



NATIONAL MAPPING AGENCIES THROUGHOUT EUROPE ARE MONITORING THE RESULTS OF THE EU-FUNDED AGENT PROJECT WITH GREAT INTEREST

For UK digital mapping software company Laser-Scan Ltd. the project has already opened up new markets - commercialisation will bring new rewards too

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Computers have long been used to collate and manipulate the various data sets that underpin a map, to assist in the preparation of maps and, more recently, to display information within a GIS (Geographical Information System). Most people take maps for granted; road maps at various scales for motorists, contour maps for ramblers, sketches on the back of an envelope if you are lost. Each has its own conventions for the way real-life objects are rendered and for selecting different types of object that will be significant to the person using the map according to its scale. The concept of a 'scale free' digital database, from which mapping products at various scales could be derived automatically (called generalisation) has been the 'holy grail' of digital mapping for over 20 years.

Laser-Scan Ltd. was founded in 1969 by three Cambridge-based academics from the Cavendish Laboratories. As the name suggests, their goal was to develop scanning devices using the very high precision offered by lasers. Over the next few years, two discrete but related business activities emerged - very high-resolution design tools used to create around a third of the world's bank-notes, and scanning devices for military and civil map-making. By the mid 1990s, Laser-Scan had become a leading provider of digital mapping software, and had developed some map generalisation tools that a map-maker could use to assist in the generation of maps at different scales. But nobody yet had a workable system for automatic generalisation.

Laser-Scan and the French Institut Géographique National (IGN) used the EC-funded AGENT (Advanced GEneralisation New Technology) project to work alongside academic researchers from Grenoble, Zurich and Edinburgh to solve a problem that none of the participants could expect to address on their own. Manual generalisation is a slow, tedious, error-prone task. Automating even 70% of the process would reduce costs enormously, as well as making new products possible. The project allowed the academic teams to apply and develop their know-how in geography, cartography and artificial intelligence, while IGN gained access to results with the potential to revolutionise the way they produce new maps. Laser-Scan were given a three-year exclusive exploitation agreement and have already sold and shipped a system based on AGENT results which the Danish National Mapping Agency is using to automate the conversion of existing 1:10,000 scale maps to 1:50,000. The system is now being commercialised as a generalisation tool that works with the company's object-oriented spatial database and has attracted interest from national mapping agencies from Germany, Spain, Belgium, the Netherlands and the UK.

The AGENT project was a learning exercise for everyone involved. The first year was spent understanding each other's ways of approaching



LASER-SCAN

Generalisation algorithms make clear mapping from cluttered data.

and describing the problem. The geographers, the cartographers, the computer scientists and artificial intelligence researchers all had languages of their own. Group meetings were important, since most progress can be made when the various different views are openly discussed. It was important to break big problems down into manageable chunks and regularly review what could be achieved in the time available. While the final year of the project was spent implementing a demonstrable system, Laser-Scan's Chief Product Manager, Paul Hardy, advocates building a prototype implementation early in the project then being prepared to throw it away and do it better the second time. Paul, who was Laser-Scan's Technical Board representative for the project, says: "Overall, the AGENT project was a real success, advancing the 'state of the art' and opening up opportunities for Europe and wider markets."



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