Innovative and affordable service for PC monitoring of individual Cultural Artefacts during display, storage, handling and transport

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Introduction

The conservation of cultural artefacts is strongly affected by environmental conditions (temperature, relative humidity, light, air pollutants), specifically fluctuating and cyclical (short-term) as they can increase considerably the degradation rate of this cultural artefacts.

Preventive conservation (PC) strategies are in charge for mitigating the action of these environmental parameters through the application of different control procedures and appropriate environmental formulations. However, possessing complete environmental information does not allow a definitive assessment of the probable deterioration process that a cultural artefact may have during its exposure to those climatic parameters. For this reason, it is necessary to create a system not only to obtain information on the environmental conditions to which cultural artefacts are exposed, but also to provide predictions of the alteration dynamics of the cultural materials against these environmental parameters.

CollectionCare Objectives

The CollectionCare project, a European Commission's Horizon 2020 funded project, aims to **develop an innovative PC decision support system** targeting the needs of small-medium sized museums and collections. It will integrate current research and technological advances in **monitoring systems (sensor nodes), wireless communications, cloud computing, big data and material and multi-material degradation models** into a single affordable system, in order to suggest improvements in the conservation conditions of the cultural artefacts.

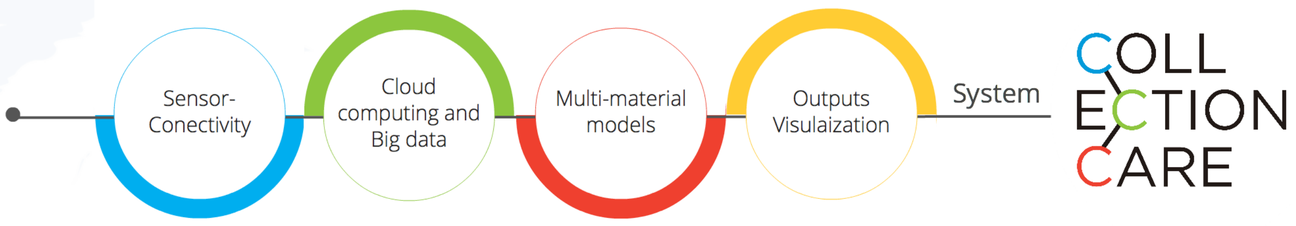

Figure 1. Principal components of the CollectionCare system

CollectionCare system will monitor continuously the environmental conditions for each artefact individually at any place (at display, storage, handling or transport), through an IoT device (sensor node) that is assigned and attached, near or on, to a CH artefact. This information is stored and analyzed in the cloud with advanced multi-material degradation models allowing users to estimate both the evolution of the degradation of the artwork as well as warnings and recommendations to ensure the proper conservation of cultural artefacts in the long term.

