SEVENTH FRAMEWORK PROGRAMME

ICT-2011-9 600849

insidds

Integration of technological solutions for imaging, detection and digitisation of hidden elements in artworks

Project Summary

Index

Index

Project outline

- Title: "**IN**tegration of technological **S**olutions for **I**maging, **D**etection, and **D**igitisation of hidden **E**lements in artworks"
- Acronym: INSIDDE
- Duration: 36 months (from January 2013 – December 2015)
- Budget:
  - Total budget: 3 643 065 €
  - EC contribution: 2 897 106 €
- Reporting periods:

RP1: M1-12 **RP2**: M13-M24 **RP3**: M25-M36

Project outline

- INSIDDE objectives

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*

– **Advancing** the state-of-the-art of **digitisation technologies**
– **Adding value** to cultural content
– **Increasing** the range of **end-users**
– Assuring **affordability and widespread availability** of tools and services

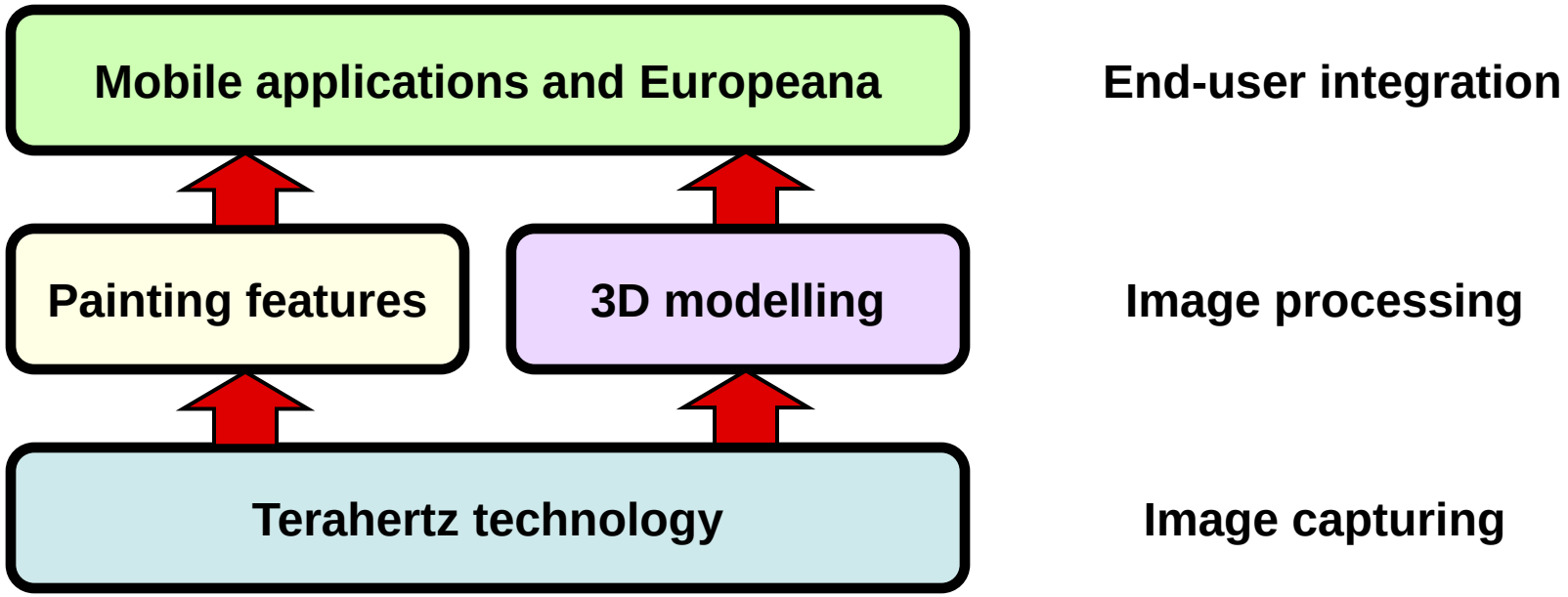
Project outline

- INSIDDE **scientific and technical** objectives
  - Development of graphene derivatives and the corresponding **high performance graphene based nonlinear components** for the efficient generation and detection of terahertz signals
  - Development of a **cost-effective high-performance 2D and 3D terahertz imaging and spectroscopy system** for the specialised digitisation of artworks
  - Development of **new techniques to process and analyses terahertz images** for extracting valuable information of terahertz images obtained from paintings
  - Development and improvement of techniques and modification of existing equipment for a **better modelling of paintings and 3D artworks**
  - **Integration of digital surrogates** of artworks **into Europeana**
  - Development of a **smartphone application based on Augmented Reality** for museums

