

The Technical University of Catalonia (UPC)



Joaquín del Río Fernández
SARTI research group

Assistant Professor: Electronics Department
Technical University of Catalonia, UPC

www.obsea.es
www.cdsarti.org
www.epsevg.upc.edu
www.upc.edu

Contents

- The Technical University of Catalonia (UPC), Barcelona, Spain.
- The Technical Engineering School of Vilanova i la Geltrú (EPSEVG)
- SARTI Research Group: Remote Acquisition Systems and and Signal Processing.
- OBSEA Project.

The Technical University of Catalonia (UPC)



Localization: **Barcelona – Spain**

Schools: **23**

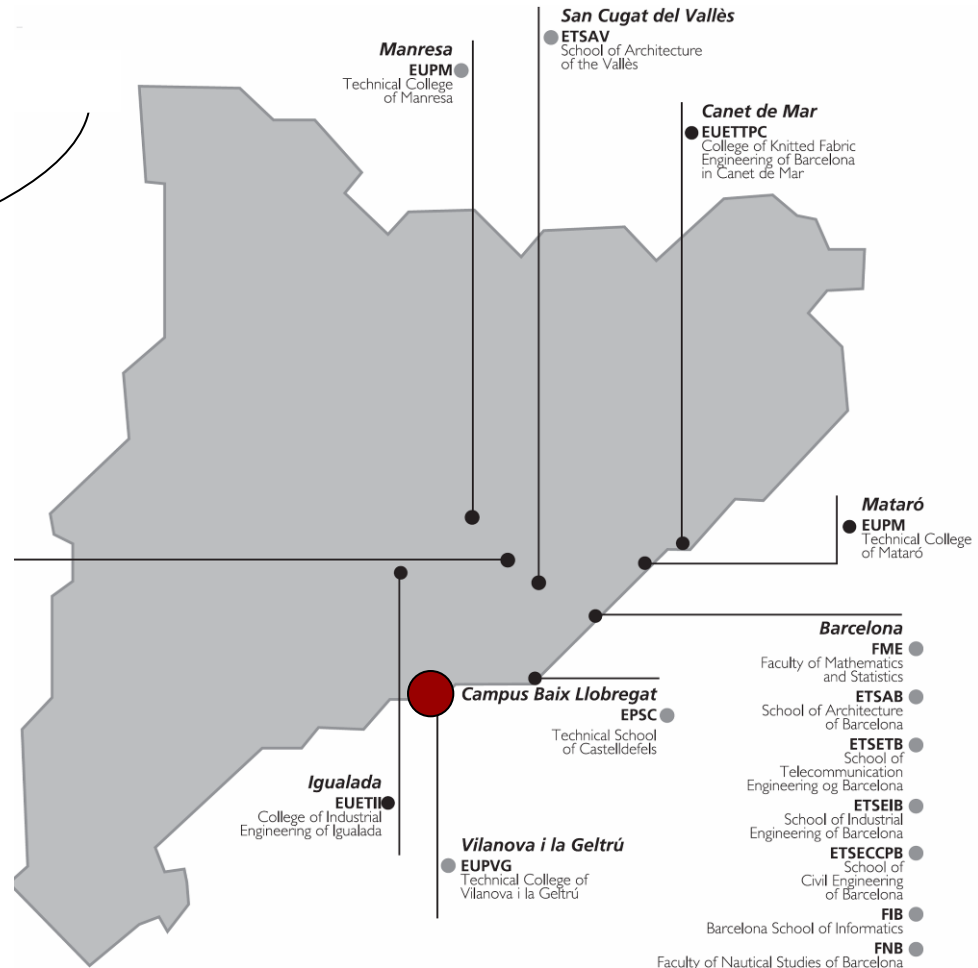
Departments: **40**

Campus: **7**

Students: **40000**

Lectures & researcher: **2642**

Research Institutes: **3**



The Technical University of Catalonia (UPC)

MAIN FIGURES

27,678 bachelor and master students

2,985 postgraduate cycle students

4,720 students at associated schools

4,752 lifelong learning students

65 bachelor and master cycle courses

15 schools

8 associated schools

13 libraries

2,642 academic and research staff

1,294 administrative and service staff

The Technical University of Catalonia (UPC)

EDUCATION AREAS

Architecture
Civil Engineering
Mathematic Sciences
Industrial Engineering
Health Sciences
Nautical Studies
Economics
Computer Science
Telecommunications
Multimedia and Photography
Farming and Forestry
Aeronautics

RESEARCH AREAS

Architecture
Civil Engineering
Social, Human and Life Sciences
Physics and Chemistry
Mathematics and Statistics
Environment
Energy
Natural Resources
Information and Communication
Technologies
Production Technologies

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The School of Engineering



Escola Politècnica Superior
d'Enginyeria de Vilanova i la Geltrú

UNIVERSITAT POLITÈCNICA DE CATALUNYA



Edificio EPSEVG



Centre Tecnològic
de Vilanova i la Geltrú

Edificio Centro Tecnológico.
SARTI Headquarters

The School of Engineering



Escola Politècnica Superior
d'Enginyeria de Vilanova i la Geltrú

UNIVERSITAT POLITÈCNICA DE CATALUNYA



The School of Engineering

1901

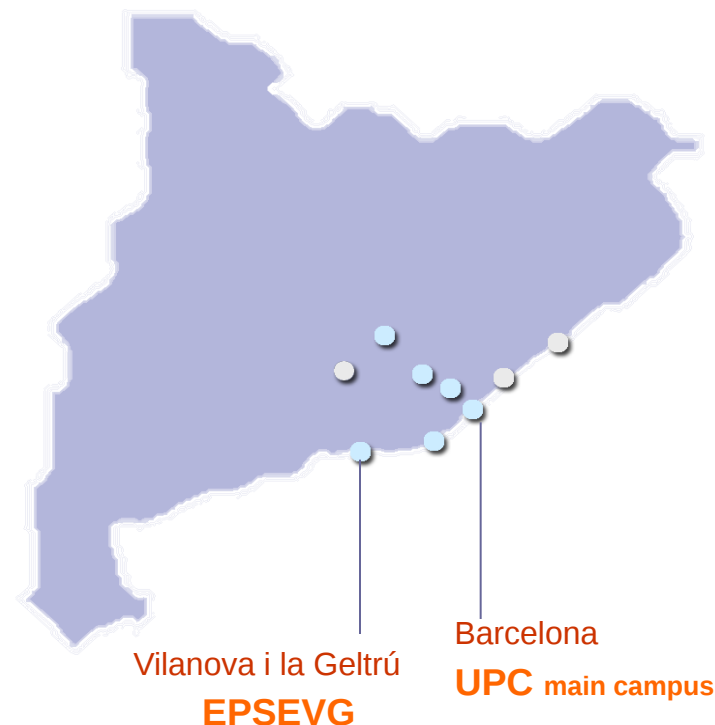
It was founded as an arts
and crafts school

1972

It became part of the
Technical University of
Catalonia (UPC)

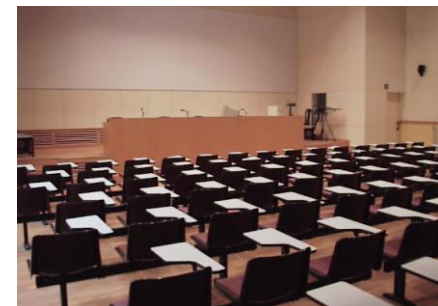
2001

The university campus is
born with new facilities
and services



Main indicators

- 1500 students
 - 200 academic and research staff
 - 50 administrative staff
 - 17 departments
-
- 14.000 m²
 - 22 lecture rooms
 - 22 laboratories
 - 8 computer rooms



Studies: now deeply involve in the Bologna Process

Graus d'Enginyeria àmbit TIC:

- Grau en Enginyeria Informàtica
- Grau en Enginyeria de Sistemes Electrònics

Graus d'Enginyeria àmbit industrial:

- Grau en Enginyeria de Disseny Industrial i Desenvolupament del Producte
- Grau en Enginyeria Mecànica
- Grau en Enginyeria Elèctrica
- Grau en Enginyeria Electrònica Industrial i Automàtica

Ensenyaments de 2n cicle d'Enginyeria:

- Enginyeria Superior en automàtica i electronica industrial

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SARTI Research Group

- Centro de Desarrollo Tecnológico de Sistemas de Adquisición Remota y Tratamiento de la Información (SARTI) de la Universitat Politècnica de Catalunya
- Scientific and technological development of remote acquisition systems and instruments mainly focus on oceanographic instrumentation.
- Analog and uC based Electronic Designs

