



Brisa's model for life cycle performance monitoring and decision-making process

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Abstract

The asset management model must allow for visibility across the asset portfolio, enabling a more coherent and informed decision-making process. This topic addresses how the need to improve analytic capabilities and decision support techniques leads to the guidelines of Brisa's Information System Dashboard, covering asset's availability and condition indexes (Asset Monitoring), risk levels and relevant costs key performance indicators.

Keywords: Asset Management System, Asset Performance Monitoring, decision-making process

1. Introduction

As stated in *Asset Management – An Anatomy*, published by the Institute of Asset Management (IAM) [1], “the key to making good Asset Management decisions is acquiring appropriate knowledge and applying this within a robust decision-making framework (...). This means that, when appropriate, consistent decisions must be made at different moments of the life-cycle of an asset and at different levels within an organization such as Brisa: for example, at an asset's operation and maintenance level or at a concession's capital investment planning level.

When, in 2016, Brisa decided to engage on a reflection on their Infrastructure's Asset Management practices [2], it was known that the opportunities for decision-making life-cycle costing optimisation during the design, building and set-up phases were already consumed. In fact, the assets are now at a maturity stage which allows to confirm that good decisions were made at several levels and that investments made on additional structural robustness and more lasting solutions, on earth works, drainage, pavements, and bridges are paying back since the assets went on exploitation,

sustaining the historical low levels of capital and operational expenditures ($TOTEX = CAPEX + OPEX$) being allocated to the infrastructure's maintenance.

However, as assets are getting old, more decisions must be made, balancing whether to maintain, refurbish (adding life / improving performance) or replace the assets. The 2016 assessment shown that some useful data is not being collected during maintenance activities or that, even when collected, it is not always driven by the information system needs or timely available, restraining the ability to improve the asset manager's awareness of their decision's impact and to measure in an analytic fashion the risk/profitability balance.

Thus, it was identified as mandatory to have a source of reliable information on the asset's performance, availability and condition (health indexes), as well as a tool allowing to simulate the impact of today's decisions on the asset's future behaviour and level of risk to support the optimum economic life assessment.

The present paper addresses the Stage-gate decisional model and the Asset Information Monitoring framework, built on the needs of the vision for Brisa's Asset Management System.