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IMPLEMENTING THE EXPERT SYSTEM INDIGAU®

WITHIN THE SCALE OF THE METROPOLIS OF LYON

altereo
éveilleurs d'intelligences environnementales®

TOWARDS AN EFFICIENT ASSET MANAGEMENT SYSTEM

The Metropolis of Lyon was one of the active partners of the INDIGAU research project, financed by the National Research Agency (ANR) and led by the INSA of Lyon and G2C Ingénierie (subsidiary of Altereo) between 2008 and 2010.

Towards the completion of this research project, which gave birth to the Indigau® expert system, the metropolis expressed the desire to deploy this solution in order to optimize the management of assets relating to the sanitation network.

The project, led by G2C Ingénierie, thus aimed to implement the Indigau® application and to ensure that the agents become capable of autonomously using the application.

The main expectation of the Metropolis of Lyon included the capacity for processing large quantities of data in a homogenous manner in order to perform an initial screening of undamaged sections (classes G1-G2) and those in poor or very poor conditions (classes G3-G4). The goal:

- *classify immediately, a substantial number of inspections requiring no further actions,*
- *identify the sections requiring follow-up or more detailed study,*
- *alert the relevant departments on the matter of the most vulnerable sections.*

INNOVATIONS

▶ **Indigau® is a SaaS (Software as a Service)** and is available in the form of a complete Internet service comprising of software modules.

▶ It is an innovative expert system for automatic inspection of CCTV for large numbers of sanitation networks and has provided decision-making support towards the rehabilitation of sanitation networks. The automatic scoring model allows for the evaluation of the state of all of inspected sections in a non-biased manner, resulting in the comparison of the sections and the prioritization faster and more reliable.

▶ Within the Metropolis of Lyon, the Indigau® expert system managed to process 260 km of inspected sections within a few minutes.

STAKEHOLDERS

▶ **The Metropolis of Lyon:** a unique territorial collectivity created through the fusion of the Lyon Urban Community and the Rhône General Council, and comprising of 59 municipalities that make up the territory of Greater Lyon.

KEY FIGURES

- 2,800 km of networks
- 700 km of accessible networks
- 2,100 km inaccessible networks
- 123 grit chamber basins
- 200 drinking water basins
- Over 2000 filter wells
- Asset:
  - Estimated value 4-8 B €
  - 0.5%: rate of renewal

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IMPLEMENTATION

▶ As part of preventive measures for network asset management, the Metropolis of Lyon has undertaken CCTV inspection campaigns, adhering to the EN 13508-2 standard and supporting the non-accessible sanitation networks, at an average rate of 40 km/year.

▶ The commercial version of the INDIGAU® expert system has been implemented at the scale of the Metropolis of Lyon since the beginning of 2012. It is available via a web platform and operated by the operations service of the Water Directorate.

▶ This service manages a total of 2800km of sanitation networks within the territory of the agglomeration, of which 2,100 km is non-accessible.

▶ 12%, or a total of 260 km of networks, of the non-accessible asset has already been inspected according to the EN 13508-2 standards.

The underlying methodological approach in the programming of rehabilitation works for the Indigau® expert system is based on components 5 and 6 of the RERAU (Rehabilitation of Urban Sanitation Networks) reference guide.

The CCTV inspections need to be carried out according to EN 13508-2 standards, which codifies the observations and report formats, introduces the notion of electronic file exchanges for all information on the inspections. This facilitates computerized interpretation of the data – already one of the primary functions of the Indigau® system.

RESULTS

/// 300 km of CCTV analyzed

/// 17% (51km) classified as G3, 5% (14km) as G4 due to 'infiltration'

/// 14 km of works

FINANCIAL DIMENSIONS OF THE PROJECT

➜ **Project total: 50,000 €**

/// The efficiency of the system and the significant amount of time saved contributes directly towards the return on investment of the system.