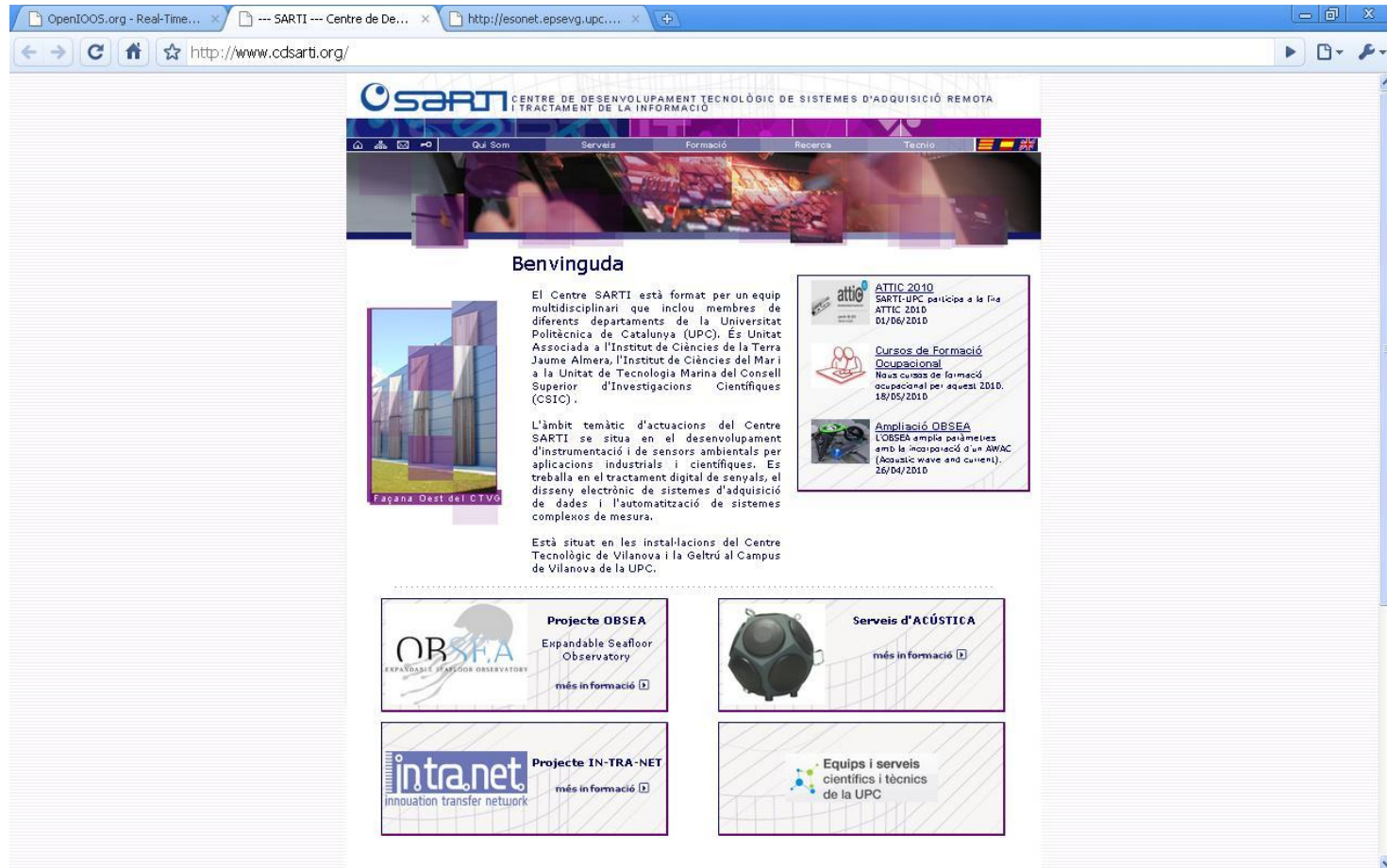
SARTI's Personnel

- 
- Arbós Martos, Alejandro
 - Artero Delgado, Carla
 - Bghiel, Ikram
 - Cadena Muñoz, Javier
 - Carreras Pons, Normandino
 - del Río Fernández, Joaquín
 - Garcia Benadí, Albert
 - Hidalgo Castro, Alberto
 - Mànuel Làzaro, Antoni
 - Molino, Erik
 - Nogueras Cervera, Marc
 - Sanchez Garcia, Antonio Francisco
 - Santamaria Català, Josep
 - Sarrià Gandul, David
 - Shariat-Panahi Ghaderinejad, Shahram
 - Toma, Daniel Mihai
 - Vidal Oliveras, Neus
 - Spartacus Gomariz
 - Rafael Ramos
 - Mariano Lopez
- Tècnic d'aplicacions hardware
 - Tècnic d'aplicacions hardware
 - Becaris i Doctorands
 - Tècnic d'aplicacions hardware
 - Becaris i Doctorands
 - Cap de projectes electrònics
 - Tècnic d'aplicacions hardware
 - Tècnic d'aplicacions informàtiques
 - Director
 - Becaris i Doctorands
 - Cap de projectes electrònics
 - Cap de projectes electrònics
 - Responsable de qualitat
 - Tècnic d'aplicacions hardware
 - Tècnic d'aplicacions hardware
 - Becaris i Doctorands
 - Cap de formació
 - PDI
 - PDI
 - PDI

... more than 20 people

CENTRE DE DESENVOLUPAMENT TECNOLÒGIC DE SISTEMES D'ADQUISICIÓ REMOTA
TRACTAMENT DE LA INFORMACIÓ

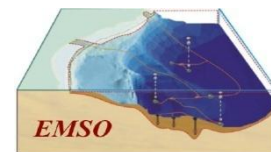
www.cdsarti.org



The screenshot shows the website of the Centre SARTI (Centre de Desenvolupament Tecnològic de Sistemes d'Adquisició Remota i Tractament de la Informació). The website is in Catalan and features a navigation bar with links to 'Qui Som', 'Serveis', 'Formació', 'Recerca', and 'Tècnies'. The main content area includes a 'Benvinguda' (Welcome) section with a description of the center, a 'Fàbrica Oest del CTVD' image, and several project and service highlights. The highlights include 'Projecte OBSEA' (Expandable Seafloor Observatory), 'Projecte IN-TRA-NET' (Innovation transfer network), 'Serveis d'ACÚSTICA' (Acoustic services), and 'Equips i serveis científics i tècnics de la UPC' (Scientific and technical equipment and services of the UPC). The website also mentions 'ATTIC 2010' and 'Cursos de Formació Ocupacional'.

SARTI membership's

- Miembro Red de Innovación Tecnológica (CIDEM, ahora ACC10 TECNIO)
- Miembro Red AEGIS (Ability Enlargement For Geophysicists and Information Technology Specialists) de la Comunidad Europea. IST-2000-26450
- Participa en las redes temáticas europeas de observatorios marinos **ESONET** (*European Seas Observatory Network*): VI Frame Program European Seas Observatory NETwork FP6-2005-Global-4 - ESONET 036851-2
- VII Frame Program European Multidisciplinary Seafloor Observation **EMSO** FP7 Infraestructures-2007-1. Proposal 211816
- Miembro red Temática de Riesgos Naturales (RYSKAT) DURSI Generalitat de Catalunya 2003/XT/00076
- Centro Colaborador 427 Servicio Catalán de Ocupación



SARTI. Important activity in Technology Transfer Projects to Companies

- Centro Formador de National Instruments.
National Instruments Certified Instructors (NICIs)
 - Instrumentación Controlada por ordenador
 - 3 llibros Thomson. Aplicaciones industriales
- **Renesas** University Program Member
- DET NORSKE VERITAS certificado sistema de gestión conforme a la norma ISO9001:2000 para el campo de aplicación:
 - Diseño Electrónico, Aplicaciones Informáticas, Gestión de la formación para Empresas y Ocupacional en materias de Informática y Electrónica
- Dirección Laboratorio Metrología Dimensional Acreditación ISO/IEC 17025



SARTI membership's

SARTI is an Associate Unit to CSIC (Consejo Superior Investigaciones Científicas)

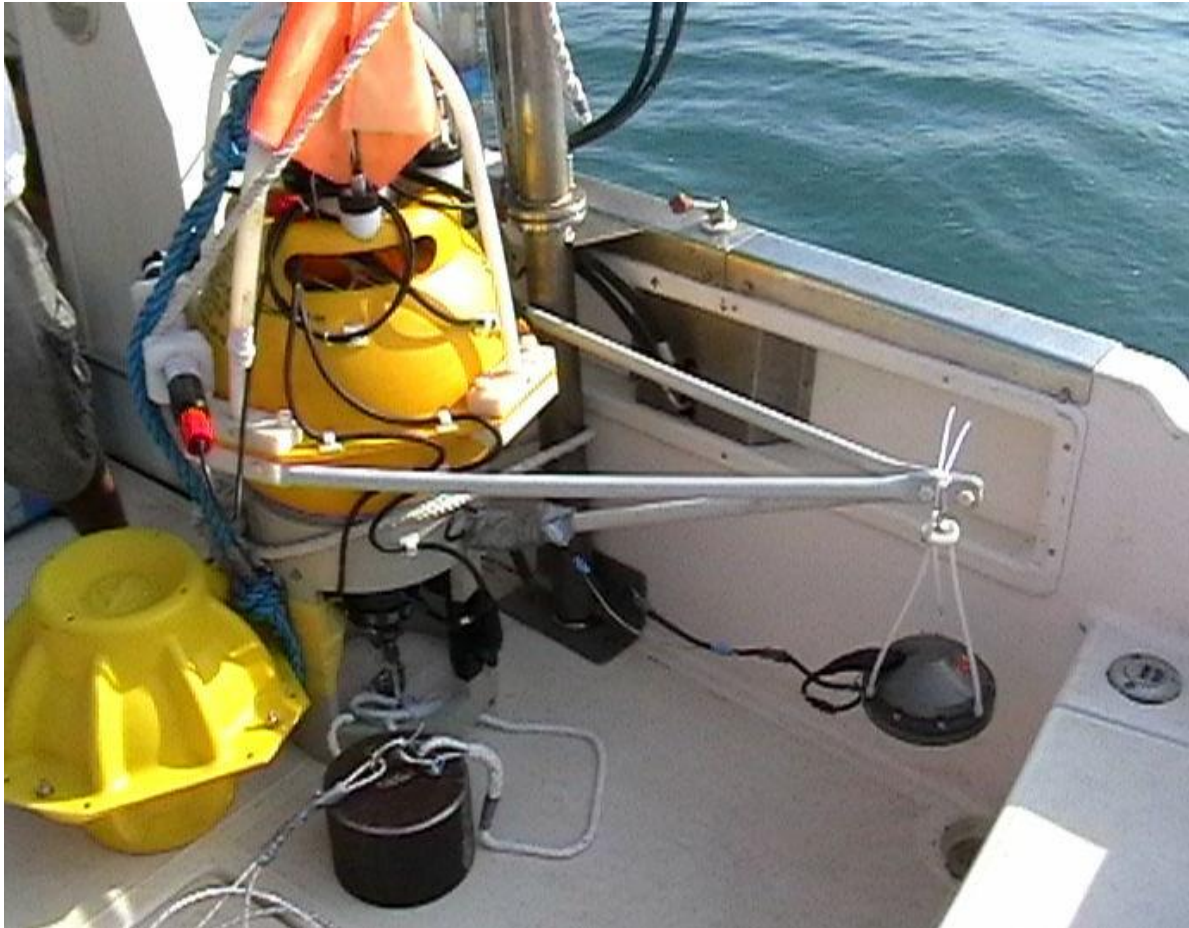
- **Tecnoterra** is the name of the Association between different instituts wihtin the CSIC and SARTI within UPC. Desarrollo Tecnológico de Sistemas de Adquisición Remota Aplicado a las Ciencias de la Tierra.
 - Earth Science Institut, Instituto Ciencias de la Tierra, Jaume Almera. CSIC
 - Marine Science Insititute, Instituto Ciencias del Mar. CSIC
 - Marine Technology Unit, Unidad de Tecnología Marina. UTM-CSIC
- Grupo Investigación Consolidado (DURSI). 00708. Recursos marinos renovables.

