

## Compression for Vectors - RaveGeo

# Idevio

*Working with large vector maps is challenging for a number of reasons; detailed vector datasets are very large, resulting in slow access, especially over the Internet. Idevio is a Swedish software company that has invented a new way to combine high compression with fast access, enabling real-time zoom and panning in huge vector datasets, even over the Internet.*

By Patric Nordström, CMO and founder, Idevio

Idevio was founded in 2001 by Johan Persson M Sc. and Patric Nordström M Sc. and is a privately owned company situated in Gothenburg, Sweden. Idevio is part of Chalmers Innovation, a science park with close connections to Chalmers University of Technology. Chalmers Innovation is a network of technology-based companies situated on the west coast of Sweden. In addition to this affiliation, Idevio is a member of Telematics Valley, a cluster of companies delivering state-of-the-art telematics solutions for the vehicle industry in Sweden.

Despite its short history, the company has already received much attention, both in trade press and from the GIS industry. On 16th May 2002 Idevio was awarded third prize in the innovation competition 'Venture Cup' in Sweden.



*Idevio is located in the docklands of Göteborg, where many high-tech companies are now moving into old shipyard buildings*

Both Johan Persson and Patric Nordström have an academic history at Chalmers University of Technology and long experience in designing and developing geographical information systems. Johan Persson was the architect behind the advanced geographical toolkit SpatialAce from Carmenta. Before founding Idevio, Patric Nordström was a Manager with Accenture, specialised in the Communications and High-Tech industry.

### Current Profile

Idevio is a software company specialised in storing and streaming geographical information. Its main product is the RaveGeo vector database. RaveGeo is a new storage format and software designed for fast access to huge vector databases for environments ranging from handheld devices to desktop applications. The main features are:

- ◆ **High Speed**, very large vector datasets: >GB can be browsed with continuous zoom and panning, even over the Internet
- ◆ **High Compression** ratio, ten to twenty times greater than other formats
- ◆ **Streaming access** to big vector databases over Internet and wireless networks
- ◆ **Multi-resolution**, which widens the usable scale range of the dataset

RaveGeo is a compressed vector format where data is organised in such a way that the same data can



*RaveGeo is a fast, compressed, multi-resolution format for huge geographic vector databases, designed for environments ranging from handheld devices to desktop applications*

be accessed in many resolutions, resulting in a drastic expansion of the usable scale range. As an example, a dataset designed for scale 1:50,000 can be used efficiently to scales of 1:40,000,000. The different scale levels are constructed using mathematical operations for automatic data generalisation and no geodata is duplicated in the process. In this way, RaveGeo is Idevio's attempt to fulfil the vision of automatic data generalisation, making geodatabases in intermediate resolutions redundant. The RaveGeo format may be compared with the formats for image data respectively named ECW from Earth Resource Mapping and MrSID from LizardTech. RaveGeo has the same kind of capabilities for vector data as these formats have for raster data. The speed of RaveGeo enables intense operations such as real-time zoom and panning in voluminous datasets, even over the Internet.

The RaveGeo software consists of three parts: a compiler to create RaveGeo datasets from existing databases, a reader API to access the objects programmatically and a server to distribute the vector data over a network.

The product RaveGeo is viewed as

a software component to be integrated in map applications. Several companies specialised in geographical visualisation and analysis have already done so and are now working with RaveGeo integrated in their software. The feedback so far has been very positive. We believe that working in accordance with our mission statement of "being a superior technology supplier of storing and streaming technology" we will continue to be able to provide our partners and clients with leading edge technology.

There is a patent pending on the technology behind the RaveGeo concept. In January 2002 Idevio filed a patent application with the Swedish Patent and Registration Office, covering the unique storing and streaming principles of RaveGeo.

#### International and Global Scope

Idevio has from its beginning targeted an international market; the problems with large vector maps are universal and the software called RaveGeo may be applied to any geographical vector database. The software has successfully been evaluated with many different datasets, such as the worldwide dataset VMap0 from the US National Imagery and Mapping Agency (NIMA), Navstreets from



*RaveGeo enables real-time zoom and panning in very large vector databases, even over the Internet*

Navtech and Electronical Navigation Charts of US waters from NOAA.

