

Technology Collaboration Center Collaboration Request

REQUEST SUMMARY

Collaboration Request ID: EXOR

Collaboration Request Title: Exoskeleton for Rehabilitation

Requesting Organization: NASA Johnson Space Center

All questions on this request are to be:

- Submitted via e-mail to Collaborations@techcollaboration.center

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

DETAILS – NON-CONFIDENTIAL

Reference No: NNJ14ZBH018L

Potential Commercial Applications: Department of Defense (DoD), medical rehabilitation, and others

Keywords: exoskeleton, rehabilitation, robotics, biofeedback, sensing, control monitoring

Purpose: NASA JSC seeks parties interested in co-developing technology associated with its X1 exoskeleton to include additional powered degrees of freedom and increased sensing capability.

NASA JSC has been the leader in space-based humanoid robots for several years and seeks to leverage this position to advance NASA JSC's current X1 Exoskeleton for rehabilitation.

By co-developing this dual-use technology, NASA JSC and interested parties may be able to extend and enhance the current capability in the areas of overall performance, controls modeling and safety, in addition to biofeedback and sensing, thereby creating a more advanced exoskeleton with capabilities that mitigate muscle atrophy in space, as well as strengthen muscle function for persons suffering from paresis and other motor function pathologies.

Technology: NASA JSC's goal is to improve the current exoskeleton design to create a fully customizable device whose dual-use technology will improve life here on Earth as well as keep astronauts healthy.

R&D Status: NASA JSC's current X1 Exoskeleton was initially designed as a mobility assist device for persons with lower extremity paralysis. It has since shown great promise as a novel and compact in-space countermeasure and dynamometry device. A ten-degree of freedom robotic exoskeleton, X1, has the ability to impart high torques at its active joints while providing real-time joint feedback to physicians and scientists. X1's adaptable control software makes custom exercise and rehabilitation routines easy to realize.

Intellectual Property (IP): Multiple individual technologies associated with robotics are currently available for co-development and licensing. Visit [Robonaut 2](#) and click on Licensing Opportunities.

This co-development project may produce new IP that could be jointly owned by NASA and the partner or may become the property of the partner.

To view all Co-Development and Partnering Opportunities with the NASA Johnson Space Center please visit our [website](#).