OBSEA: SARTI-UPC and UTM-CSIC Collaboration

- **The UTM together with the Marine Science Institute belongs to the Natural Resources Area of the CSIC, and both are integrated in the Mediterranean Centre for Marine and Environmental Research.**
- **The UTM is National Technical Service for Marine and polar Science (from 1992). Large Scale Facilities (ICTS) technical/technological support, maintenance & logistics.**
- **Marine Science & Technological Development. To generate knowledge and formation of the marine environment and advance in a sustainable development of the seas, coastal areas, and marine resources of Spain**

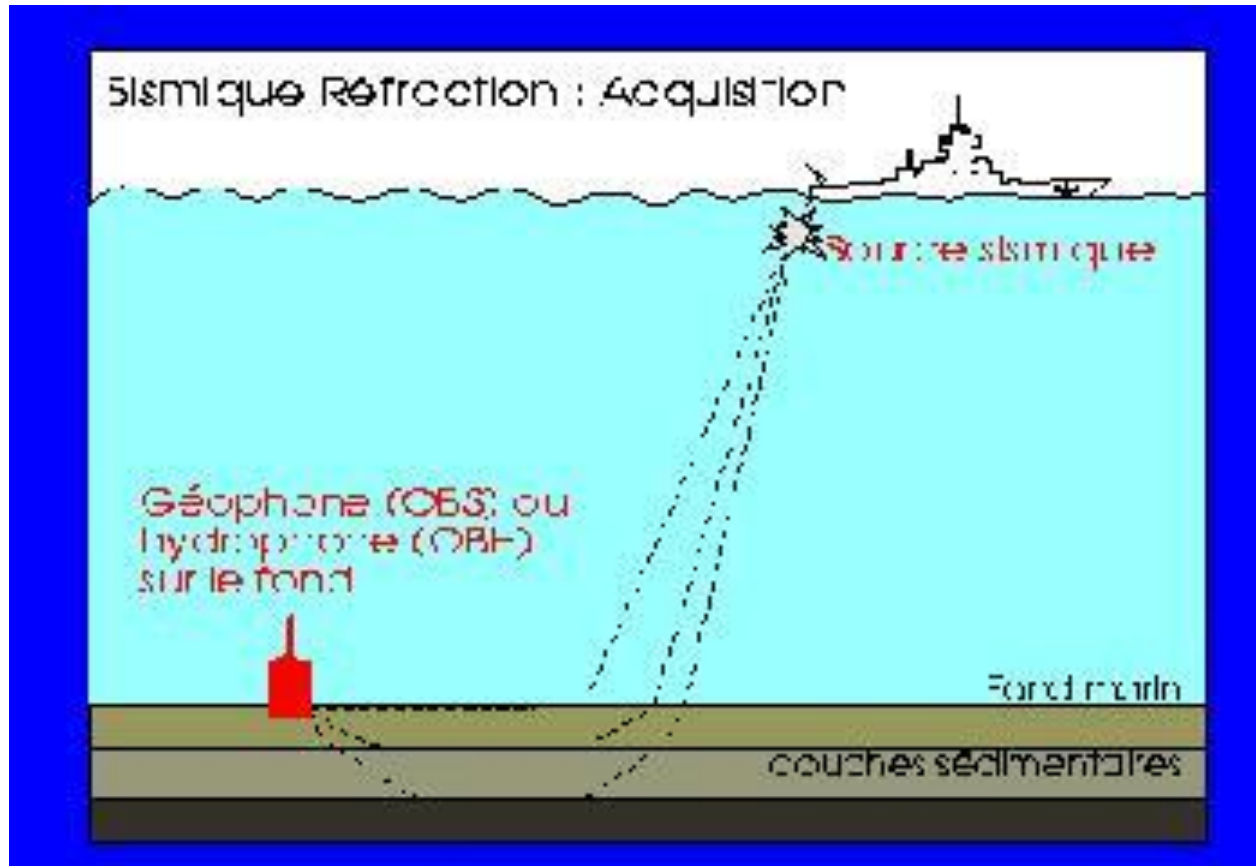
ESONET NoE and **EMSO PP** are two projects dedicated to deep sea observatories implementation in European seas. They are co-funded by the European Commission in the framework programme FP6 and FP7 respectively

SARTI: Ocean Bottom Seismometers, OBS



SARTI: Ocean Bottom Seismometers, OBS

Refraction seismicity: OBS's



SARTI

Crayfish emergence activity rhythms (nephrops norvegicus) and his influence on the population assessment. CTM2005-02034/MAR



Acquisition and tracking system to
measure emergence activity rhythms on
Nephrops Norvegicus population assessment

SARTI Crayfish emergence activity rhythms (*nephrops norvegicus*) and his influence on the population assessment. CTM2005-02034/MAR

- ✓ Custom Electronic system based on Infrareds barriers data acquisition and USB communication. LabVIEW application monitoring the activity
- ✓ infrared image acquisition
- ✓ Blue light (480nm) day-night simulation

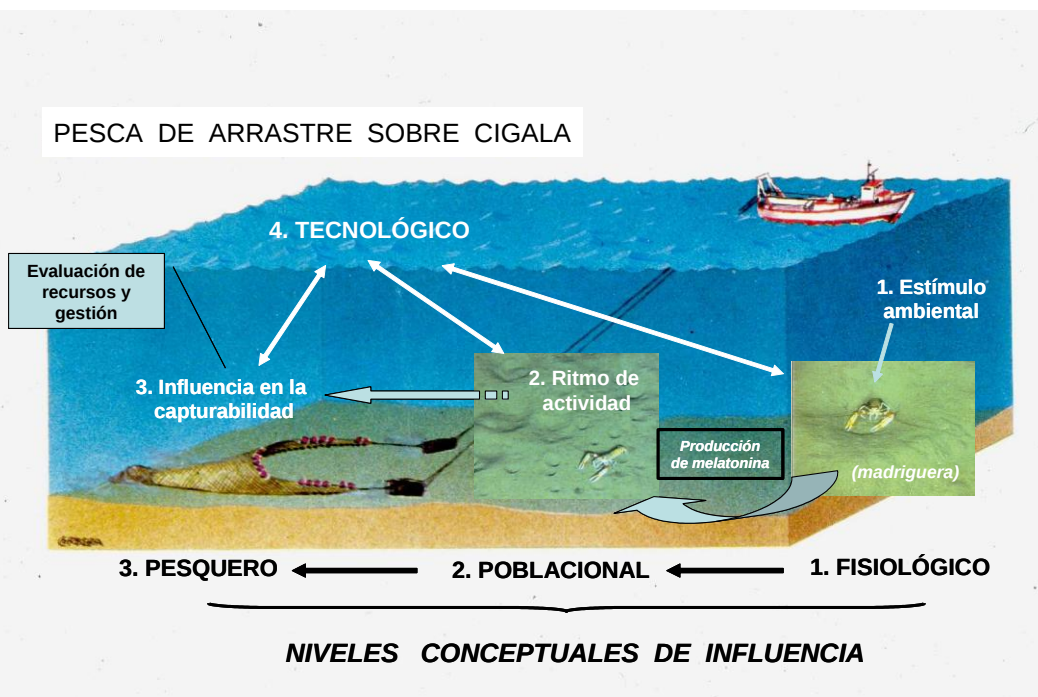
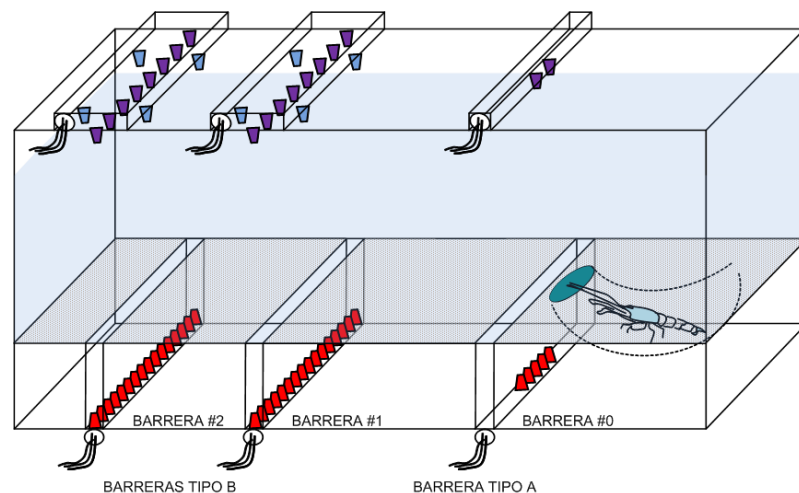


