BUSINESS INNOVATION SYMPOSIUM (E6)
Case Studies and Prizes in Commercial Space (1)

Author: Mr. Magni Johannsson
DLR (German Aerospace Center), Germany, magni.johannsson@dlr.de

Mr. Benjamin Kraetzig
Space Generation Advisory Council (SGAC), Germany, benjaminkraetzig@gmail.com
Mr. Hugo Wagner
International Space University (ISU), France, hugowagner@berkeley.edu
Mr. Ian Stotesbury
International Space University (ISU), United Kingdom, ian.stotesbury@gmail.com
Mr. Jaroslaw Jaworski
Students Space Association, Poland, jaworski.j@hotmail.com
Mr. Jens Raymaekers
International Space University (ISU), Belgium, jens.raymaekers@gmail.com
Mr. Julien Tallineau
QinetiQ Space nv, Belgium, Julien.tallineau@qinetiq.be
Dr. Michael Gallagher
Astronauts for Hire, Canada, michael.gallagher@astronauts4hire.org
Mr. Philippe Cyr
International Space University (ISU), Canada, pcyr02@gmail.com
Dr. Tanay Sharma
Space Generation Advisory Council (SGAC), United Kingdom, t.sharma@sussex.ac.uk
Mr. William Ricard
HEC Montreal, Canada, william.ricard@hec.ca
Mr. Zac Trolley
International Space University (ISU), Canada, ZacT04@gmail.com
Mr. zhao zhigang
China Academy of Space Technology (CAST), China, zhaozhigang077@yahoo.com.cn
Mr. Rory Ewing
International Space University (ISU), Canada, rory.ewing@community.isunet.edu
Ms. Hilda Palencia
NASA Ames Research Center, United States, hilda.palencia@community.isunet.edu
Mr. Sebastian Davis Marcu
International Space University, Germany, marcu@designdata.de
Ms. Anne Wen
International Space University (ISU), Canada, anne.wen@community.isunet.edu
Mr. Matthew Shouppe
International Space University (ISU), United States, matthew.shouppe@community.isunet.edu
Ms. Silje Bareksten
Norwegian Space Agency (NOSA), Norway, siljebareksten@gmail.com
Mr. William van Meerbeeck
ISU, France, william.vanmeerbeeck@community.isunet.edu
Mrs. Suma M.N.

Indian Space Research Organization (ISRO), India, sumarajeev1@rediffmail.com
Mr. Matthew Claude
International Space University (ISU), Canada, matthew.claude@community.isunet.edu
Mr. Mitchell Brogan
ISU, Canada, mitchbrogan@gmail.com
Ms. Karima Laïb
ISU, Canada, karima.laib@hec.ca
Mr. Louis-Etienne Dubois
International Space University, Canada, lewis_dubois@hotmail.com
Mr. Mark Lander
ISU, Spain, markieme@gmail.com
Ms. Natalia Larrea Brito
ISU, Canada, natalia.larrea.brito@community.isunet.edu
Mr. Dan Cohen
International Space University (ISU), Israel, Dan.Cohen@community.isunet.edu
Ms. Tiantian Li
International Space University (ISU), China, Tiantian.Li@community.isunet.edu

SPACE AND OPEN INNOVATION: POTENTIAL, LIMITATIONS AND CONDITIONS OF SUCCESS

Abstract

The classical model of innovation behind closed doors is slowly but surely being challenged by the open innovation model that is reshaping the way organizations bring new products and services into the market.

This paper reports on the results of an International Space University Team Project focused on the potential, limitations and conditions of success of open innovation in the space sector. The project used ISU's international, interdisciplinary, intercultural (3Is) approach in order to determine the fit of the open innovation model to the challenges and opportunities in the space sector.

Open innovation can be defined as "innovating with partners by sharing risk and sharing reward". Conventional approaches to technology development for space, such as spin-offs or spin-ins are no longer sufficient to fully describe the interactions between organizations in today's R&D landscape. From the Android operating system to 3D printing designs, from crowdsourcing to Wikipedia, a wide range of platforms enable contributors from around the world to work together and develop innovative solutions to very challenging scientific, technical and socio-economic problems.

Traditionally, conducting space technology development and launching space missions required massive infrastructure investments, long lead times and large teams of experts. However, internal R&D, dedicated marketing departments and closely guarded intellectual property are no longer the only way to achieve success. Companies such as Space X, Scaled Composites, zero2infinity, NanoSatisfi, Copenhagen Suborbitals, Planet Labs and others work in a fundamentally different way compared to space agencies. Smaller, nimbler teams, significant use of commercial off the shelf technologies, crowdfunding, a more aggressive approach to managing risk and a great motivation to leverage intellectual property are just some of their defining characteristics.

In the traditional, closed innovation model, organizations generate, develop and commercialize their own ideas. In contrast, in the open innovation model, organizations aim to commercialize external as well as internal ideas by exploring multiple paths to the market. These paths include launching start-up companies, licensing intellectual property, forming joint ventures and many other mechanisms.

By using a case study methodology supported by a critical literature review, the project team highlighted the potential of open innovation in space by identifying its most promising applications as well as its limitations. The advantages and disadvantages of open innovation in space mission design, development and operations were compared to the current closed innovation practices.