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CHARISMA: Cultural Heritage Advanced Research Infrastructures: Synergy for a Multidisciplinary Approach to Conservation/Restoration

Science is important in the conservation of paintings, sculptures and other works of art. Sophisticated instruments allow conservators and restorers to identify the materials and methods used by the original artist, while modern materials and test methods ensure that work done today respects the principles of durability and compatibility. Following on from the EU-ARTECH project, CHARISMA brings together 21 leading European art conservation bodies. Its goal is to optimise the use of infrastructures through a coordinated programme of transnational access, joint research and networking activities.

● CONSERVATION AND RESTORATION

Historical artefacts and works of art deteriorate over time because of exchange of energy and matter interactions with the surrounding environment. These processes are complex from a chemical-physical point of view and can lead to changes in the original appearance of an object, as well as to weakened structures, corrosions and other alterations that - without any conservation to stop or slow down the degradation - could lead to it being lost completely.

Carrying out conservation and restoration first of all involves recognising a work of art as a physical object possessing both aesthetic and historical value. This is followed by work (such as cleaning, consolidation and protection) that is based on full respect for the original work of art in its historical context, on the principle of the reversibility of any intervention, and on the stability and safety of the materials used.

Scientific research makes a significant contribution to the conservation of our heritage. Several methods are used to explore the bulk, microscopic and surface properties of artefacts, including both traditional and advanced analytical techniques. The works studied include paintings, sculptures, metal works, ceramics, manuscripts, printed books and archaeological items.

Before a piece is restored, conservators use scientific investigations to learn about the materials and techniques used to create it. This allows them to make sure that they use materials that are compatible with the originals and that the intervention is effective and durable. Other investigations include the study of alterations and their origin, the identification of previous restorations, and assignment of provenance or dating. Science is also used to develop and test new conservation methods



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and to create innovative diagnostic tools. All these studies are by their nature multidisciplinary, bringing together specialists from the arts and the sciences to exchange ideas and develop creative and sustainable solutions.

However, there is no coherent powerful platform of access to the wide number of scientific techniques available in large-scale installations and small/medium facilities – a lack which can significantly impede research. Closing the gap between the cultural heritage community and the most advanced material science research is thus a priority.

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On this basis, CHARISMA aims to create a solid base for outstanding innovation in the capacity-building policies of science and technology, with expert knowledge on the most significant advances for safeguarding and protecting cultural heritage. The consortium will provide the best opportunity for developing research at the forefront of

the field, as it combines advanced scientific research infrastructures with leading technology institutes on cultural heritage. This will couple cutting-edge research with intelligent delivery systems through interaction with end-users and scientific experts.

● DATA AND ANALYSIS

Transnational access is offered to European researchers in the various phases of research development. In particular, the service allows users to carry out their work in the best possible conditions, either in the laboratory or in situ (i.e. at the site where the work of art is located or exhibited), taking innovative and multi-technique measurements, and gives them access to information on previous studies and data.

Comprising two platforms (FR and HU), FIXLAB enables researchers to make use of all the most advanced state-of-the-art techniques presently available in the laboratory from large scale to medium and small facilities. Through MOLAB, users have access to a unique set of mobile equipment, which makes it possible to carry out on-site multi-technique measurements with no sampling of and no contact with the artwork. In all cases, studies otherwise impossible for the users will be performed.

In addition, a huge amount of data, information and knowledge on identification of historical materials and their production techniques, for example, is located in the archives of several conservation institutions or prestigious museums. Yet, this data has only been partially reported in the scientific literature. Via ARCHLAB, researchers have access to the extensive archives of analytical and technical data on paintings, sculptures, manuscripts, metals, etc. of the six partners.

Furthermore, as part of CHARISMA's joint research activities, a portal to cultural heritage knowledge will complement and enlarge the physical access to ARCHLAB, innovative instrumentation for in-situ 2D and 3D examination of artworks and new cleaning techniques will be designed and set-up to improve MOLAB and, finally, new methodologies for the study of organic materials and their distribution in microsamples or directly at the surface of the object will be developed to improve FIXLAB. All these initiatives will enhance the quality of research and prove to be a significant step towards the creation of a common ground for a European research.



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Partners:

Università degli Studi di Perugia (IT)
Centre National de la Recherche Scientifique (FR)
Foundation for Research and Technology Hellas (EL)
The National Gallery (UK)
Société Civile Synchrotron Soleil (FR)
Consiglio Nazionale delle Ricerche (IT)
Uniwersytet Mikołaja Kopernika w Toruniu (PL)

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Opificio delle Pietre Dure (IT)
Museo Nacional del Prado (ES)
Instituut Collectie Nederland (NL)
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