between Italy and Denmark, in particular in the aerospace field.

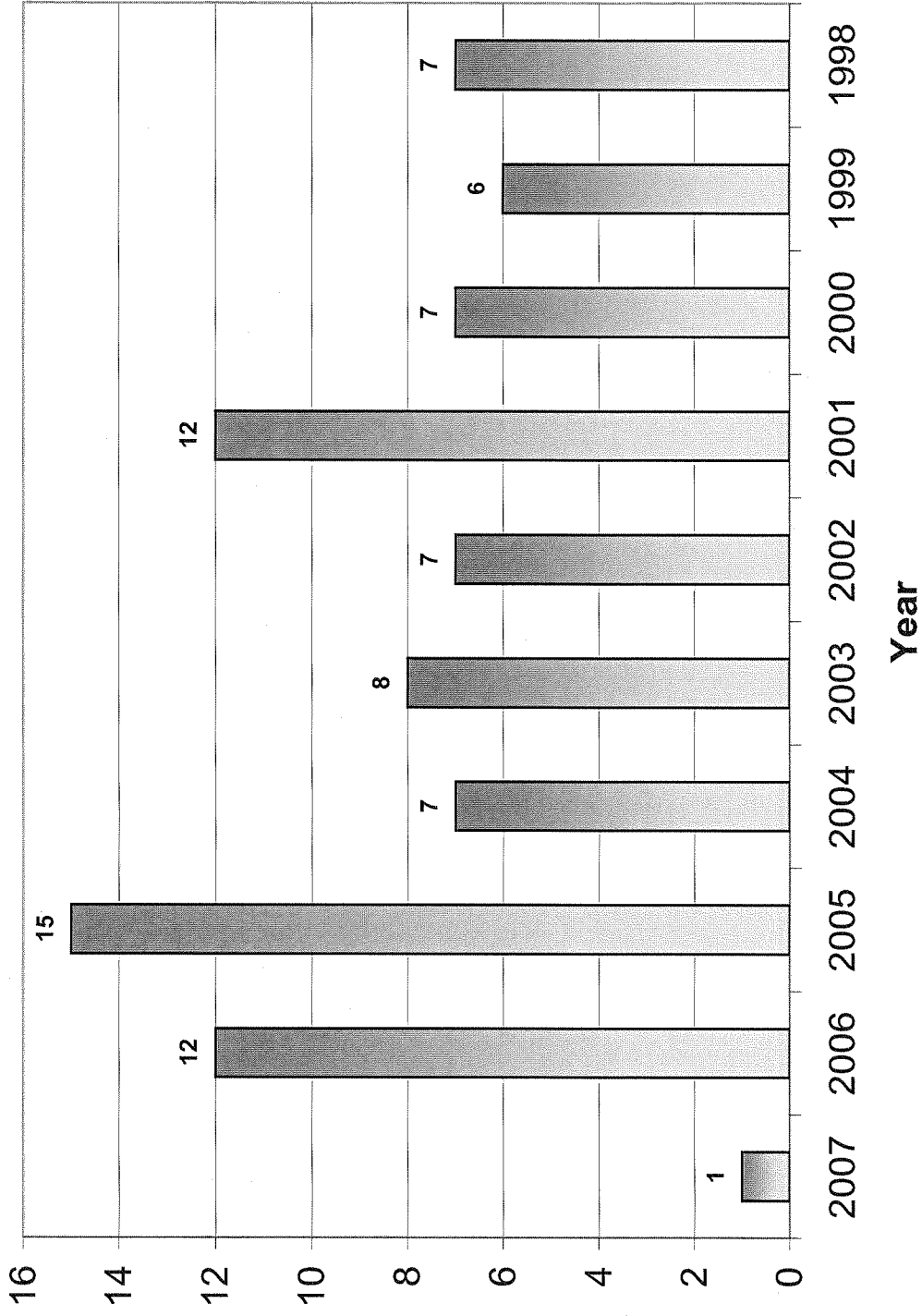
- Signature on September 28, 2006 at Villa Mondragone (Monte Porzio Catone, Roma) of the Memorandum of Agreement for the establishment of the Italian branch of the Danish *Center for Teleinfrastruktur (CTIF)*, namely CTIF_Italy, at the University of Roma Tor Vergata premises. This important event for Italy derives from the lasting and fruitful cooperation between the University of Roma Tor Vergata (Italy) and the Aalborg University (Denmark). The signature has been framed in an event entitled “Convergence Italy-Denmark”, whose technical topics focused on the Italian and Danish aerospace activities. A section of the program has been devoted to the AESS Italian and “baby” Danish chapters and saw the participation of Robert Rassa, as Executive VP of AESS, as well as of the Italian and Danish AESS Chapters Chairs (Prof. G.Galati and Prof. R.Prasad, respectively).
- Activities related to the creation of the CTIF_Italy structure and launch of activities in the aerospace field. Promotion of the center worldwide.
- Intense activities related to the role of Editor of *Space Systems* of the AES Transactions.
- Activities related to the role of Editor of *Space Systems* of the Systems Magazine.
- Activities related to the role of member of the Judith Resnik Award Committee.
- Organisation of training and thesis activities of students at the University of Roma Tor Vergata in the field of space systems.
- Development of the 4rd edition of the Master Course in “Advanced Satellite and Communications Systems” at the University of Roma Tor Vergata and preparation of the 5th edition.
- Development of successful proposal for research projects in the field of satellite navigation, EHF (Q/V and W) payloads, NavCom systems, advanced satellite constellations and related applications.
- 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.
- Activities related to the various mentioned Conferences, that will be held this year and in 2008.
- Activities related to the mentioned projects, publications and teaching in the space system related topics.

