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The International Space Station in LEO and the Deep Space Habitat in Cis Lunar Space as platforms for simulated Mars voyages (4)

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THE ASI EXPLOTECH PROJECT: PREPARING FOR HUMANS VENTURING IN DEEP SPACE

Abstract

During the last decade the Italian Space Agency has actively participated in the effort of the International Space Exploration Coordination Group (ISECG), which gathers 14 space agencies and aims at ensuring the technical coordination of space exploration.

In recent times a general consensus has emerged on the benefits of a man-tended infrastructure located in the cislunar space and periodically serviced by the Orion vehicle. From there, efficient flight paths may take manned and robotics missions to the surface of the Moon, into deep space and ultimately to Mars – as well as back to Earth.

ASI and the Italian Industrial community have matured a substantial heritage on the development and operations support of the International Space Station. This valuable experience will be leveraged on for the preparation, development and operations of the Cislunar infrastructure.

For this very purpose, ASI has contracted Thales Alenia Space (leading a well-diversified industrial and academic team) on a long term preparatory activity – "EXPLOTECH" – aimed at:

1. Elaborating design reference mission scenarios; 2. Defining the related infrastructure requirements; 3. Identifying and planning the deployment of the necessary enabling technologies, with main focus on materials, regenerative environmental control systems and radiation protection; 4. Support the definition of the most promising options for the National involvement in the deployment of the cislunar infrastructure.

The paper will present the latest achievements of the Explotech activities as well as the planned work ahead.