

## Radius Topology™ cleans up London Borough of Enfield data in preparation for e-government deadlines

Local authorities and other government agencies are working hard to achieve e-government targets, and to have all government services available electronically.

Spatial data will play an important part in helping to deliver services electronically and in helping people to communicate and conduct information searches on a national scale. This might include a search on an address, an area requiring planning permission, or a proposed development. It may be a search to discover the range of facilities or infrastructure that exist in the locale of an address. Spatial data can also provide the important links between datasets, making 'joined-up' government possible.

London Borough of Enfield (LBE), a proactive and forward-looking Borough Council has already made significant progress in addressing e-government targets. The council has recognised that success lies in making data from each department accessible to other departments, as well as to the wider community.

In other words, LBE have recognised the need to create a single, enterprise-wide database.

### Bringing data into line

Currently, each department in LBE sets its own standards and maintains its own data. This can lead to difficulties when data needs to be used across several departments.

In addition, much of this data has been collected over a number of years and by different software packages, leading to further inconsistencies. In short, LBE discovered that extensive work was required in cleaning the data before it could be useable across the organisation.

Until now LBE has relied on human intervention to analyse its data and correct any errors (such as gaps or overlaps in boundaries). However, not only is this subjective, it is also extremely time-consuming. It was estimated that to clean the entire dataset manually, using existing tools would take 5 years! Even after this time, the correctness of the data would not be guaranteed, chiefly due to the lack of ability to maintain this accuracy over time, as the data changes.

### Enterprise-wide interoperability

Another consideration for LBE was the new OS MasterMap® data; initial trials showed discrepancies between the council's own dataset and Ordnance Survey's digital product.

In order to make the most of OS MasterMap it is important that the datasets are compatible. It was clear that LBE needed to identify a new solution, one that would electronically remove errors and ultimately produce a definitively clean dataset, ready for use throughout the organisation.

**By utilising 1Spatial's Radius Topology, LBE expects 100% clean and structured data in little more than 23 weeks, reducing their original estimate by almost 5 years!**



LBE's polygons (shown in blue opposite) were supposed to line up with the OS MasterMap data (orange and red), but there were frequent differences.  
Data courtesy of Ordnance Survey GB © Crown Copyright

*"In order to meet government electronic service delivery targets, data integration, Enfield, like all Councils, needs to pay close attention to the quality of its data. Radius Topology software has been implemented to manage and improve Data Quality by enforcing local business rules."*

**Mark Page, GIS, Manager,  
London Borough of Enfield**

## Dynamic persistent topology

Radius Topology is a dynamic topology management layer stored in Oracle9i or Oracle Database 10g, creating a server-side topological solution for handling the structure of spatial information. This means that Radius Topology also acts as a "gatekeeper", only allowing clean, accurate data into the database. Inconsistent data is automatically corrected, within the bounds of user-defined business rules.

No matter whom adds new data or which software they use, LBE can be confident that Radius Topology is working hard to ensure that it is error-free and, above all, accessible across the organisation.

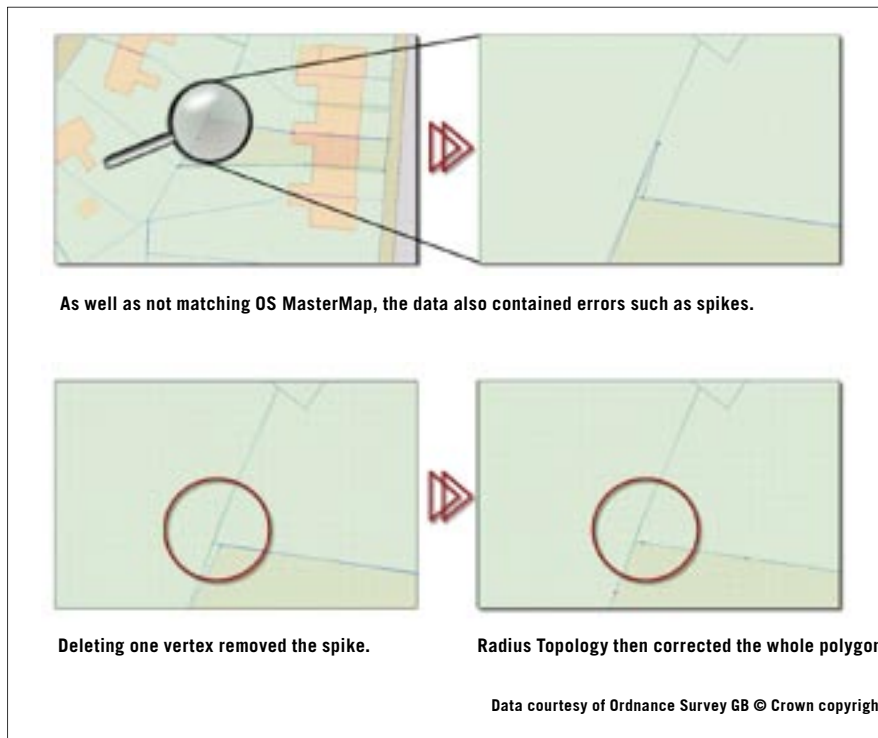
In any information system environment the database used to store, edit and query data must have the confidence of its users. The database is the key to solving the problems of information management. It must be secure, reliable, provide assurance of maintaining data integrity and provide acceptable performance when the user retrieves information from it. The Oracle server is an object-relational database management system that provides an integrated approach to information management. The Oracle server gives the user all these assurances. The combination of Oracle and Radius Topology gives LBE the confidence that it is making the most of its spatial and business data working together.

Radius Topology is being used to clean up all the gaps, slivers, overshoots and undershoots (of 20cm or less) that exist between LBE BLPUs (Basic Land and Property Unit) and OS MasterMap. Any BLPU feature that differs from OS MasterMap by 20cm or less will automatically be adjusted to match the OS MasterMap data. If BLPU features are more than 20cm apart their geometric shape will not be adjusted. In fact, a difference of more than 20 cm is often valid as not all BLPU features actually coincide with all OS MasterMap features.

## Matching up to OS MasterMap

Even though the geometric shape of the feature is not corrected for differences larger than 20cm, topological information is still calculated and stored. This means the features can be analysed 'topologically' to find out adjacency, connectivity and containment relationships. It is now very simple to identify exactly where anomalies occur and to highlight them for further analysis. Another benefit of topological analysis of data is that it is significantly faster than standard spatial analysis because no heavy geometric computations are required.

Other types of analysis that were not previously possible, such as finding holes in the data, are now achievable using the topological queries. This allows LBE to track down inconsistencies that may otherwise have gone unnoticed. As well as being fit for use within a single database, the data will also be ready to be linked up with national datasets within NLIS (National Land Information Service), the NLPG (National Land and Property Gazetteer) and the NSG (National Street Gazetteer).



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