



GREAT BRITAIN - ORDNANCE SURVEY

Automation of a national vector and raster dataset



“Using COTS, in just 11.5 days, the automated process takes over 450 million features from large scale source data and produces a finished, national edge matched 1:10 000 scale premium product in several formats.”

David Henderson

Managing Director,
OSGB

“The fact that Ordnance Survey can now produce an update of the entire country, in one automated process which takes less than 12 days is remarkable. One person can go in and press a single button to kick the process off to generate all four different types of product; it was unheard of a few years ago. This is cutting edge and leading the way with map production.”

David Watkins, GIS Product Manager, ESRI Inc

“I mean it’s just impressive what Ordnance Survey is doing here. The edge matching for a national dataset in five hours. That would have been impossible two years ago, it’s just awe inspiring.”

Mark Wigley, GIS Consultant, ESRI Switzerland



Ordnance Survey has automated a national scale dataset, with the ability to update nearly half a billion features in less than 12 days. The business benefits include consistency, currency and improved analytical properties.

The development team applied techniques learnt when creating an inferred Land Parcel Polygon workflow, to Britain's 1:10 000 scale contextual and analytical mapping product, OS VectorMap Local.

The Raster product is designed to be a backdrop map for GIS, websites, mobile applications and print and features individual houses, the line of garden fences and more detailed outlines of larger buildings. The Vector product is made available for end user analytics and styling customisation.

Country: Great Britain
Organisation: National Mapping Agency
Customer: Ordnance Survey
Challenge: To increase efficiency in producing a national backdrop mapping premium product
Solution: Automated production of a national 1:10 000 dataset in both vector and raster formats



The challenge

- A large automated production flowline, starting with 450 million features.
- To improve the analytical properties of OS VectorMap Local, vector tiles need to be created as 'seamless' data ie not 'clipped' to tile edges
- To reduce the reliance on manual input or editing throughout the production process.
- To improve production processes using COTS only with no bespoke development which previously created issues with maintenance and integration.
- Retain Ordnance Survey's cartographic excellence by producing a premium product, focusing on label placement.
- Develop a framework process which could be re-used for other products.
- The large-scale source data needed improvements to be able to support an automated process, for example improved data on the geometries of named extents to enable automated label placement.



Manual production output

The solution

- The process generalises 450 million features at 1:1 250 scale into 2.3 million at 1:10 000 scale within 4 days.
- These 2.3 million features are geo-processed and matched across partition edges.
- In order to process the huge number of features, it was necessary to use parent and child process to partition and process the dataset through cloud based distributed parallel processing.
- The development team worked closely with the product management team to understand customer needs, and by small changes to product schema and specification, and feature depiction it led to improved quality, consistency and usability.
- The team worked with Esri's Maplex Label engine development team to turn around hotfixes and agreed enhancements to improve label placement for this product and future products.
- Quality certification is run automatically after each stage to ensure processing has run as expected.



Automated production output

The benefits

- 20 year old legacy systems were decommissioned creating business efficiencies in year.
- The currency of the product improved from an average of 3 years across the product tile set using the previous manual process to a consistent 3 months across the national product.
- Delivers consistency of content with other contextual mapping products including OS VectorMap District.
- Improved analytical properties of the product from enhanced consistency, edge matching and seamless vector tiles.
- Automated fulfilment of OS VectorMap Local including integration of invoice and contract system, making the finished product available to customers in just 17 hours after completion of the production.
- The process has freed up a dedicated team of cartographers to work on other production.
- Reduced hardware and support costs through distributed processing in the cloud.
- Use of COTS software removes the cost of developing and maintaining inhouse bespoke capability.

To find out more, please contact us using the details below.

Ordnance Survey provides consultancy and managed technology services in a wide range of areas including data modelling, strategy and vision, geomaturity assessments, geographic information system roadmaps and providing support for major national events.

Presence in United Kingdom, United Arab Emirates, Bahrain and Singapore.

United Kingdom: **+44 3456 050505**

United Arab Emirates: **+971 5045 17943**

Singapore: **+65 8497 1034**

Email internationalenquiries@os.uk

Twitter [@osb2b](https://twitter.com/osb2b)

Website www.os.uk/international