Satellite Applications Catapult in Chile

Overview

Since its foundation in 2013, the Satellite Applications Catapult has been involved in 13 projects in Latin America, including seven in Chile. Satellite data has applications in many sectors, and can be particularly useful in countries such as Chile where the geography is very variable and the population is dispersed.

By far the biggest market in Chile is mining and mineral extraction, which accounts for 45.4% of foreign investment and 53.5% of exports (copper alone constitutes 49% of total exports). Hence a number of the Catapult projects have focussed on this sector, with the Chilean Government, businesses and individuals all standing to gain substantially from improvements in monitoring, management and development. These projects include OUREA and Hephaestus, plus another working with a private mining company analysing how it can benefit from the use of satellite technologies.

Project OUREA

The first of the Catapult's projects in the mining sector in Chile in 2016 was OUREA, which demonstrated the concept of a secure, trusted, independent platform for environmental monitoring that is designed to enable better environmental protection. The Catapult worked on OUREA with partners including CIREN (Centro do Información de Recursos Naturales) and support from UK Trade & Investment, with funding from the Newton Fund.

The three-month project showed how satellite data could be transformed into information that is intuitive and accessible for end-users. Key among the outputs were demonstrating how the platform could highlight environmental changes, such as ground deformation, and be used to visualise multiple data sources together (such as urban development, ground deformation, vegetation, changes in tailings dams) by combining them into a single fly-through over modelled ground.

The results of the project were showcased at Expomin (the Chilean mining trade exhibition) in Santiago de Chile in April 2016. During the event, the Catapult signed a memorandum of understanding (MoU) with the Chilean National Mining Corporation, Empresa Nacional de Mineria (ENAMI) and SERNAGEOMIN, which provides for collaboration on future projects with a focus on sustained development in economic, social and environmental areas.

Project Hephaestus

Following on from OUREA and the signing of the MOU, the aim of Project Hephaestus is to investigate how satellite technology can improve mining operations in Chile's Coquimbo region, with a focus on smaller producers.

Mineral extraction in Chile is carried out both by major producers and by nearly 2,000 small to medium-sized firms: when combined, these extraction companies are the equivalent of one of Chile's largest copper producers, as well as being a significant producer of other minerals, such as lithium.

The Chilean Ministry of Mines is aiming to boost the mineral and metal output of smaller companies by $1.8 billion per year by 2023. Project Hephaestus is therefore designed to identify tools and processes which could support ENAMI (as well as other agencies) in its mission to promote the economic development of these smaller producers and help them capture more of the global copper market.

Hephaestus will show how satellite data (Earth observation, communications and positioning) and analytics can enable evidence-based decisions on where agencies should focus their efforts in order to support regional mining ecosystems. It will cover both mining communities and the supply chain, addressing issues such as locating and assessing water and mineral deposits, analysing and monitoring tailings (waste materials dumped during ore processing), monitoring the environmental impact of extraction and transportation, and planning compliance. It should also help to tackle related organised and opportunistic crime, which financially affects both the Government and local communities.

Partners in Hephaestus, which is due for completion in December 2016, include: British Geological Survey, Energeo, Qurus, GMV, Dares Technology, CGG, Chilean Ministry of Mines, ENAMI, Servicio Nacional de Geologia y Mineria (SERNAGEOMIN) and Chilean Copper Commission (COCHILCO).

Conclusion

Competencies developed for both Projects will have benefits for other future projects and longer-term applications. Indeed, some of the work on Project OUREA (along with that from previous projects in Chile) informed Hephaestus, and outcomes from that, in turn, will be leveraged for other environmental monitoring applications within Chile. Both will therefore have a clear positive impact on the country, as well as facilitating the involvement of British companies in wider use of satellite applications within South America.

For more information, please contact info@sa.catapult.org.uk