Inspiration Enabled by the ISECG Reference Architecture for Human Lunar Exploration. William Carey[1], Vicky Hipkin[2], Bernhard Hufenbach[1], Kohtaro Matsumoto[3], Jean-Claude Piedboeuf[2] and Jennifer Rhatigan[4] 1. Exploration Architecture Office (HSF-EA), Directorate of Human Spaceflight, ESA-ESTEC, Keplerlaan 1, Postbus 299, 2200 AG, Noordwijk, The Netherlands (William.Carey@esa.int, Bernhard.Hufenbach@esa.int). 2. Canadian Space Agency, 6767 Route de l'Aéroport, Longueuil (St-Hubert), QC, Canada, J3Y 8Y9 (Victoria.Hipkin@asc-csa.gc.ca, JeanClaude.Piedboeuf@asc-csa.gc.ca). 3. System Engineering Office, Lunar and Planetary Exploration Program, JAXA, 3-1-1 Yoshinodai, Sagamihara, Kanagawa, 229-8510 Japan (Matsumoto.Kohtaro@jaxa.jp). 4. National Aeronautics and Space Administration, Johnson Space Center, Houston TX 77058. USA (Jennifer.l.Rhatigan@nasa.gov).

Introduction: The focus of this presentation will be on introducing how the development of the reference architecture has been driven by a set of 15 common goals (Figure 1), to which the particular objectives of individual space agencies may be mapped. More specifically, to highlight how such an architecture provides opportunities for inspiration through the selected campaign approach, in comparison with purely "sortie" and "outpost" human lunar exploration scenarios.

The Global Exploration Strategy: In mid-2007, *"The Global Exploration Strategy(GES): The Framework for Cooperation"* document was published [1] which expressed the vision of fourteen international space agencies for a coordinated approach to robotic and human space exploration, focusing on destinations within the Solar System where humans may one day live and work. In was in this spirit, that these fourteen agencies established the International Space Exploration Coordination Group (ISECG) in late-2007, through a voluntary, non-binding international *coordination mechanism* as a means to strengthen both their individual agency exploration programs and a global collective effort. In mid-2008, and founded upon the GES document, the ISECG initiated the joint development of a multilateral reference architecture for human lunar exploration, assuming the Moon to be a "stepping-stone" to Mars and beyond. Over the last eighteen months a number of interested agencies of the ISECG have been engaged in a series of Lunar Architecture Workshops to define the reference architecture which will serve as a "global point of departure" (or gPOD for short) for further development and refinement.

Inspiration via the gPOD: The architecture development process began with a review of respective agencies lunar exploration objectives, more than 600 in total, together with relevant lunar exploration studies. This process identified 15 common goals for human lunar exploration which expressed the shared interests of the participating agencies and reflected the five major themes of the GES, i.e. New Knowledge in Science and Technology, Extending Human Frontiers, Economic Expansion, Global Partnership, and Inspiration and Education. A major emphasis of the process was to develop an architecture that would achieve a *balance* amongst the associated objectives of all these five GES themes. This presentation will highlight those particular characteristics of the gPOD campaign which offer opportunities to facilitate inspiration in the areas of Solar System exploration, science, commerce, education, and technology development.

References:

[1] http://www.globalspaceexploration.org/.

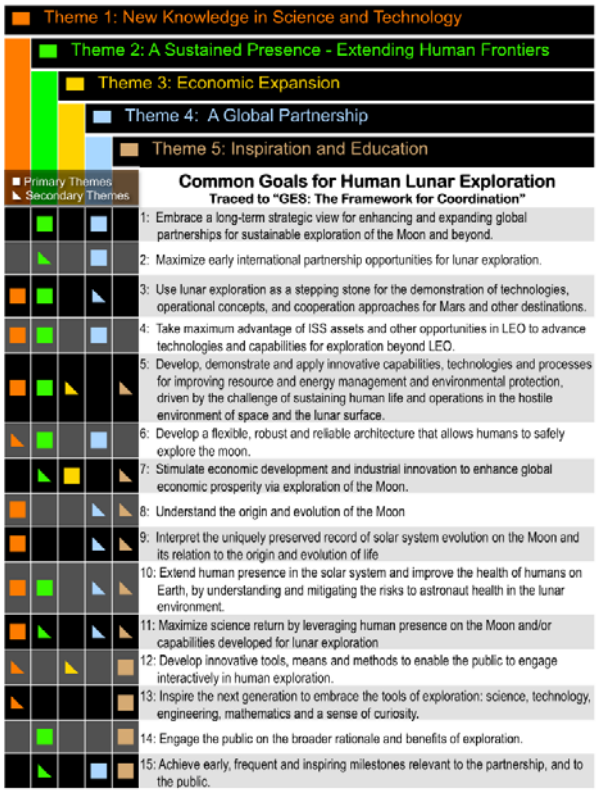

Figure 1: ISECG Common Goals.