Fig. 1



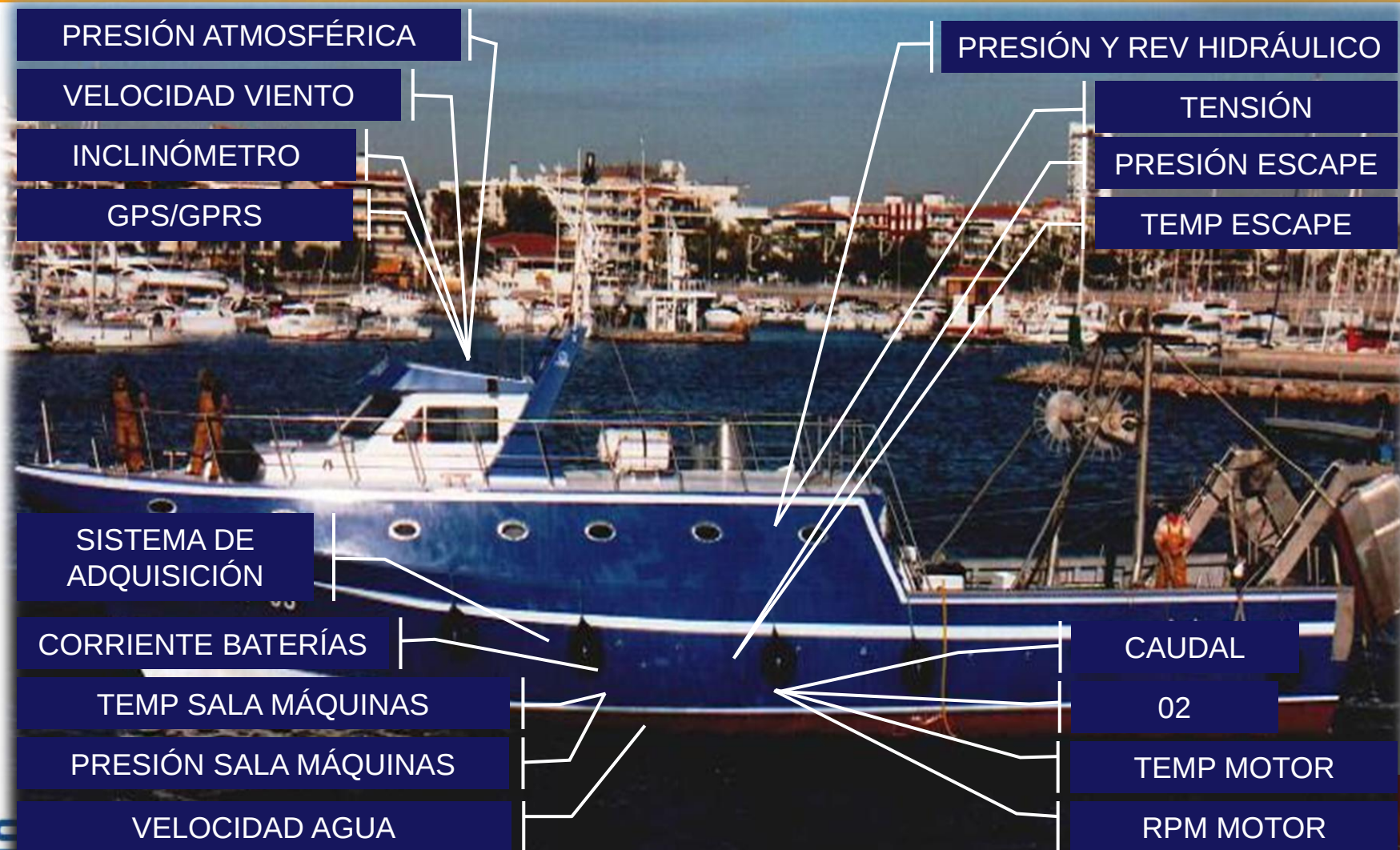
SARTI: Congress organization



3rd INTERNATIONAL WORKSHOP ON MARINE TECHNOLOGY
1st, 2nd and 3rd took place in Vilanova I la Geltrú. Barcelona.
4th Edition, 2011: Universidad de Cadiz



SARTI: Catalan Trawl fishing fleet efficiency evaluation



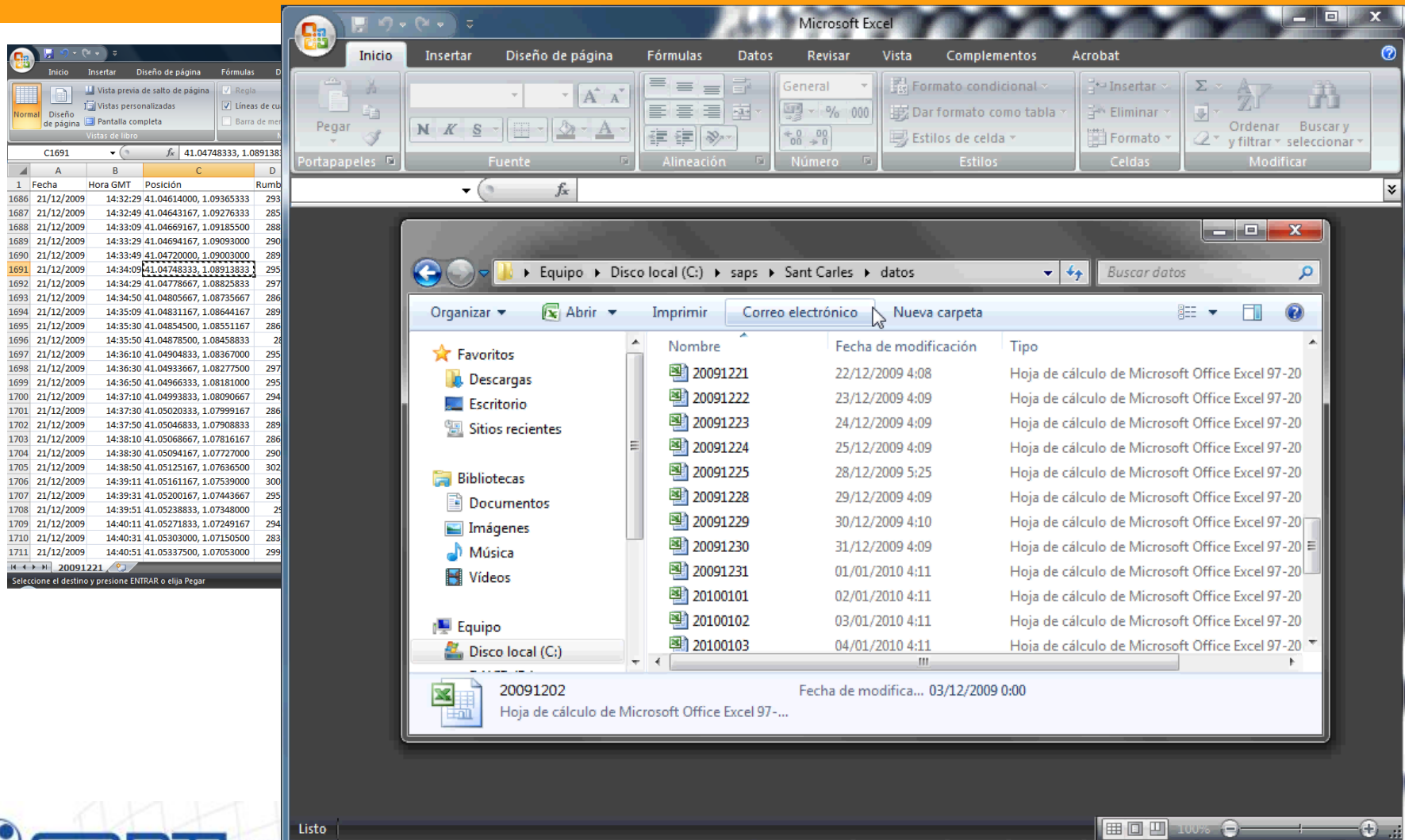
SARTI: Catalan Trawl fishing fleet efficiency evaluation

Targets:

- Improvements on hidrodinamics
- Improvements on ship management and Navigation

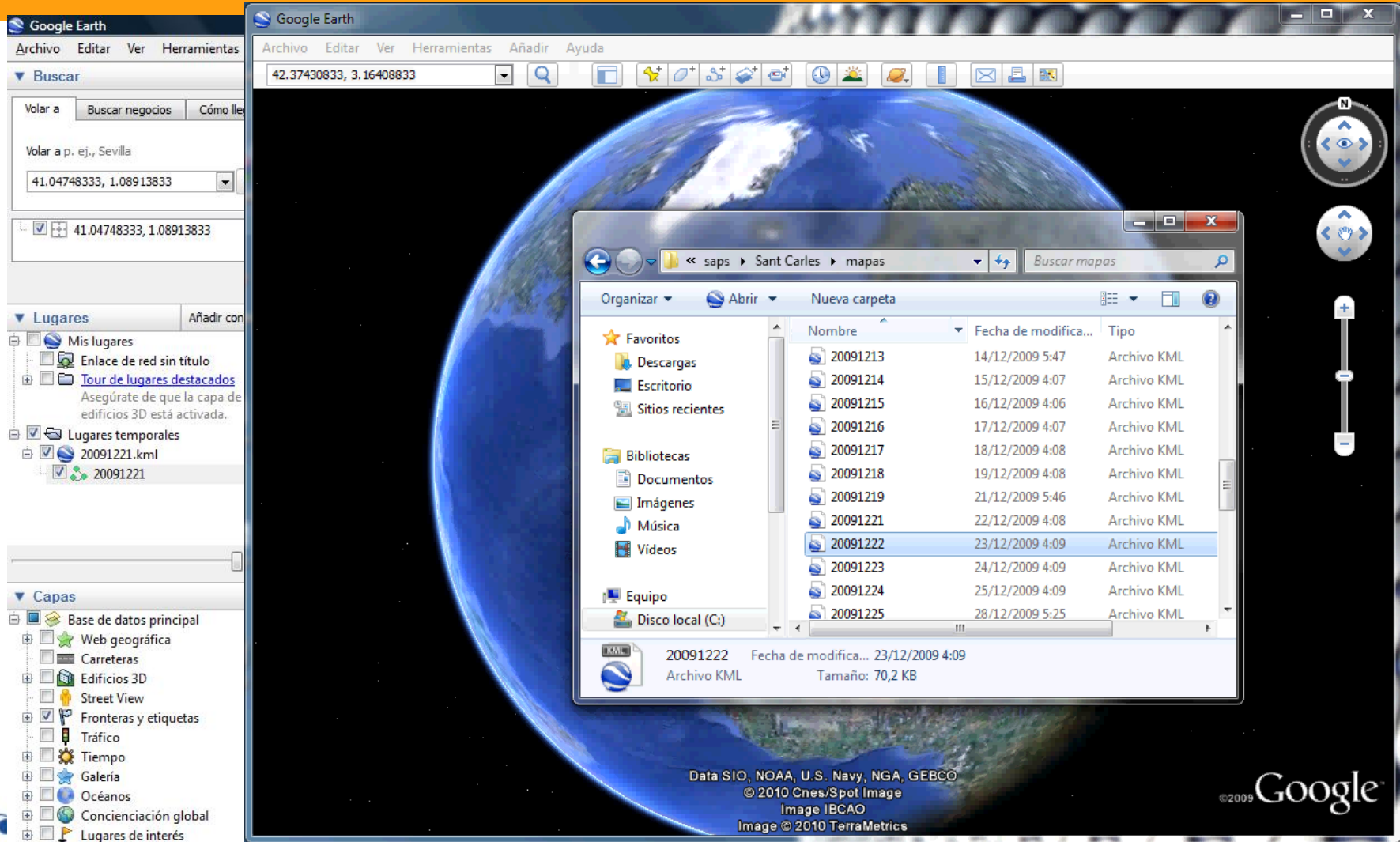
SARTI' mision: Design and implementation of a Data acquisitions system to evaluate the improvements. We based the system on a cRIO processor, a LabVIEW application, and a GSM communication

