

TOPICS FROM WITHIN



Famous Bremen City Musician and Old Church at Markt Place, Bremen.

Attending IAC2003

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The 54th IAC (54th International Astronautical Congress: IAC2003) was held in Bremen, Germany for six days during September 29 to October 3, 2003. The IAC is an united body about space related international academy and sciences organization and companies such as IAF (International Astronautical Federation), IAA (International Academy of Astronautics), and IISAL (International Institute of Space Law). It is held every year in many places of the world in autumn, and there is participation of around 3000. It was held in Huston, U.S.A. last year, to be held in Vancouver, Canada next year and more in Fukuoka, Japan in 2005. The writer participated in IAC2003 from September 29 to October 2 and did presentation, chairmanship and attend the satellite communications committee.



Fair and Congress Center Bremen and Advertising Post Set in Many Places in Bremen.

Almost all of the participants were very surprised at the performance of an opening ceremony on the first day in the congress. At first a dance of intense fire began as soon as a woman like a famous TV caster appeared and presided, and greetings of a local organizer were finished. The people accepted breath by a terrible explosion and flash of light. Furthermore, an aerial dancer who was hung by a rope appeared from the rear of a hall. Real time communication with crew in the space station, greetings of Chairperson IAF, Minister of German Science and Education, and greetings of Mayor Bremen were conducted after this. The quiz that students of international school of Bremen gave a hint before greetings of the mayor, and the chairperson of IAF, IAA and IISL replied was done. Subjects such as a fall tower for non-gravity in Bremen and a science museum were chosen. Still, it was past two hours in no time and all participants enjoyed the opening ceremony..



Female Chairperson at Opening Ceremony, Dance of Intense Fire and Aerial Dancer.

Then the exhibition hall opened. Each country displayed its exhibition in a large exhibition hall. As for Japan, NASDA, ISAS, NAL and CRL exhibited together in a Japanese booth. Because three space organizations were unified into an organization during the period of the congress, and a new organization was born as Japan Aerospace Exploration Agency (JAXA), there seem to have been many people whom CRL mistook for a member of JAXA (CRL is a separate organization from JAXA). However, many people were interested and looked at the Japanese exhibition.



CRL's Exhibition and NASDA 's (JAXA's) Exhibition at the Japan Booth.

Plenary sessions and technical symposia were started in the afternoon. It is a symposium of satellite communications that the author is related. This had five sessions as shown in **Table 1** that the Satellite Communications Committee planned, whose chairperson is Mr. Ed Ashford. Each session had about 8 presentations.

Table 1 List of Satellite Communications Symposium.

Date	Session	Title	Scope
Sep. 30, 2003	M.1	Communication Satellite Infrastructure and Economics	The Interoperability, policy, and regulatory environments can considerably impact the development of satellite communications systems, as these can greatly influence both the technical and economic feasibility of such systems. Domestic, regional and global satellite systems will be addressed and reviewed with respect to these and other nontecnial considerations.
Oct. 1, 2003	M.2	Advanced Systems and Technologies	New satellite communication system concepts will be presented, as well as promising technologies that can be applied to both existing and new systems.
Oct. 1, 2003	M.3	Mobile Communications and Satellite Navigation	New and emerging mobile and personal communications sytems will be covered, including global hand held services and aeronautical mobile services. The evolution of satellite based global navigation systems will be discussed. This will include upgrades to existing systems as well as new global initiatives. The convergence of satellite based communication and navigation systems, and the synergy between them, will also be addressed, as will the new types of services that such a convergence will make possible.
Oct. 2, 2003	M.4	Near- Earth and Interplanetary Communications Systems	Both the configuration and requirements associated with space and ground segments may be very different when there is constant relative motion between them, as compared to the situation in which they are relatively fixed, as is the case for geostationary systems. This session addresses such systems which may operate in both near-earth and interplanetary environments, with particular regard to their unique concepts, techniques, and technologies.
Oct. 3, 2003	M.5	Fixed and Broadcast Services	Advances in fixed and broadcast services will be presented including Ka frequency band systems, television and radio direct-to-user systems and satellite technology improvements.

A list of all presentations for an satellite communications symposium is shown in **Table 2**. Because the paper IAC-03-M.1.02 in session M.1 was withdrawn, the paper IAC-03-M.2.07 was presented successively by a person from Austria who is the same author as the paper IAC-03-M.1.01. As the other four presentations, including a presentation by the writer, other than 2 ones above were from Japan, the session was just like a Japan session. There was a presentation by Dr. Tanaka (Nippon University, ex-NTT) in the session M.4 and in the session M.2, one by Mr. Oyama (TAO) instead of Mr. Morikawa. In the session M.3 that the writer

presided, there were many presentations about the Galileo project as expected. It was realized that such a project energized the related research very much. In addition, there is a presentation on Mars communication infrastructure by NASA in the session M.4, and it was impressive that a Mars communication infrastructure is steadily configured with MTO (Mars Telecom Orbiter) of a launching plan for 2009 years in MGS (Mars Global Surveyor), Odyssey, Mars Express, MRO (Mars Reconnaissance Orbiter), it which reached MTO.

