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DEVELOPING PAYLOADS FOR GATEWAY

Abstract

Gateway is the new crew tended orbital platform at the Moon, and a key element in future architectures for Moon and Mars exploration in the coming decades. The first Gateway modules (PPE and Halo) are in the manufacturing phase at the same time as the first payloads. As a result many important requirements and interfaces are evolving at the same time as payloads are being developed.

This new dynamic environment poses significant challenges for payload development. This paper will describe the first two payloads being developed by ESA for Gateway. These are the externally mounted European Radiation Sensor Array (ERSA) and the internally accommodated Internal Dosimeter Array (IDA). Together these payloads will characterise the external radiation environment encountered by this human tended space craft in deep space, and the induced internal radiation environment that will be encountered by crew. The paper will introduce the main challenges for development of these payloads and approaches that have been taken to address them. Lessons may be drawn from this experience to prepare future developments for Gateway and later exploration platforms.