SARTI: Catalan Trawl fishing fleet efficiency evaluation



The screenshot displays a Windows desktop environment. In the background, a Microsoft Excel spreadsheet is open, showing a table with columns for 'Fecha' (Date), 'Hora GMT' (GMT Time), 'Posición' (Position), and 'Rumb' (Heading). The data spans from 21/12/2009 to 17/12/2009. In the foreground, a Windows Explorer window is open, showing the contents of the 'C:\saps\Sant Carles\datos' folder. The folder contains several Excel files named '20091221', '20091222', '20091223', '20091224', '20091225', '20091228', '20091229', '20091230', '20091231', '20100101', '20100102', and '20100103'. The files are listed with their modification dates and times. The Explorer window also shows a sidebar with 'Favoritos' (Favorites) and 'Bibliotecas' (Libraries) sections.

SARTI: Catalan Trawl fishing fleet efficiency evaluation



Google Earth interface showing a map of the Mediterranean Sea. A file explorer window is open, displaying a list of KML files. The file explorer window shows the following table:

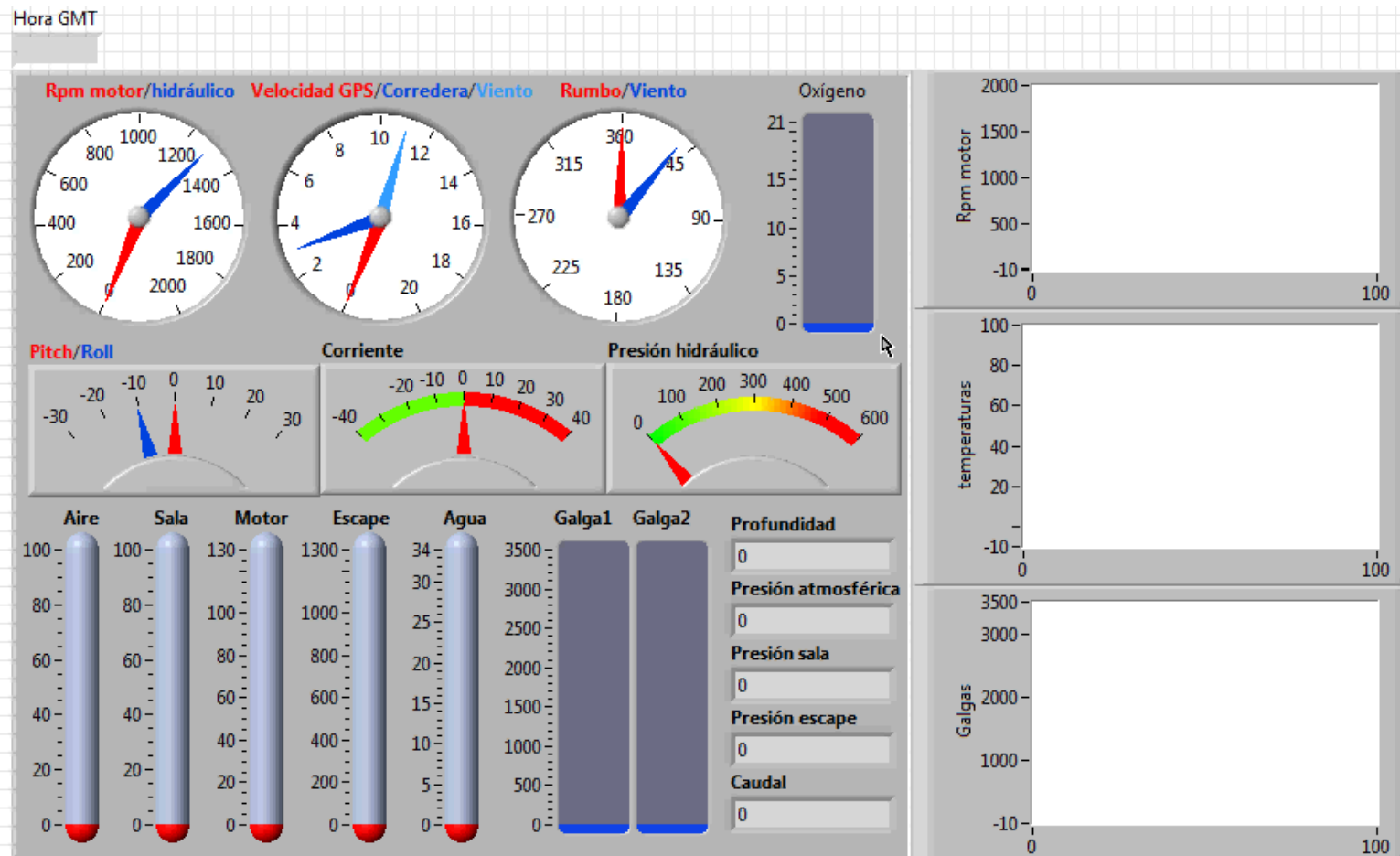
Nombre	Fecha de modifica...	Tipo
20091213	14/12/2009 5:47	Archivo KML
20091214	15/12/2009 4:07	Archivo KML
20091215	16/12/2009 4:06	Archivo KML
20091216	17/12/2009 4:07	Archivo KML
20091217	18/12/2009 4:08	Archivo KML
20091218	19/12/2009 4:08	Archivo KML
20091219	21/12/2009 5:46	Archivo KML
20091221	22/12/2009 4:08	Archivo KML
20091222	23/12/2009 4:09	Archivo KML
20091223	24/12/2009 4:09	Archivo KML
20091224	25/12/2009 4:09	Archivo KML
20091225	28/12/2009 5:25	Archivo KML

Below the table, a summary for the selected file 20091222 is shown:

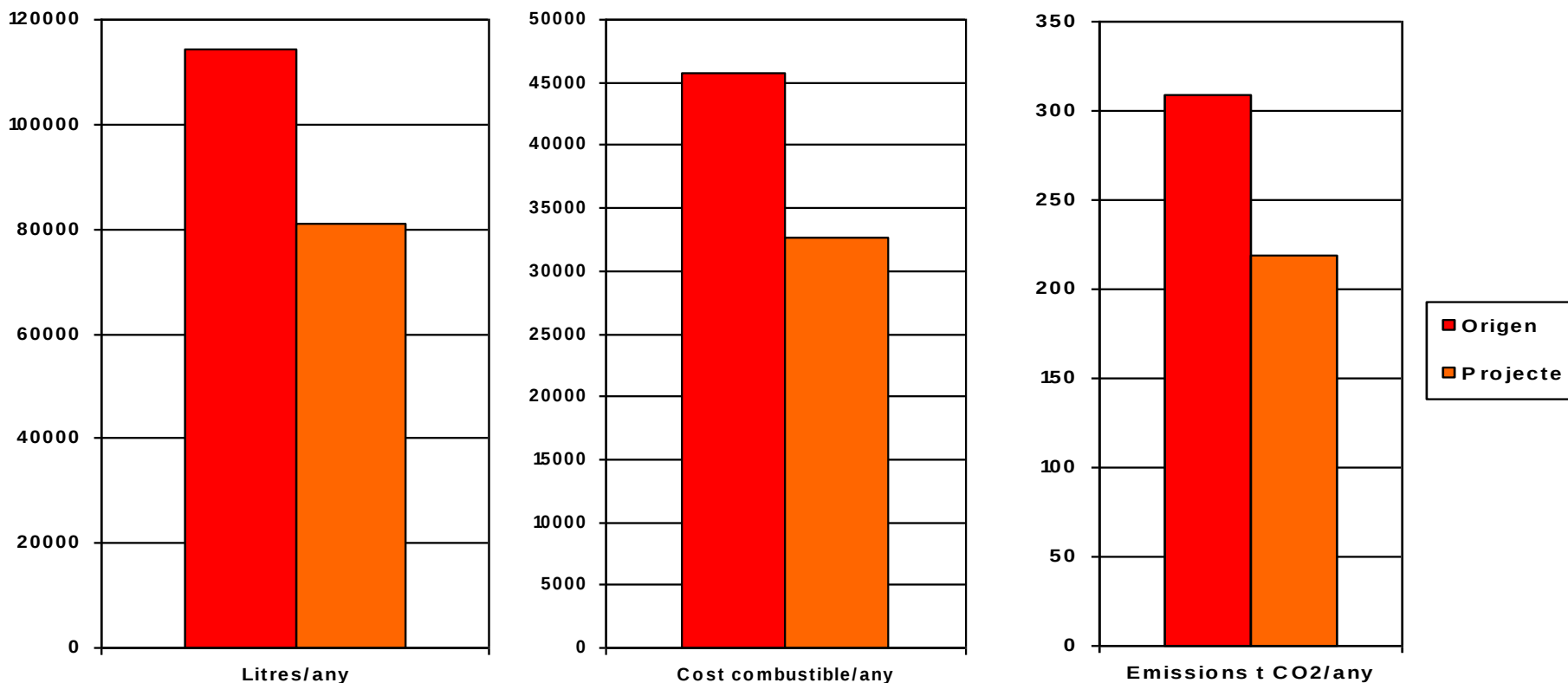
20091222 Fecha de modifica... 23/12/2009 4:09
Archivo KML Tamaño: 70,2 KB

