

Scientific and Technological Objectives of the Project

For the last few decades historic cities in Cyprus experience 'violent' transformations of their face and urban fabric. Today despite all the efforts of the authorities we still see numerous buildings to be demolished in Nicosia, Limassol and elsewhere (<http://city.sigmalive.com/article/25099/katedafisan-mia-apo-tis-pio-istorikes-epayleis-tis-lemesoy>), to give way to the construction of new high rise developments that change the identity of the cityscape and the city skyline, and ultimately impact real estate values and by doing so they provoke gentrification phenomena.

PERISCOPE overall objectives have been designed to address the Main Priority Areas of the S3Cy "Built Environment and Construction – Heritage Buildings (B.2)", as well as the Horizontal Priority Area 3, "Protection, Promotion and Exploitation of Cultural Heritage". At the same time PERISCOPE will aim to create a critical mass of young researchers focused in the above mentioned thematic fields, supporting in this way the overall goal of S3Cy, which is to improve the R&I of Cyprus. PERISCOPE is aligned with the "Smart Specialisation"¹ of Cyprus. Expert groups working on the Smart Specialisation Strategy have clearly indicated that multiplier factors such as cultural heritage constitute key pillars on which the future growth of Cyprus should be based. Cultural heritage is one of the few factors which have shown resilience to the financial crisis². Indeed, as recently indicated³ cultural heritage has spillover effects in other economic sectors.

In the context of PERISCOPE the following specific scientific and technological (S&T) objectives and expected results of the project will be addressed:

- **S&T Objective 1.** The innovative integration of state-of-the-art methodologies and tools applied on heritage that can be further exploited in the future for the socio-economic growth of Cyprus. This integration will lead to the **creation of a comprehensive online platform**, which will allow holistic research inquiries that range in scale (from a macro scale environmental monitoring of clusters of historic buildings to the structural analysis of individual buildings), as well in time (monitoring of the development of settlements).
- **S&T Objective 2.** The project aspires to deliver a **good practices step-by-step guide** for the documentation and validation of conditions and functional aspects of heritage buildings in Cyprus.
- **S&T Objective 3.** Based on the information and data acquired on the location, geometrical features, structural stability and thermal performance, PERISCOPE aims to offer a comprehensive methodology to key players of heritage in Cyprus for **the development of innovative and sustainable renovation solutions for heritage buildings in Cyprus**, through the integration of reliable observation data and cost-effective energy efficient methods.
- **S&T Objective 4.** **The quantification of sustainability aspects of heritage buildings** and their integration into the PERISCOPE platform. For the assessment of the anticipated environmental impact from the application of PERISCOPE, a Life Cycle Assessment (LCA) methodology will be implemented for heritage buildings.
- **S&T Objective 5.** Instrumental role in the achieving Objective 1, and contributing to the update of guidelines, policies and heritage key operators' tools in Cyprus, plays the definition of the shapes, geometric features and accurate reconstruction of the

¹ <http://s3platform.jrc.ec.europa.eu/home>

² Cultural Statistics, 2016. European Union, p. 188

³ European Commission, Towards an integrated approach to cultural heritage for Europe, Brussels, 22.7.2014 COM(2014) 477 final.

architectural designs of heritage buildings through the employment of proximal and terrestrial 3D-modeling techniques.

- **S&T Objective 6.** Regional mapping and monitoring of heritage buildings clusters on a macroscale level. **Identification and quantification of land use multi-temporal changes in the vicinity of heritage buildings clusters** based on satellite image processing and spatial analysis. Identification of patterns and periodic / seasonal changes based on the exploitation of Earth Observation and Geographical Information System (GIS) technologies.

