



DC07

PhD Enrolment: Politecnico di Milano

Duration: 36 Months

Specific Deliverable: SD5.4

Time Input: [WP4 40%, WP6 60%]

Secondments:

DC07S1: Host: POLIMI, Alfredo Cigada (M13-M18) 6 months on SHM fundamentals, signal processing & measurement.

DC07S2: Host: Innatera, George Joseph (M31-M33), 3 months on neuromorphic solutions for art transport

Local Sensing for Artworks

Context

DC7 will demonstrate and develop open benchmarks on capabilities of edge sensing for cultural heritage with high cultural and commercial value, underpinning transformative digital transformation at the intersection of art and engineering.

Objectives (Ob):

Ob1: Develop and deploy distributed sensor networks at the edge for detailed operational needs for precious artworks during transportation and exhibition.

Ob2: Assimilate distributed sensing capability at the edge to local and embedded intelligence to design, define, train and adapt required alarms and support decision options for different features of interest with AI.scale design engines for fatigue estimation by improving/extending existing procedures for efficient data transfer, computing costs, and software to move towards self-aware infrastructure. DC8 will assimilate DT solutions with on-site capabilities and decision making/asset management tools at fleet level integrated

with Value of Information (Vol) analyses, identifying optimal key performance indicators (KPIs) for maximized benefit.

Ob3: Create scenarios of managing, conserving, storing, transporting and exhibiting artworks over long lifetimes and related design of combined sensing and local computing for future use.

Ob4: The value of information, performance metrics and consequences of such monitoring will be demonstrated for similar sectors around high value art conservation and transport. DC7 will have direct access to some of the most important museums or expositions globally (e.g. Uffizi, Florence or Brera, Milan) as per the required artwork movements at the time of the DC activity.

Expected Results (R):

Creation of a digital monitoring framework at the edge for art and heritage transport, restoration and exhibition addressing needs at the confluence of art and engineering.

R1: Development of a suite of flexible prototypes of smart objects to deploy on or close to artworks, exhibition/transportation cages with edge and at-location computing.

R2: A software solution for smart decision support as the 'guardian' of artworks.

R3: Performance repository of developed solutions for resilience against hacking/malicious attack scenarios.

R4: Open repository and solution demonstration for real-time capabilities and decision support with transformative impacts on tangible cultural heritage as well as museum operations (crowd check, alarms, environmental parameters, etc.).

Contributions for Recruited Researchers over 36 months

Living Allowance: €137575.08

Mobility Allowance: €25560

Family Allowance: (where relevant) €17820

This position and related financial contributions is subject to the commencement of the project and agreement signed.