



# IAA 1<sup>ST</sup> SYMPOSIUM ON PRIVATE HUMAN ACCESS TO SPACE,

ARCACHON / May 28 to 30  
FRANCE / 2008

## PRELIMINARY PROGRAMME



## Conference objectives :

The Symposium aims at addressing all topics related to the "Space Transportation of Passengers on a Commercial Basis".

The overall goal is to identify and quantify the key topics associated to Private Manned Access to Space for both Orbital and Sub-orbital missions:

- The Symposium will deal with the major technical features of the conceivable solutions,
- The Symposium will address the legal, regulatory and insurance aspects, on both certification and safety aspects of commercial manned space flight; current limitations will be identified and future actions will be proposed,
- The Symposium will deal with the financial aspects associated to the development of Private Access to Space, mainly in terms of overall evaluation of development cost, the operational costs, associated business plans and financing schemes,
- The Symposium will identify the motivations of the potential customers in order to consolidate the foreseen market, and associated customers requirements linked to this new branch of Access to Space,
- The Symposium will deal with the constraints associated to manned flights in the frame of commercial initiatives, mainly the physiological aspects, psychological ones, and ergonomic constraints,

- The Symposium will deal with ground infrastructures, future spaceports, space tourism bases together with associated services such as side activities, entertainment.

### A PLACE FOR EXCHANGES AND NETWORKING

The International Academy for Astronautics has the ambition of making this Symposium a key focal point for all partners interested in the subject, researchers, industrials, entrepreneurs, space companies, agencies, universities, government representatives, associations, academies...

The conference will propose outstanding communications on all those topics, but will also reserve time for networking and fruitful exchange among all delegates.

A special attention will be given to students in order to guarantee presence of fresh blood who will undertake in near future the dreams of older sceptics...

### TOWARDS A POSITION PAPER

The International Academy of Astronautics IAA has undertaken the preparation of a Position Paper related to "Private Manned Access to Space". Commission III (Space Technology and System Development) and Commission V (Space Policy, Legal and Economic Aspects) have tasked a dedicated Study Group to fulfil this action: your exchanges and presentations during the conference will serve this project.

## Wednesday, may 28

08.00-9.00		REGISTRATION	
OPENING SESSION			
09.00-09.30		WELCOME ADDRESS	
C. BONNAL - International Academy of Astronautics - IAA, FRANCE T. LEVEUGLE - Atmospheric Reentry Association - ARA, FRANCE			
GENERAL OVERVIEW - Coordination: C. BONNAL			
09.30-09.50		Keynote Introduction Speech C. BONNAL - IAA	
09.50-10.10		Keynote introduction speech J. P. HAIGNERE - Astronaut - Astronaute Club Européen (ACE)	
10.10-10.40		COFFEE BREAK	
10.40-11.00		Some Reflections about Orbital and Suborbital Tourism P. EYMAR - N4E, FRANCE	
11.00-11.30		Introduction to Legal Aspects & Certification M. COUSTON - University of Lyon 3, FRANCE R. CROWTHER, Rutherford Appleton Laboratory (RAL), UK	
11.30-12.10		Safety and Survivability Factors in Manned Private Space Flights M. J. ANTUNAND - Federal Aviation Administration (FAA), USA	
12.10-12.30		What the Growth of a Space Tourism Industry Could Contribute to Employment, Economic Growth, Environmental Protection, Education, Culture and World Peace P. COLLINS, Azabu University, JAPAN	
12.30-12.50		The Possibility of a Cultural Return from Commercial Space Passengers J. ARNOULD - CNES, FRANCE	
12.50-14.20		LUNCH	
		Session N°1: Technical Aspects - Overviews Coordination: G. Smith - M. Calabro	Session N°2: Societal Motivation Coordination: W. Peeters - P. Eymar
14.20-14.40		Reflections on Conditions for Commercial Air-launched Suborbital Flight in Europe J. STARKE, ASTRIUM ST, GERMANY	Creating New Transportation Culture by Suborbital Space Tourism Vehicles M. ONUKI, Space Frontier Foundation, USA
14.40-15.00		Some Motivations for Private Access to Space – M.C. BERNASCONI, MCB Consultants, SWITZERLAND	The Private Manned Access to Space, a New Employment for Junior Engineers J.B. DELPY, ENSAE, FRANCE
15.00-15.20		Khrunichev Space Center Proposals on Development of Space Tourism Infrastructure A.I. KUZIN, Khrunichev Space Center, RUSSIA	Space Tourism = Space + Tourism W. PEETERS, International Space University

