GUANAY II

Underwater Autonomous Vehicle

The vehicle moves over the surface and can do immersions in pre-established points.

- Dimensions: 2300 x 320 mm.
- Weight: 85kg.
- Maximum depth: up to 30m.
- Structure: double hull.
1. SARTI core research themes and interests

The Technological Development Centre for Remote Acquisition Systems and Information Treatment (SARTI), from the Polytechnical University of Catalonia, has as main purposes the development of scientific and technological instruments and the acquisition of data from remote systems, especially for controlling systems (submarine robots), for signal processing and developing networked devices for the oceanographic instrumentation. SARTI is also a place with a specific know-how that allows the interaction between engineers and scientists for developing and innovate information and marine technologies.

Intelligent sensors-networks are one of the developing lines of the Oceanographic instrumentation, where sensors are distributed over an area (geographically or spatially) and are all interconnected through a communication network. The data management and acquisition from the network is based on the standardization of the installation and operational modes, which allows the interchange of instruments between different networks and platforms. The design of underwater vehicles and the control of its systems is a complementary developing line, which provides support to the oceanographic instrumentation.

Signals and images processing has evolved from the acquired experience in the development of low-cost hardware and processing systems for biometric identification, which is another developing area, where improvements and contributions have been made. This is the adaptation for tests with ROVs. On this research line, smart sensor interfaces, SensorML, and currently it is under development a platform for research projects on sensors interoperability, which allows the interchange of instruments between different networks and platforms. The design of underwater vehicles and the control of its systems is a complementary developing line, which provides support to the oceanographic instrumentation.

2. SARTI Technological Maturity.

Currently, the maturity of our technology allows us to follow three specific areas: first, the deployment of the underwater laboratory OBS4A, and with it, the integration of a sensors network which acts as a platform for oceanic observation with a remote access to the data via a web page application; second, the development of an Ocean Bottom Seismometer (OBS); and finally, the design of Autonomous Submarine Vehicles.

The OBS4A is a cabled seafloor observatory at 4 km offshore of Vilanova i la Geltrú coast, located in a fishing protected area and interconnected to the coast by an energy and communications mixed cable. Currently, four instruments are connected to the station is bidirectional through an industrial modem radio. The communication between the vehicle and the land station is bidirectional through an industrial modem radio.

3. SARTI projects and funding

- CTM2009-08867 (subprograma MAR). MICINN (Ministerio de Ciencia e Innovación) Universitat Politécnica de Catalunya: Interoperabilidad en redes de sensores marinos y ambientales
- NCIA : ACI2009–0983. FCI. ACI–PROMOCIONA Subdirección General de Instalaciones y Organismos Internacionales. MICINN: Operatividad laboratorio Submarino OBS4A
- VALTEC09–0059. CENTRE D’INNOVACIÓ I DESENVOLUPAMENT EMPRESARIAL (CIDEM) Generalitat de Catalunya. Valoritza de Tecnologia: Sismómetro mari digital amb connexió per cable
- TRA2009_0294. Ministerio de Ciencia e Innovación: Redes de sensores submarinos acústicos aplicados al seguimiento de especies de interés comercial
- CTM2006-12072/MAR. Ministerio de Ciencia e Innovación: Acometimiento hidroacústico oleaje corriente, tasas de dispersión e implicaciones interdisciplinarias en la zona costera

4. SARTI most relevant citations

**1. Funding:**

National networks, can be invited to participate
- pay for traveling, not for people’s salaries, equipment
- not a lot of $’s; will not support complete cost
- apply for a special action for organizing a workshop
  + to do so, need to know where the WS will be

National projects
  - Can ask for funding only once every 3 yrs
  - Can participate in only one proposal
  - Funding has been reduced

Regional Governments
  - Support at local level if you bring equipment/experiments to the local area
  - Cartagena has line of funding for meetings/does not cover all costs
  - Need to check with local government
    - Vigo not viable because of conditions
      - JS to check with Port. Navy about connections with Cartagena
      - JG will check with retired Spanish Navy person
      - JG will check with local govt.
      - JdR will check local Vilanova govt + university
      - MC will check with Catalan govt + university

Cooperation funding in Portugal (JS)

European
  - Not focused for the time being. Do small experiment(s) first and then evolve subsequently into something larger.

**2. When:**

If experiment happens in Sept in Vilanova, then a buoy will be connected to OBSEA

End of Sept 2011 is better for everyone

Note that Martech Nov 2011 in Cadiz (run by UPC)

**3. Locations:**

1. Cartagena
   - coastal lagoon
   - Near Cape Tinoso
2. Vigo
3. Border area of southern Portugal/Spain (near Cadiz)
4. Near OBSEA
5. Near Girona (various)

**4. Potential equipment for a simple experiment:**

1. Porto: Catamaran, Remus AUVs, buoys
2. Cartagena: 1 AUV (ex. Navy)
3. Girona: SPARUS AUV
4. SARTI: Data System backend
5. Belearic Is: Glider (check with Bart)

**5. Action items:**

1. Documents what each group will need to interact. Also a measure of commitment
   a. how do AUV’s transmit data and how to collect and archive
   b. KR to talk to Bart about being POC for data system
   c. DB needs list of actions that can be made for the planner
   d. JS has an interface for simulation for all their vehicles
2. JdR will come up with a Wiki site
3. BG volunteered for mailing list
4. EM to generate a pamphlet/document for all participants presentations
5. Separate action items to check with local govs. for funding
   (see above in funding)