



The ARCHEOSub Project is co-funded by the European Union

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*Surveying, conservation, protection and valorization of
underwater cultural heritage*

Chiara Petrioli

BlueLab projects kickoff, Bruxelles, March 9th 2017



The team



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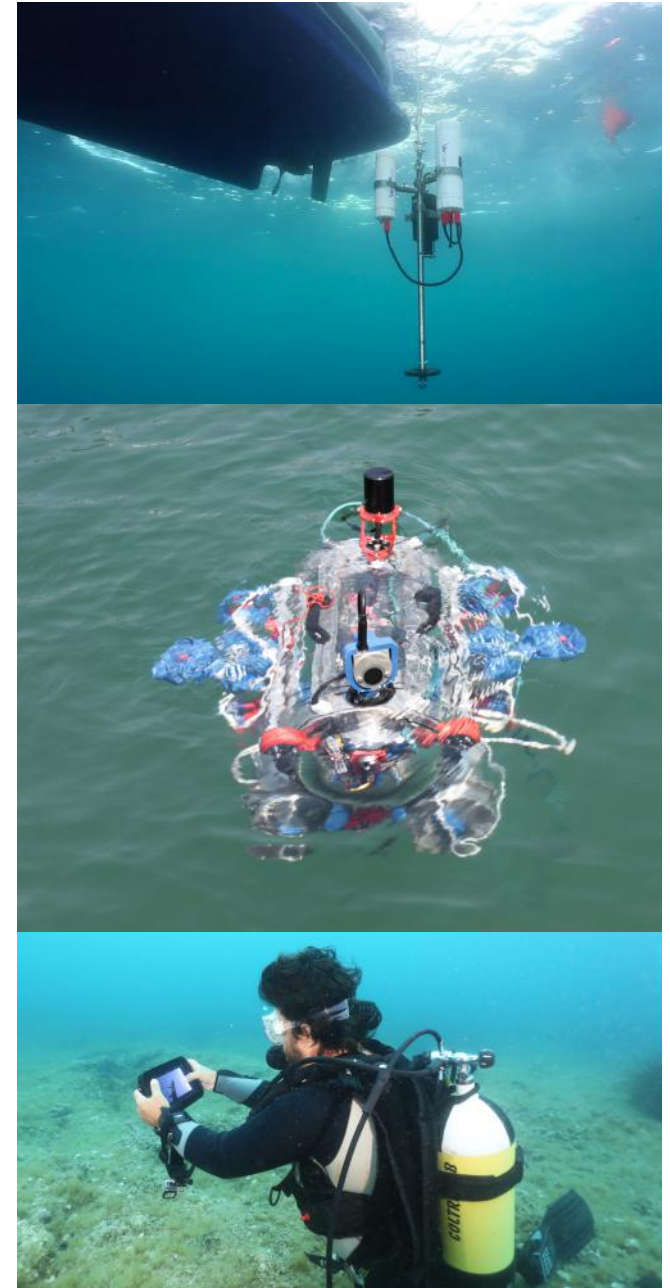
SAPIENZA
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ARCHEOSUB – The context

- +1000 underwater archaeological sites offshore the Italian coast (source: Archeomar project)
 - Many more across the Mediterranean basin
 - UNESCO Convention on the protection of the Underwater Cultural Heritage recommends in situ conservation
 - Demanding for surveillance systems, monitoring of conservation status
 - Posing the issue of how to combine protection of such sites with their valorization (also in line with BLUEMED Strategic Research and Innovation Agenda)
 - High interest in valorization of such sites for touristic purposes
- Need for turn-key low cost, simple to use, unintrusive solutions



