Combining Spatial and Traffic eContent for Regions in Europe

COSTE

Programme: eContent (http://www.cordis.lu/econtent)

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Partners:
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Over the last years, the use of combined geographical, land and traffic digital data has attained an increasing relevance. Thanks to the availability of advanced IT solutions, such as e.g. internet and web services, on-board computers, etc., these type of digital contents are more and more becoming a key factor for the realisation and operation of the Intelligent Transport Systems (ITS).
For instance, the combined use of digital maps and dynamic traffic information is a fundamental requirement of today's' traffic management systems. On the one hand, this enables evaluating the conditions of the transport network and taking appropriate control decisions, on the other hand, this allows providing road users with updated information about traffic and mobility. However, this is not the only sector which depends in a fundamental measure on the availability of combined geographic, land and traffic digital contents. These are relevant for several other applications and services, including, for instance: land and resource planning and use, planning and operation of infrastructures, Location Based Services (for e.g. tourism, commerce, etc.), event management, emergency management, etc.

Despite such relevant implications, the digital maps available today are mainly providing geographical, spatial and road network related information, without mobility and traffic related data. Moreover, they hardly provide suitable tools and methods to facilitate the combination of contents from these two sectors. In most cases, the different digital contents are owned by Public Administrations, are organised according to different data models often incompatible each other, are hosted by IT systems provided with different data access interfaces. All of this, limits severely data accessibility, makes data combination and integration difficult and costly and represents a main barrier to the use and potential exploitation of the relevant digital content asset owned by the public administration.

OBJECTIVES

Financed under the EC eContent initiative, COSTE (**Combining Spatial and Traffic eContent for Regions in Europe**) is a *Definition Phase* project aiming at facilitating the access to, the use and commercial exploitation of geographic and traffic digital contents available from Public Administrations.
In order to achieve this, COSTE has investigated and defined suitable **methods**, **operational procedures** and **techno-logical infrastructures** to support **on-line** data access, production and exploitation of digital maps combining data from the two sectors.
The interest in these fundamental issues at the core of the **digital content value chain** is common to all European countries, as of general interest are the implications on different sectors of engineering and management of traffic, mobility, transport, land use and citizens oriented services.

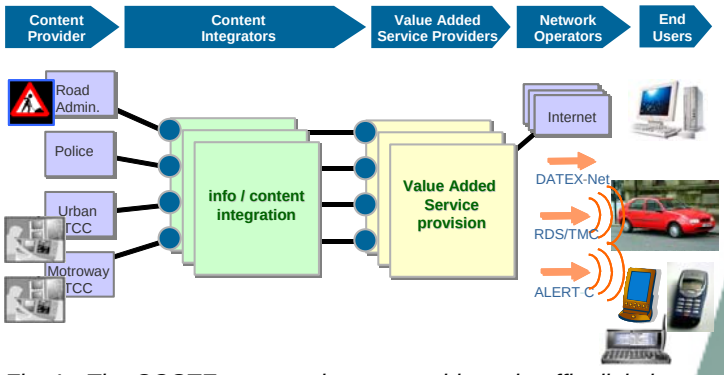

Fig. 1 - The COSTE context: the geographic and traffic digital contents reference value chain.

PROJECT AND RESULTS

COSTE is based on the fundamental collaboration between Public Administrations and private organisations and on the possibilities to share procedures and technological infrastructures to support this collaboration.

In order to allow this, COSTE addresses the requirements and needs of different user categories potentially interested in the use of combined geographical and traffic contents and digital maps, and of the related e-services. The target user categories investigated in the project include: (1) the **Public Administrations** themselves, with their various divisions and services, which can play the role of both content providers and service users within the content value chain, (2) **private organisations**, including professional and value added service providers, (3) ultimately, the real **end-users** of the combined digital contents, i.e. the citizens and the public at large

With reference to these user categories, the COSTE *Definition Phase* has investigated, designed and assessed through prototype development a novel distributed IT architecture (**Reference COSTE Infrastructure**) combining a set of on-line, web based e-services (**CosteServices**) to:

- support on-line data access through standard methods and interfaces,
- enable interoperability among distributed data sources over the internet – i.e. different Web Map Servers (WMS) and Web Feature Servers (WFS),
- allow the production and exploitation of combined, geographic and traffic digital maps (**CosteMaps**) and the implementation of value added services.

The end-product of COSTE is a novel technological platform and a largely distributed e-services architecture, as well as the related methodologies and management procedures. This will ultimately enable the sharing of digital geographic and traffic contents in a largely distributed network environment and their **interoperability** through access to the content servers which will conform to the specified COSTE data models, interfaces and services.

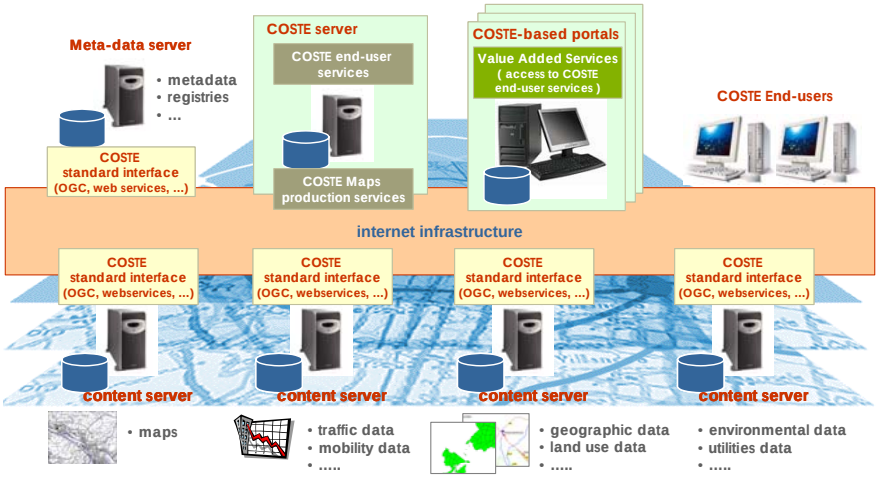

Fig. 2 – COSTE reference architecture.

REFERENCE SITES

COSTE has involved a tight cooperation between IT solutions suppliers and Public Administrations acting as digital contents providers. In order to root the analysis and specification work to the typical European context of geographic and traffic digital contents, two reference sites have participated to the research: **North Rhine - Westphalia Region**, in Germany, and the **City of Genoa**, in Italy. Both sites are largely representatives of the data and operational situations as well as of the common requirements that can be found in most land and transport systems in Europe, along the main interurban transport corridors and within mid and large size cities.

The investigation, requirements analysis and specification work was conducted in parallel in the two sites, and two small-scale prrof-of-concepts have been realised (see COSTE website at: http://www.costeweb.com). The design and operational solutions have been also discussed and validated through consultation of a **User Group**, involving both public and private organisations during the various phases of the Definition Phase project.

STANDARDS

COSTE design is largely oriented to exploitation of the main technologies and standards in the internet and web services world, ensuring conformity with the main standards and EU initiatives related geographical and traffic data models, architectures and e-services. These include: the digital road map Geographic Data File (GDF) model, OGC (Open GIS Consortium) specifications for geodata interoperability computing standards (i.e. ISO 19100 Geo- Information / Geomatics standards), the European initiative INSPIRE (INfrastructure for SPatial InfoRmation in Europe), widely used XML-based languages such as GML (Geography Mark-up Language).