

Innovation Technologies and Applications for Coastal Archaeological sites (ITACA)



Call Identifier: FP7-SPA-2013-1 one-stage

Work programme topics addressed: Activity: 9.3 Cross-cutting activities; Area 9.3.1: SME specific research; SPA.2013.3.1-01: SME space technology research and technology transfer

Abstract

ITACA project aims to prove a management system for underwater archaeological sites in coastal regions. The discovering and monitoring service uses innovative satellite remote sensing techniques combined with image processing algorithms. The project develops a set of applications integrated in a system that pursue the following objectives:

- *Search and location of ancient ship wrecks;*
- *Monitoring of ship wrecks, ruins and historical artefacts that are now submerged;*
- *Integration of resulting search and monitoring data with onsite data into a management tool for underwater sites;*
- *Demonstration of the system's suitability for a service.*

High resolution synthetic aperture radar (TerraSAR-X, Cosmo-SkyMed) and multispectral satellite data (WorldView) will be combined to derive the relative bathymetry of the bottom of the sea up to the depth of 70 meters. The resulting data fusion will be processed using shape detection algorithms specific for archaeological items.

The availability of the above remote sensing data, combined with innovative processing techniques and optimized for archaeological site, enable the provision of a location and monitoring service for underwater archaeological sites in coastal zones.

The new algorithms, the physical modelling and the computational capabilities will be integrated into the Web-GIS, together with data recorded from surface (2D and 3D modelling) and from underwater surveys. Additional specific archaeological layers will be included into the WebGIS to facilitate the object identification through shape detection techniques and mapping.

The system will be verified and validated through an extensive on-ground (sea) campaign carried out with both cutting edge technologies (side-scan sonar, multi beam echo sounder) and traditional means (submarine exploration with professional scuba divers).

A six months trial service on a selected coastal zone will be performed to provide a service demonstration; which will benefit the participant End User. The dissemination activities will include one international workshop and a final conference, organized in cooperation with the End User¹ with the aim to let ITACA stakeholders aware of the benefit of the developed technologies and service.

¹ The selected partner has been coordinator of the FP6 ARCHEOMAP focused on Archaeological Management Policies

The Team

| No. | Participant organisation name | Acron. | Country |
|-----|--|--------|----------------|
| 1 | Planetek Hellas E.P.E. | PLKH | Greece |
| 2 | Kell S.r.l. | KELL | Italy |
| 3 | Nextant SpA | NXT | Italy |
| 4 | Geographic Resource Analysis & Science A/S | GRAS | Denmark |
| 5 | Hellenic Institute of Marine Archaeology | HIMA | Greece |
| 6 | Instituto de engenharia de sistemas e computadores, investigacao e desenvolvimento em lisboa | INESC | Portugal |
| 7 | ANESTI Ltd. | ANES | United Kingdom |
| 8 | Servizio Soprintendenza dei Beni culturali e ambientali del Mare della Regione Siciliana | SPM | Italy |
| 9 | Alma Sistemi sas | ALMA | Italy |
| 10 | Codevintec Italiana S.r.l. | CDV | Italy |
| 11 | SME4SPACE | S4S | Belgium |

