



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

## INFRALERT Deliverable D2.1

## Summary Sheet

### DELIVERABLE TITLE:

**D2.1 Data ontology and architecture. Abstract data types definition. Data localization architecture.**

### WORK PACKAGE:

#### WP2. Data Management

- **T2.1.** Data Ontology: abstract data types definition
- **T2.2.** Data storage architecture and its consistency for feeding the eIMS
- **T2.3.** Localisation data: how localisation data are associated to the measurements

#### Deliverable Leader:

DMA

#### Contributing Partners:

LTU, IP, Regens, Universidad de Sevilla, Fraunhofer IVI, CEMOSA

### EXECUTIVE SUMMARY:

WP2 – Data Management is one of the pillars of the INFRALERT project. Its final objective is the creation of a Data Farm able to store all types of data coming from linear infrastructures, paying particular attention to railways and roads, on which the INFRALERT platform will be firstly tested.

The Data Farm will have to overcome some critical issues and problems strictly related to the project's needs, such as the necessity to store big dimensional data and very different data types coming from various linear infrastructures.

Part of the solutions to these problems will be offered by the use of a relational database (RDB) because it provides the optimal answer to the INFRALERT Data Farm needs.

This deliverable analyses the problem of Data Storage, and the concept of the innovative Data Farm, capable to solve storage-related issues without compromising speed processes is clearly exposed .

Heterogeneity of data is one of the issues that INFRALERT Data Farm is facing: explanations on how and why the creation of abstract data types offer a solution to such problems is also given.

The focus then shifts to existing standards in linear infrastructures schema representation and classification of all network-related objects, which is a crucial preliminary work before the creation of abstract data types. RailTopoModel, OpenStreetMap and OpenRailwayMap offer a base and are a good starting point in relation to the previous issues. These are analysed in both their strength and weak points.

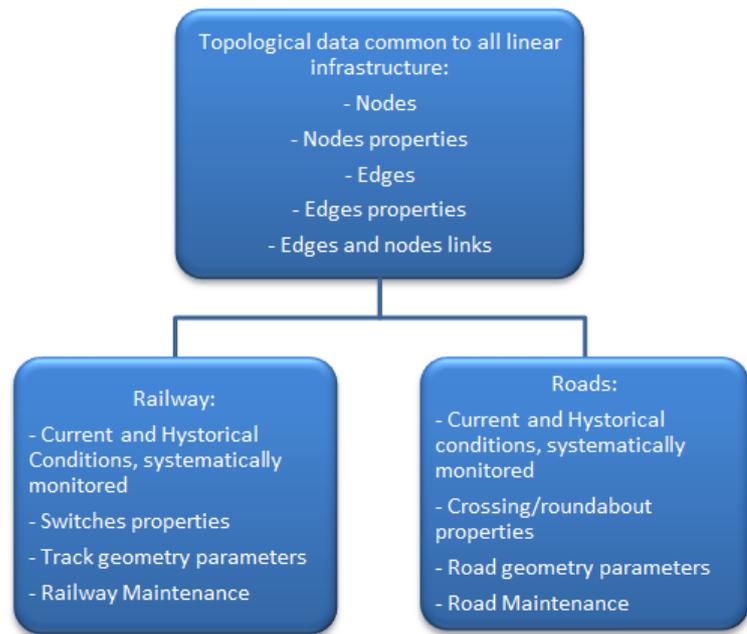
Even though railways and roads have many differences, it is possible to identify common concepts and network related objects (that will have the same schema representation), mainly because they are both linear infrastructures. It is competence of this deliverable to highlight such concepts and objects, which will be of great importance for the INFRALERT project aims, especially for the creation of the Data Farm.

Data localisation issue, which plays a crucial role within WP2, is analysed as well and the most important methods and attributes for an optimal localisation is identified.

As there are many objects which constitute both railway and road infrastructures, a proper classification of them is needed.

Every network-related object is named asset, they will be organized in different levels and a hierarchical representation of such assets is given.

One of the aims of this deliverable is the identification of the best possible way to access data stored in the Data Farm. Moreover, the INFRAalert DB architecture and all the layers that constitute the platform are described as well.



**ACKNOWLEDGEMENT:**



This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 636496.

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