

'The Possibilities Are Unlimi

ESA Actively Promotes Earth Observation Products

Remote sensing from satellites or Earth Observation (EO) can be useful in many applications. The potential value of earth observation products and services has long been well recognised. However, despite rapid progress over the years, many users feel that these products and services still fall short of expectations or present limitations in their effective use.

By Robin Wevers



Potential

The market for earth observation products and services has remained small when compared to the cost of developing space assets. Although the potential of the commercial market is still considered to be large, it has become clear that the optimistic forecasts of the early 1990's regarding the growth of commercial exploitation of EO missions have not been realized. Nowadays, it is well understood that the market is difficult to be exploited without accompanying measures. Within this context the ESA started the

Earth Observation Market Development (EOMD) initiative in 2000.

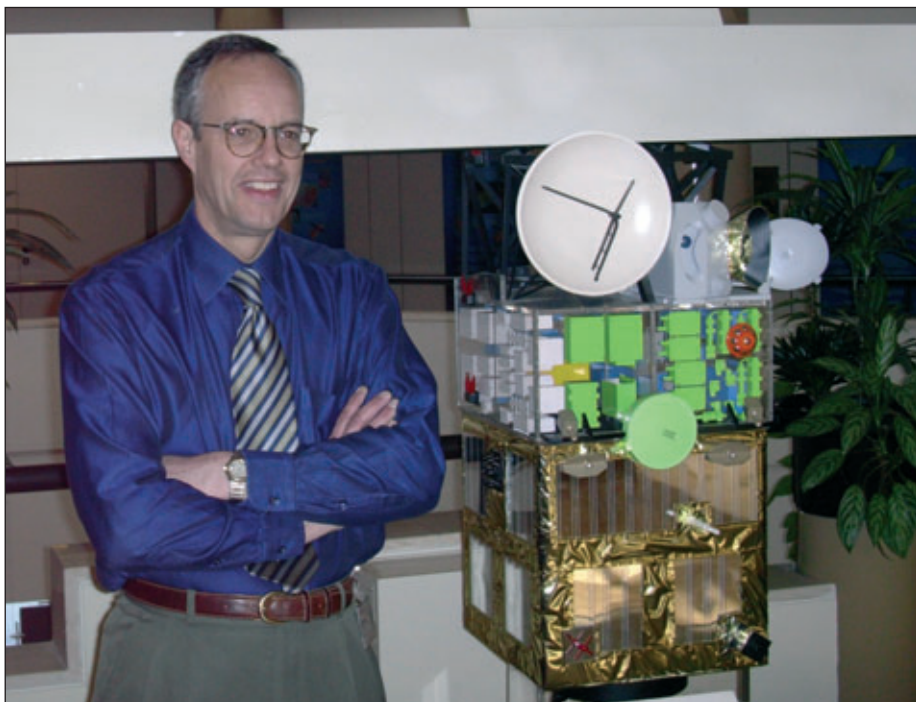
The EOMD has the objective to foster the use of Earth Observation (EO) based geo-information services within various market sectors. Stephen Coulson, Head of the Industry section of the Earth Observation Programs at ESA, gives his views of the developments. "EOMD means the first time for ESA to directly support the market development phase of satellite-based products and services. The approach has been to 'plug-in' information from space into conven-

tional information services in order to improve or enhance what is on offer. Coulson says: "To convince customers of the benefits of earth observation EOMD has carried out 75 trials involving about 130 customers focussing on 20 main service portfolios. Examples include geological mapping, land subsidence monitoring, flood mapping, monitoring of agricultural crops, detection of ships and monitoring of oil spills."

