

## Proposal for Forming an IAA Study Group S 6.9

**Title of Study: The Architecture of Space: Tools for Space Development in the 21<sup>st</sup> Century**

**Proposer(s): Richard Clar & Oleg Alifanov**

**Primary IAA Commission Preference: VI, Space & Society**

*(From Commission 1 to Commission 6)*

**Secondary IAA Commission Interests: III, Space Technology**

*(From Commission 1 to Commission 6)*

### Members of Study Team

**Chairs:** Nikolai Tolyarenko (M, Russia) & Olga Bannova (USA)

**Editor:** Albert Harrison (USA)

**Secretary:** Brent Sherwood (USA) & David Wong (UK)

**Other IAA Members:** H. Benaroya (CMM, USA), R. Clar (CMM, France), D. Raitt (M, UK), Peter Swan (M, USA, Commission III Member), I. Bekey (M, USA), J. Pearson (M, USA), Oleg Alifanov (M, Russia), Susmita Mohanty (CM, India),

**Other Members:** Jacques Arnould (France), Larry Bell (USA), Jim Burke (USA), Maijinn Chen (USA), Jesper Jorgensen (Denmark), Jim Lowe (Canada), Shinji Matsumoto (Japan), Dmitry Payson (Russia), Jack Stuster (USA), Peter Suedfeld (Canada), Larry Toups (USA).

### Short Description of Scope of Study

#### Purpose of Revised Proposal:

- 1) Update the scope and goals of the SG;
- 2) Renew the membership based on members' activity.

#### Overall Goal:

- 1) Identify and categorize known constraints in the design and construction techniques of extraterrestrial facilities and systems.
- 2) Identify and categorize international multi-disciplinary expert resources—both industry and government, and academic institutions—to support the advancement of space development.
- 3) Generate a set of recommendations that the Academy will endorse as its official position and which will serve as a useful reference for practitioners, students, and decision-makers and can be used as a source for developing a web site database.

#### Intermediate Goals:

- 1) Identify sources for relevant expert data from organizations and professionals in areas of technology, structures, human factors, medicine, psychology, philosophy, the arts, system engineering and other fields that can support broad aspects of space research, design and development that will be used to generate recommendations from Study Group modules.
- 2) Investigate and incorporate expert information and tools drawn from international space analog experiences, including ocean, polar and disaster relief programs.
- 3) Facilitate cooperative productive networking between organizations with common interests and programs.

**Methodology:**

- 1) Formation of Study Executive and Member Groups drawn internationally from academia, industry and government.
- 3) Study Executive and Member Groups to include participants from IAA, IAF, ASCE, AAS, AIAA and other organizations.
- 4) Study Executive and Member Groups will meet at IAC Valencia 2006, Hyderabad 2007, and Glasgow 2008, with limited meetings held at the Spring IPC in Paris.
- 5) Program Committee Proposals for Architecture of Space Study Group related sessions will be submitted for IAC in Glasgow 2008.
- 6) Generating requirements and structure for an interactive website format with a peer reviewed database.
- 7) Suggesting objectives for next study group development through additional meetings and on-line communications as required.

**Time Line:**

- 1) The Executive will meet (on-line) at the beginning of the three-year study to define the research and report outline, assign editorial responsibilities, and assign teams and leaders for the development of each research module in the outline.
- 2) Module leaders will coordinate their respective progress bi-monthly via telecom and inter-active study group web site.
- 3) Interim results will be discussed at the IAC in Valencia and Hyderabad. The final report draft will be discussed in Glasgow during the third IAC in the study period and final editorial will be made by January 15<sup>th</sup> 2009. The book will be published after finding a publisher and/or sponsor (possibly during next calendar year).

**Final Product (Report, Publication, etc.):**

Executive summary book length report—for widespread distribution by the IAA—detailing findings and recommendations which will include:

- 1) Discussion of problems and “human factors” needs to be addressed for successful next step in space exploration.
- 2) Set of recommendations from five Study Group modules that Academy agrees to endorse.
- 3) Recommendations for organizing an interactive web site with peer reviewed preliminary database identifying expert resources and state-of-the-art knowledge. In addition to print, executive summary of the report to be presented on-line on related web sites.

**Target Community:**

IAA, Space Agencies, Academic Institutions, Space Policy Organizations (public & private), Professional Societies, Aerospace Industry, International Community.

**Support Needed:**

- 1) Use of IAA web site.
- 2) Establish Community Zero interactive web site.
- 3) Reservation of rooms for meetings during the IAF Congress.
- 4) Finding a sponsor and/or publisher for publication of the final report in a book format.

**Potential Sponsors:**

IAA, World Space Agencies (including ESA, NASA, CNES, Roscosmos, JAXA, DLR), Private Industry (Boeing, Lockheed Martin, Shimizu Corporation).

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