## Wednesday, may 28

15.20-15.40	Best Practices for a Sustained Manned Access to Space P. BULTEL, ACE, FRANCE	The New Student Aerospace Motivation J. HENRY, DASSAULT AVIATION, FRANCE
15.40-16.00	Prospects for Space Tourism in Japan P. COLLINS, Azabu University, JAPAN	Sciences Education with Planète Sciences: a Squadron of Tools and Programmes to go on Space Conquest C. SCICLUNA, Planète Sciences, FRANCE
<b>16.00-16.30 COFFEE BREAK</b>		
<b>Session N°3: Technical Aspects Point to Point Transportation Coordination: G. Smith - M. Calabro</b>		<b>Session N°4: Medical &amp; Physiological – Coordination: M. Antuñano - R. Gerzer</b>
16.30-16.50	Promising Roadmap Alternatives for the Space Liner M. SIPPEL, Space Launcher System Analysis, DLR, GERMANY	Physiological, Environmental and Operational Risk Factors for the Crew and Passengers of Future Commercial Space Vehicles – M. J. ANTUÑANO, Federal Aviation Administration, USA
16.50-17.10	Point-to-Point Sub-orbital Space Tourism: Some Initial Considerations D. WEBBER, Spaceport Associates, USA	Medical Infrastructure and Program for Medical Selection of Passengers for Commercial Suborbital Spaceflight R. GERZER, DLR, GERMANY
17.10-17.30	The Logistical Challenges of the Space Liner Concept A. van FOREEST, Space Launcher System Analysis, DLR, GERMANY	Medical Safety Considerations for Passengers on Short-Duration Commercial Orbital Space Flights M. J. ANTUÑANO - Federal Aviation Administration, USA
<b>Session N°5: Technical Aspects - Orbital Concepts Coordination: G. Smith - M. Calabro</b>		<b>Session N°6: Psychological &amp; Ergonomics – Coordination: M. Antuñano - F. Winisdoerffer</b>
17.30-17.50	Launch of Private Manned Spaceships Using Zenith and Mayak LV A. P. KUSHNAR'OV, Yuzhnoye Design Office, UKRAINE	Private Ground Infrastructures for Space Exploration Missions Simulations A. SOUCHIER, Planète Mars, FRANCE
17.50-18.10	Study of Next Generation Space Transportation System R. YAMASHIRO, JAXA, JAPAN	Passengers' Safety and Habitability Requirement as Keys to the Design of Sub-Orbital Vehicle : the Black Diamond Case Study – O. BRECHON CORNER, The Strate College, FRANCE
18.10-18.30	New Concept of Space Construction S.V. ANTONENKO, Khronichev Space Center, RUSSIA	Development of the DL/H-1 Full Pressure Suit for Private Spaceflight P. DE LEON, University of North Dakota, USA

