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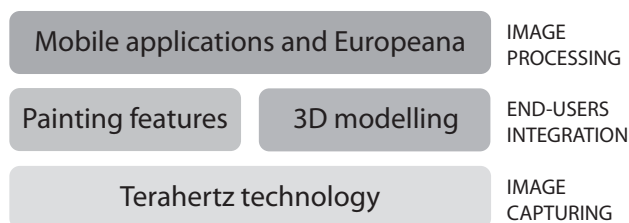
The Project

INSIDDE is aimed at **unveiling unknown features** - hidden paint layers, overpaintings, possibly underdrawing steps, brushstroke textures, sealed contents - **of both 2D and 3D artworks** for enhancing the knowledge-sharing of and the access to the digitised surrogates of the original cultural resources.

The combination of **terahertz technology, image processing techniques, and 3D high-resolution scanning** is the basis for the development of an **innovative Augmented Reality application for smartphones** to be used at museums and the integration of the digital models into Europeana.

Strategy and Concepts

The **strategy** to achieve these goals is **based on a hierarchical model** consisting of three layers and four actions - each one corresponding to a specific work package:



Apart from being **non-harmful and non-ionising**, which guarantees the perfect conservation of artworks, **terahertz (THz) radiation** – frequencies between 300 and 3 THz – **can penetrate** through dielectric materials up to 1 cm, so it **allows recovering information about inner layers** that cannot be seen by the human eye.

This initial step is followed by **2D image processing techniques**, which contemplate an automatic analysis of THz images – including brushstroke segmentation – in order **to extract author's features and other aspects** that dwell inside.

Analogically, albedo **reconstruction and content identification** of sealed objects by means of spectroscopy **will enhance the perception of 3D artworks** through highly detailed and accurate digital surrogates.

Scientific and Technical Objectives

- Development of a **cost-effective high-performance terahertz system** for the specialised digitisation of 2D and 3D artworks.
- Implementation of **new techniques to process and analyse** terahertz images from paintings.
- Improvement of existing equipment and techniques for a **better modelling of 3D artworks and their contents**.
- Integration of **digital surrogates** of artworks into the **online collection of Europeana** and development of a **smartphone application to improve visitor's experience** at museums.

End-User Scenarios and Applications

Preliminary **test and validation** activities for the AR-based application and the integration into Europeana will be carried out at the **Doerner Institut** (Germany) and the **Regional Museum of History of Stara Zagora** (Bulgaria) **employing real artworks** so, at the end, the results will be transferred to a **wider range of users** of cultural resources – not only cultural heritage professionals but also citizens and visitors.

Consortium

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MATERIALS TECHNOLOGY

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 sCDynamics

 INO-CNR
ISTITUTO NAZIONALE DI OTTICA

 Regional Museum of History
Stara Zagora

 DOERNER INSTITUT