



EDINA Digimap - national web mapping for the education sector

A case story that describes the development of the new EDINA Digimap service.

EDINA is a Joint Information Systems Committee (JISC)-funded National Data Centre, hosted within the University of Edinburgh Data Library and offering the UK higher and further education research community networked access to a library of data, information and resources. Launched in 2000, the EDINA Digimap service specialises in the delivery of a number of geographical data collections over the Internet to nearly 150 institutions who subscribe to different levels of service.

Digital map data ranging from Ordnance Survey® (OS) products to geology, marine and historical maps can be accessed by staff and students free at point of use, at any time of day, whether they are casual or expert 'power' users.

Made possible by funding from JISC, Digimap enables the education sector to access OS data and other digital map resources which they may otherwise be unable to consider. JISC inspires UK colleges and universities in the innovative use of digital technologies, helping to maintain the UK's position as a global leader in the field of education.

The challenge

In 2008, EDINA decided to upgrade the current Digimap system to ensure it could both grow and cope with an ever-growing number of map requests. Demand for the Digimap OS service alone had increased to between 30,000 to 35,000 map requests per day and was doubling every year. The existing system was running at capacity and showing signs of strain. EDINA was keen to address this before it affected the service to its users.

EDINA wanted to provide a consistently outstanding service so they decided to issue a tender for a replacement system. The procurement process lasted a year and involved thorough testing to ensure the chosen solution was stable and robust. Cadcorp products Map Modeller and GeognoSIS were chosen as the best fit against various agreed benchmarks including: cost effectiveness, support and training, customer relationships, scalability and performance, ability to use with other data sets, and licensing.

The solution

Cadcorp delivered a number of licences of its web-based mapping software, GeognoSIS together with multiple licences of Map Modeller, its high-end desktop GIS system, to manage the data being delivered to the web. This software allowed EDINA to build a new updated Digimap service which has met and exceeded EDINA's numerous challenging and rigorous requirements.

OS MasterMap data was uploaded to a PostGIS database using Snowflake Software's GO Loader. OS Strategi was loaded with a modified OGR and various other OS vector datasets were managed and loaded via Cadcorp SIS Map Modeller.

EDINA used a combination of TileCache and Cadcorp GeognoSIS to serve the maps into the interface. TileCache is used on the server-side of the system; with caches of vector-based OS data populated using GeognoSIS, and those of raster data using MapServer. The new user interface, created using OpenLayers and MapFish, mixes a tile-based slippy map for standard views of the data, and live OGC WMS renders from PostGIS for non-standard views such as buildings only, roads and buildings etc.

This was a major project for both EDINA and Cadcorp, challenging the knowledge and skills of both parties. The pulling together of all the different software and data components in this project is a credit to the technical capabilities of the Digimap team and their close working relationship with Cadcorp throughout the process. More information on the technical challenges facing Cadcorp and EDINA and how they were overcome, can be found at the blog of Cadcorp technical director, Martin Daly - <http://blog.lostinspatial.com/> (see: 'A Higher Education, parts 1-4).

EDINA are very happy with the new version of Digimap and the various enhancements made to Cadcorp SIS and GeognoSIS as a result of the project, which will bring substantial benefits to all Cadcorp users. Since going live, the Cadcorp-powered EDINA Digimap servers have rendered in excess of 30 million maps to both populate the tile caches used by the system and to provide

EDINA Digimap Services – The benefits

Speed	The slippy map interface built from the cache performs on-demand rendering of custom maps via GeognoSIS's OGC WMS interface and is significantly faster than the previous version of Digimap.
Stability	Demand from users has been steadily increasing, making stability a key requirement from the new system. The new Digimap has been 100% reliable since its launch, with the system only restarted to accommodate routine maintenance tasks.
Cleaner looking maps	The new user interface provides more flexibility, allowing users to switch on and off certain attributes and layers, whilst also maintaining the outstanding map quality expected by the users of the service.
Improved print functionality	The new system allows users to print to Adobe PDF in paper sizes from A4 to A0; to print in full screen mode and will also soon allow them to add their own labels, thus giving far more flexibility and control over the appearance of the final map. Output includes the user and institution name, logo and all the OS small print required.
Cost saving	Increased speed, stability and system availability mean the EDINA team can concentrate on developing new features and improving and extending the service to their users and other industries in the future.
Return on investment	Comparing Digimap now with the previous version is very hard to do as the new system has only been live for a few months, however the savings in system administration alone are exceptional.

dynamic custom maps for end users.