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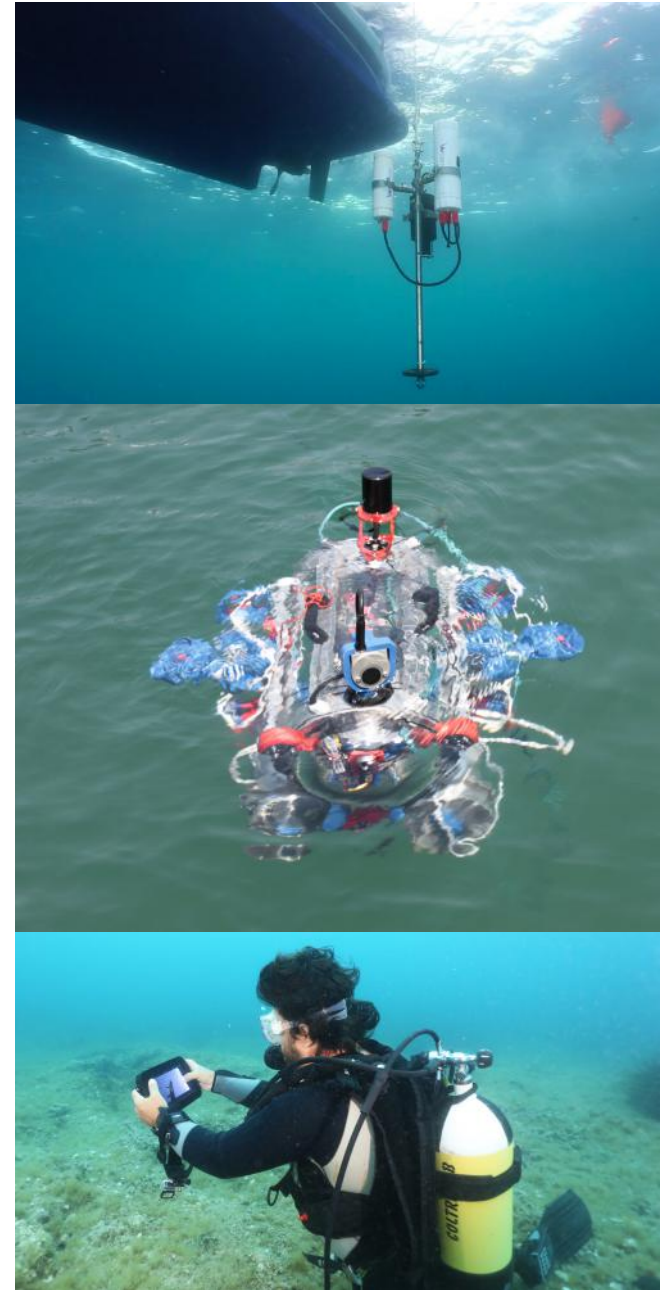


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ARCHEOSUB Objectives

- Low cost underwater AUV supporting archaeologists across all phases of operation
 - Localization system for divers and AUV navigation
 - Acoustic real-time transmission of AUV site acquisition and of data from underwater cameras
 - Underwater sensor networks
- Services to support underwater archaeologists
- Underwater Surveillance Systems
- Itineraries for divers

Field tests in Populonia Baratti, Pyrgi, Caesarea



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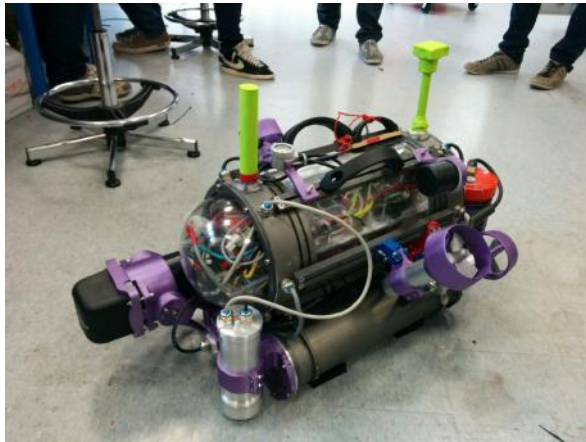
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UNDERWATER COMMS – Why it is so challenging



