2020 Wearable Technologies Workshop Challenge Request

Challenge Title: MCTB Based Crew Sleeping Compartment

Organization Name: NASA Johnson Space Center

Team Assignments Available: 2

Summary of the Challenge and Team Project

Background:

The Crew and Thermal Systems Division is responsible for providing crew sleeping compartments on spacecraft.

Problem statement:

Unlike the International Space Station which has dedicated crew sleeping compartments, future spacecraft, like the Crew Exploration Vehicle, Orion, and the MiniHab on Gateway do not have dedicated sleeping compartments.

Important design considerations (These can be discussed, and possibly negotiated, in more detail after the Team has been assigned):

- Use Modified Cargo Transfer bags (MCTB) as much as possible
- Attachable to walls of ISS or Orion or to Orion seats
- Places to put laptop, personal effects
- Rigid when mounted but without containing rods (as little weight as possible)
- Ventilation & Air Circulation: need to move CO2 away from sleeping astronaut's face
- Large enough for astronauts to sleep and change clothes inside (53 ft3)
- Reading Lamp

What funding and/or resources can be provided to each Team? (The details of the payment arrangements must be negotiated with the Team.)

None

Deliverables (the final product you expect the Team to provide – such as a report, garment, user evaluation, …):

Prototype demonstration, final report

How will the results be used?

Results will be evaluated and provided to NASA team developing concepts for portable crew sleeping compartments.

What deliverables (if any) do you want transferred to you at the end of the project?

Final report.