The Google Earth interface includes a search bar at the top left, a sidebar with 'Lugares' and 'Capas' panels, and a main map area showing the Earth's surface. The 'Lugares' panel shows a list of places, including 'Enlace de red sin título', 'Tour de lugares destacados', and 'Lugares temporales'. The 'Capas' panel shows a list of layers, including 'Base de datos principal', 'Web geográfica', 'Carreteras', 'Edificios 3D', 'Street View', 'Fronteras y etiquetas', 'Tráfico', 'Tiempo', 'Galería', 'Océanos', 'Concienciación global', and 'Lugares de interés'.

SARTI: Catalan Trawl fishing fleet efficiency evaluation



Results: savings up to 29%



Període amortització inversió 18 mesos

SARTI: Catalan Trawl fishing fleet efficiency evaluation

Similar initiatives in other autonomies like Galicia in Spain

**Buques de Pesca y Eficiencia
Energética:
Proyecto “Peixe Verde”**
Actividad del Grupo Integrado
de Ingeniería



FIN



grupo integrado de ingeniería

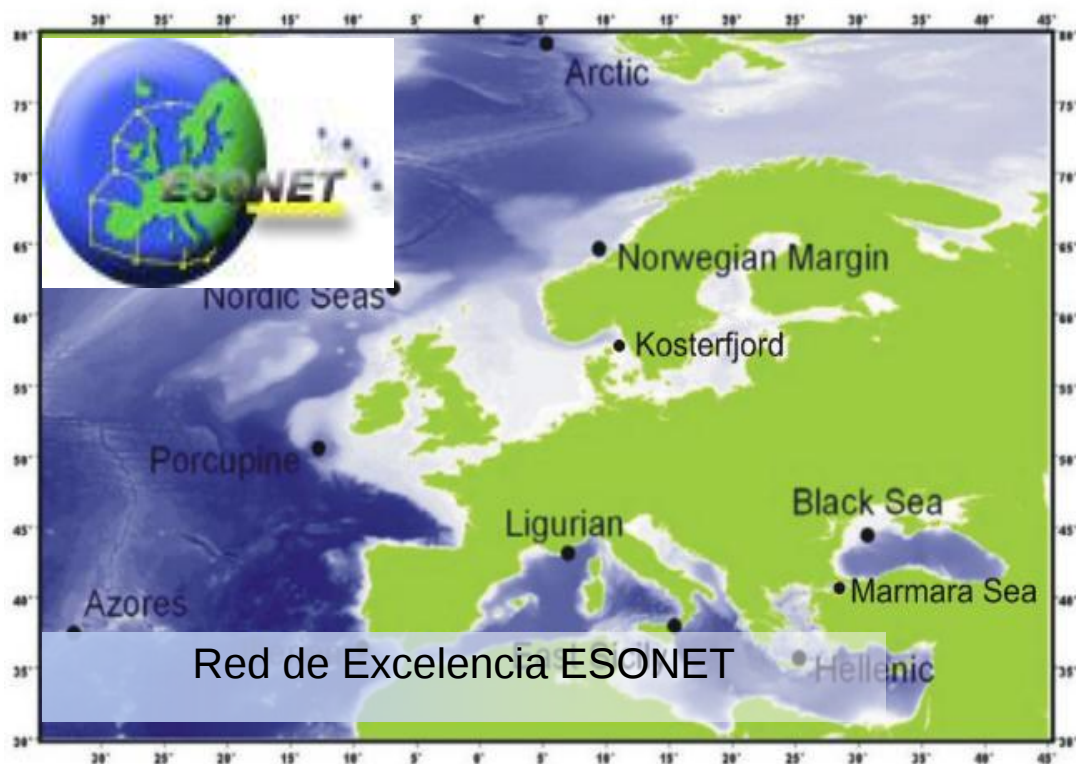
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OBSEA Project

- OBSEA is a project whose objective is to install a cabled seafloor observatory 4 kilometers away from the Vilanova I la Geltru coast in a fishing protected area, 20m depth.
- The objective of this project is to have a test-bed for the development of oceanographic instrumentation and at the same time to have an observatory that provides valuable information to the scientific community
- OBSEA will be extended in the future in order to form a seafloor observatory network that covers several interesting sites. Every node will provide connectivity to several instruments (at least 8) as well as a link to other nodes.
- August 5th and 6th, we're going to deploy and extension cable in order to connect a 2nd node 300m away.

OBSEA: Marine Observatories



OBSEA: ESONET

The aim of the **ESONET** Network of Excellence is to create an organisation capable of implementing, operating and maintaining a network of multidisciplinary ocean observatories in deep waters around Europe from the Arctic Ocean to the Black Sea.



The NoE will structure the resources of the participating institutes to create the necessary critical mass, remove barriers and through a joint programme of activities arrive at durable solutions for this future organisation.

OBSEA: motivation

Eight main activities are addressed by ESONET NoE:

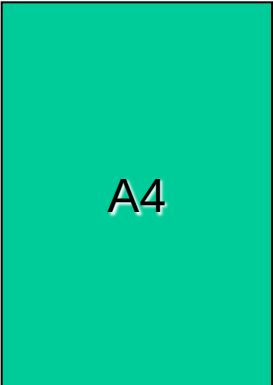
<http://www.esonet-noe.org/>



Integration,
Data infrastructure,
Standardization and interoperability
Scientific activities,
Demonstration missions and Testing operations,
Exchanges of personnel,
Socio-economic users and SMEs promotion,
Education and Outreach,
Implementation strategies and Business Plan

OBSEA: motivation

- ESONET WP2 (work package 2) wants to propose and validate different standards and protocols to ensure interoperability between systems and users.
- Due to the big amount of standards and protocols in the market, is very complicate to became totally compatible at different levels (physical, communication, data formats, data archives...)

A4US Letter

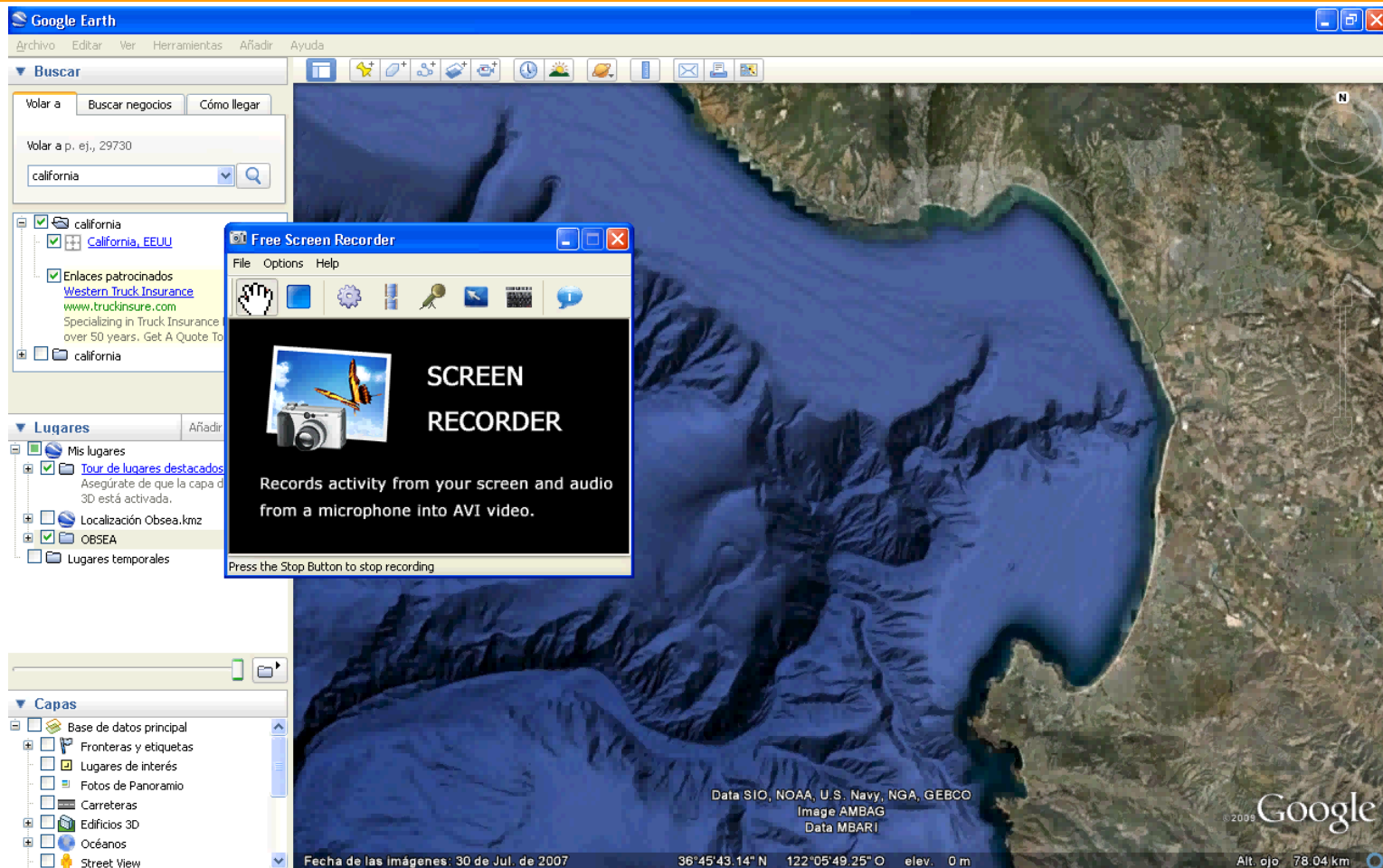
La cooperación entre diferentes instituciones es fundamental

