

Environment

EU Compliant Environmental Information for Authorities and the Public

Ministry of Environment of Lithuania (MoE)

As a member of the European Union, the Republic of Lithuania has to implement EU requirements in the environmental sector and to meet the corresponding reporting obligations.

Within the context of the EU-financed Phare program, FICHTNER CONSULTING & IT (FCIT) was awarded the contract to design and implement an environmental information system meeting the requirements of the EU and of the Lithuanian Government and enabling public access to environmental information.

ICISEM (Integrated Computerized Information System for Environmental Management) integrates data from the sectors air quality management, surface water and groundwater protection, industrial pollution control, radiation protection and chemicals. These data are provided via a portal, specific for different kinds of users. With ICISEM, the MoE has a freely configurable, modern information system to support an efficient environmental management. The system serves as the national information hub within the pan-European environmental information and monitoring network.

Client

After Lithuania regained independence in 1990, the Ministry of Environment was gradually built up. Today, it comprises subordinate authorities such as the Environmental Protection Agency with 8 regional departments, the Marine Research Center and the Lithuanian Geological Survey.

Lithuania stretches across an area of 65,000 square kilometers, with the Courland Spit – a unique area of unspoiled nature – facing the open Baltic Sea.



Situation

Most of Lithuania's existing information systems in the various environmental sectors were developed independently and without taking into account the need for integration. They are based on a variety of technologies – most of which do not meet current and/or future requirements. Moreover, they are not compliant with EU standards.

The existing systems required re-engineering and integration, using modern information technologies to make them future-proof.

Objectives

ICISEM shall strengthen the MoE's capability in management of environmental quality and in fulfilling reporting obligations. In detail:

- Effective management of environmental information from the various sectors

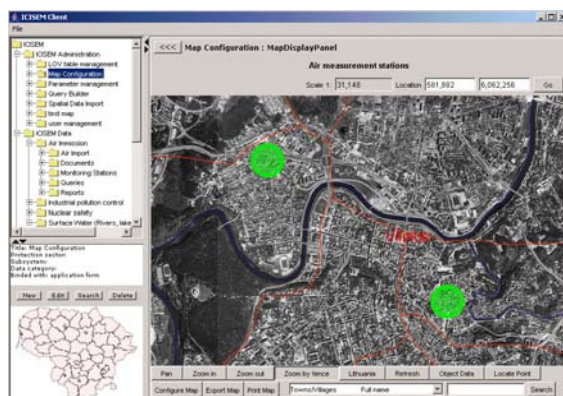
- Meeting reporting obligations on the status of environmental quality as demanded by the EU, other international organizations, the public and Lithuanian institutions working on environmental monitoring and analysis
- Elimination of existing deficits concerning data capture, data processing and provision of data to experts, the public and environmental institutions
- Integration of environmental data from different protection sectors
- Local online capture and evaluation of environmental data
- Flexible configuration of analysis functions

Activities of FCIT

FCIT covered all project phases, including requirements definition, specification, design, implementation as well as installation and training.

ICISEM integrates the environmental sectors air quality management, surface water and groundwater protection, industrial pollution control, radiation protection and chemicals. The system provides comprehensive and flexible functions, such as

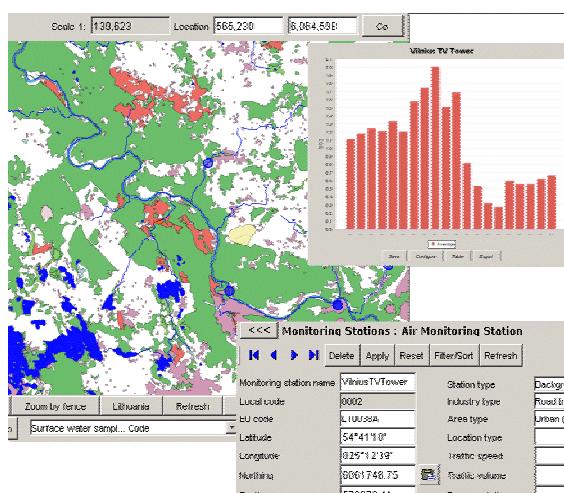
- Integrated data model across all environmental sectors with fully integrated spatial data
- Metadata in accordance with ISO 19115, search by metadata
- Online input, access and analysis of environmental data



- Data capturing functions, interfaces to legacy systems (partly automated)
- Query builder, including various aggregation and statistical functions, pivoting and time series functions

- Flexible presentation of environmental data in tabular form
- Freely configurable diagrams
- Seamlessly integrated and configurable map view of environmental data
- Complex reports via report generator
- Administration of all kinds of documents
- Administration of physical units
- User and role administration

Users are authorized by configurable roles allowing tailored access protection on functions and data.



ICISEM was developed in a J2EE 3-tier-architecture in Java, based on the Oracle Application Server and the Oracle database 10g. Map functionality was implemented using FCIT's component GeoXtension on Oracle Spatial. JFreeChart is used for the diagram functionality.

To support the various areas of application, both a browser client and a rich client have been implemented. They use the same data basis and business logic. The rich client is distributed using Java Web Start technology.

Conclusion and Outlook

With ICISEM, the MoE in Lithuania possesses a modern, integrated, configurable IT system to support environmental management processes. The system helps to improve the quality of the reports to the EU and enables public access to environmental information. ICISEM can easily be enhanced to include other sectors such as waste, noise, nature conservation, soil or be adapted to modified EU directives.