Paper ID: 97952
oral

28th IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM (A5)
Interactive Presentations - 28th IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM (IP)

Author: Mr. Thomas Cernev
The University of Adelaide, Australia

Dr. Will Robertson
The University of Adelaide, Australia
Dr. David Harvey
The University of Adelaide, Australia

DEVELOPING SCALABLE LUNAR AGRICULTURE SYSTEMS TO FACILITATE HUMAN EXPLORATION

Abstract

Lunar agriculture will play a pivotal role in efforts to establish a long-term human lunar presence. Following a literature review of lunar agriculture technology and roadmaps, this paper explores the key design considerations for transforming initial lunar agriculture experiments and technology into systems that can facilitate a permanent, and growing, human lunar presence. Key design considerations include those associated with the lunar environment, human demands on the lunar agriculture system, and the interfaces existing between the lunar agriculture system and other lunar exploration systems (e.g., habitation, energy, launch). These design considerations are investigated with the analysis subsequently used to propose lunar agriculture system design features that should be incorporated into an initial lunar agriculture system such that it is 'scalable' and can easily develop and grow as humanity's lunar presence becomes permanent and expands. From these considerations and system design features, a roadmap is established, and consideration is given to the technology's role in future human missions to Mars.