Attachment 2

Number of Lectures versus Year



Summary of Distinguished Lectures Given

Date Reviewed: March 28th, 2007 – Dr. J. R. Huddle

Lecturer	Lecture	2007	2006	2005	2004	2003	2002	2001	2000	1999	From July, '98
Inactive	Various									Note 14	Notes 1,2
Hugh Griffiths	Bistatic & Multistatic Radar										
Hugh Griffiths	Synthetic Aperture Radar										
Bob Hill	Advances in Radar										
Dick Wiley	Electronic Warfare & Modern Radar Signals			Note 51	Note 41	Note 23			Notes 16, 17		
Pramod Varshney	Multi-Sensor Fusion		Note 63	Note 58	Note 50		Note 33				
Myron Kayton	Navigation – Land, Sea, Air		Note 68	Note 57	Notes 45, 46, 47		Note 36		Note 20	Note 11	Notes 3,4,5,6,7
Myron Kayton	Avionics for Manned Spacecraft		Note 65 (2) Note 66	Note 60	Note 48						
Myron Kayton	Practitioners View of System Engineering		Note 66 Two Ad hoc in MO			Notes 37, 38, 43	Notes 34, 36	Note 27		Notes 12, 13	Note 3
William Ward	Planetary Exploration			Note 53		Notes 40,42		Note 25, 28 - 4	Note 15 - 2	Note 9	
Eli Brookner	Radar – Past to Future		Note 70					Note 22			
Saj Durrani	Satellite Communication Systems	Note 71	Note 64 Note 69	Notes 52, 54 & 61		Note 44		Notes 21, 26	Notes 18, 19	Note 8	
Paul Gartz	System Engineering & Systems of Systems for the 21 st Century			Notes 56, 62		Note 39	Notes 32, 35	Notes 24,30			
Y. Bar-Shalom	Target Tracking			Note 59	Note 49						
Larry Chasteen	National Missile Defense & Early Warning Radars		Note 67	Note 55			Note 31	Note 29			
I. Y. Bar-Itzhack	Evolution of Inertial Navigation										
Daniele Mortari	Novel Satellite Orbits and Constellations										
Kimio Kanai	Active Control of Cars and Aircraft										
Surendra Paul	Satellite Navigation (GNSS)										
	Total	1	12	15	7	8	7	12	7	6	7
		2007	2006	2005	2004	2003	2002	2001	2000	1999	1998

