



Sustainable Intelligent Management of Indoor Air Quality for the Culture and Creative Industries

2025 - 2028

15 partners

7 countries

OBJEKTIVES

SIMIACCI is an ambitious Innovation Action (IA) project funded under the Horizon Europe programme that aims to improve the efficiency of IAQ management in Galleries, Libraries, Archives, and Museums (GLAMs) across Europe, thereby enhancing the conservation of cultural heritage artefacts while reducing energy consumption. To achieve this goal, SIMIACCI will introduce a portfolio of tailored innovative technologies.

CONTEXT

Cultural and Creative Industries (CCIs) use significant energy to control Volatile Organic Compounds (VOCs), Nitrogen Oxides (NO_x), Hydrogen Sulfide (H₂S), and humidity levels, which is essential for the preservation of cultural heritage artefacts. Traditional indoor air quality (IAQ) solutions often lack efficiency and environmental considerations. There is an urgent need for solutions that meet curators' and conservators' standards while being environmentally, socially, and economically viable in the current climate transition.

SOLUTION

Innovative, efficient, reusable, and stable Metal-Organic Frameworks (MOFs) to capture noxious VOCs, mitigating NO_x, and capturing H₂S in real scenarios. AI-based predictive models and sensors to track and manage contaminant levels in real-time. Modular systems that meet both technical and environmental needs for IAQ control. New business models that combine SIMIACCI solutions.

PARTNERS



IST-ID COORDINATOR AND LEADER OF PROJECT
Engineering School of the University of Lisbon. IST-ID aims to create, improve, disseminate and transfer knowledge, research and scientific and technological development.



CENTRE DE RECHERCHE SUR LA CONSERVATION (CRC)-CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS) – MUSÉUM NATIONAL D'HISTOIRE NATURELLE (MNHN)
French state research organisation and the largest fundamental science agency in Europe. The Centre de recherche sur la conservation (CRC) is a research laboratory operating under the umbrella of the CNRS, the French National museum of natural History and the ministry of Culture. The CNRS-CRC team will be involved in the Research and technology activities.



SQUAIRTECH
is an innovative French company specializing in advanced materials for air management solutions.



TECHNICAL UNIVERSITY OF DENMARK (DTU)
is a leading university in the technical and natural sciences, renowned for its business-oriented approach, focus on sustainability



STUTT GART STATE ACADEMY OF ART AND DESIGN (ABK STUTT GART)
is a fine arts academy with one of the richest traditions in Germany with full scientific university status.



TEQOYA
is a French company that designs and manufactures air purifiers



AON SPA INSURANCE & REINSURANCE BROKERS (AON)
is a leading group in Italy and in the world in risk and human resources consultancy, insurance and reinsurance brokerage.



NÁRODNÍ TECHNICKÉ MUSEUM (NTM)
is the largest Czech institution managing collections documenting the development of science and technology in the Czech lands. NTM is a small partner, involved in the development of the data management plan and air quality monitoring. Its other role is in validation and optimisation, communication dissemination and cluster activities.



EUROQUALITY (EQY)
French consulting company with over 25 years' experience in setting-up and managing EU innovation projects from different programs



ESPCI- IMAP
is a leading French "Grande Ecole" as well as a world-renowned research institution.



MUSEUS E MONUMENTOS DE PORTUGAL (MMP)
The Museums and Monuments of Portugal P.B.E. is a Public Business company with a Council Board of Administration.



ECOLE NATIONALE SUPERIEURE D'INGENIEURS DE CAEN (ENSICAEN)
LCS laboratory at ENSICAEN is a mixed research unit between universities and CNRS



ROYAL DANISH LIBRARY (RDL)
is Denmark's national and university library and one of the largest cultural institutions in the country.



DEUTSCHES MUSEUM VON MEISTERWERKEN DER NATURWISSENSCHAFT UND TECHNIK (DM)
is the largest Museum for Science and Technology in Germany. It includes a collection of objects, a library with books and an archive with manuscripts.



