

9th SYMPOSIUM ON STEPPING STONES TO THE FUTURE: STRATEGIES, ARCHITECTURES,  
CONCEPTS AND TECHNOLOGIES (D3)

Strategies and Architectures to Establish a “Stepping Stone” Approach to our Future in Space (1)

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BUILDING BLOCKS FOR DEVELOPMENT AND DISCOVERY IN SPACE

**Abstract**

During the past three decades, a wide variety of architectural approaches to the future exploration and development of space have been examined in the US and by the international community. During the past ten years alone, several diverse options ranging from lunar bases, to asteroid missions, to human missions to Mars and others have been examined. Despite this ongoing flurry of activity and as the construction of the International Space Station is completed, there is as yet no government-to-government consensus what should come next. Perhaps, the question to be posed should be not so much “where next”, as “how”? The possibility of government-industry partnerships in the development of future space capabilities is also becoming a topic for discussion – particularly in the US.

This paper examines the critical “half dozen” future space capabilities that have the potential to permanently transform how commerce, exploration and science are pursued in space. These future capabilities are applicable to a wide range of potential missions and markets, including both the traditional human space flight objectives mentioned above, as well as transformational new commercial market opportunities. The paper concludes with a prospective roadmap, and a set of recommendations for future action to assure that these promising future space capabilities are realized in a way that is timely, cost-effective and international.