Details on the Locations of the Lectures

Note	Location	Date
1	Nagoya University, Japan	10-22-98
2	Thomson CSF Labs, France	07/01/98
3	Instituto Militar de Engenharia, Rio de Janeiro	10/19/98
4	Instituto Tecnológico de Aeronáutica, San José	10/08/98
5	Embraer Company, San José dos Campos,	10/08/98
6	Escuela Técnica del Buceo, Montevideo,	10/13/98
7	Military Academy, Montevideo, Brazil	10/14/98
8	Section Meeting in Lahore, Pakistan	01/23/99
9	Swarthmore College Student Branch	03/23/99
10	Electrical & Computer Engineering, Villanova	11/04/99
11	Communications Research Center, Ottawa	08/26/99
12	Laval University, Quebec City	08/30/99
13	Dallas Chapter	10/26/99
14	Penn State University	06/08/99
15	Boston Chapter	02/03/00
	Providence Section	10/10/00
16	Atlanta Chapter	05/23/00
17	Central Georgia Section	07/26/00
18	Technical University of Finland, Helsinki Section	09/22/00
19	Electro Technical University, St. Petersburg,	10/02/00
20	St. Louis University & the Missouri Conference	11-2,3-00
21	IEEE Panama Section	03/23/01
22	IEEE Section in Cairo – National Radio Science	03/27/01
23	Dayton Section	03/08/01
24	AESS Dallas Chapter	04/24/01

Note	Location	Date
25	RadarCon 200 Boston Section	5-1-01, 3-18-01
	IEEE Student Branch, Boston University	02/01/01
26	AESS Chapter, Aristotle University of Thessaloniki, Greece	04/25/01
27	IEEE/INCOSE Meeting at NASA, Houston	05/16/01
28	Birmingham, Alabama Section	09/10/01
29	Atlanta AESS Chapter	10/25/01
30	University of Southern California	11/20/01
31	Seattle Chapter	02/25/02
32	University of Southern California	03/26/02
33	Atlanta Chapter	05/30/02
34	Connecticut Section	10/23/02
35	Dallas Chapter	11/19/02
36	Vancouver Chapter	11-19,20-2002
37	San Diego Section	01/01/03
38	Halifax & Ottawa Section	2-4, 2-6-2003
39	University of Southern California	03/18/03
40	Canaveral Chapter	03/20/03
41	Eglin Chapter	03/27/03
42	Maine Section	05/09/03
43	Long Island Chapter	11/20/03
44	Galveston Bay Chapter	12/05/03
45	Montreal Section	06/17/04
46	St Maurice Section – Eastern Canada	06/21/04
47	Quebec Section	06/23/04
48	Canadian Atlantic Section	06/28/04
49	AESS Long Island Chapter	10/04/04
50	AESS Long Island Chapter	11/15/04
51	AESS Dallas Chapter	11/16/04

Distinguished Lectures in Planning Stage for 2007

Lecturer	Lecture	Location and Tentative Time	Estimated Expense
Hugh Griffiths	Bistatic & Multistatic Radar		
Hugh Griffiths	Synthetic Aperture Radar		
Bob Hill	Advances in Radar		
Dick Wiley	Electronic Warfare & Modern Radar Signals		
Pramod Varshney	Multi-Sensor Data Fusion	UAE - IEEE Section Fall, 2007	\$1,500
Myron Kayton	Navigation – Land, Sea, Air	IEEE Newfoundland & New Brunswick Lecture Tour Summer, 2007	\$1,500
Myron Kayton	Avionics for Manned Spacecraft	Kerala, India Student Chapter – Deferred	\$1,500
Myron Kayton	Practitioners View of System Engineering		
William Ward	Planetary Exploration		
Eli Brookner	Radar – Past, Present, Future		
Saj Durrani	Satellite Communication Systems	AESS Chapter Istanbul, Turkey June, 2007	\$1,500
Paul Gartz	System Engineering & Systems of Systems for the 21 st Century		
Yaakov Bar-Shalom	Target Tracking		
Larry Chasteen	National Missile Defense and Early Warning Radars		
Itzhack Bar-Itzhack	Evolution of Inertial Navigation		
Daniele Mortari	Novel Satellite Orbits & Constellations		
Kimio Kanai	Active Control of Cars & Aircraft		
Surendra Paul	Satellite Navigation (GNSS)		
	Total	4	\$6,000

SAE standard provides guidance for human-machine interface

Technology is the force that drives innovation in today's sophisticated aircraft. But while technological innovation offers many benefits, attention still needs to be paid to the most basic and crucial type of system: the interface between flight crew and aircraft.

