Paper ID: 67296
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IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Interactive Presentations - IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (IPB)

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# THE CRUISER-FEEDER CONCEPT FOR INTERPLANETARY TRANSPORTATION

**Abstract**

With current advances in space technology and future interplanetary manned missions to the Moon first and Mars later , is important to consider the optimization of such future frequent travels through the definition of an all new transportation system that differs from the conventional ones proposed . The cruise -feeder system is composed of multiple vehicles: -the cruiser that would connect different planetary bodies , Earth, Moon, Mars, is a modular system that includes expansion capabilities that would fly in a cycling orbit for the most frequent destinations, Earth-Moon and Earth-Mars . It includes 1G artificial gravity possibilities for long manned missions. The cruiser system would be composed of different modules ranging from the service module, with propulsion, fuel and engines systems, communication, navigation and others specific as needed . The node module that connected to the service one will allow the docking of incoming feeders with their container payloads. The operational modules such as the habitat, life support system, food production ,and others as required. Such modules will be based on a container system that would optimize and standardize all payloads for simplification and cost reduction purposes. The configuration of the system include spike and ring modules to compose a rotating system to allow artificial gravity by rotating the system around a central axis. -The feeder will be a spacecraft ring shaped to connect ground or space based stations to the cruiser, delivering container payloads where needed. It will connect the cruiser, during its proximity in its cycling orbit, to the ground bases of different bodies accepting and delivering missions . Its shape is due to the need , on the ground, to load and unload , by leaving the container on the ground or reutilizing it . The ring shape allow the payload to be in the middle of the spacecraft and not on the top as conventional ones so allowing an easy handling on the ground. In this paper we want to define and analyze the capabilities of the system and its components in accordance with specific interplanetary mission requirements.