ARCHEOSUB Objectives

- Low cost underwater AUV supporting archaeologists across all phases of operation



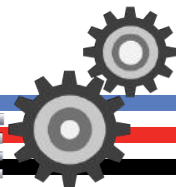
Target: depth 50-60m

Cost: 50K

Trade off accuracy vs. cost of payloads

Support of the network for navigation very important challenge

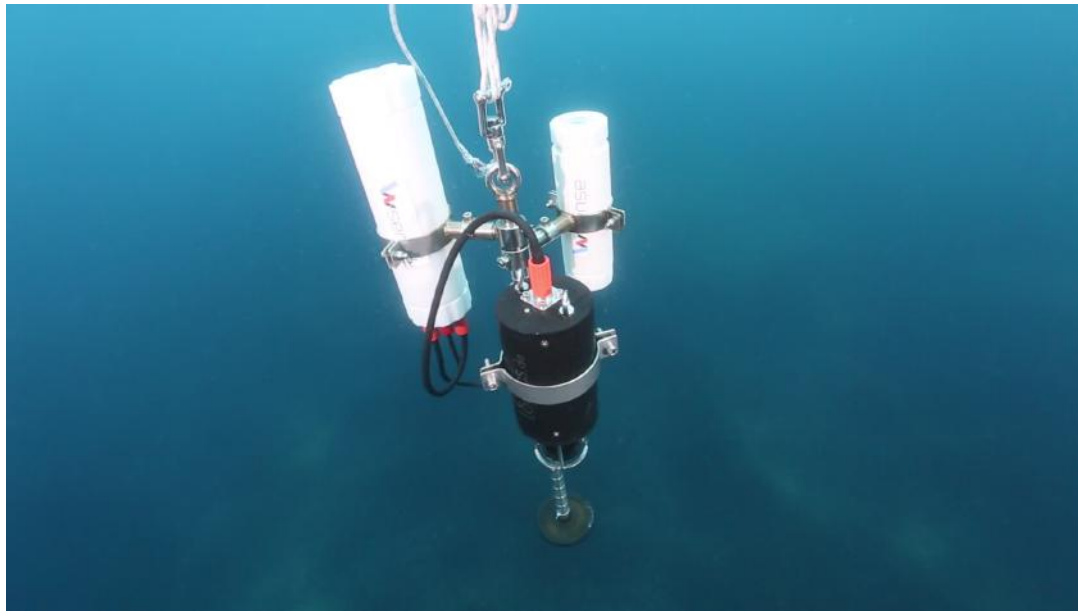
MDM TEAM



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ARCHEOSUB Objectives

- Localization system for divers and AUV navigation
- Underwater sensor networks for surveillance