Characteristics

Coulson explains the characteristics of earth observation: "It is quite simple: satellites are flying around the world, 'seeing' the 'big-picture'. They do not distinguish between different countries, languages or cultures. Satellites are extremely stable pieces of equipment and provide the same type of information wherever and whenever they are. These may seem like simplistic statements, but are in fact very important. To give an example, we have been working with an oil producer who operates a number of drilling wells in the US. This oil producer constantly needs information on the land subsidence the oil production causes, as wells can easily collapse. Of course, this can be done on ground level, but this is expensive and provides local information only. Satellites can measure small movements, in centimetres or less, of the land surface. Within 15 seconds a satellite can image an area of 100 x 100 km and provide tens of thousands of measurements. It can do this once a month, for a long time. A lot of people worrying about subsidence are simply unaware of these possibilities. Now the US oil company is one of our biggest converts: they regularly buy and use this type of information from satellites for their operational business."

Coulson is the first to admit that satellites also have their limitations: "They are expensive. However, the commercial costs of satellite data are coming down and this opens up more possibilities for services using these data. It is a value-for-money issue. Here, I think that companies in the EO satellite services sector can improve. They need to keep the focus on the customer, and not let the technical wizardry get in the way." Another limitation of EO is the limited temporal and spatial resolution and the inability of optical sensors to see through clouds.



Stephen Coulson's view on the future: "In my opinion, the true value of Earth Observation will come into play when the modelling, assimilation and forecasting techniques are fully developed".

These limitations of earth observation data can only be overcome by combining these data with in-situ measurements, which provide the calibration data necessary for validation.

Market Analysis

Coulson about the current market: "First let me say that currently the earth observation market is small. Studies estimate that the total revenues from Earth observation services across Europe are about 250 - 275 million euros in 2002. The optimistic forecasts that EO would become fully commercial have not come true. Nowadays, it is recognised that the market is difficult to exploit and that is why we have a program like EOMD. The market is now emerging from a long period of stagnation. Currently we are seeing growth in commercial sales of services, particularly in the areas of land motion, geological mapping and maritime surveillance."

According to Coulson there are still some market segments that have serious as yet unexploited potential for the EO-industry: "We live in an age where information is one of the most valuable assets in business. The possibilities are unlimited. We are now starting activities to test what Earth Observation

can do in the area of sustainable development with large corporate industries. This is a hot topic; big industries are very sensitive in being able to show that they can develop their business without damaging the environment. We are working very closely with large international companies like Shell, Suez Energy, Alcan and Lafarge group to demonstrate that EO information can help them out in monitoring and reporting their corporate activities. Another area we are looking at is whether EO can play a role in assessing the exposure risk for industries associated with climate change. There is increasing pressure from leading investors, especially in the US, to enforce companies to analyse and disclose how the consequences of climate change could affect their assets and businesses. These consequences include things like floods, droughts, storms, fires, rising sea levels and melting ice. Industry is becoming more active here, an example being the 'Climate Group' recently set up and lead by SwissRe in the UK."

GMES

According to Coulson Global Monitoring for Environment and Security (GMES) is the wake-up call for Earth Observation: "It is the

start of a big joint initiative between the European Space Agency and the European Commission to put space to work for the benefit of European environmental and security policies. The pollution of our water, the state of our forests, cities and countryside, and the quality of the air we breathe are very much of interest to us all. GMES should deliver information services to a whole host of international, national and regional agencies and organisations who are legally mandated to care for and protect our environment and need information to do this. In addition, GMES should give industry the opportunity to 'spin off' a wide range of new commercial services, some of which we probably cannot even imagine at the moment. But bear in mind that something of this scale does not happen overnight; it took 20-25 years for information from space to be used and be shown everyday on TV in weather forecasting."

The Future

Coulson shares his thoughts about the future: "In my opinion, the true value of Earth Observation will come into play when the modelling, assimilation and forecasting techniques are fully developed. Take meteorology. People are not very interested in knowing what the weather is like at that moment - they can simply look out of the window. But when the forecast for tomorrow or the next few days is given, then people do get interested. The same goes for Earth Observation. When it becomes possible to use this information to understand and predict the effect that humans are having and will have on our planet, then people will get more than interested. This all starts with GMES. The next decade is going to be the most exciting and challenging period in the field of Earth Observation."

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More information can be found at www.esa.int/eomd.