



Will the use of space assets in mine action improve efficiency and effectiveness of land clearance and release?
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Space Assets for Demining Assistance

This article discusses an innovative study the European Space Agency is funding to examine the feasibility of applying space assets to the field of mine action to improve the land-release process. It also announces the opportunity to get involved in implementing the study.

by Thomas Bouvet [European Space Agency]

Established in 1975, the European Space Agency is an intergovernmental organization of 18 member states. ESA's programs are designed to find out more about Earth, its immediate space environment, our solar system and the universe, as well as to develop satellite-based technologies and services.

The ESA's Integrated Application Promotion facilitates the setup of new services enabled by multiple space assets such as telecommunication, navigation or earth-observation

satellites, and funds feasibility studies and pre-operational demonstrations. A realistic understanding of user needs and field realities is essential to developing useful and sustainable services. To this end, the IAP program strives to actively involve relevant end-users and stakeholders in its activities.

Feasibility Study

Under its IAP program, ESA is fully funding a feasibility study to investigate and develop the

potential of space-enabled services for land release.¹ The study aims to produce a concept for space-enabled services supporting general impact assessments and demining in their various stages. It will assess the added value, affordability and viability of the space-enabled services, and will prepare a roadmap for a possible pre-operational demonstration.

The Geneva International Centre for Humanitarian Demining is partnering with ESA to provide the mine-action expert perspective and to assist in integrating promising services into common practice. GICHD helped prepare the statement of work, and GICHD's Daniel Eriksson will sit on the evaluation board and attend review meetings to make sure the study is going in the right direction.

Using Space Assets in Mine Action

The idea of exploiting space assets to assist land release was developed by the International Astronautical Federation. The plan was submitted to ESA for funding of an in-depth feasibility study, followed by a preoperational demonstration. The current project is not the first landmine-related project in which ESA has been involved. In early 2000, ESA participated in the HOPE project, aimed at developing a multi-sensor, hand-held detection device (i.e., ground-penetrating radar, passive microwave and metal detector) for close detection.²

Exploiting the capabilities of space assets could significantly increase the effectiveness and efficiency of the various stages of the land-release process, from general impact assessment to mine/explosive remnants of war clearance. In fact, space assets such as Earth observation data, satellite communication and satellite navigation could contribute to provide the right information at the right time, thereby improving planning and operations. Sample uses for these tools include:

- Production of impact maps for better-informed prioritization by mine-action decision-makers
- Production of maps of risks with associated confidence level, based on remotely sensed indicators of mine absence/presence to more pertinently discriminate between

hazardous areas and lands safe enough to be released

- Characterization of the environmental setting of a hazardous area and its time dynamics, to select appropriate detection tools and time for deployment
- Data geo-referencing and navigation assistance for Non-technical Surveys, stand-off detection, demarcation of hazardous zones, close-in detection and clearance
- Global communication capabilities to securely transfer collected data into the Information Management System for Mine Action

Relevant organizations involved in mine action, such as nongovernmental organizations, mine-action centers, service providers, research and development organizations and donors, are encouraged to express interest in participating in the implementation of the study.

The invitation to tender can be found at <http://tinyurl.com/y3ctzyv>. For further information or to express interest in participating in the study, please contact iap@esa.int. ♦

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Thomas Bouvet was initially educated as a life and environment engineer. He then specialized in space engineering and atmospheric physics. After completing his Ph.D. in Canada, Bouvet returned to Paris and started his career at the International Astronautical Federation. He recently joined the European Space Agency to work on space enabled integrated applications for Earth.

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