

Development of an Integrated Human Factors Research and Training program in Canada.

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Objective:

This program involves a cluster of University and corporate partners to train future researchers in aerospace human factors, and develop research and training (R&T) programs for personnel and flight crew for the next generation of space travel. Sustaining and supporting human activity in space requires complex integration and collaboration from a wide variety of disciplines. There are four main objectives for this research and training cluster: 1) Initiate and solidify regional university and private sector R&T programs for human spaceflight; 2) Develop a cluster focused on the future training requirements of scientists in high-altitude and suborbital spaceflight; 3) Expand ground-based capacity in altitude and g-physiology; and, 4) Develop plans for a permanent comprehensive multi-user/purpose aerospace R&T human factors facility with programs for next generation space travel personnel and flight crew. This cluster is being formed to provide the nucleus for scientific collaboration, data sharing, technology development, and research and technical training for human factors in spaceflight in Canada. The R&T groups are designed to meet the unique needs of the spaceflight industry and develop evidence-based human factors safety guidelines for commercial spaceflight.

Rationale:

The field of human sub-orbital spaceflight requires rapid research, development, and training in new techniques and technologies. A network to support these emergent needs is essential. The proposed cluster brings together R&T programs in aerospace human factors/performance, and will be comprised of five groups: Aerospace Physiology; LifeCom (Advanced life and mission critical information, communication and computing technologies for spaceflight-oriented biodata); Smart Materials; Biomedical Engineering; and, Aerospace Training.

The team members include an international airport with advanced flight training schools, manufactures of aerospace protective garments,

and several internationally recognized scientists in space physiology, human factors, biomedical engineering, and space systems with experience in Shuttle, ISS, and ground-based analog research programs.

Activities:

Research and training programs for the next generation of experimental ground-based, sub-orbital and orbital space scientists are being developed with university and private sector research and training programs for human spaceflight. Existing research and development facilities in altitude/g-physiology, smart materials and space communications are being integrated to form a comprehensive, multi-user/purpose aerospace research and training program in space flight human factors. The first goal of this program is to provide the tools necessary for sub-orbital space travel personnel and flight crew. This program will have clear and direct benefits for Canada and its international partners in space. It will involve training of highly qualified personnel, and lead to knowledge transfer with a high potential for spin-off creation or industrial advantage.

Summary:

The goal of this space human factors initiative is to encourage and expand Canada's presence in future space missions, particularly in the emerging private human spaceflight sector. The Aerospace Human Factors Research and Training Cluster will sustain and enhance the critical mass of space specialists; foster space innovation and create and sustain a pool of inter-disciplinary space experts and talent that will form the next generation of space professionals. The program is designed to encourage private and public research establishments to devote portions of their activities to space research and to attract local and international scientists and engineers to further develop their space expertise with the goal to increase global collaborative opportunities for human spaceflight research and training.