

# UNLOCKING THE POTENTIAL OF DIGITAL TRANSFORMATION FOR HUMANITIES AND HERITAGE SCIENCE

## PNRR Extended partnership CHANGES project

An international reference hub for training, research, and technology transfer in cultural heritage. It seeks to enhance our country's cultural heritage by promoting new sustainable approaches for its protection and enjoyment, fostering partnerships between research and industry, and generating employment opportunities while addressing social and economic inequalities.

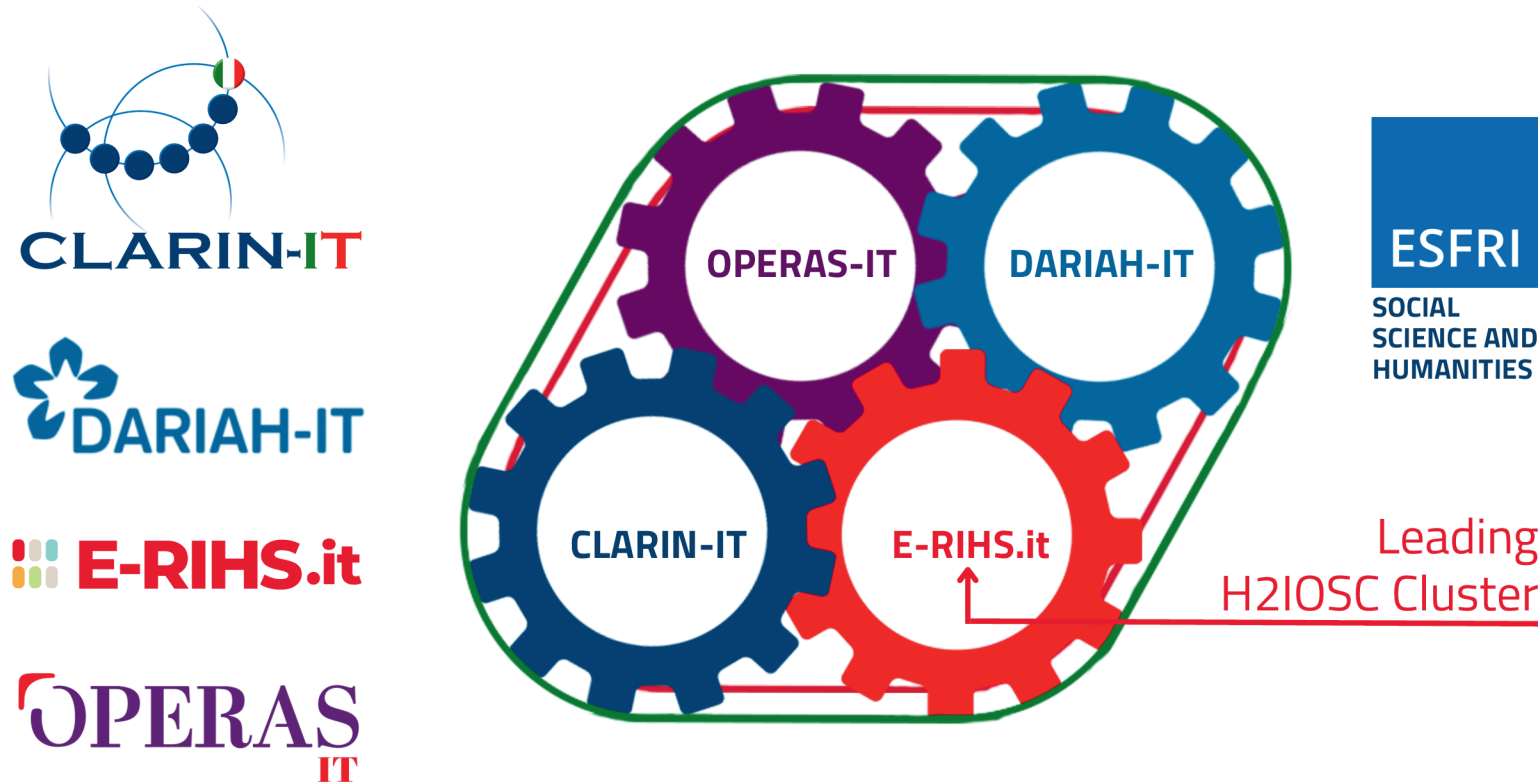
SPOKE 1	Historical landscapes, traditions and cultural identities	ISPC
SPOKE 3	Digital libraries, archives and philology	ILC-OVI
SPOKE 4	Virtual technologies for museums and art collections	ISPC-ITD
SPOKE 5	Science and technologies for sustainable diagnostics of cultural heritage	ISPC-INO-SCITEC ISTI-IAC
SPOKE 7	Protection and conservation of cultural heritage against climate changes, natural and anthropic risks	ISAC-IPCB-ISPC
SPOKE 8	Sustainability and resilience of tangible cultural heritage	ISPC