That is the position of **SAE International**, and one of its many aerospace



Human factors must be considered early in the design process, not "designed in" later, said ARP 5056 co-sponsor and Boeing Technical Fellow Alan Jacobsen.

committees has developed a standard to address the issues involved in that interface. The goal is the safest and most cost-effective crew interface system possible.

SAE Aerospace Recommended Practice (ARP) 5056, Flight Crew Interface Considerations in the Flight Deck Design Process, defines recommended flight crew interface design processes and methods for new flight deck designs as well as for modification of existing ones. The standard applies to commercial transport, regional, and business aircraft.

"The increased utilization of automated systems, coupled with the increased operating sophistication of aircraft in the modern international air-space system and the increased data and information demands on today's flight crews, has made the proper application of sound human factors design principles more important than ever," said Alan Jacobsen, co-sponsor of ARP 5056 and a Technical Fellow at **Boeing** who serves as the leader of the company's Human Factors Team for the 787 Dreamliner. Other co-sponsors and key players in development of the standard were Bill Connor, retired **Delta Air Lines** Captain and Co-Chair of the SAE

G-10 Committee, and Etienne Tarnowski of **Airbus**. Some of the other entities involved in development of the standard were **Raytheon, Eclipse Aviation, Honeywell, Rockwell-Collins, Thales, Garmin, NASA, the FAA**, and several airlines.

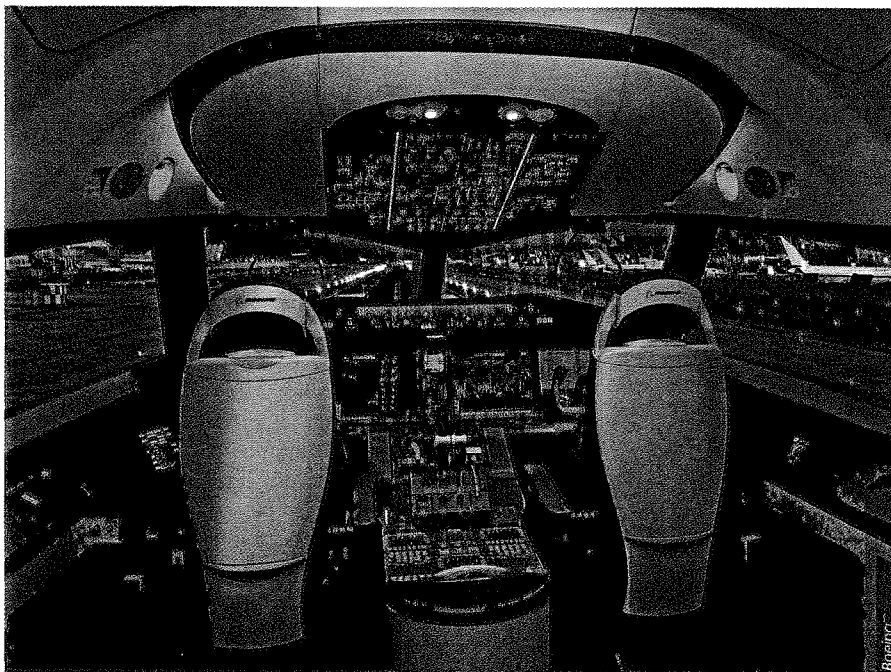
Jacobsen noted that the industry has become more sensitive recently of how failing to take a human-centered design approach "can lead to bad interfaces—i.e., interfaces that are error-prone or difficult to train. This sensitivity has led to newer flight crew interfaces that are more intuitive and error-tolerant than earlier designs."

The standard guides companies away from "reviewing in" human-machine design considerations after the design is near completion. A better idea, and one the standard supports, is "designing in" those considerations. The "designed-in" approach not only avoids the high costs of late modifications entailed under the "reviewed-in" approach, but also results in a better design, Jacobsen said.