Users of Digimap have access to two product variants known as 'Roam' and 'Carto'. Roam allows users to navigate, pan, zoom and click on the map in the usual way, as well as to create their own maps using a Gazetteer facility. Users can turn on and off different attributes such as buildings, administrative boundaries, water features, roads and trees. They can create their own queries, bookmark them, or use preset saved queries. Maps can be saved in a 'My Maps' facility or printed to a layered PDF. Data is also available for download to use with appropriate application software such as GIS or CAD.

Carto allows users with some cartographic experience to carry out a variety of more specialised tasks such as producing maps to a user specified scale and combining data from different datasets in a single map. Carto supports the creation of maps for hardcopy printing at sizes from A4 to, somewhat uniquely, A0 in size.

What's in store for the future?

EDINA feel that having a more robust and stable system will help future proof their business, increasing the viability of the Digimap system and enabling the team to be more able to meet and cope with any new challenges. The new system is amply equipped to manage the increasing numbers of users and the team's development plans.

EDINA plans to extend access to the Digimap OS Collection to schools across the UK with custom built mapping application which should be available to all 8-14 year olds in February 2010. Historic, Geology and Marine Digimap datasets are also being re-engineered to use the Cadcorp-based platform, with new mapping applications becoming available through Digimap in 2010. The system is under continual development and existing users will see the addition of new features and functionality over time.

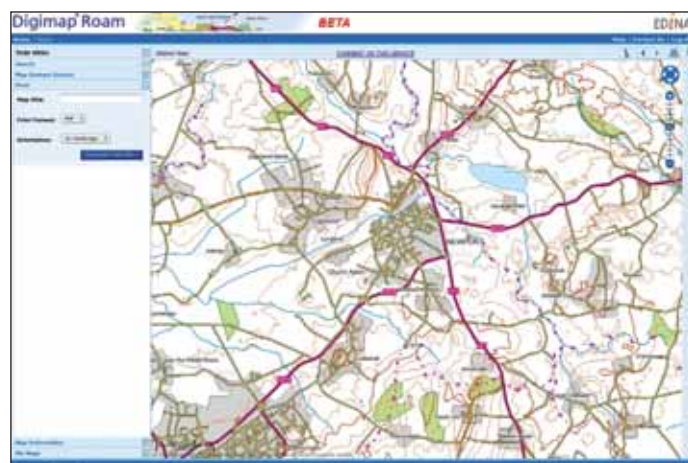
David Medyckj-Scott, Manager of Research and Geodata Services at EDINA commented, "Cadcorp had a proactive professional approach. That and the



Roam Plan View - A large scale (view scale approx 1:1250) using OS MasterMap. The Map Content Control tab is show active. This presents a legend which can be used to customise the viewed map, by turning on or off map features, such as buildings, roads etc.



Roam Local View - A mid scale view (View scale = approx 1:19 000) using OS 1:50,000 Colour Raster data. The full legend can be viewed in the Map Content Control tab, though in views using raster data, such as this, the legend can not be used to customise map content.



Roam District View - A mid scale view (View scale approx 1:47 000) using OS Meridian 2 and Land-From PANORAMA data. The standard map, or one customised by the user, can be saved as A4, A3, landscape or portrait PDF map for printing.

quality of their software meant that our development team could satisfy all the requirements for the replacement of the complex GIS which underpins our Digimap service. Where problems did occur, Cadcorp were quick to adapt and develop their software to meet our high demands. The resulting service provides outstanding quality maps quickly and seamlessly; the performance and scalability exceeded our expectations. The Cadcorp team went out of their way to make this project a success and we look forward to working with them again as we extend the facilities Digimap offers in the future."

Neil McLeod, neilmcleod@btopenworld.com

Note of the Editor - Cadcorp and the EDINA National Data Centre have announced recently that the latest version of the EDINA Digimap service has gone live.