## Thursday, may 29

<b>Session N°7</b> <b>Ground Infrastructure</b> <b>Coordination: P. Droneau - D. Webber</b>		<b>Session N°8: Legal, Insurance &amp; Regulatory : General Legal Frame –</b> <b>Coordination: M. Couston - R. Crowther</b>	
09.00-09.20	The "Cit� de l'Espace" & Space Tourism P. DRONEAU, Cit� de l'Espace, FRANCE		
09.20-09.40	Spaceport France - A Preliminary Study to Launch Commercial Suborbital Spaceflights from the Montpellier Mediterranean Airbus Airport G. SMITH, 3AF, FRANCE	Private Human Access to Space - Legal Challenges and Possibilities T. MASSON-ZWAAN & S. FREELAND, International Institute of Air and Space Law, Leiden University, THE NETHERLANDS	
09.40-10.00	Building the Next Generation of Spaceports – G. GARCIA-CUADRADO, Aerospace Research and Technology Centre, CTAE, SPAIN	Private Manned Space Flight – Navigating the Intersection of Public International Law and Commercial Law Regimes R. OLOFSSON, White & Case LLP, BELGIUM	
10.00-10.20	Plans To Operate a Commercial Suborbital Spaceport in Caribbean A.A. WIELDERS, Space Horizon, THE NETHERLANDS	Attempt of Identification of the Legal Framework Potentially Applicable to Manned Suborbital Flights S. DEVOUGE, Marsh SA, FRANCE	
10.20-10.40	Spaceport Sweden - from Idea to Reality - Issues to Consider – S. GRAHN, Swedish Space Corporation, SWEDEN	Suborbital Flights with Entertaining Purposes: Legal Considerations A. FARAND, ESA	
<b>10.40-11.10 COFFEE BREAK</b>			
<b>Session N°9:</b> <b>Technical Aspects - Technologies</b> <b>Coordination: G. Smith - M. Calabro</b>		<b>Session N°10: Legal, Insurance &amp; Regulatory : Risks and Insurances –</b> <b>Coordination: M. Couston - R. Crowther</b>	
11.10-11.30	Operationally Responsive Space: How the Space Tourism Industry Can Work with Government – K.R. McKEE, XCOR Aerospace, USA	Typology of Insurable Risks Related to Manned Suborbital Flights as a Space Tourism Activity S. MOYSAN, Marsh SA, FRANCE	
11.30-11.50	Base Drag, Landing Propellant and Genetic Algorithm Vehicle Optimization for Suborbital VTVL Rocket Vehicle Trade-Off A. LENTSCH, Orbspace Engineering, AUSTRIA	Space Tourism Insurances D. BENSOUSSAN, Hiscox, FRANCE	
17.50-12.10	Concept Study of Propulsion System for Japanese Future Two-Stage Semi-Reusable Launch Vehicle K. AOKI, Mitsubishi Heavy Industries, JAPAN	Private Manned Access to Space: Space Insurance Questions, but also a Broader View on Insurance Matters – P. MIQUET, Risk management & insurance consultant, FRANCE	
12.10-12.30	Advanced Solid Propulsion for Private Manned Access to Space F. MAGGI, SPLab, Politecnico di Milano, ITALY	Liability and Insurance – S. AKBAR, Institut du Droit de l'Espace et des T�l�communications, FRANCE	

Thursday, may 29

12.30-14.00		LUNCH
	<b>Session N°9: (Cont'd) Technical Aspects - Technologies Coordination: G. Smith - M. Calabro</b>	<b>Session N°11: Legal, Insurance &amp; Regulatory: Regime and Users Status Coordination: M. Couston - R. Crowther</b>
14.00-14.20	Space Tourism: Interest of Hybrid Propulsion M. CALABRO, The Inner Arch, FRANCE	Who is an Astronaut? The Inadequacy of Current International Law F. LYALL, University of Aberdeen, UK
14.20-14.40	TNO Technologies for Second Generation Space Tourism Vehicles – T. MAREE, TNO Defense, THE NETHERLANDS	Space Tourists – the New Ambassadors of the Common Heritage of Mankind Principle? – A. FROEHLICH, Institute of Air and Space Law, Köln University, GERMANY
	<b>Session N°12: Technical Aspects - Market Analysis Coordination: D. Salt - A. Dupas</b>	<b>Session N°13 Legal, Insurance &amp; Regulatory : Specific National Regimes – Coordination: M. Couston - R. Crowther</b>
14.40-15.00	The Disruptive Potential of Space Tourism D. SALT, VEGA IT GmbH, GERMANY	Privately Funded Human Space Flight in the Context of the UK's Outer Space Act R. CROWTHER, Rutherford Appleton Laboratory, UK
15.00-15.20	A Phased Approach to Orbital Public Access M. HEMPESELL, Bristol University, UK	European regulation for private human spaceflight in the context of Space Traffic Management – J. ABOU YEHIA & K.U. SCHROGL, European Space Policy Inst., AUSTRIA
15.20-15.40	Analysis of the Futron/Zogby Study Conclusions and Forecast V. ZILLOTTO, ESA/ESTEC	Informed Consent v. ITAR: Regulatory Conflicts that Could Constrain Commercial Human Spaceflight – P.J. BLOUNT, University of Mississippi Law School, USA
15.40-16.00	Commercial operations concepts and considerations for business planning in sub-orbital space travel S. ADLEN, VEGA Group PLC, UK	Licensing Regime of the Launch and Reentry of Suborbital Planes S. AKBAR, Institut du Droit de l'Espace et des Télécommunications, FRANCE
16.00-16.30		COFFEE BREAK
	<b>Session N°12: (Cont'd) Technical Aspects - Market Analysis Coordination: D. Salt - A. Dupas</b>	<b>Session N°14: Reliability, Safety &amp; Risk Coordination: M. Romero - M. Grimard</b>
16.30-16.50	An Analysis of Supply Chain Constructs in the Commercial Space Access Industry C. REMILLARD, Delft University, THE NETHERLANDS	Crew Safety Design Elements for Suborbital Vehicles – Past Experience and Basic Comparisons A. LENTSCH, Orbspace Engineering, AUSTRIA
16.50-17.10	The Galactic Suite Experience X. CLARAMUNT, Galactic Suite, SPAIN	Emergency Rescue System S. IVANOV, LAVOCHKIN ASSOCIATION, RUSSIA