Table 2 List of Papers in Satellite Communications Symposium.

Staus	Paper Number	First Author	Affiliation	Title
	IAC-03-M.1.01	Mr. Otto Koudelka	Joanneum Research	A "Native IP" Satellite System Enabling Seamless Integration of Satellite and Terrestrial Communications
Withdrawn	IAC-03-M.1.02	Mr. Bontcho Hristov Balabanov	Institute for Scientific Research in Telecommunications	Conditions for Involving new Satellite Networks in the Environment of the Overloaded GSO and Crowded NGSO Constellations
	IAC-03-M.1.03	Mr. Yuuchi Fujiwara	NASDA	Japan's First Data Relay Test Satellite (DRTS)
	IAC-03-M.1.04	Dr. Takashi Iida	Communications Research Laboratory	Global Ring Satellite Communications System for Future Broadband Network
	IAC-03-M.1.05	Mr. Morio Toyoshima	NASDA	Ground-to-Satellite Optical link Tests between the Japanese Laser Communication Terminal and the European Geostationary Satellite
	IAC-03-M.1.06	Mr. Nozomu Nishinaga	Communications Research Laboratory	Cost Evaluation of Reconfigurable Communication Satellite System
	IAC-03-M.2.01	Mr. Rolv Midthassel	ESA / ESTEC	Mobile Ku-Band Receive only System
	IAC-03-M.2.02	Mr. Alberto Canabal Rey	NN	Multifunctional Phased Array Antenna Design for Satellite Tracking Using an Extended Version of the Schelkunoff Polynomial Method
	IAC-03-M.2.03	Dr. Harald Michalik	Hochschule Bremen	High Rate CCSDS Formatter/Encoder plus IDEA Encryptor as a Single Chip Solution
	IAC-03-M.2.04	Mr. Feng Li	Xian Institute of Space Radio Technology	Remote Sensing Images via Embedded Compression in Low Bit Rate
	IAC-03-M.2.05	Mr. Victor N. Doniants	Zond-Holdings	Satellite Communication System "Molniya-Zond" using Mid-Altitude Elliptic Orbit Constellation
	IAC-03-M.2.06	Dr. Misayoshi Tanaka	Nihon University, College of Industrial Technology	Design and Operation Algorithm for Improving Performance and Reliability of an Multiport Amplifier
	IAC-03-M.2.07	Mr. Otto Koudelka	Joanneum Research	A Flexible MF-TDMA Modem for an IP-Based Satellite Communications System
	IAC-03-M.3.01	Mr. Hans L. Trautenberg	Astrium GmbH	GALILEO System Overview
	IAC-03-M.3.02	Mr. Holger Krag	Thales ATM GmbH	Impact of Orbital Precession on the combined Galileo-GPS Performance
	IAC-03-M.3.03	Mr. Martin Kassebom	OHB-System	Use of Galileo Navigation System for Traffic Surveillance and Law Enforcement
	IAC-03-M.3.04	Mr. Xavier Prats	ESA Student - UPC	SBAS data Processing and Analyzing Tool (BRUS)
	IAC-03-M.3.05	Mr. Colin Goulding	International Space University	Future Navigation Systems for Un-piloted Sub-Orbital and Orbital Vehicles
Withdrawn	IAC-03-M.3.06	Mr. Xingang Li	Northwestern Polytechnical University	A High Altitude Platform Station Navigation System for Regional Positioning
	IAC-03-M.3.07	Mr. Konstantin A. Karp	Moscow Aviation Institute	Algorithms of Complex Inertial and Satellite Navigation System for Mobile Objects
	IAC-03-M.3.08	Mr. Alex da Silva Curiel	Surrey Satellite Technology Limited	The Surrey Navigation Satellite
	IAC-03-M.4.01	Mr. Edward W. Ashford	SES Global	Non-Geo Systems...where have all the Satellites Gones?
	IAC-03-M.4.02	Mr. Eihisa Morikawa	Telecommunications Advancement Organization	Space Demonstration Experiments Plan of a Next Generation Leo System for Global Multimedia Mobile Satellite Communications
	IAC-03-M.4.03	Mr. Martin Kassebom	OHB-System	Profitable Small Data Communication Services by using the ORBCOMM Satellite Network
	IAC-03-M.4.04	Mr. Ramon P. De Paula	NASA	Telecommunications Systems Evolution for Mars Exploration
Withdrawn	IAC-03-M.4.05	Mr. Imran Majid	Space Generation Advisory Council	GCRP: An Efficient Routing Strategy for Inter Planetary Ad Hoc Networks
	IAC-03-M.4.06	Mr. Paolo Tortora	Universita di Bologna	The Microsatellite Research Program at Universit
	IAC-03-M.4.07	Mr. Ines Gaudel	CNES	Operational Use of Pastel Passenger on Spot 4 Satellite
	IAC-03-M.5.01	Mr. Doug Liddle	Surrey Satellite Technology Limited	A low Cost Geostationary Minisatellite Platform
	IAC-03-M.5.02	Mr. Christian Hunscher	Astrium GmbH	Advanced Antenna Technologies for Communication Satellites
	IAC-03-M.5.03	Mr. Angelo Cofone	ESA Student	Millimeter-Wave Antenna aArray for Video on Demand Applications
Cancelled	IAC-03-M.5.04			
	IAC-03-M.5.05	Mr. Nickolay N. Sevastianov	KGUPS	Development of the Satellite Communication and Television System in the Interests of Large Corporative Clients
	IAC-03-M.5.06	Mr. Patrick T. Anglin	Sirius Satellite Radio	Unique Satellite Operations for a Highly Inclined, Elliptical, Geosynchronous Satellite

