TEGIS OR INTEGRATED MANAGEMENT OF ROMANIAN POWER TRANSMISSION NETWORK

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INTRODUCTION
With the purpose of the full availability of the technical information within the whole Company and also the purpose to increase the operation efficiency, Transelectrica implemented a Geographical Informational System, named TEGIS. The system, unique and common for all the eight Branches and also for Headquarters, mainly supports the need of specific information for Asset Management Division.

THE CLIENT
TRANSELECTRICA is the Romanian Transmission Power Operator and the System Operator and is operating, maintaining and developing about 9000 km OHL (220-750 kV) and 78 substations with 138 transformers (~35500 MVA) in 8 Transmission Branches.

THE PROJECT
TEGIS was implemented through a PHARE funded project, which started in March 2003 and finished in September 2004. The overall objective was to improve the operation of the power transmission system. The specific objectives were to cover the operations of technical departments, to integrate the processes and all associated technical information and to provide data for facilities management and land properties monitoring, for outage management systems and for owned equipment.

The project deliverables were: hardware, software, background map and related support services (analysis, implementation, training etc.).

TEGIS SYSTEM ARCHITECTURE
The system, in a centralized architecture for all 8 branches and headquarters, includes servers, PCs, peripheral equipment and a GPS station.

TEGIS USERS
TEGIS has some general functionalities: friendly GUI, visualizing controls, editing functions, database validation, query and analysis, thematic maps, export and output facilities, reports wizard. The specific functionalities, which are focused to solve the specific issues, are: network tracing, network analysis, work order management, outage management.

These functionalities are to be used either by the professional users, or by the ‘light’ users, accordingly to their needs, in order to answer to the current, repetitive questions or to the complex ones. The professional users operate specialized software (GeoMedia and GeoMedia Professional, Coswin, special developed modules and interfaces), and the ‘light’ users (at the management level) have a web application, based on GeoMediaWeb Map, with customized views, themes and reports.
TEGIS DATA

There are two main categories of data used by TEGIS:
- geospatial (general data – as the background map and detailed data – as those which are coming for topo-cadastral measurements for OHL and substations) and graphical (drawings, schema etc.);
- technical/alphanumerical, which represents technical or functional characteristics of equipments.

TEGIS CHALLENGE

The main technical challenge was the electric model of the substation, which combined the single-line diagram (a schema) with the topo-cadastral drawing (a real plan) in order to offer a habitual view for power engineers for network tracing and simulation purposes. There were used clear rules of association and connection between electrical equipment in order to obtain an accurate electrical model.

TEGIS FUNCTIONALITIES

The visualizing functionality was set up according to the user background: power engineer or patrimony engineer.

The ‘light’ user interface provides a lot of information in a comfortable manner, easy to use for the managers, which obviously have not to be IT specialists.
The specialized functionalities developed in TEGIS for professional users are:
- work order management;
- outages management.

These applications are able to submit valuable details related to technical characteristics, work orders, outages, failure history, measuring reports, maintenance plan etc.

TEGIS could also provide resources and cost information related to the works done or to be done.

Moreover, TEGIS will be interfaced with Transelectrica Management Information System, through fixed asset codification.

The query result could be presented as a table, as a report, on the map or as a thematic map, and the report could be customized according to the local needs.
LESSONS LEARNED

During the implementation the implementation team learned some very important lessons:

1. DATA are essential for the system because the decision quality is precisely linked to the data quality; so, the data have to be permanently verified and updated in order to be kept accurate.

2. USERS are valuable for the system; they have to be not only trained but also educated to use all the power of TEGIS.

3. The INVOLVEMENT of the MANAGEMENT makes the success sure. It's a very significant implementation success factor for an IS that is going to change the existing practices in the Company.

BENEFITS

TEGIS comply with the Open Geospatial Consortium standards and regulations, has an open architecture, so the data are accessed and manipulate in their native format. Data could be read and integrated from various IS, and also could be exported to other GIS or CAD systems.

The Oracle Database allows being stored extensive amounts of data; in addition, allows extensions, so when the users will become experienced, TE could improve TEGIS with new data and functionalities.

The existing data (topo-cadastral and also alphanumerical) became accessible for entire Company under an friendly, easy-to-use interface.

The repetitive and dull tasks, now automated, will have a better quality output.

CONCLUSIONS

After all the data will be fill-in, the management will have the suitable tool to make fast and efficient complex analysis. The intuitive visualisation of the results of complex queries and of large analysis, as thematic maps instead of tables, offer to the staff a decision support reliable, complete, on time, accurate, and this is the great achievement of TEGIS.