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A SPACE SETTLEMENT MODULAR CONSTRUCTION SYSTEM

Abstract

Since the introduction several years ago of the space settlement concept by Eugene O'Neill, such infrastructures have been characterized by a certain gigantism in dimensions and population, compared to available technology, requiring very long construction times and very high costs, in the order of trillion dollars making them non feasible, at least with current or expected technology. In order to reconsider the concept in a more realistic way we are proposing a step by step modular construction system that , beginning with a second generation ISS, positioned in a cycling Earth – Moon trajectory, with artificial gravity, supported by a clear and specific business plan , in our case passenger and cargo transportation supporting future lunar bases and development, will allow to test most space settlement technologies. While these first example of settlement will be mostly built on our planet, further advances mainly asteroid capture and deflection , associated with metal processing and manufacturing in space will allow more ambitious and bigger enterprises. For this phase , the first generation space settlement ,we are also proposing modular system, based in relatively small (40x80 x25m height) that would be built in space utilizing local available resources, deflected small asteroids, that would allow much bigger structures in a planned way with reasonable cost and schedule as needed. Such modules would be connected to a ring structure that would rotate around a central hub to allow artificial gravity, one of the main conditions for a functional space settlement. In this case supported logistically and serviced by the previous cycling facility following the same trajectory to allow the feasibility and support of a business plan. In this paper we want to analyze and describe in detail such systems and subsystems representing a new and possibly more feasible approach to this space infrastructure type.