

Infrastructure Management in Portugal: A Survey

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Summary

This study has the objective of gathering information over infrastructures' management systems used by the main infrastructure operators in Portugal. The typological diversity of infrastructures encompassed in this study is wide, from highway, airports, railways, subways, dams, and seaports operators. The most relevant topics were approached in face-to-face interviews with the people in charge of the infrastructures management. The topics approached ranged from organization, protection and accessibility of information in the management system, to inspection, maintenance and intervention systems, leading to decision making methodologies with the identification of prioritization systems, as well as environmental considerations, cost analysis and life cycle assessment. In parallel to face-to-face interviews it was carried out an online survey specially developed for inspectors, in which the objective was to gather information about their needs regarding the infrastructure management system when performing the inspection tasks. In this article are presented the results of the study, as well as further considerations of new development topics over infrastructures' management systems.

Keywords: Asset Management, Infrastructure Management Systems, Inspections, Monitoring, On-Line Survey.

1. Introduction

Over the last years, the scientific community has been directing substantial efforts in the research and development of tools to support the infrastructures management. The main concern is to improve the existing management systems to streamline the management process, with the overall objective to obtain significant efficiency earnings. Currently, this thematic is transversal to all kind of infrastructures and management models, being designated by Asset Management. In a broad sense, Asset Management is the application of a systematic process of operation, maintenance, and upgrade of assets in a sustainable way (as financial, social and environmental) regarding its inherent life cycle.

In fact, civilizations have always relied in infrastructures for the development of its structural functions, like the transports, trade, or health systems, among others. For example, in Europe the Romans have built a vast empire through the construction of roads, bridges or aqueducts, some of them can still be seen in our cities, and these examples can be found all over the world. So, it's not an overstatement to say that this subject assumes critical importance since the development of a country relies, in a vital way, in the optimal function of its infrastructures.

The need to manage infrastructures in an effective way leveraged the development of computerized tools for that purpose. The Federal Highway Administration (USA) has developed the software PONTIS that comprises advanced functions for inspection, preservation, and management of bridges [1]. The software BRIDGIT (USA) is also a management system similar to PONTIS, but with less functionalities. Both are dedicated to the management of bridges, and most of the available software systems are developed for this type of infrastructures. In Europe, each country has developed their own systems, also dedicated to bridge management: "SIB-Bauwerke" (Germany), "DAMBRO" (Denmark), "Edouard and OA" (France), "NATS" (UK), "Brutus" (Norway), "BDOA" (Belgium), "SAFE BRO" (Sweden) [2] and GOA (Portugal). The implementation of artificial intelligent management systems for pavements is a growing trend, mainly applied to highway networks and airports. Examples of such systems are: ROSE (Hajek et al. 1987) developed for Ontario Ministry of Transportation to assist in the selection of appropriate