An interface's effectiveness can be judged based on its physical, perceptual, and cognitive attributes, according to Jacobsen. Physical characteristics include the size of controls, knobs, and switches, along with the distance between them, and their tactile feel. Perception relates to how well pilots can read and identify information in all lighting environments. Cognitive merit relates to such things as possible hidden modes that can lead to errors. And, Jacobsen added, "Given that people will continue to make errors, how easy does the interface allow the pilot to recover from an error? How much training is required to operate the device or function? Does the interface lead to significant confusion? Is there positive or negative transfer of knowledge across functions?"

Jacobsen preferred not to identify examples of good and bad aircraft interfaces, but said bad interface design is found in all industries. "Digital time pieces and automobile CD players are notorious for having poor interfaces, as there are often hidden modes and buttons that have different meanings dependent on poorly annunciated modes, and owners often have to take out the instruction manual to reset the time or even change the pre-select buttons," he said.

Patrick Pontical



Boeing's involvement in the development of the SAE Aerospace Recommended Practice 5056, Flight Crew Interface Considerations in the Flight Deck Design Process, ensures that controls in the 787 Dreamliner cockpit (shown) will be intuitive and easy to use.

Felix J. Yanovsky, Professor, Dr., Academician, Laureated as Prize-Winner of the State Award of Ukraine in the field of Science and Engineering

Felix Yanovsky was born in Kiev, Ukraine, 07 Feb 1946. He graduated from the Kiev University of Civil Aviation Engineers (now – the National Aviation University (NAU), Kiev, Ukraine) as radio-engineer (M.S.). He received the candidate of science (Ph.D.) degree from the Moscow Institute of Civil Aviation Engineers, Russia in 1979 in radar and radio-navigation, and the two D.Sc. degrees: the first one from NAU in Air Transport Sciences & Meteorology in 1991 and the second one from the Moscow State Technical University, Russia in Radar and Radio-navigation in 1992.

From 1969 to 1996 he was with NAU:

1969-1980 – as a Teacher, Senior Researcher, Senior Lecturer;

1981-1992 – as Associate Professor of the Radar Department;

1993-1996 – as Full Professor of the Airborne Radio-Electronic Equipment Department.

In 1996-1998 he was with the Delft University of Technology (TU-Delft), The Netherlands as Top Scientist, Professor at the International Research Center for Telecommunications-Transmission and Radar (IRCTR).

During 1998-2000 he worked as Full Professor of the Airborne Radio-Electronics Department and Director of the ICAO Subregional Training Centre at NAU.

From 2000 to 2003 he was Vice-Head of the Air Navigation Systems Department, Full Professor at the Faculty of Electronics and Telecommunications in NAU.

During 2002-2003 he was again with TU-Delft, IRCTR, The Netherlands as Professor and Top-Scientist.

Currently (from 2003) he holds the Full Professor's position at the Institute of Information & Diagnostic Systems in NAU, Kiev, Ukraine.

Prof. Yanovsky is organizer and supervisor of the educational cycles on radar, remote sensing, airborne radioelectronic equipment (avionics) and radar meteorology in NAU. Currently he and his disciples deliver the following subjects at three faculties:

- Theory of radar (Faculty of Electronics)
- Theory of location systems (Faculty of Information Technology)
- Radar Systems of Aircraft (Faculty of Electronics)
- Airborne Surveillance Systems (Faculty of Information Technology)
- Airspace Survey and Remote Sensing (Faculty of Terrain Management)
- Remote Sensing of the Atmosphere (Faculty of Information Technology – optional)
- Aviation Meteorology (Faculty of Information Technology)
- Communications, Navigation and Surveillance Systems (Faculty of Information Technology)
- Fundamentals of Scientific Research (Faculty of Information Technology).

His research interests and achievements are in radar and remote sensing, particularly scattering on and radiation of weather objects, Doppler polarimetry, signal processing, math modeling and simulation, radar systems, multi-parametric and adaptive methods, detection, measuring and recognition.

He is author or co-author more than 400 scientific papers, 6 books, 39 invention patents.

He has been consulting to design and industrial companies in the field. He is elected Member of the Scientific Council of the National Academy of Sciences of Ukraine on Microwave Radiophysics and Electronics. He is a member of the General Assembly of the European Microwave Association (EuMA), European Geophysical Society, IEEE Senior Member (AES-S, GRS-S, MTT-S, AP-S).