- Multi-modal modems
- Sensors
- Videocameras
- Localization system

Target: Cost: 20K
Multi-purpose

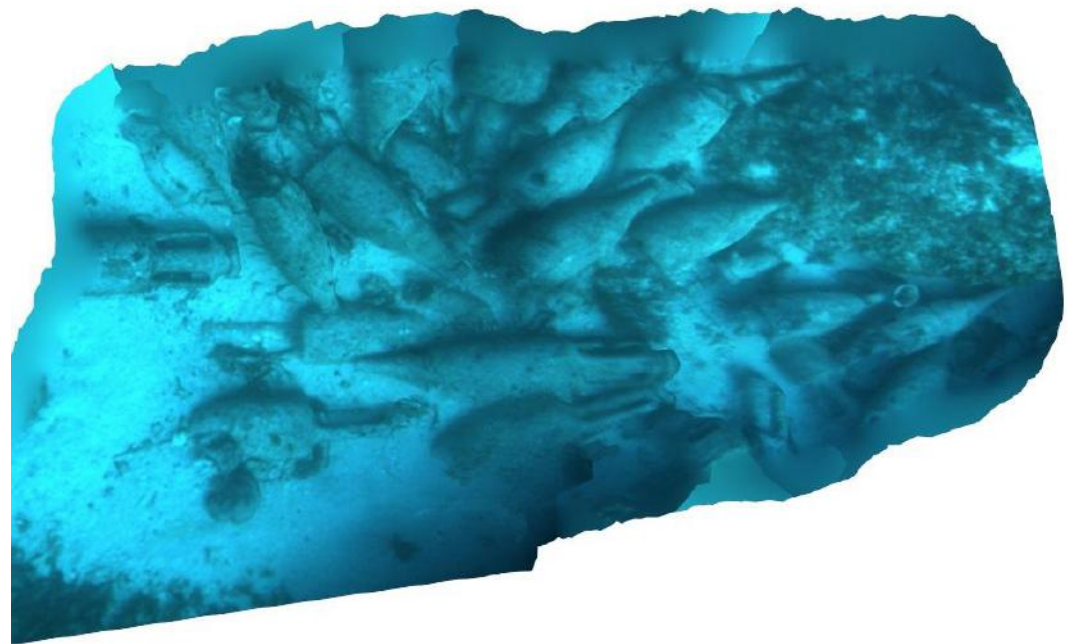
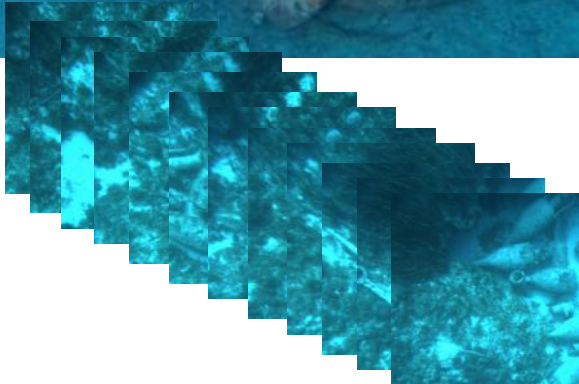
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ARCHEOSUB Objectives

- Acoustic real-time transmission of AUV site acquisition and of data from underwater cameras



Big challenge: best combination of modem + perception/compression techniques+ smart networking. Ambition: camera data transmission, possibly sonar + mosaiking techniques

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ARCHEOSUB Timeline

	feb-17	mar-17	apr-17	mag-17	giu-17	lug-17	ago-17	set-17	ott-17	nov-17	dic-17	gen-18	feb-18	mar-18	apr-18	mag-18	giu-18	lug-18	ago-18	set-18	ott-18	nov-18	dic-18	gen-19
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24
WP1 - Project Management & Coordination			D1.1			D1.2						D1.2						D1.2						D1.2
T1.1 Setting up of the project management structure		*							*							*							*	
T1.2 Project Internal coordination																								
T1.3 Project monitoring and reporting																								
T1.4 Risk management																								
T1.5 Innovation management																								
WP2 - User requirements and system architecture		D2.1		D2.2														D2.2		D2.3				
T2.1 User requirements																								
T2.2 System architecture design and development																								
T2.3 Integration																								
WP3 - System development									D3.1 D3.2		D3.3							D3.4 D3.5						
T3.1 Development of a low-cost Autonomous Underwater Vehicle for archaeological surveying and monitoring																								
T3.2 Development of underwater sensor nodes for environmental monitoring and surveillance																								
T3.3 Localization of AUVs and underwater assets																								
T3.4 Image compression																								
T3.5 Implementation of an innovative system for divers augmented reality																								
WP4 - Testing and field demonstration																		D4.2			D4.1			D4.3 D4.4
T4.1 Software and hardware integration																								
T4.2 Preliminary lab/sea experiments																								
T4.3 Demonstration of the integrated system in different UCH sites																								
WP5 - Stakeholder engagement. Dissemination & awareness raising		D5.1										D5.2												D5.3
T5.1 Planning of the communication & dissemination activities																								
T5.2 Setting-up & maintenance of the project website																								
T5.3 Creating durable smart partnerships																								
T5.4 Technical dissemination activities																								
T5.5 Information & awareness raising activities for the general public																								
T5.6 Closing Workshop and Exhibition																								
T5.7 Networking with other projects and initiatives																								
WP6 - Exploitation and market access	D6.1		D6.2																					D6.2 D6.3
T6.1 Protection of ARCHEOSub outcomes and results																								
T6.2 User needs identification																								
T6.3 Market analysis																								
T6.4 Developing a preliminary commercialisation plan																								
T6.5 Search for further public/private funding to sustain the commercialisation phase																								

