

21st IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM (A5)
Human Exploration of the Moon and Cislunar Space (1)

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EXPLORING THE TECHNICAL AND ECONOMIC FEASIBILITY AND SOCIAL AND LEGAL
IMPLICATIONS OF ESTABLISHING A COMMERCIAL ENTITY AND THE FIRST
INTERPLANETARY HOTEL ON THE LUNAR SURFACE IN THE EARLY 2030S

Abstract

As the International Space Station (ISS) approaches the end of its operational life after 2028, a Lunar outpost is becoming a priority for major space agencies around the globe, spearheaded by ESA's Moon Village. However, establishing a project this scale would require tremendous government funds and could trigger serious legal implications, should it not be studied and implemented carefully. On the other end of the spectrum, major private space businesses, such as SpaceX, Blue Origins, Boeing, Lockheed Martin, and Bigelow Aerospace are developing the necessary infrastructure for sending humans to, and establishing interplanetary, sustainable human settlements on, the Moon, Mars, asteroids, and beyond in the next few decades. The private sector has helped national space agencies set more ambitious plans to explore deep-space and is paving the way for a sustainable human presence on habitable planets and moons within our Solar System. As a result, if the global private space sector plans to keep this momentum going in regard

to space settlements, then it is essential that the technical components, economic aspects, and social and legal implications of such an endeavor be considered. Accordingly, this paper proposes a disruptive business case for space tourism and explores the feasibility of a novel engineering endeavor, establishing a commercial entity and the first interplanetary hotel (Centauri - Lunar Hotel Alpha) on the Lunar surface by the 2030s. The first and second chapters of this paper feature designs of the proposed lunar settlement and evaluate contemporary and futuristic technological systems/subsystems needed to build and maintain the Lunar Hotel to ensure sustainable human presence on the Lunar surface for space tourists, scientists, explorers, and miners. Following this section, this paper then investigates legal issues pertaining to the United Nations Treaties and Conventions, and socioeconomic implications. Consequently, the Lunar hotel will serve as a test-bed for future Mars exploration and settlement, act as a gateway to the solar system, and support — through its Research and Development activities and funds — humanity’s long-term vision of expanding out into the solar system during this century and reaching Centauri star systems in the next couple of centuries. In conclusion, this paper will present ways in which the Lunar Hotel could democratize access to space, expand the global space economy by introducing a nascent market in the space industry, strengthen international cooperation among space industry stakeholders at all levels, and serve as a test-bed for future planetary exploration missions.