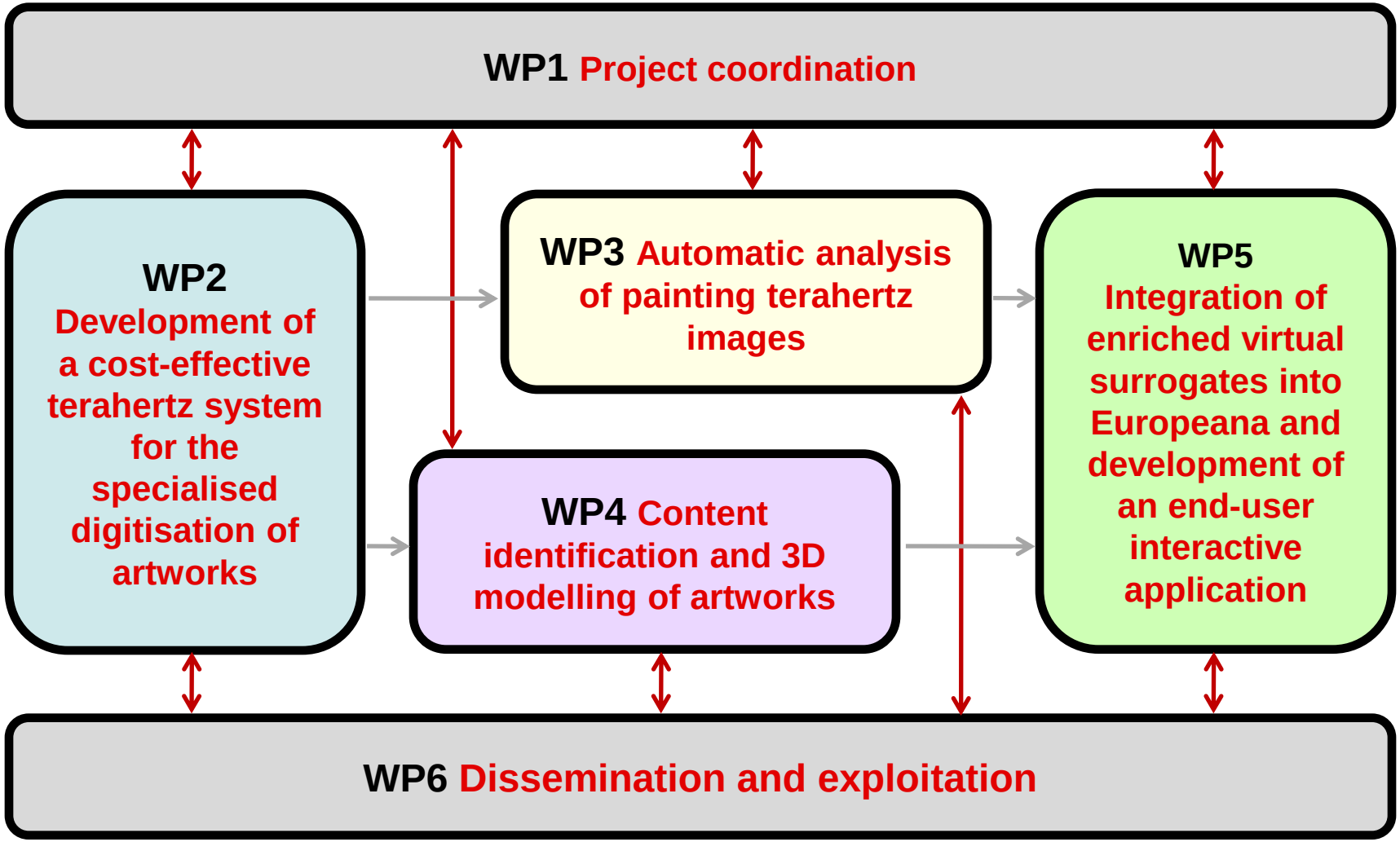
Index

Work plan

- Hierarchical model



Work plan


WP1 Project coordination
WP2 Development of a cost-effective terahertz system for the specialised digitisation of artworks
WP3 Automatic analysis of painting terahertz images
WP4 Content identification and 3D modelling of artworks
WP5 Integration of enriched virtual surrogates into Europeana and development of an end-user interactive application
WP6 Dissemination and exploitation