To be able fully to serve a global community Idevio is working together with partners both from Europe and North America, all of which are focused on geographical visualisation. They are today working with multi-resolution formats for raster data and have a need for a similar format for vector data. The integration of a RaveGeo data reader brings real-time zoom and pan to these companies' products and drastically reduces database size. Some of our partners used to ship geodata to their clients on more than twenty CDs. Military applications in particular tend to have enormous amounts of indispensable vector data. To deliver and update such a distribution is a tedious and costly operation, with hours of installation time required to be spent with each client. Today our partners can supply their clients with that data over the Internet (with better performance than local storage!) or in many cases ship all data on one CD.

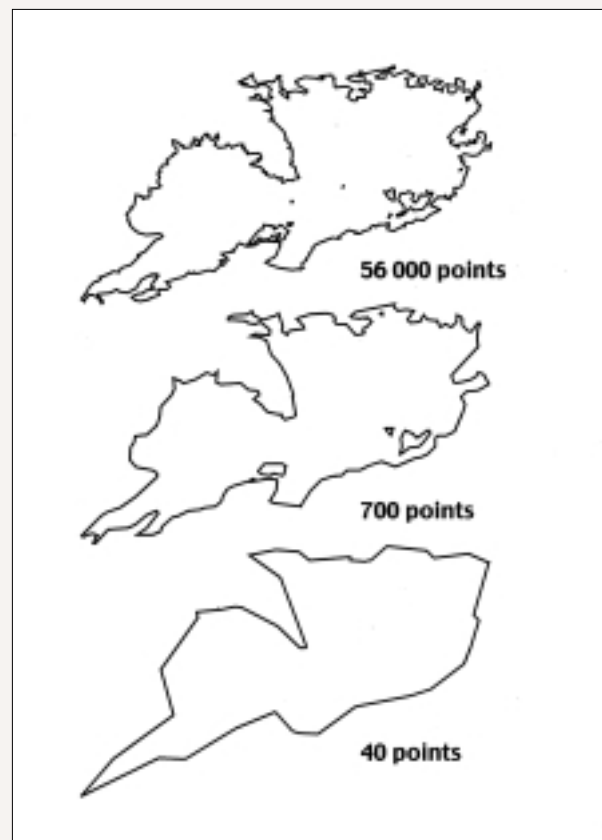
#### View of the Future

The first target segment for Idevio is map system developers in the traditional GIS industry. The primary goal is to make RaveGeo the obvious technology choice for storage and streaming of vector-based information. Just as ECW and MrSID currently provide the ideal way to store raster data, Idevio has proved that RaveGeo is the most efficient way to provide fast and easy access to very large vector databases in any area and resolution. The first to discover the potential of RaveGeo has been, not surprisingly, Swedish Defence and the Swedish Defence industry. These both place very high demands in terms of performance and also have the capacity to adopt new technology fast. The largest market for RaveGeo is believed to be handheld devices of all kinds. According to market research in the USA and Nordic countries, map capability in mobile phones is one of the top three most wanted new mobile services. The unique streaming and compression capacities of RaveGeo make it ideal for presenting vector infor-



*Chalmers Lindholmen Technology Park is home to a number of technology-based start-up companies*

mation in handheld devices such as mobile phones, handheld GPS navigators and PDAs. Moving forward, Idevio will apply the Rave technology in other areas as well, since the technology behind RaveGeo is general. RaveGeo may be used in any application that has a



*Automatic Data Generalisation, the same object in different resolutions without duplicating data: a key concept of RaveGeo*

need for storing and streaming vectors. CAD and 3D software games are obvious markets for Idevio. More information about Idevio and RaveGeo, including an on-line demonstration of RaveGeo may be found at the company web-site, [www.idevio.com](http://www.idevio.com). ♦

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