OBSEA: motivation

- WP2: test and validate different standards at different levels:
 - Sensors
 - Acquisition systems.
 - Data communication
 - Data management
- Study other initiatives like: INSPIRE, GMES, IOOS, GEOSS, OGC and others:
 - **GEO** - Group on Earth Observations
 - **GEOSS** - Global Earth Observation System of Systems
 - **GEM** – Global Environment Modelling project
 - **GMES** – Global Monitoring for Environment and Security
 - **IWGEO** – Interagency Working Group on Earth Observation
 - **IGOS** – International Global Observing Strategy
 - **IGOS-P** - International Global Observing Systems Partners
 - **IGOSS** – International Global Observing System of Systems
 - **IGGOS** – Integrated Global Geodetic Observing System
 - **GOS** - Global Observing Systems
 - **GCOS** - Global Climate Observing System
 - **GOOS** - Global Ocean Observing System
 - **GTOS** - Global Terrestrial Observing System
 - **GOSIC** - The Global Observing Systems Information Center
 - **GOS/GAW** - Global Observing System/ Global Atmosphere Watch (WMO)
 - **ESONET** – European Sea Floor Observatory Network
 - **EODIS** – Earth Observing System Data and Information System



OBSEA Location:



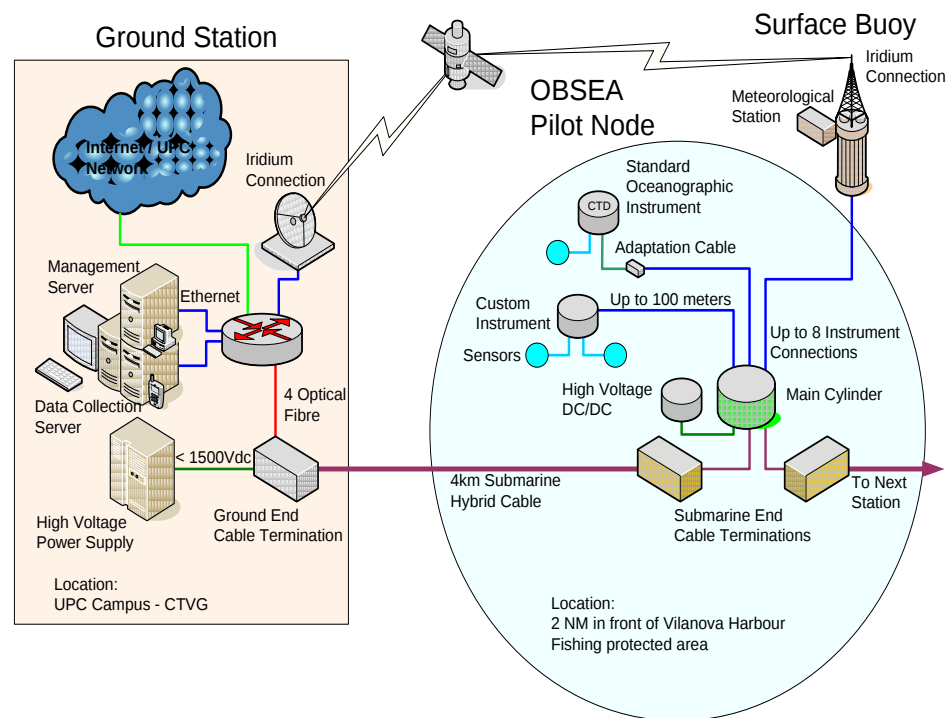
OBSEA Location:

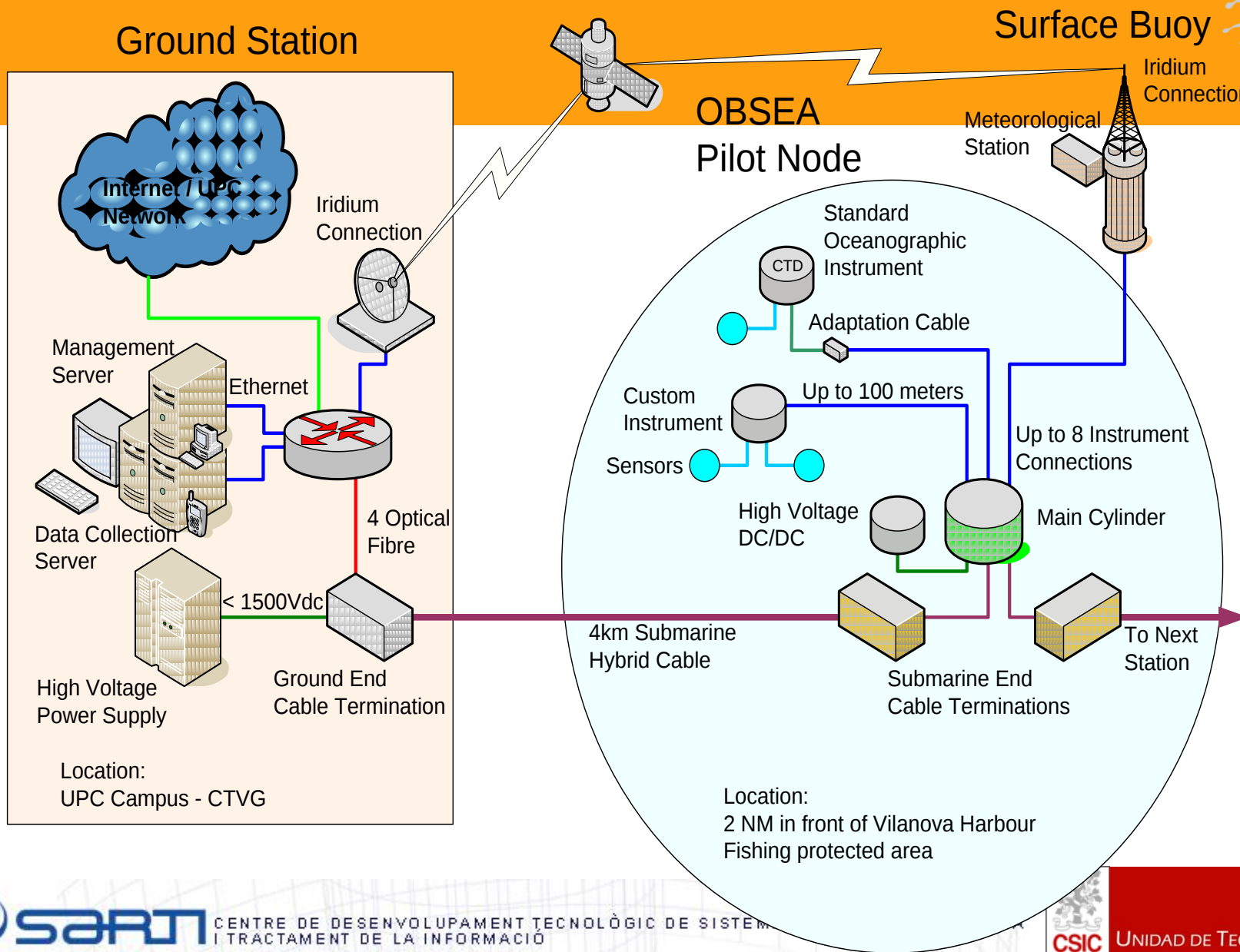


OBSEA

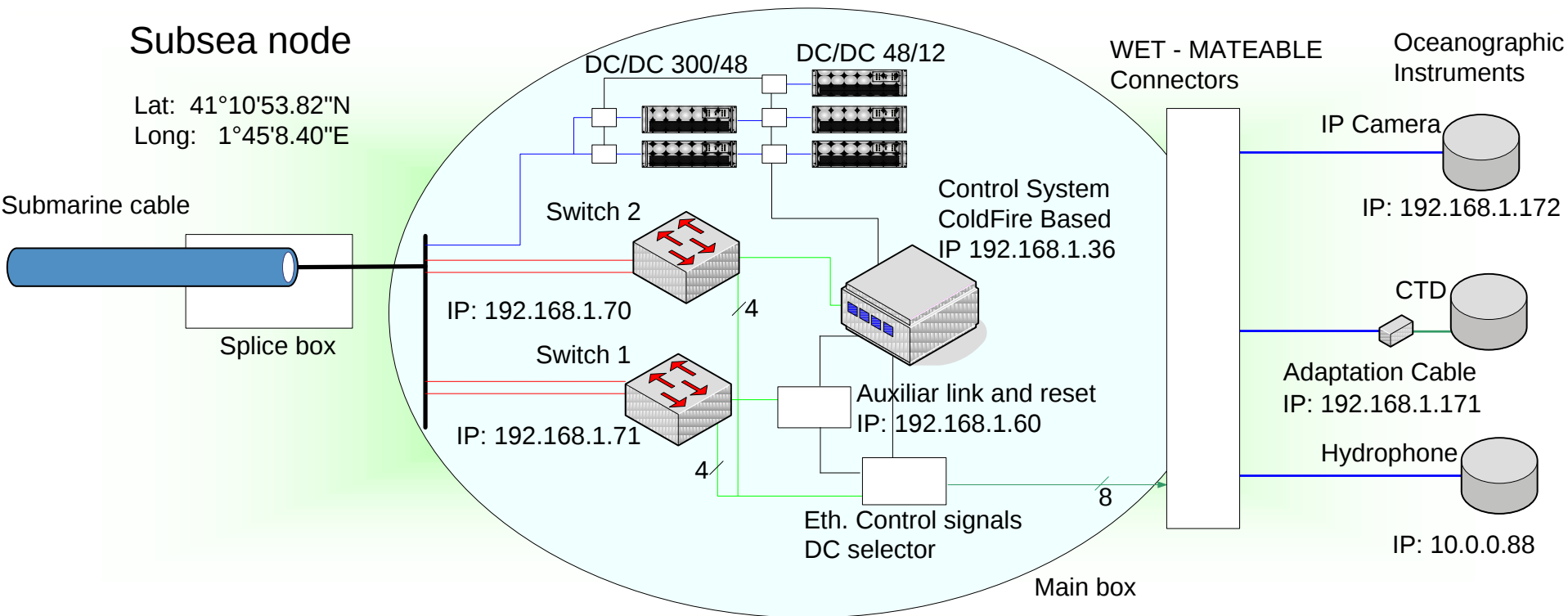
Topics about Obsea

- Mechanical Design
- Power Supply
- Connectors
- Electronic Design
- Communication System
- Administrative Management
- Permissions
- Deployment
- Instrumentation
- Data transmission and Management
- Acces to data
- Maintenance
- extensions

