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THE MOON VILLAGE, A GRAND PROJECT FOR THE 21ST CENTURY

Abstract

In a near future, Industrialisation of Space is likely to develop an unprecedented range of activities which, over the long-term, would result in the achievement of two main objectives : supplying the Earth with extraterrestrial material, and creating added value in space towards a whole new branch of economy. First steps of this Space Industrialisation should take place in Earth's vicinity, exploiting the resources of the Moon.

Fast progresses in robotics and artificial intelligence could suggest, in a first approach, that presence of astronauts on the Moon is not an absolute necessity, given the cost and constraints of manned missions. However, we must consider too that activities on the Moon will not only be simple systematic or repetitive processes, but all kind of innovative, complex and sophisticated technologies requiring a human supervision. For these reasons, we are convinced that the development of futur activities on our natural satellite will be accompanied bya humanpresence, as envisioned in the concept of "Moon Village".

To address these issues, the French Association "Grand Projects 21"(AGP21) – Major Projects for the 21st Century - has launched a trans-disciplinary group of experts in the beginning of 2017. AGP21 is a unique organisation that takes into account both technical aspects of major programs or projects, and their ecological, socioeconomic, and possibly ethical consequences. It acts within the framework of sustainable development, planetary protection, and "social acceptability" regarding resources we share on - and beyond - the Earth.

The aim of this paper is to synthesise the six key themes identified by the working group for further reflection and studies on theMoon Village"Grandproject" : 1/ Space Industrialisation as aGrand Project, 2/ Location of the First Lunar Base, 3/ Space Transportation Systems, 4/ Closed Ecosystems 5/ The Moon Village from a Legal and Ethical Perspective, and 6/ Architectural Concepts.