SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
Tools and Technology in Support of Integrated Applications (2)

Author: Ms. Carolyn Belle
International Space University (ISU), France, clbbelle@gmail.com

Ms. Vibha Vibha
International Space University (ISU), India, vibha.aero@gmail.com
Mr. Simone La Torre
International Space University (ISU), France, simone.latorre@yahoo.it
Mr. Andrés Dono Pérez
International Space University (ISU), France, andresdono89@gmail.com
Mr. Andrew Chee Hau Lee
International Space University (ISU), Malaysia, landrewch@gmail.com
Ms. angeliki kapoglou
International Space University (ISU), United States, Angeliki.Kapoglou@community.isunet.edu
Mr. Arno Geens
Belgium, arnogeens@gmail.com
Ms. Danijela Ignjatovic Stupar
International Space University (ISU), France, danielaignj@yahoo.com
Mr. David Sulitzer
International Space University (ISU), France, 8Gaston8@gmail.com
Mr. Erik Franks
International Space University (ISU), France, efranks3@gmail.com
Mr. George Kotsopoulos
International Space University (ISU), France, georgessp12@gmail.com
Mr. Gerhard Ressler
International Space University (ISU), France, gerhard.ressler@community.isunet.edu
Mr. Guangxi Zhang
International Space University (ISU), China, zhgux-bj0411@163.com
Mr. James Harpur
International Space University (ISU), Ireland, james.a.harpur@gmail.com
Mr. Luke Idziak
International Space University (ISU), France, luke.idziak@community.isunet.edu
Mr. Marcin Bujar
International Space University (ISU), United Kingdom, marcin.bujar@community.isunet.edu
Mr. Massimo Pellegrino
International Space University (ISU), France, massimo.pellegrino@isu.isunet.edu
Ms. Maud Moullec
International Space University (ISU), France, maud.moullec@gmail.com
Ms. Nikita Marwaha
International Space University (ISU), France, Nikita.Marwaha@community.isunet.edu
Mr. Phillip Keane
International Space University (ISU), France, Phillip.Keane@community.isunet.edu
Mr. Scott Yim

United States, scottyim@hawaii.edu
Mr. Taylor Cartwright
International Space University (ISU), France, Taylor.Cartwright@community.isunet.edu
Mr. TINGWEI GUO
International Space University (ISU), France, guotingwei2011@163.com
Mr. Yilkal Eshete
International Space University (ISU), France, YilkalChanie.Eshete@community.isunet.edu
Mr. Padraic Doherty
International Space University (ISU), France, Padraic.Doherty@community.isunet.edu

THE BRAIN FOR AN INTERACTIVE ARCTIC NETWORK (BRIAN): ENHANCING SITUATIONAL AWARENESS IN THE ARCTIC

Abstract

The Arctic is a vast region of growing international interest and geopolitical significance. The extraction of natural resources as well as increased potential for year-round shipping as a result of climate change promise more activity across the region in the coming decades. Scientific research stations will maintain operations and likely expand in scope and distribution. Indigenous peoples and local populations will continue to occupy traditional lands and rely upon the environment. This varied group of Arctic actors share a common requirement for greater situational awareness to support their decision making processes. New and innovative means of engaging the world community through participatory processes are also needed, as global perceptions of the Arctic are limited by fragmented access to knowledge. A program such as Google Earth provides a suitable platform for displaying information on Arctic conditions, with simple access and an already widespread user base. This program currently lacks high-resolution imagery, such as that derived from radar, for the Arctic. Many space and terrestrial data sources that are currently in existence gather valuable information on specific aspects of the Arctic, but their data is spread across innumerable agencies and offices and consequently is largely ineffectual at providing situational awareness. The BRain for an Interactive Arctic Network (BRIAN), a knowledge management system, has been designed to process and fuse information from this wide variety of sources for presentation within a single repository and mode of access. Unique to this design is the use of space-based assets in tandem with community remote sensing and traditional ecological knowledge of indigenous peoples. The manipulation of quantitative and qualitative information will generate a diverse set of geo-linked data layers that each provide information on a different parameter. Google Earth will serve as the interface and base upon which these layers can be viewed according to the specific needs of each user. The data behind each layer will also be made available, enabling further data mining to be undertaken independently by users to facilitate a knowledge exchange. This overall architecture is a means of integrating the vast amount of data provided by space assets, terrestrial resources, and local communities in order to achieve an enhanced situational awareness and a holistic understanding of the Arctic.