EUROPEAN FEDERATION OF HEATING VENTILATION AND AIR CONDITIONING (REHVA)
its mission is to develop and disseminate economical, energy efficient, safe and healthy technology for mechanical services of building

EXPECTED IMPACT

Developed prototypes
Demonstrated in 6 GLAM partners
Energy demand reduced
Extended conservation time of cultural heritage artefacts
30,000 visitors reached by SIMIACCI exhibitions

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National
Technical
Museum



Featuring: SIMIACCI PROJECT

Interview with Ivana Kopecká (National Technical Museum)

The SIMIACCI project (Sustainable Intelligent Management of Indoor Air Quality for the Culture and Creative Industries) was selected for funding in 2024 under the Cluster 2 call - Cultural and creative industries for a sustainable climate transition. It runs between January 2025 and December 2028.

What is the project about?

SIMIACCI focuses on innovative technologies for indoor environmental quality management. The aim is to improve the efficiency of indoor environmental quality management in galleries, libraries, archives, and museums (GLAMs), and thus improve the preventive conservation of cultural heritage artifacts while reducing energy consumption. The EU's climate transition demands sustainable practices across all sectors, including Cultural and Creative Industries (CCIs). CCIs rely on high-energy systems to regulate pollutants like VOCs, NO_x, and H₂S, essential for preserving cultural artifacts. However, traditional indoor air quality solutions often lack efficiency and sustainability. There is a critical need for innovative approaches that meet conservation standards while being environmentally, socially, and economically viable.

What is the role of the National Technical Museum (NTM) in SIMIACCI project?

The NTM has a very diverse collection, which includes items made from metal, wood, textiles (such as old pattern books), paper (like historical building plans and maps), image archives, and even synthetic materials. All of these materials are sensitive to temperature, light exposure, air humidity, and various pollutants. The goal of a museum is to preserve its collections for future generations in the best possible condition for as long as possible. As part of "preventive conservation", institutions strive to maintain the internal environment in their depositories and exhibitions within appropriate parameters. In the SIMIACCI project, the NTM plays primarily a role of a testing site, utilizing the experience of staff in the field of preventive conservation both in the selection of locations and in the interpretation of measurement results.

What are the objectives of your project?

The main objective is to deliver industrial-grade MOF-based (Metal-Organic Frameworks) adsorbent materials for advanced air purification, along with a smart, wireless IAQ monitoring system tailored for GLAMs. Our vision is to empower GLAMs to become the innovating leaders of indoor air quality management. Moreover, SIMIACCI aims to promote the adoption of its solutions in other sectors through dedicated exhibitions and a launch of its own label, ensuring long-term impact and scalability.

What is the concept of work in your project?

We are 15 partners in the consortium. Our coordinator is the Portuguese Technical University Instituto Superior Técnico in Lisbon (IST ID). The project has been running since January 1, 2025, and is planned to last four years. At the beginning of the project, all the researchers met in person at a joint meeting in Lisbon. Since then, the individual working groups have been holding online meetings approximately twice a month. One large meeting of all researchers is tentatively planned each year.

What is difficult about participating in Horizon Europe?

The SIMIACCI project is our first experience with the Horizon Europe program. We were approached by partners from France based on previous professional cooperation. The most difficult part for us was the administration involved in registering the project and communication with the programme management officials. We are only at the beginning of the implementation and have not encountered any serious difficulties so far.

And what are the benefits?

Establishing and expanding cooperation with colleagues from various European countries, raising awareness of an issue that is becoming increasingly pressing in light of the economic situation, and perhaps also contributing to the optimization of the interior environment of our museum.

What will be the impact of the SIMIACCI project?

It will introduce a portfolio of innovative technologies to transform indoor air quality management. This includes advanced adsorbent materials to capture harmful pollutants, predictive models and sensors for real-time monitoring and optimization, modular air quality control systems, and new business models integrating economic, environmental, and social strategies. Additionally, through dedicated exhibitions reaching 30,000 visitors, SIMIACCI is expected to inspire climate transition across GLAMs and beyond, ultimately influencing 5 additional sectors: hotels and resorts, educational buildings, shopping malls, healthcare facilities and transport hubs.

<https://simiacci.eu/cs/>