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ARCHEOSUB Key Deliverables and Milestone, Y1

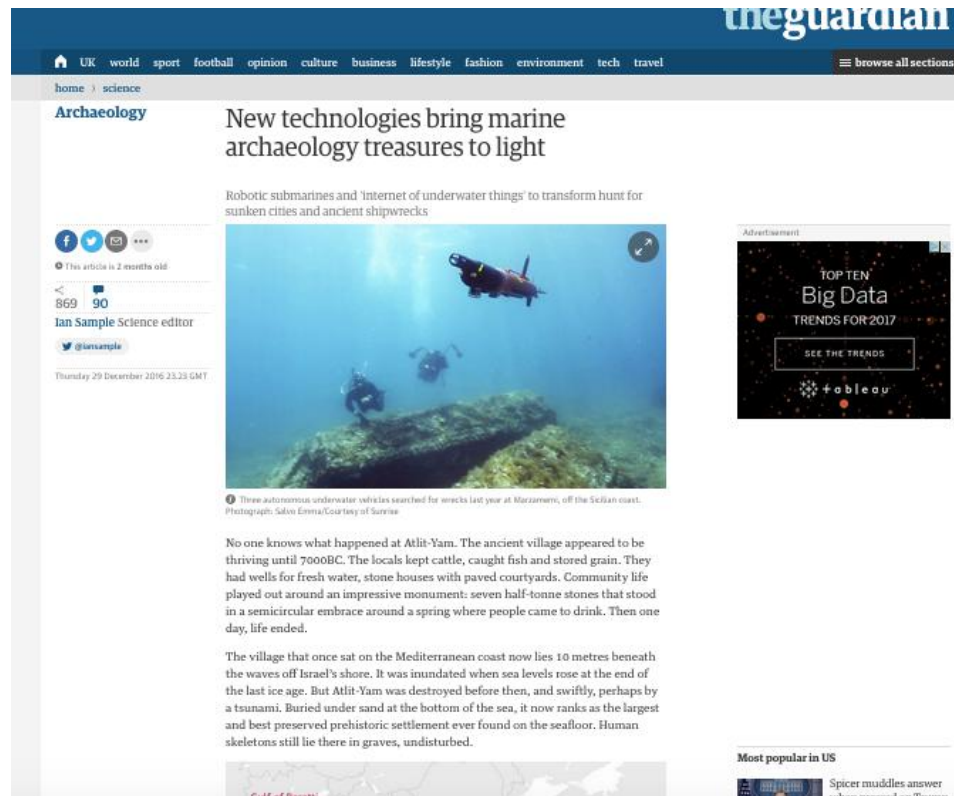
Deliverables : 1st year	
Deliverable Title	Month due
D6.1 IPR consortium agreement	1
D2.1 – User Requirements	2
D5.1: Dissemination and Communication Plan	2
D1.1 Project Inception Report	3
D6.2 Exploitation Plan	3 - final version 24
D1.2: Contractual Interim, Periodic and final reports with related financial information	6, 12, 18, 24
D3.1 – Report on the design of the low cost AUV	9
D3.2 – Report on the design of the underwater sensor nodes	9
D3.3 – Description of the low cost acoustic localization system for the AUVs	12
D5.2: First dissemination and communication package	12

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ARCHEOSUB Communication

- Strong comm team already set up



- First success!
- Challenge: exploit communications for exploitation

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Contacts



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