

## Client

Well-known European manufacturer of automotive infotainment, multimedia and navigation systems

## Industry

Automotive, Navigation systems

## Business Challenge

A multinational Navigation Systems manufacturer was looking for a partner to develop a set of algorithms to support 3D digital map compilation process. Customer expected rapidly developed algorithms for processing and visualization of major types of 3D objects required for digital map compilation.

Main business requirements included:

- High optimization for limited hardware resources
- Validation and comparison of algorithms
- Visualization verification

## Solution

In order to address the client's requirements, Luxoft developed the following algorithms:

### Triangulation

An algorithm of triangulation of different kinds of surfaces has been implemented by our team. All 3D/2D objects, which are to be deployed into target database, should be triangulated to match restrictions of limited HW resources, namely to be fast rendered on targets.

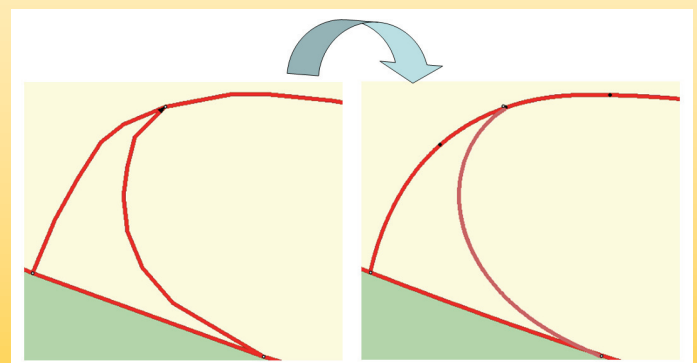
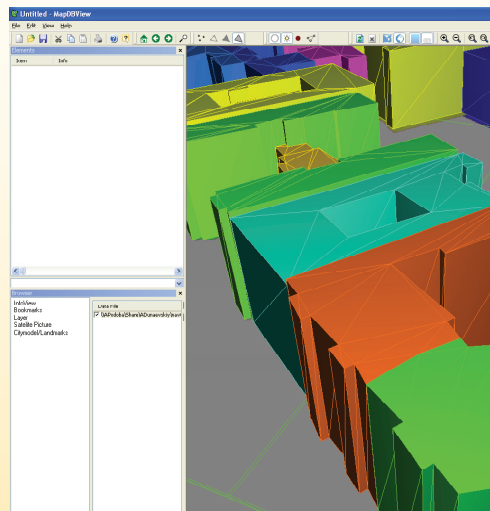
### Smoothing roads

Our team developed algorithm of smoothing roads based on clothoid curves.

Actually, a lot of roads in Europe were constructed in form of clothoid curve. Thus, the smoothing of roads returns the roads their original look

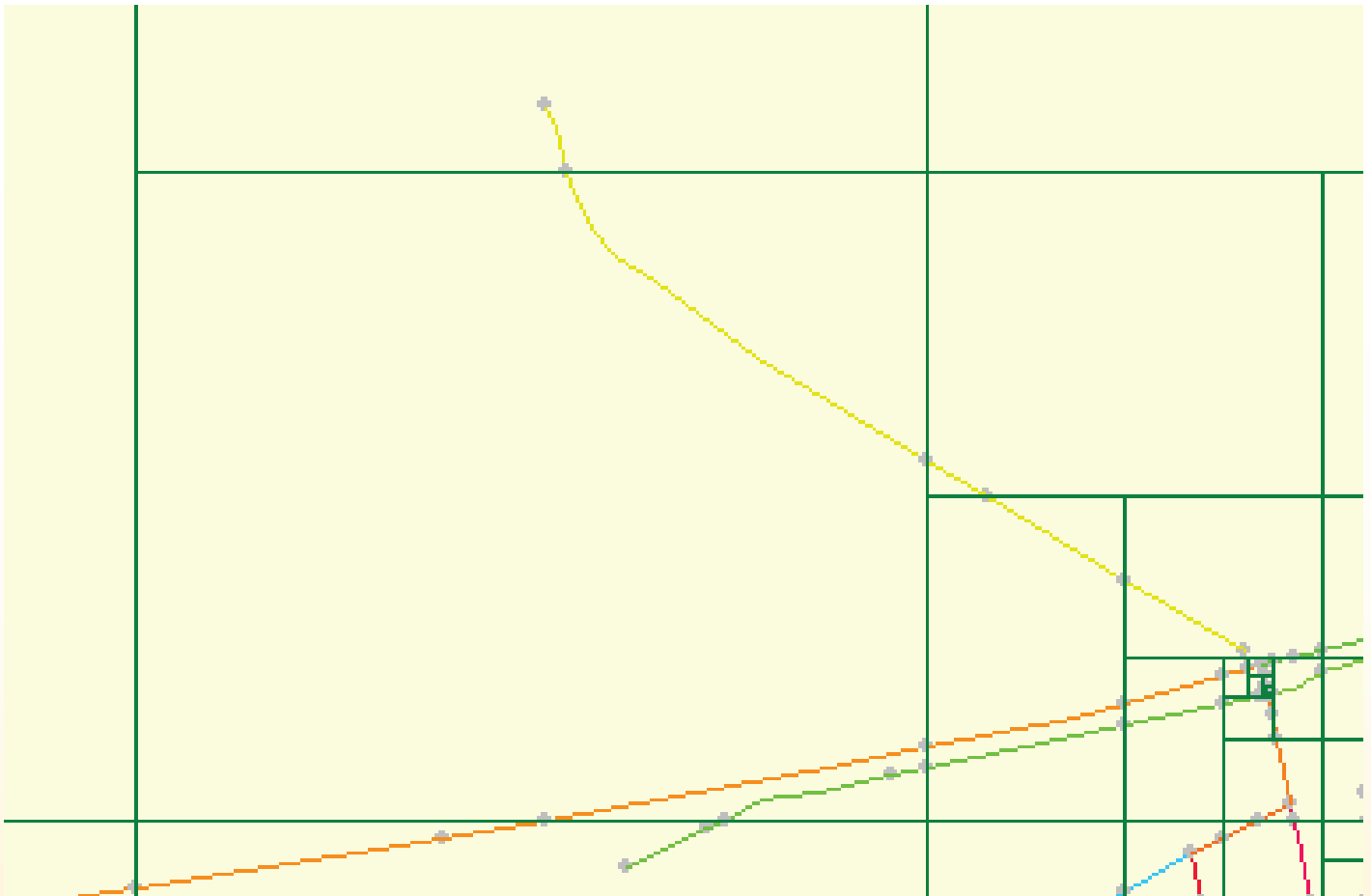
## Technology Utilized:

- C/C++ (Visual C/C++ 6/2005, JAM)
- GDF (Geographic Data Files)



## Clipping and tiling maps

Luxoft team worked on a complex task of partition of a navigation map to a set of tiles, which contain specified regions of the Earth and their size is limited not to exceed specified amount of bytes. This allows to sequentially load the databases at target device in runtime, e.g. using wireless internet access.



## Benefits

Luxoft provided a high quality solution that brings the following benefits to the client:

- Complete, flexible and extendable solution
- Development of the new complex algorithms for 2D/3D visualization and improvement of the existing ones
- Implementation of complex scripts, which perform all the required steps for the creation of databases for the target head units

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