

Museion - Innovative IoT-based digital platform for the preventive preservation of cultural heritage

The MUSEION project's direct target is to protect cultural heritage. Going beyond the state of the art, it provides a solution for the intelligent preservation, presentation and accessibility of cultural heritage through research methods and digital technologies. Climate change and increasing tourism are expected to affect the conditions of the conservation in the coming decades, while the economic resources required are expected to decrease. The impact of climate change on built heritage has long been a topic of research. The results are well documented, but the changing indoor conditions also need to add to the overall picture.

The MUSEION project monitors, evaluates and mitigates the potential impact of climate change on cultural heritage collections and aims to avoid the adverse effects of external conditions on artifacts. In order to address this problem effectively, the project will develop reusable tools to monitor, assess and mitigate the potential impacts of climate change on historic interiors.

The environment is crucial for the preservation of historic collections and interiors, and it is essential to create modern solutions. The MUSEION project's assessment tools allow for a succession of (low-cost) mitigation measures to be carried out, preparing heritage owners for the necessary changes.

The solution is to measure environmental parameters, climatic factors, in particular temperature and relative humidity, light effects and to carry out advanced real-time monitoring at the sites. The objectively measured data is transmitted to a cloud-based central platform using a radio link and a communication network, where it is stored in a unified repository for efficient data processing, presentation and analysis. In addition to data evaluation, we also perform event monitoring to alert museum professionals to potential threats and detected anomalies.

In the MUSEION project, the partners plan to implement a key IoT-based solution to support the cultural sector, i.e. museums, archives, libraries, in their cultural heritage preservation, environmental management and collection management tasks. The project will deliver the following range of products and services:

- Digital museum platform for continuous monitoring and visualisation of environmental and air quality indicators,
- Software for real-time calculation of the general indoor air quality (IAQ) index,
- Electronic heritage tags that allow the planning of a condition assessment of heritage materials/artifacts and a sequence of successive action steps.

The project aims to be part of a comprehensive digital museum concept. The development of digital museum services can have a major impact on the cultural industries, both for institutions and their visitors.

MUSEION aims to provide a solution through a data warehouse approach and complex data analysis by combining data, evidence information and biometric measurement results that have an impact on the museum environment, and by processing them in a consolidated way to answer current questions on the preservation of cultural heritage.