

Le tecnologie spaziali per il monitoraggio e la valorizzazione del patrimonio culturale

Rita Rinaldo

*Head of Partner-led and thematic initiatives
Business Applications and Space Solutions
European Space Agency*

Purpose of the European Space Agency

“To provide and promote, for exclusively peaceful purposes, cooperation among European states in **space research and technology** and their **space applications**.”



Article 2 of
ESA Convention

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→ Space Applications

Space technologies

Space Weather



Earth Observation



Satellite Navigation



Satellite Communication



Human Spaceflight Technologies



- Big Data analytics
- VR/AR
- Artificial Intelligence
- Megaconstellations
- 5G
- Crowdsourcing
- IoT
- Cybersecurity
- Blockchain



Users and Markets

Maritime



Healthcare



Transport



Environment



Agriculture



Media



Energy



Education



Aviation



Financial



Partners

International Institutional Actors



European Institutional Actors

Frontex
EMSA
EU SatCen
EDA
EASA

Vertical Industry and associations

ENTSO ENEL
Friends of the Supergrid
CarbonTrust
Indian Energy Storage Alliance
OneSea Alliance
DMEC
Global Sustainable Energy Alliance

UNICRI
IOM
Eurocontrol
WWF

National Governments & Regulators

DCMS (UK)
MID (IT)
MISE (IT)
IT Ministry of Education
OPRED (UK)
Traficom (FI)

Platforms/Foundations

Toilet Board Coalition
The Plastic Bank
Mirpuri Foundation
Genius100 Foundation

Smart Cities/Regions

Technology toppers

Vodafone
AWS

Roma
Torino
L'Aquila
Abruzzo
Groningen

Space Agencies

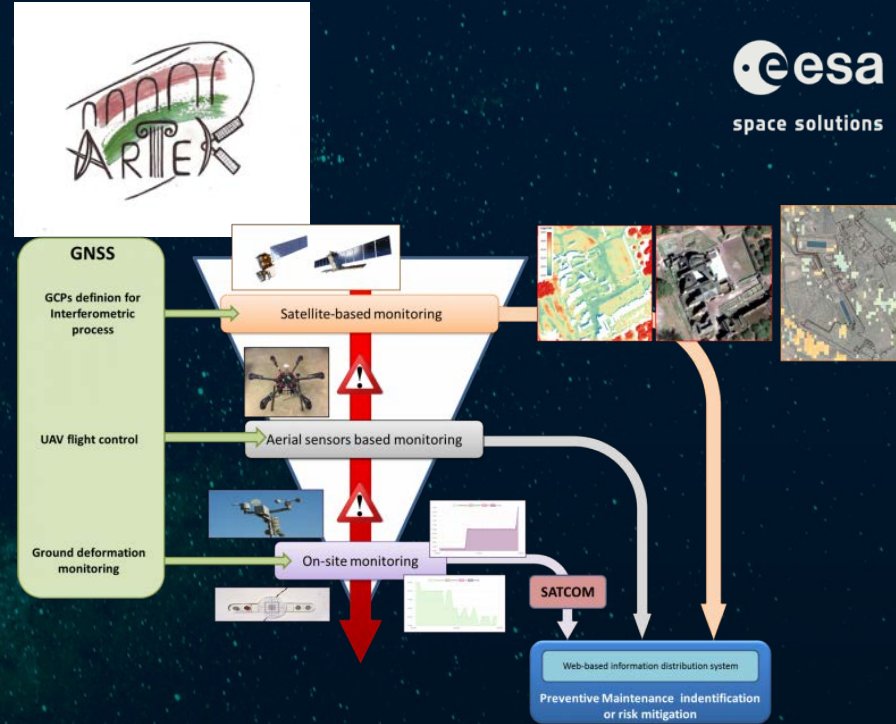
JAXA
AMS
SANSA



Space in support of Cultural Heritage preservation and fruition

ARTEK project

ArTeK provides systematic high frequency monitoring of cultural heritage sites supporting the preventive maintenance of Cultural Property (CP)

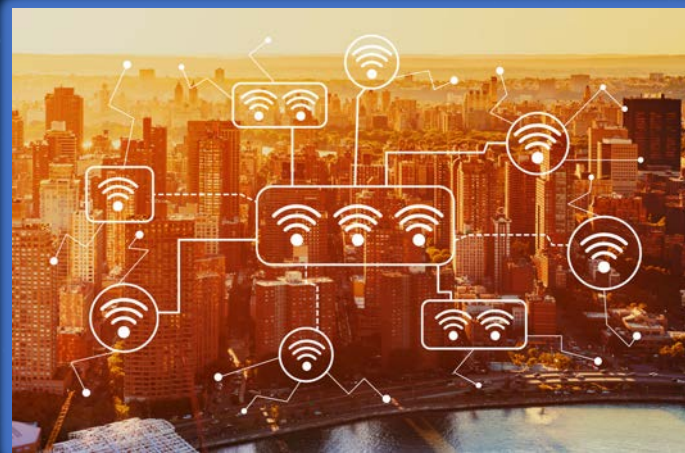


5G for L'ART: L'Aquila and Abruzzo Region, Roma, Torino

- In 2019 ESA has signed three Memorandum of Intent with Roma, Torino, L'Aquila and the Abruzzo Region.
- Scope of the MoIs is on pursuing space based activities making use of the 5th Generation of communication networks.
- ESA Business Applications and the involved municipalities have identified the following thematic:
 - Law enforcement and emergency response
 - **Cultural heritage fruition and preservation**
 - Structural monitoring
 - Intelligent transport



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5G for L'ART: Cultural Heritage projects

Four projects were started with the support of IT Ministry of Cultural Heritage and Tourism and of the Italian Space Agency:

1. **SpacetoTree Demo Project (Prime Digimat):** to design, implement, test and validate a dedicated Alert System (AS) for the **monitoring of the public green**, in particular those located inside areas of relevant historical and cultural sites.
2. **VADUS Demo Project (Prime: Next):** to develop and demonstrate a new set of applications for **the enrichment of the tourists' visit experience** based on the convergence of Augmented Reality (AR)/Virtual Reality (VR) technologies, the 5G networks and satellite services.
3. **POMERIUM Demo Project (Prime: e-Geos)** to implement a **cultural heritage monitoring and management system** in support of ordinary and extraordinary management activities.
4. **AMOR Demo Project (Prime: NAIS):** to develop sustainable services for the **safeguard and fruition of Cultural Heritage in rich and dense historical city centers** affected by a significant anthropic pressure, especially represented by huge visitors' flows.



- New use cases identified by MIBACT:
 - Under water cultural heritage monitoring and fruition and monitoring
 - Preservation of cities threatened by environmental phenomena/climate change
- The integration of satellite assets and data with the data collected by unmanned vessels may be used in this context to develop new applications addressing user needs
- ESA is working on the preparation of a dedicated Call for Proposals “Space for smart and unmanned shipping” based on the needs of stakeholders including MIBACT. The preservation of cultural heritage and resilience to climate change is one of the aspects to be addressed Ministry.





Rita.Rinaldo@esa.int