

HUMAN SPACE ENDEAVOURS SYMPOSIUM (B3)  
How Can We Best Apply Our Experience to Future Human Missions? (2)

Author: Mr. Manuel Valls Toimil  
European Space Agency (ESA), Spain, mvallstoimil@gmail.com

FUTURE HUMAN MISSIONS: BENEFITING FROM EXPERIENCE

**Abstract**

Five decades into Human Spaceflight, there is a good deal of experience cumulated by the Human Space community in terms of development, operations and utilisation of Human Missions.

While Future Human Missions in the process of Space Exploration will no doubt have to face new challenges, that experience should be applied to the maximum extent so as to provide for enhanced crew and vehicle safety; avoid unnecessary repetition of efforts; achieve higher programme efficiency; and other similarly important elements for the objective to assure mission success. All of which represents the purpose of the Paper.

The Paper will review previous and current human spaceflight missions like Apollo, Soyuz, Mir, Space Shuttle and ISS and identify lessons learned from them, including regarding mission objectives, architectures, design, operations, utilisation, commercial aspects and programmatic and policy aspects among others. The Paper will further use these lessons to critically discuss how they could be applied to any future mission, including of commercial nature, in the context of Space Exploration, therefore showing the direct relationship between the past and current missions and their influence in future missions; in doing so, the Paper will consider a notional reference mission and put special emphasis on cost reduction efforts and enhanced crew and vehicle safety. The Paper will end with a number of conclusions which could represent a check list for Future Human Missions, including the need for realistic expectations concerning mission objectives; dissimilar redundant systems; affordability, etc.

The Paper will therefore include a substantive content; other than the factual information from past and current missions, the material is new and original in that it represents the thorough analysis and reflection of the author. The Paper fully matches the Congress Main Theme of “Space for human benefit and exploration”.

The author certifies that the Paper has not been presented at any previous meeting and that financing and attendance of the author at the respective IAC at Prague to present the Paper is assured.

The author, Manuel Valls Toimil is (Retired) Head of Policy and Plans Department, Human Spaceflight, Microgravity and Exploration Programmes at the European Space Agency (ESA), Noordwijk.