



European Union Satellite Centre (SatCen)



Client:

European Union Satellite Centre

Sector:

Space and Defence

Benefits:

- ▶ Faster integration of different sources of vector data via automation
- ▶ Increased efficiency within Geospatial Data Quality Workflow
- ▶ Easier and faster access to accurate daily reporting
- ▶ Increased efficiency of the data transformation and importation process

SatCen sought a Geospatial data solution that would allow implementation of an efficient Quality Control workflow. Using business rules, 1Spatial were able to provide a solution that automated the data transfer process from multiple sources into SatCen's standardised Data Model (SatCen DD).

Challenge

The EU Satellite Centre supports the decision making and actions of the European Union in the field of Common Foreign and Security Policy (CFSP), in particular Common Security and Defence Policy (CSDP), including European Union crisis management missions and operations, by providing products and services resulting from the exploitation of relevant space assets and collateral data, including satellite imagery and aerial imagery, and related services.

SatCen's products include Geospatial Intelligence (GeoInt) reports, where vector generation supports the analysis of activity in specific locations, and Geographic Information System (GIS) analysis, which is used for creating map products.

This wide range of SatCen products results in inconsistent vector output, which varies greatly depending on how many object classes and vector features are generated.

A stricter quality control process was therefore necessary for some products, such as a transport network feeding a route calculation solution. In contrast, such a level of verification was not necessary for a standard quality control (QC) process.

Methodology

1Spatial has implemented a service that validates, enhances (where possible) and automatically integrates the vector data produced by SatCen or obtained from external sources in the SatCen data model and database.

The Validation Service automatically processes SatCen rule sets for different vector data products and was developed using 1Spatial's 1Integrate solution and implemented in the secure SatCen environment.

In parallel, 1Spatial implemented another part of the project to transform the OpenStreetMap data to the SatCen data model, using Safe Software's FME software.

Three consultants and a project manager worked on this project using the agile methodology. SatCen has also developed a master data file set, concerning the validation rules to adopt and implement in the 1Integrate solution.

These rules particularly concern topology. Layers created by SatCen or by third parties for external geospatial data production projects must comply with topological rules that should respect, for example, the

following principles:

- Points representing entities in the same location must overlap
- Points related to a line or contour of a polygon must overlap the line or contour
- Polygons representing complete land use must cover the entire area of interest covered by the product
- Layers representing a land use function cannot overlap
- Polygons can only overlap if they are logically within each other (e.g. the terminal building may overlap at an airport)

The rules were created and tested based on representative examples and via JIRA, SatCen then validated them.

“ 1Spatial has clearly demonstrated how 1Integrate and 1Integrate for ArcGIS can better support our QC workflow by enabling flexibility thanks to the ability to define, implement and automate different Quality Control Levels ”

Lucio Colaiacomo, Chief Technology Officer at Satcen

In total, more than 450 validation rules have been created, as well as the necessary corrections and reporting. SatCen will soon provide an extension of 1Integrate, via the Data Gateway. This web interface will allow external data providers to load their own data and run the rules created for the project. They will then be able to validate the quality of their data before sending it to SatCen.

SatCen will then perform additional checks, integrations or corrections via 1Integrate, as well as visual controls in ArcGIS Pro with the help of 1Integrate for ArcGIS Pro.

“ We are delighted that this project has been delivered in due time, and the results demonstrate the power of our solutions and expertise in validation, improvement and integration of big geospatial data. This contract again demonstrates our presence and expertise in the Space & Defence market. ”

Raoul Penneman, Business Development Manager at 1Spatial.

