



Progress report on IAA Study Group 3.9 “Private Human Access to Space”

Proposer(s): H. Rauck – G. Brachet **Chair:** Ch. Bonnal
Primary IAA Commission Preference: Commission 3
Secondary IAA Commission Interests: Commission 5

Overall Goal:

Identify and quantify the key topics associated to Manned Private Access to Space for both Orbital and Sub-orbital missions.

Key words:

- Technical aspects
- Legal and regulatory aspects, safety aspects
- Financial aspects, market analyses, associated business plans
- Motivations of potential customers
- Physiological and Psychological requirements, ergonomic constraints

Expected outcome of the study:

IAA Position Paper giving the keys to the topic and potentially including recommendations. Subdivision of the study into key chapters, with one “book captain” per chapter ; 7 or 8 members per chapter covering a wide range of origins (countries, agencies, industrials, searchers, operators...)

Time line:

Initially: 3 years following the initial proposal (March 2007)

Revised timeline:

1st IAA symposium on Private Human Access to Space (Arcachon)

⇒ 28-30 May 2008

Publication of the full CD with all the papers, most of the presentations, pictures, ... Distribution to all participants

⇒ End of September 2008

Report during IAC Glasgow

⇒ October 2008

Publication in Acta Astronautica of the 15-20 best papers out of the 68 presented in Arcachon

Process undergoing: 15 papers pre-selected

- 1 rejected
- 7 under initial review
- 4 reviewed once and under 1st revision
- 1 reviewed twice and under 2nd revision
- 2 finally accepted under Rev 1

Very long process !

Could be finished by end 2009

Tentative date was March 2009,

⇒ Revised to December 2009

Formal invitation of members of the SG, Table of contents

Additional members are welcome, but may lead to problems of coherence and homogeneity (lack of efficiency; depends on the definition of a Working Group !)

⇒ Daejeon, October 2009

First Draft, internal

⇒ IPC, Paris March 2010

Draft release for Peer Review within IAA

⇒ Praha, September 2010

Final publication

⇒ IPC, March 2011.

IAA Position Paper on Private Human Access to Space
Tentative table of contents, sub-chapters, length and chapter responsables:

1. Introduction:
 - a. context, history,
 - b. general overview,
 - c. IAA action description

(4 pages – Bonnal)
2. Societal motivations :
 - a. New transportation culture, Space age
 - b. Effects on society
 - c. Outreach

(6 pages – Peeters, Eymar)
3. Market analysis
 - a. Current analyses and forecast
 - b. Phased approach to public access to space

(6 pages – Salt, Webber)
4. Medical, Physiological and Ergonomics
 - a. Risk factors for the crew and passengers
 - b. Medical selection, dedicated ground infrastructures
 - c. Habitability requirements, flight suits
 - d. Applicable and similar experiences

(7 pages – Gerzer, Antuñano, Winisdoerffer)
5. Legal, Insurance and Regulatory aspects
 - a. General legal frame
 - b. Risks and Insurances
 - c. Regime and Users status
 - d. Specific national regimes

(11 pages – Couston, Crowther, Masson-Zwaan (TBC), Clerc (TBC))
6. Technical aspects:
 - a. Potential solutions, variants at system level, shape, number of passengers, single or dual stages
 - b. Main sub-systems, aerodynamics, propulsion, thermal protections, TRL
 - c. Growth potential: P2P, hypersonic passenger travels

(12 pages – Calabro, Bultel, Bernard-Lépine (TBC))
7. Ground Infrastructures
 - a. Space tourism and Grand public
 - b. Spaceports : criteria, proposals

(8 pages – Droneau, Webber)
8. Reliability, Safety, Risk
 - a. Reliability requirements
 - Safety requirements

(4 pages – Romero (TBC))
9. Conclusions:
 - a. Key hurdles to overcome
 - b. Recommendations, role of Agencies

(4 pages – Bonnal)

Grand total : 62 pages (for comparison : Space Debris = 64 pages)

Next symposia:

Current activity on the subject at world level is very low:

- Numerous flights of White Knight 2, but no flight yet of Space Ship 2
- Astrium SpacePlane TBN is frozen
- No news at all from Goddard – New Shepard – Blue Origin (Jeff Bezos)
- No significant progress on Rocketplane XP development
- Progress in propulsion at X-Cor, but nothing obvious on Lynx vehicle
- VSH is frozen
- Space Dev Dreamchaser Benson heritage ?
- Progress on ISAS side ?
- Orbispace Infinity re-scoped for sub-systems
- Numerous concepts apparently stuck nowhere: Armadillo, Da Vinci, Masten, Starchaser, Interorbital Systems Neptune,
- ...

↳ Considering the general lack of activity at world level on this subject, and despite the strong support of Avantage Aquitaine (thanks!), the 2nd IAA Symposium on Private Human Access to Space is postponed to May – July 2011, earliest ! Decision to be taken during the next IAA Commission III meeting

→ Location and local organizer to be discussed, but same as 2008 seems a good idea.