The goal of the Information Presentation Directed Research Project (DRP) is to address design questions related to the presentation of information to the crew on flight vehicles, surface landers and habitats, and during extra-vehicular activities (EVA). Designers of displays and controls for exploration missions must be prepared to select the best formats, label styles, alarms, electronic procedure designs, and cursor control devices that provide for optimal crew performance on exploration missions. The major areas of work, and outlook, within the Information Presentation DRP are: 1) Controls, 2) Displays, 3) Procedures, and 4) EVA Operations.

**CONTROLS – Cursor Control**

The unique environmental conditions encountered by crewmembers on space missions (vibration, variable gravity, vacuum requiring pressurised suits) threaten to substantially affect human-computer interaction with information presented on computer displays. Cursor control devices (CCDs) must be specially designed to function under the variable, harsh conditions of space. Partnership with Stakeholders: The cursor control device work described below has fed and supplemented concurrent work on Orion cursor control device evaluations. Results of these studies have aided Orion device down selection, and software development for the effort to be using the Orion cursor control device evaluations.

**DISPLAYS - Label orientation**

**DISPLAYS - Label alignment**

**PROCEDURES**

An Electronic Procedure Viewer (EPV) is one of the most operationally critical interfaces for next-generation crewed space vehicles, particularly for real-time fault isolation and recovery operations. An extensive human-in-the-loop evaluation of two fault management concepts, ELSIE and BESSIE, was recently completed. The evaluation included the following:

- **EPV** is one of the most operationally critical interfaces for next-generation crewed space vehicles, particularly for real-time fault isolation and recovery operations.
- The EPV is already in use in the International Space Station (ISS).
- The evaluation included the following:
  - **EPV** was used to support fault isolation and recovery operations.
  - The evaluation included both simulation and live operations.
- The evaluation results will be used to improve future EPV designs.

**EVA OPERATIONS**

Working in an extravehicular environment poses great challenges in terms of displays, controls, and safe information, especially in the harsh lunar environment. This is a new frontier for FY19.