

The Local Government Boundaries Commissioner (LGBC)



The Local Government Boundaries Commissioner (LGBC) for Northern Ireland is saving significant time on part of its data review process thanks to a new system from 1Spatial. The time taken to define electoral boundaries within Northern Ireland has been cut from 12 months to 2 months – a time saving of more than 80%.

1Spatial has provided technology and services to deliver a Mapping Production System as an enhancement to the Parliamentary Boundary Commission GIS, and to facilitate a review of all local government boundaries in Northern Ireland.

The Challenge

The original Parliamentary Boundary System was developed by 1Spatial in 1992 using GINIS (Graphical Editing Tool) on a VAX/VMS platform.

The Parliamentary Boundary GIS was upgraded to run on a Windows platform for a subsequent review in 2002, and formed the basis of an Integrated Boundary GIS.

The LGBC Mapping Production System was developed to enable LGBC to undertake a review of electoral boundaries, if necessary and to ensure entries in the electoral database match the Pointer® address database.

The need for a review, together with other factors including OSNI (Ordnance Survey of Northern Ireland) migration to a Windows Platform, and an initiative to build an integrated Boundaries GIS were the main drivers for change.

The LGBC defined the following requirements:

1. Geo-Code Electorate Database – Match more than 1,000,000 Electoral Address records with Pointer® (the standard address database for Northern Ireland). Approximately 70,000 entries in the electoral database did not have an automatic Pointer® match – an interactive tool was provided to LGBC to enable these remaining addresses to be matched.
2. Boundary review - to review and reduce the existing 26 council areas to 7 new local government districts, with each district required to contain around 60 wards.
3. Overlaying base data – the LGBC wanted the ability to use its electoral data in conjunction with OSNI mapping data so that the electoral numbers for each Ward could be more simply calculated.

The Solution

The LGBC chose a solution from 1Spatial to achieve its objectives. The initial upgrade was to provide the same GIS functionality from the VMS-based system on 1Spatial's Radius Vision™ (Windows-based) platform. The system is based on an open Oracle 9i spatial database; the team is also using Radius Vision product to generate map plots that will be used to publish the results of the review.

The GIS Mapping Production System implemented in 2006 was a development of the original .DST vector file and the Access database created in the 2003 for the Parliamentary Boundary Commission. These datasets have now been stored in an Oracle-based SDS database. Each Ward, District Electoral Area (DEA), Local Government District (LGD) and Political Constituency (PC) then has additional information stored as attributes on each geographical element.

The Radius Vision desktop application loads the data directly from the Oracle SDS database. Once loaded, users can make changes before saving directly back to the database. Only changes are stored back to the Oracle SDS database. The Pointer® and Electorate databases have been uploaded to the same Ordnance Survey Northern Ireland Oracle database server. These databases are used to dynamically calculate the electorate inside polygons (Wards and LGDs).

The architecture of the GIS Mapping Production System provides the following functionality:

- Combine Whole LGDs
- Combine Whole wards
- Define New Ward Boundaries
- Move Whole Wards from one LGD to another
- Report of LGD and Ward Electorates
- Print an A3 Map on desktop printer
- Enhance the data using an agreed spec and presentation
- Add a plot template incorporating the appropriate logos etc
- Print finished map to file or CD for commercial printing
- Undo functionality on moving Wards, LGDs etc

The Results

Previously, the local government boundary definition had taken 12 months. Thanks to 1Spatial's spatial technologies and expertise, the LGBC was able to carry out the process within 2 months and with half the number of personnel, leaving staff free to work on other projects. More than 420 major boundary changes were made and 1,000,000 electorate addresses, including 70,000 manually validated, were matched to Pointer within just 6 weeks. This has produced an extremely valuable dataset within record time. The LGBC is now able to make better-informed decisions in a much shorter timeframe.

One component of the solution: "MatchElector", added a location element to the electorate database. The data matching exercise between the Electoral data and Pointer data allowed electoral calculations to be automated, and the 'MatchElector' tool then enabled the LGBC to manually match those records that the initial joining process had missed.

The Future

After the initial GIS system was implemented, work began on a new Interactive Web Application to seamlessly integrate the existing LGBC systems and data holdings into the LGBC Web Site. Existing LGBC technologies and software infrastructure were reused to maximise previous investments in technology. The Web Application was delivered in November 2006 and has been live since. There are forthcoming plans for enhancements, including the ability to match the Parliamentary electoral database with the Pointer and population databases.

"I am delighted with the Interactive web application developed and delivered by 1Spatial within a very demanding and challenging time frame. It will enable the Commissioner to publicise his Provisional Recommendations interactively on line and reach much more of the electorate than was hitherto possible".

**Crawford McIlveen, Boundaries Manager for
Ordnance Survey of Northern Ireland
(on behalf of LGBC)**

"The GIS developed by 1Spatial for the Local Government Boundaries Commissioner for Northern Ireland enabled electorate data to be given a spatial reference through a process of data matching with Pointer (NI definitive address database). It enabled the Commissioner to accurately define district and ward boundaries, overlaid on OSNI mapping and ortho photography, and to see instantly the effect on electorate numbers. This is ground-breaking for Commissions on these islands, and it allowed for much more informed Provisional Recommendations than were ever possible before. The system was developed and installed in only three weeks and enabled the Commissioner to publish his recommendations in a dramatically shorter time frame than in previous reviews."

**Crawford McIlveen, Boundaries Manager for Ordnance Survey of Northern Ireland
(on behalf of LGBC)**



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