Paper ID: 30063
oral
student

13th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)
Space Elevator Tether and Space Mineral Resources (3)

Author: Mr. Mansoor Shar
International Space University (ISU), France

ASTEROID MINING: A EUROPEAN VENTURE

Abstract

With the increased strain being placed on terrestrial resources and the rise in global space activity, an opportunity for extraterrestrial resource mining presents itself. This paper examines the prospects of asteroid mining and looks at the business case from a European perspective. Astronomical work over the last twenty years has dramatically increased the number of known Near Earth Asteroids (NEAs) from about 300 to more than 12,000. Discovery rate of NEAs has grown rapidly to about one thousand per year. Many advances have been made in our understanding of asteroids through spectroscopic and other studies that, have allowed us to make inferences based upon their spectral properties. Each of the three asteroid types could in future serve different purposes due to their varied composition, for anything from resources for terrestrial use to insitu propellant production.

Numerous studies and concepts exist for asteroid mining from NEAs, and this interest has increased in recent years with the rise of commercial concepts. Most of these concepts, however, have a significantly non-European bias, and therefore do not cater for the intricacies of the European market from an economic feasibility and business viability perspective. This paper serves to help fill this gap and forms as a feasibility study for a European asteroid mining business, with the motive to ensure European competitiveness in a potentially lucrative new industry. Existing asteroid and terrestrial mining companies are explored and analysed. The paper looks at the market potential, ROI analysis, business risks and structure, while taking into consideration any legal issues, and identifies potential sources of funding to finance such a venture. A candidate business plan containing a developmental roadmap for a possible venture is one of the outcomes of this report.