## Thursday, may 29

17.10-17.30	Building a Business in Operationally Responsive Space B. ESPOSITO, VEGA Group PLC, UK	Centrifuge Training as Key Safety in the Commercial Spaceflight Industry A. QUINN, Worldview Spaceflight, UK
17.30-17.50	Spaceport Sweden – Open for Business O. NORBERG, Espace Swedish Space Corporation, SWEDEN	The Re-entry Phase of Private Human Access to Space Vehicles: Challenging or not? Questioning or not? – T. LEVEUGLE, Atmospheric Reentry Association, FRANCE

## Friday, may 30

### Session N°15 Interactive Round Table 1

08.30-09.15	Legal Aspects & Certification Moderator : M. Couston, University of Lyon 3, FRANCE
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### Session N°16: Suborbital Current Projects Coordination: G. Smith - M. Calabro

09.15-09.45	DASSAULT Aviations VHS Missions L. GATHIER, DASSAULT Aviation, FRANCE
09.45-10.15	The XP Spaceplane C. LAUER, Rocketplane Incorporated., USA
10.15-10.45	The Sub-orbital Space Tourism Project of EADS Astrium C. CHAVAGNAC, EADS Astrium, FRANCE

### 10.45-11.15 COFFEE BREAK

### Session N°17: Interactive Round Table 2

11.15-12.00	Concepts, Systems & Technology Moderator: G. SMITH - Airbus Chairman, 3AF Space Tourism Commission
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### 12.00-12.30 CLOSING SESSION: FINAL ADDRESS C. BONNAL - IAA

### 12.30-14.00 CLOSING LUNCH

## Location

Palais des Congrès d'Arcachon  
Boulevard Veyrier Montagnères  
33120 Arcachon – France  
(3/4 hour drive from Bordeaux International Airport)

## Arcachon

Arcachon in May should be terrific!  
The conference center is second to none. Located on the beach of the Arcachon Bay, there you will profit by famous oysters, world known Bordeaux wine, and all possibilities of local entertainment.

<http://congres.arcachon.com>

## Secretariat

All correspondence and inquiries should be sent to the conference secretariat.

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[www.avantage-aquitaine.com](http://www.avantage-aquitaine.com)

For Technical Information,  
or Questions regarding the Conference Objectives : Please contact  
Mr. **Christophe BONNAL**, Chairman of the Programme Committee.  
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More Information on IAA  
<http://www.iaaweb.org/>

## Programme Committee

Chairman of the Programme Committee: **Christophe Bonnal** – CNES, IAA

**Dr. Melchor J. Antufiano**

Director, Civil Aerospace Medical Institute, FAA

**Max Calabro**

The Inner Arch, former head of propulsion department in Astrium Space Transportation, IAA

**Pr. Mireille Couston**

University of Lyon 3, Head of Space Laws Center

**Pr. Richard Crowther**

Rutherford Appleton Laboratory

**Philippe Droneau**

Deputy Director, Toulouse Cité de l'Espace

**Alain Dupas**

Collège de Polytechnique

**Patrick Eymar**

N4E, former head of future projects at Astrium ST

**Max Grimard**

Head of Business Development, Astrium, IAA

**Walter Peeters**

Dean of ISU, International Space University

**Manola Romero**

ONERA, IAA

**Dave Salt**

Vega Group, European Space Agency

**Garrett Smith**

Airbus, Chairman of the 3AF Space Tourism Commission

**Derek Webber**

Spaceport Associates

**Francis Winisdoerffer**

Airbus, Professor at Strate College