Paper ID: 68209
oral

25th IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM (A5)
Space Transportation Solutions for Deep Space Missions (4-D2.8)

Author: Mr. Giorgio Gaviraghi
Unispace Exponential Creativity, Italy

INTERSTELLAR TERMINAL AND STARSHIP ASSEMBLY IN THE KUYPER BELT

Abstract

Traveling space settlements in the future will become valuable instruments for the colonization of the solar system. They would support missions in the entire territory while supplying, where needed, terrestrial life support, services, technology and tools. One such mission would be the assembly of a terminal for future interstellar travel that would send and receive outgoing and incoming starships. The location would be at the edge of the solar system, in the Kuyper belt, possibly in the plutonian system that would supply in quantity needed materials. The terminal settlement would also be utilized as a shipyard for the assembly of future starships that would utilize its facilities. The terminal would be a space settlement type of facility, with artificial gravity obtained by rotating the system around a central hub, with a resident population in the thousands, fully independent from the point of view of life support, food, health care, materials retrieval, manufacturing facilities, transportation system and all other required subsystems. The terminal main business would be the construction of starships and supplying support facilities for arrivals and departures of interstellar missions. It would be fully equipped , including transportation systems for material retrieval in Pluto and the possibility to capture and retrieve small asteroids and comets to be utilized for their minerals and other components. The starships that would be built in the facilities would be similar to the settlements, since they will transport thousands of settlers for a long traveling time , with an additional advanced propulsion and power generation system to allow traveling at extremely high speeds in interstellar space. In this paper we want to define and analyze both the terminal space settlement, its design, assembly and operations as well as the starships that would be built in the facilities including the definition of technologies and capabilities required.