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Author: Mr. Maurice MARNAT
Institute for Space Medicine and Physiology/MEDES, France

Mr. Sebastien Rouquette
CADMOS-CNES, France
Mr. Frits De Jong
ESA, Germany
Mr. Yann Lapeyre
MEDES - IMPS, France
Mrs. Beate Fischer
DLR, German Aerospace Center, Germany
Mr. Deihiem Afchine
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Institute of Aerospace Medicine, Germany
Ms. Susanne Altenburger
ESA - European Space Agency, Germany
Dr. Jonathan Scott
Institute for Space Medicine and Physiology/MEDES, Germany
Mr. Frank Nicolini
ESA, European Astronaut Centre (EAC), Germany
Mr. Alexander Nitsch
European Space Agency (ESA), Germany
Dr. Didier Chaput
Centre National d'Etudes Spatiales (CNES), France
Mr. Emmanuel Thulliez
CADMOS-CNES, France
Mr. Remi Canton
Centre National d'Etudes Spatiales (CNES), France

EVERYWEAR, A HUMAN RESEARCH AND HEALTH MOBILE ASSISTANT FOR EXPLORATION

Abstract

EveryWear (EVW) is a software solution developed by MEDES/CNES integrating joint CNES and ESA objectives improving the monitoring of Astronaut's health through recording of physiological and science data during their mission on-board ISS. EVW is made of a fully custom tablet (iPad) application, an onboard server part for Space to Ground data synchronisation and ground services components for data dissemination and exchange. EVW provides data recording, (pre-)processing and synchronization during human spaceflights in support of crew medical and human research objectives. EVW was introduced on-board the International Space Station during Increment 49 (2016) and since then has been extensively used and continuously improved with very positive feedback received from astronauts enjoying the enhanced usability offered by mobile application ergonomics.

EveryWear medical functionalities, represented through different modules, include nutritional / medication intake tracking and assessment as well as secure private messaging between crew and medical teams

on ground. EveryWear science functionalities allow interfacing with connected devices such as a Commercial Off The Shelf glucometer or custom dosimeter, dynamic questionnaires, and private messaging with operation support teams.

Multiple support teams and crewmembers are using EveryWear simultaneously while considering Space to Ground communication constraints. The system ensures end-to-end encryption between crew and designated recipient for each type of data and for each crewmember.

After several years of joint European efforts, ESA with CNES decided to jointly develop EveryWear with NASA. This will be an evolution of the existing ESA/CNES EveryWear application, integrating existing functions like NASA's Food Intake Tracker (FIT) and Data Collection Tool (DCT) as well as new requirements from ESA and NASA into a single centralized modular system.

The joint development is expected to represent the minimum total cost path for all involved parties and is composed of three incremental phases. Phase 1 and Phase 2 are dedicated to ISS operational use cases while Phase 3 will include enhanced ISS functions considering Exploration scenarios.