

## Technology Collaboration Center Collaboration Request

### REQUEST SUMMARY

Collaboration Request ID: CMWE

Collaboration Request Title: Complex Multi-Wearable Environments

Requesting Organization: NASA Johnson Space Center

All questions on this request are to be:

- Submitted via e-mail to [Collaborations@techcollaboration.center](mailto:Collaborations@techcollaboration.center)

Any organizations interested in participating in this collaboration are to submit a proposal using the Collaboration Response form from [techcollaboration.center](http://techcollaboration.center), the Technology Collaboration Center's (TCC) website. Responses will be forwarded to the Requesting Organization for consideration

## DETAILS – NON-CONFIDENTIAL

## Complex Multi-Wearable Environments Data Integration and Human Performance Evaluation

Potential Commercial Applications: Oil & Gas, medical, Department of Defense (DoD), emergency responders, aerospace, and others

Keywords: Wearable technology, health monitoring, smart garments,

Purpose: As interest in wearable technology has increased in the consumer marketplace, numerous commercial products have become available that meet NASA's human monitoring needs without requiring expensive in-house development. As a result, NASA and its research partners are using a variety of wearable devices to collect long duration physiological data in ground analogs and on the International Space Station. Taken alone, these wearables provide a valuable function in a relatively unobtrusive form factor, but when the number of simultaneous research studies grows, test participants are asked to wear more and more devices. This poses unique challenges from technical and human factors perspectives. With many standalone devices in a small dynamic environment, how can we ensure reliable data transmission, limit network complexity, and synchronize data streams? How do we ensure user comfort, eliminate performance impacts, and ultimately support user compliance? As the research, workplace, and consumer environments continue to see more adoption of wearable technologies, these challenges will need to be addressed.

Technology & Expertise:

- Human-in-the-loop (HITL) testing
- User centered design
- Wearable technology for data collection
- Development of best practices for multi-wearable environments
- Modular development platforms for wearable technology
- Data management middleware

R&D Status: The [WEAR Lab](#) at NASA JSC has been investigating data management and the human factors implications for multiple wearable devices.

Intellectual Property (IP): This Partner relationship may produce new IP that could be jointly owned by NASA and the partner.