BIOSENSOR INTEGRATION DEVELOPMENT EXMC/CANADIAN SPACE AGENCY COLLABORATION

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ABSTRACT

In support of the NASA Human Research Program Exploration Medical Capability (ExMC) Element, NASA Ames Research Center (ARC) established a collaborative effort with the Canadian Space Agency (CSA). The collaboration focuses on leveraging CSA capability in the areas of biosensors and decision support that will augment future development of such components for Exploration Missions. The CSA advancement of biosensors enables NASA to focus on the integration and data management associated with these types of components through the system currently under development by the Medical Data Architecture (MDA) project. This approach has enabled the establishment of a successful collaborative working relationship between ExMC and CSA.

Applying lessons learned from the fiscal year 2016 (FY16) Human Exploration Research Analog (HERA) campaign, CSA and NASA ARC developed a solution to provide real-time feedback to researchers who monitor the collection of vital signs data from a wearable Astroskin garment. The advances in the interfaces included the development of an iPad application (by CSA) to wirelessly forward the vital signs data to the MDA system, which collected the vital signs data through a receiver developed by NASA ARC. The development of these interfaces aims to provide communications between the Astroskin and the MDA system such that data may be seamlessly collected, stored and retrieved by the MDA. The first steps towards this goal were demonstrated in FY16. In FY17, ExMC will complete the first in a series of test beds that establishes a system to automate collection and management of vital sign data from the Astroskin, and other sources of data, to provide information for a crewmember to make medical decisions. In addition, the MDA Test Bed 1 will enable CSA to evaluate and optimize biosensor advancement and facilitate decision support algorithm development.