Work plan

- **Aims**
  - **WP2** Development of a cost-effective terahertz system for the specialised digitisation of artworks
    - Bridging the technological gap in the lower terahertz frequency range
    - Development of a scanning system for large area 2D/3D THz imaging and spectroscopy of artworks
  - **WP3** Automatic analysis of painting terahertz images
    - Digitisation of paintings employing the scanning system for feature extraction
    - Development of automatic image-processing and computer-vision techniques for the analysis of THz images of paintings
  - **WP4** Content identification and 3D modelling of artworks
    - Integration of the THz scanning system with a multi-view structured light scanning
    - Acquisition and visualisation of multi-layer surface information
  - **WP5** Integration of enriched virtual surrogates into Europeana and development of an end-user interactive application
    - Integration of 2D and 3D surrogates into Europeana
    - Development of an AR-based application to enhance visitor's experience at museums

Work plan

- **Outcomes**
  - **WP2** Development of a cost-effective terahertz system for the specialised digitisation of artworks
    - **Transmitters** and **receivers** in the range 0.14-1.1 THz
    - THz automatic **focusing system**
    - **Full characterisation** of the scanning devices
  - **WP3** Automatic analysis of painting terahertz images
    - **XY scanning** system (mounted, assembled and tested)
    - Software for **automatic analysis** of terahertz images
    - Software for **modelling brushstroke characteristics**
    - Know-how on using **structured light for 3D brushstroke acquisition**
  - **WP4** Content identification and 3D modelling of artworks
    - **3D scanning system** (mounted, assembled and tested)
    - **Demonstrator of albedo calculation**
    - **Integration of THz data** into 3D scans
    - **Identification of substances** using terahertz radiation

Work plan

- **Outcomes**
  - **WP5** Integration of enriched virtual surrogates into Europeana and development of an end-user interactive application
    - Demonstrator on 3D artwork models using the **smartphone application**
    - Reports on compilation of metadata and the **integration** of 2D/3D digital models with movement **into Europeana**

Index

Consortium and roles

- **Consortium**
  - **Treelogic**
    - Spain
    - www.treelogic.com
  - **ITMA Technology Materials**
    - Spain
    - www.itma.es
  - **3DDynamics**
    - Belgium
    - www.3ddynamics.eu
  - **Regionalen Istoricheski Muzei Stara Zagora**
    - Bulgaria
    - www.museum.starazagora.net
  - **Universidad de Oviedo**
    - Spain
    - www.tsc.uniovi.es
  - **Technische Universiteit Delft**
    - The Netherlands
    - www.tudelft.nl
  - **Consiglio Nazionale delle Ricerche**
    - Italy
    - www.ino.it
  - **Doerner Institut**
    - Germany
    - www.doernerinstitut.de

Consortium and roles

- **Roles**
  - **Treelogic**
    - Coordinator and exploitation leader
    - Smartphone application developer
    - Europeana aggregator
  - **ITMA Technology Materials**
    - Synthesis/integration of graphene
    - Dissemination and exploitation
  - **3DDynamics**
    - Development of 3D scanning system and techniques
    - Exploitation actions
  - **Regionalen Istoricheski Muzei Stara Zagora**
    - Artwork provider/advisor
    - Dissemination leader
  - **Universidad de Oviedo**
    - Technical Manager
    - Development of Tx and Rx
    - Characterisation of THz system
  - **Technische Universiteit Delft**
    - Software developer for image processing techniques
    - Dissemination and exploitation
  - **Consiglio Nazionale delle Ricerche**
    - Automatic focusing system
    - Dissemination
  - **Doerner Institut**
    - Artwork provider/advisor
    - Organisation of conference

Index

Dissemination tools

- **Public website**
  - www.insidde-fp7.eu
- **Slideshare**
  - http://www.slideshare.net/insidde
- **Project Management Office**
  - info@insidde-fp7.eu

insidds

Coordinator

treelogic

Partners

Universidad de Oviedo

itma MATERIALS TECHNOLOGY

TU Delft Delft University of Technology

3DDynamics

INO-CNR Istituto Nazionale di Ottica

Regional Museum of History Stara Zagora

DOERNER INSTITUT

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