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## Software Sensor for Smart Infrastructures (S4i)

### Researchers:

- [Set Informática, Comunicaciones e Ingeniería S.L.](#) [1], [Grupo OHL: Obrascon Huarte Lain S.A.](#) [2], [Auditoriza Diagnóstico de Sistemas S.L.P.](#) [3], [grupo Hypercomp \(University of Extremadura\)](#) [4], [CénitS](#) [5].

Language English

### Description:

The main objective of the project is the correct management of the construction infrastructures by means of the use of sophisticated monitoring and telemetry systems, which are able to continuously evaluate the structural health status of the infrastructures throughout his useful life. This project has proposed the development of a system based on the Sensor Software concept, which analyzes and optimizes the construction, management, operation and maintenance operations throughout the life cycle of an infrastructure, providing information that allows different strategies to be deployed, in order to prolong its useful life and guarantee its safety while offering service.

### Objectives:

- Carrying out a market study and a projection of the application scenario. The aim is to clarify the permanence of the detected need, in order to analyze its coherence and its temporal synchronization, an aspect that requires the market in the short, medium and long term, providing the Consortium with very useful information for forecasting future investments .
- Performing a study of the state of the art of civil engineering applied to auscultation, by collecting the monitored engineering variables and a tour of the different technologies, sequencing them according to their state of maturation.
- Proposing a new methodology oriented to management under a preventive approach rather than a corrective one, throughout the life cycle of the infrastructure, to eliminate the need for destructive tests.
- Developing robust and innovative auscultation systems (software sensors) that allow the intelligent monitoring of infrastructures through the application of neural networks, sensorial technologies and learning algorithms applied to the measurement of control variables.
- Acquiring capacity for continuous monitoring and concentration of data to monitor the KPIs or Key Structural Indicators of the infrastructures to be monitored.
- Acquiring capacity to diagnose the state of the infrastructure throughout its life cycle through the analysis of Key Structural Indicators, increasing the accuracy of auscultation and optimizing the efficiency of the operations and therefore improving of the management.
- Acquiring capacity for early detection/prediction of anomalies or structural damages that affect the behavior specified in the design of the Infrastructure or the level of service requirements.
- Select the most appropriate strategy to deploy in a real structure, according to technical, economic and market criteria.

### Achieved objectives:

[COMPUTAEX](#) [6] has participated in the design and development of a system that allows the intelligent monitoring of infrastructures through the use of technologies such as wireless sensor networks and artificial neural networks. The purpose of the developed system is to detect / predict early anomalies or structural damage in infrastructures and be able to apply it to real structures.

### Funding sources:

Project financed by the Coinvestiga Program, destined to finance the execution of R&D projects by groupings of companies in the strategic areas established in the [V Regional R & D Plan](#) [7] (20142017).

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**Source URL:**<https://web.computaex.es/en/proyectos/software-sensor-smart-infrastructures-s4i>

### Links

[1] <http://www.setici.net/> [2] <http://www.ohl.es/> [3] <http://www.auditoriza.com/> [4] <http://www.unex.es/investigacion/grupos/hypercomp> [5] <https://web.computaex.es/cenits> [6] <https://web.computaex.es/fundacion> [7] <http://doe.juntaex.es/pdfs/doe/2014/1980o/14062175.pdf>