Satellite communications committee meeting was held on October 2, and decided to rename satellite communications committee as space communications committee in future. The presentation papers were submitted by an electronic method from this time. But it is difficult

for an chairperson to acquire the related paper due to one paper of \$5, all papers \$1200, and it is inconvenient that some papers were not offered from an author satisfactorily either even for chairpersonship. So there was an opinion to distribute CD-ROM of presentation to all the participants even if the participation fee is raised by \$10-20. It suggested that this opinion should be proposed to the international program committee.

Plenary sessions with a theme to be shown in **Table 3** were held across lunch about twice a day. The theme that seemed to be interesting are listed, but time for one hour was seemed to be short so that only a few questions could be accepted after all panelists gave their own presentation. In addition, it seems to have been often that a panelist was a person different from a notice. There was a session "Space and Society" on September 29 and the writer attended it. By a notice, NASA Administrator, Minister of German Science and Education and Director of CNES were to be present, but actually these persons were absence, and Dr.Lucid (NASA Chief Scientist, Astronaut), Dr.Koptev (Russian Astronaut), Mr.Oborne (OECD, Commercialization of Space), Dr.Comacho-Lara (United Nation), Dr.Schork (Director of German Federal Ministry of Education & Research) were panelists. The panel began by chairperson's question of why space is developed and what relationship with society is. Dr.Lucid (NASA) told that President Bush said "The space is an exploitation basic drive for human" in his speech held in Johnson Space Center and that NASA was the only organization which developed space by order of the government proudly. In addition, Russian Dr.Koptev extends that the space have been developed more than 40 years and space has been used in every fields of a living such as communication and weather forecast. It was very impressive that he said why now raises a question of why space is developed. No Japanese panelist was invited in the Plenary Session, and it is a fact this time to have felt loneliness to some extent as a Japanese.

Table 3 List of Plenary Session

Date	Theme
Sep.28, 2003	Soalr and Heliospheric Observatory
Sep.29, 2003	Space and Society
Sep.30, 2003	Space to Promote Peace - Initial Focus on the Reconstruction of Afganistan
Sep.30, 2003	Status and Outlook of the International Space Station Programme
Oct.1, 2003	Space Business: Emerging Profitability in Space
Oct.1, 2003	To Mars - To Go There, We Start From Here: Earth Research to Enable Exploration
Oct.2, 2003	Handing Over to the Next Generation
Oct.2, 2003	Fundamental Physics in Space
Oct.2, 2003	Space Transportation Systems - Will Space Faring Nations Join Forces for Developing Space Transportation Systems?
Oct.3, 2003	Astronaut Session: ISS and Beyond

As mentioned in the beginning, IAC2003 was the big meeting that around 3000 participated in, and it was indicated that the city Bremen laid emphasis by the fact that many advertising posts, shown in the beginning of this article, were set in many places of a town. In addition, some young students were invited as previous IAC, and some visit tour to EADS, etc. and accompany person programs were arranged. Among such events, Culture Night took place as evening event, although a rate of 10 Euros was required. A short reception at the venerable city hall, a concert by Bremer Filharmoniker (a full orchestra) was conducted in an

old church Unser Lieben Frauen from 9:00 p.m. "The Planets" of Gustav Holst lasted for one hour, and direction with a laser beam was belonging to it.

It is expected that there are much participation and presentations from Japan at IAC2004 in Vancouver of the next year.

The end



Reception at the City Hall and Concert at the Church in Culture Night.