



Linear infrastructure efficiency improvement by automated learning and optimized predictive maintenance techniques

INFRALERT Deliverable D1.2

Summary Sheet

DELIVERABLE TITLE:

D1.2 Set up of case studies and Evaluation Framework

WORK PACKAGE:

WP1. Project framework and requirements

- **T1.4.** Definition of case studies
- **T1.5.** Evaluation framework

Deliverable Leader:

CEMOSA

Contributing Partners:

Fraunhofer IVI, Infraestruturas de Portugal, Lulea Tekniska Universitet

EXECUTIVE SUMMARY:

The developments of the INFRALERT project will be demonstrated both in a rail and road systems, with the aim of proving the transversal approach of the system to linear assets in general.

The road demo case is a meshed road network in Portugal under the management of IP. The selected road sub-network comprises several roads in the Coimbra region in centre of Portugal, including roads from Aveiro, Coimbra, Guarda, Leiria and Viseu districts, totalling 539 km. The selected sub-network does not include motorways. It includes Principal Itineraries (IP), Complimentary Itineraries (IC), National Roads (EN), Regional Roads (ER) and Other Roads (EM), which are under IP jurisdiction. Considering traffic levels, it is also found heterogeneity among the chosen sub-network. Besides freight transport, the selected road-subnetwork links several important urban areas at a national and regional scale, such as the municipalities of Coimbra (143.396 inhabitants), Aveiro (78.450 inhabitants) and Viseu (99.274 inhabitants).

The management system currently used in this road network is SGPav (IP Pavement Management System). The software tools that allow the access to the information stored in the database could be grouped in 2 types of modules: i) End User Modules for generalized access to all IP staff; ii) Support Modules for data management.

The railway demo case is a rail corridor in Sweden under the management of TRV: the Iron Ore Line (Malmbanan), in northern Sweden. It starts in Luleå and ends in Narvik in Norway. The traffic on the Line consists of both passenger and freight trains. The freight traffic consists primarily of heavy haul trains with axle loads of 22,5 tonnes and more. Running heavy-haul railway traffic in a mountainous area north of the Arctic Circle is a challenging task. The trains operate in harsh climate conditions, including snow in the winter and extreme temperatures ranging from -45°C to +25°C.

In this railway corridor, the management system is BIS, tool developed by Trafikverket. BIS is used to

store and retrieve information about runway related facilities and events. BIS is based on a reference system, a description of the track system of nodes and links, and a system of classification, areas and distances. It is searchable via a graphical user interface based on the Sweden map. BIS is connected to a number of Swedish Transport Administration systems, such as Ofelia, Bessy, Dove, Opera and the Tigris.

The relevant database in the selected road and railway demo cases have been made available for the INFRAALERT partners in order to enable the technical developments in WP2 to WP7, which means the accomplishment of the Milestone MS1 of the project.

With the aim of evaluating the impact of the INFRAALERT system in capacity, cost-efficiency and performance, a set of Key Performance Indicators have been defined. This evaluation framework is structured as follows:

- External level, where the KPIs are set by the Infrastructure Manager (general targets)
- Internal level, where the KPIs are pre-defined and auto-adjusted by the INFRAALERT system to meet the general project targets (capacity, cost efficiency, performance).

The evaluation framework set out in the INFRAALERT project will not replace the KPIs in existing AMS, but it will be focused on those parameters that the project aims to improve (capacity, cost efficiency, performance). Moreover, INFRAALERT will only focus on those KPIs which the INFRAALERT system will be directly able to assess which will be mainly derived from the infrastructure auscultation data and maintenance actions.

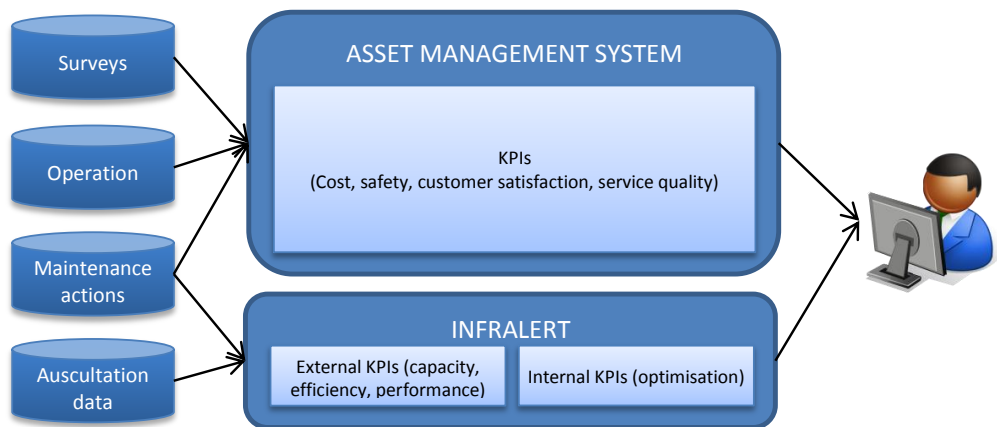


Figure 1. KPIs managed in AMS and INFRAALERT

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