## PNRR IR H2IOSC project

A federated and inclusive cluster of four Italian nodes of the European Research Infrastructures committed to the ESFRI domain of Social Science and Humanities. H2IOSC enables researchers from various disciplines - humanities, language technologies, and cultural heritage - to collaborate in research by sharing tools, services, and data.

The RIS CLUSTER



CNR|DSU  
4 FEDERATED RIS  
12 CNR INSTITUTES  
18 Operating Units

Cultural Heritage

**Cultural Heritage** is an essential element of contemporary society, influencing identity, social, and economic development. It manifests in physical forms (museums, monuments, landscapes, cities) and intangible forms (traditions, languages, religions, collective memory). **Digital transformation** is revolutionizing how it is studied, preserved, and enhanced, necessitating transdisciplinary research.

The **CNR initiative** brings together two PNRR projects focused on heritage science - **PE-CHANGES** and **IR-H2IOSC** - to maximize the impact of digital transformation in basic and applied research through translational approaches for the sustainable conservation and enhancement of tangible and intangible heritage. This collaboration may attract further PNRR initiatives, including **ITSERR**, which focuses on the digital study of religions, and **SAMOTHRACE**, aimed at supporting Sicilian cultural and creative enterprises.

Four possible research trajectories are:

- **OPEN CH:** develop collaborative virtual environments based on H2IOSC, with knowledge graphs and AI for archaeological and art-historical interpretation, integrating multidimensional and multidisciplinary open-linked data produced in CHANGES.
- **RESILIENT CH:** Create digital twins for monitoring tangible heritage and mitigating climate and human risks with innovative sensors and AI predictive analysis.
- **ACCESSIBLE CH:** Enhance heritage accessibility and inclusivity through interactive interfaces, immersive experiences, and haptic devices for participatory management.
- **Digital Philology Hub:** Establish a collaborative environment for digital philology with tools for digital editions, text collation, lemmatization assistance, and handwritten text recognition.

Digital Transformation



ITSERR is the Italian Strengthening of the ESFRI RESILIENCE, an interdisciplinary and distributed research infrastructure for religious studies. It aims to transform the scientific community in this field from simply applying established technologies to becoming a leader in harnessing new advancements in artificial intelligence, big data, and high-performance computing. **ISTI**



The CH pillar of SAMOTHRACE ecosystem aims to establish a comprehensive system that can generate an innovative center for the design, manufacturing, tuning, and validation of breakthrough materials and devices intended for cultural heritage applications. **IMM - IPCF - ISPC**

International Cooperation

- **ECHOES – ECCCH:** The European Cultural Heritage Cloud developed by European Cloud for Heritage OpEn Science, involves the CNR (ISTI, ISPC, ILC) and key sector players (CNRS, Fraunhofer, Europeana, DARIAH-ERIC, CLARIN-ERIC, ETT, Meta, ICOMOS, NEMO), in which H2IOSC could become the Italian node.
- **ARCHE:** The Alliance for Research on Cultural Heritage in Europe is a network that brings together researchers, professionals, and institutions to promote cultural heritage research. ISPC coordinates the Strategic Research and Innovation Agenda, which forms the basis for the future European Partnership on Resilient Cultural Heritage for Italy, funded by the MUR and MIC.
- **SSHOC** - Social Sciences and Humanities Open Cluster is the evolution of the SSH cluster within EOSC, aggregating the H2IOSC infrastructures. CNR (OVI, ISPC, ILC) actively participates in building an inclusive and efficient research platform.
- **Memorandum of Understanding with ICCROM** strengthens cooperation on climate change and heritage monitoring.



4 DEPARTMENTS

DSU - DSFTM - DSCTM DIITET

17 INSTITUTES

ICAR - ILC - IMATI - NANOTEC - ISTI  
ISPC - ISAC - SCITEC INO - OVI - IPCB  
IPCF - ILIESI - IMM - ISPF - IAC - ITD

CNR Involvement