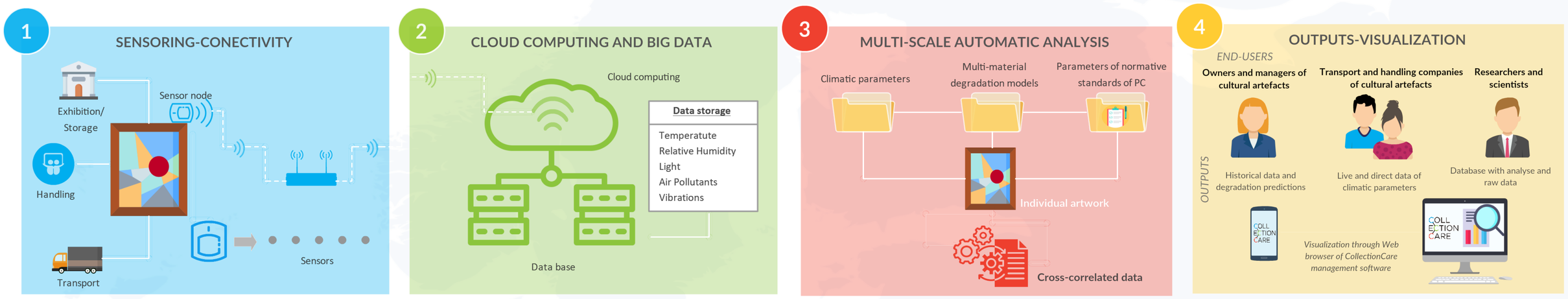

Figure 2. Schematic diagram summary of the CollectionCare system

The project

In order to accomplish CollectonCare objective, the project has structured its work into ten Work Packages (WP), combining development of the system, project management and related activities. The project will begin in WP1 with a thorough analysis of the specific technical requirements to have a starting point of departure for initiating the development of WP2 (degradation models), WP3 (cloud computing) and WP4 (design of sensor node). Once all the previous work has been done, the different system validation and demonstrations tasks will start in WP5 and WP6. These validations and demonstrations will take place in the different partner museums, where 40 objects have been selected for monitoring and testing the CollectionCare system during the last 6 months of the project. In parallel, WP9 an WP10 will be carried out to ensure the successful achievement of the project objectives, outputs and impacts. Finally, WP7 and WP8 will ensure proper communication and dissemination of the project as well as the exploitation plan to increase the potential impact and acceptance of CollectionCare system in its corresponding market.

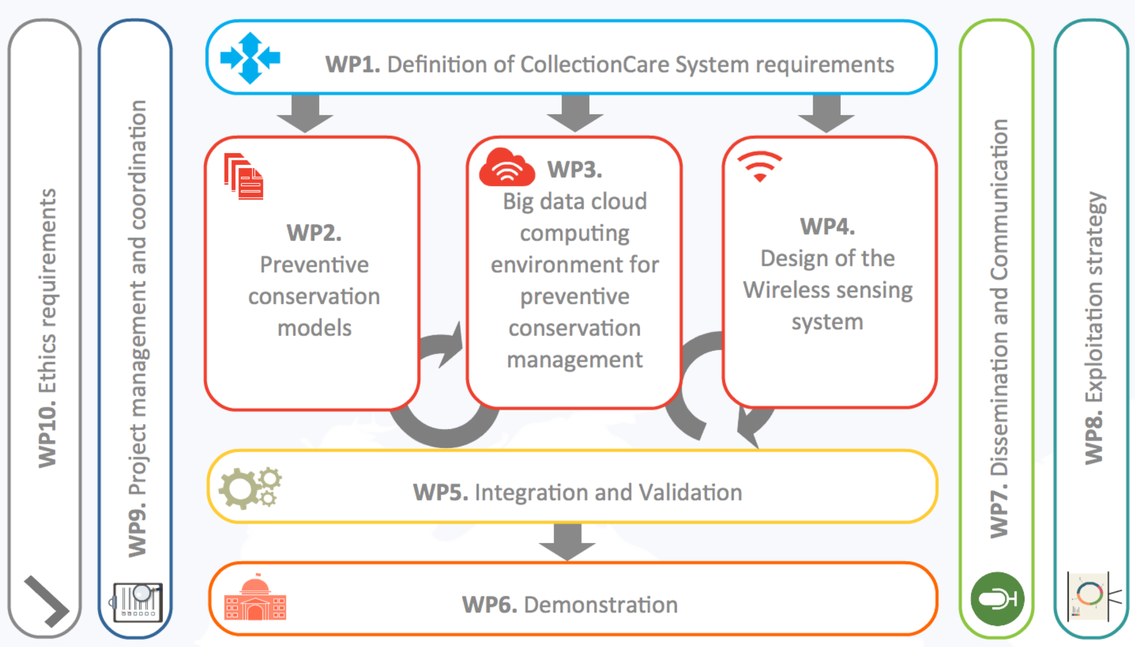

Figure 3. Schematic diagram of CollectionCare Work Plan

The CollectionCare system will be achieved through the joint work of a large interdisciplinary group, the CollectionCare consortium. This consortium is made up of 18 partners from Spain, France, Greece, Holland, Italy, Poland, Lithuania, Denmark and Belgium, bringing together 6 universities and research centres, 6 small museums and/or collections, 2 technology companies, 1 cultural management company, 1 conservation and restoration company and 1 shipping company.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 814624.
For more information visit us at www.collectioncare.eu