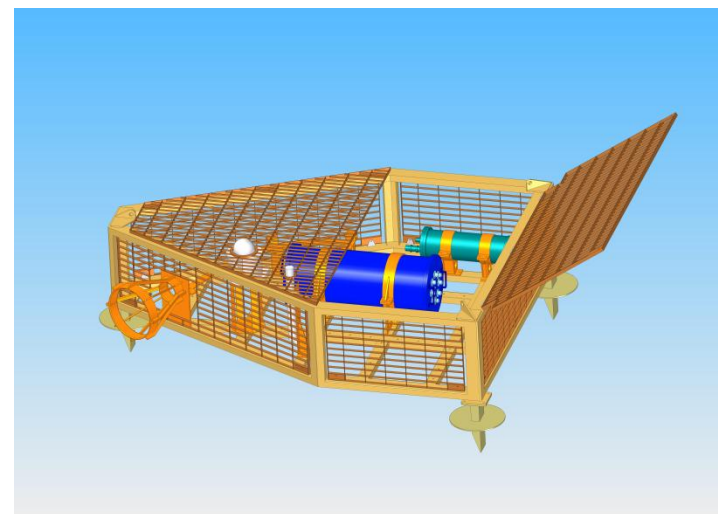
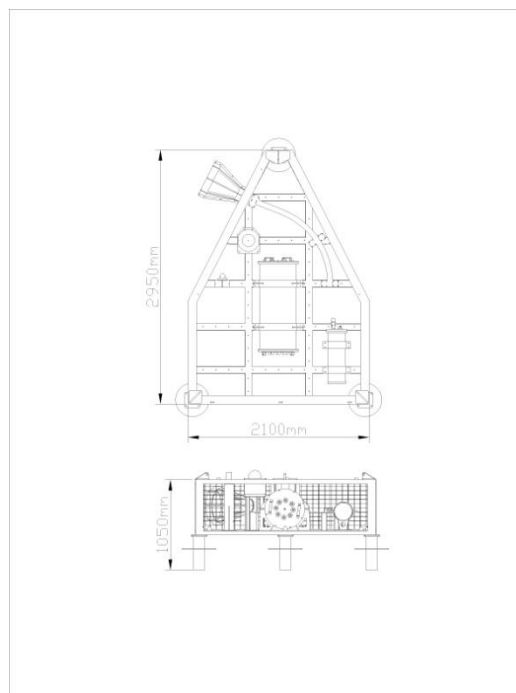
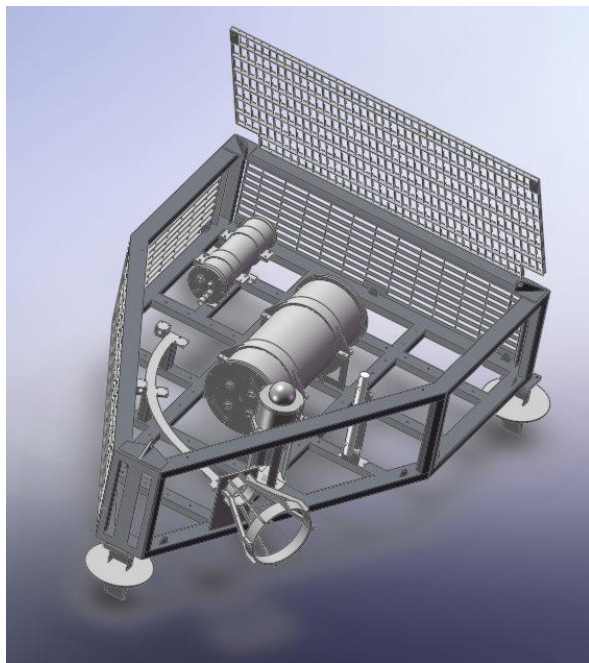




OBSEA: Offshore submarine node



OBSEA: Mechanical Design

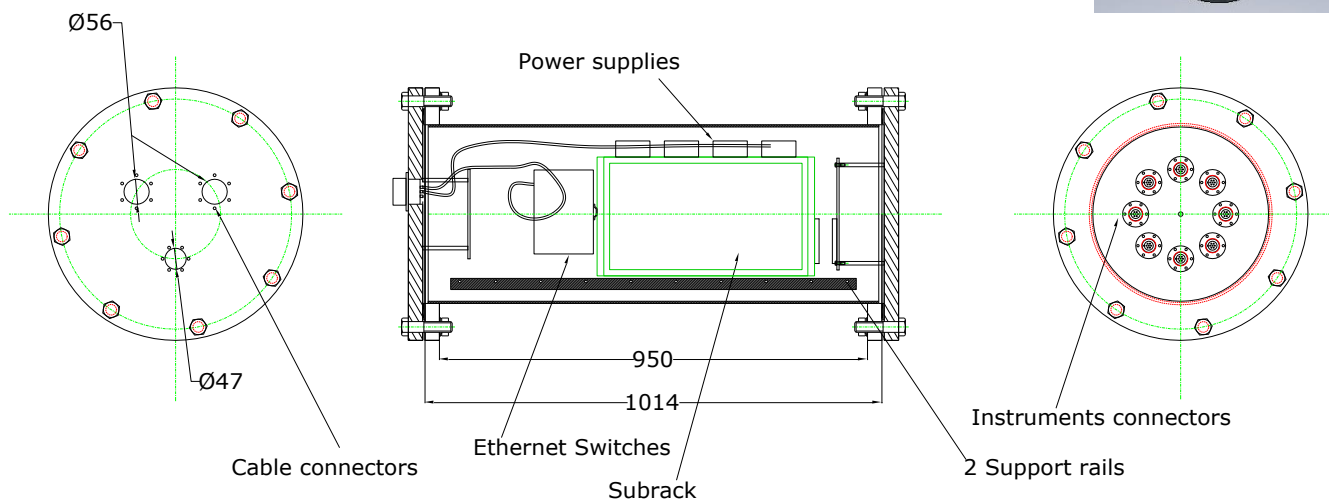
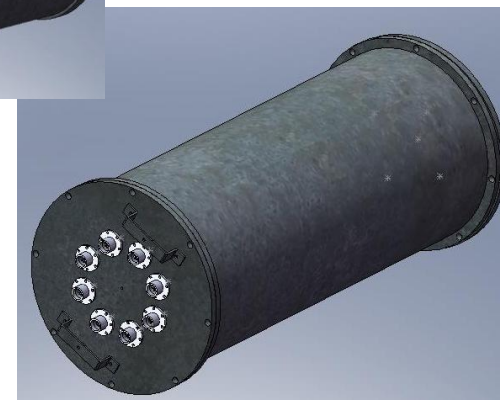


OBSEA: Mechanical Protection



OBSEA: Main Node

- Designed for 300 meters depth
 - Up to 8 instrument ports
 - 2 ports for trunk cable connection
- One sub-rack for 16 100 x 160mm PCB cards
- 150 watt redundant 1+1 power supply at 48Vdc
- 100 watt redundant 2+1 power supply at 12Vdc
- 1+1 redundant gigabit Ethernet switch



OBSEA: Main Node



OBSEA: Stainless steel: SS 316L

MatWeb Data Sheet

AISI Type 316L Stainless Steel, annealed and cold drawn bar

Date: 2/23/2007 7:02:58
AM

KeyWords:

UNS S31603, AISI 316L, ISO 2604-1 F59, ISO 2604-4 P57, ISO 2604-4 P58, ISO 4954 X2CrNiMo17133E, ISO 683/13 19, ISO 683/13 19a, biomaterials, biomedical implants, biocompatible materials

SubCat: Stainless Steel, T 300 Series Stainless Steel, Metal, Ferrous Metal

Material Notes:

Similar to Type 316 for superior **corrosion resistance**, but also has superior resistance to intergranular corrosion following welding or stress relieving. Good corrosion resistance to most chemicals, salts, and acids and molybdenum content helps resistance to **marine environments**. The low carbon content of 316L reduces the possibility of in vivo corrosion for medical implant use. High creep strength at elevated temperatures. 316L has fabrication characteristics similar to Types 302 and 304.

Applications: biomedical implants, chemical processing, food processing, photographic, pharmaceutical, textile finishing, **marine exterior** trim.

Component

	Value	Min	Max
Carbon, C	0.03		
Chromium, Cr		17	
Iron, Fe		65	
Manganese, Mn		2	
Molybdenum, Mo	2.5		
Nickel, Ni		12	
Phosphorous, P	0.045		
Sulfur, S	0.03		
Silicon, Si		1	

Properties

Physical

	Value	Min	Max	Comment
Density, g/cc	8	--	--	

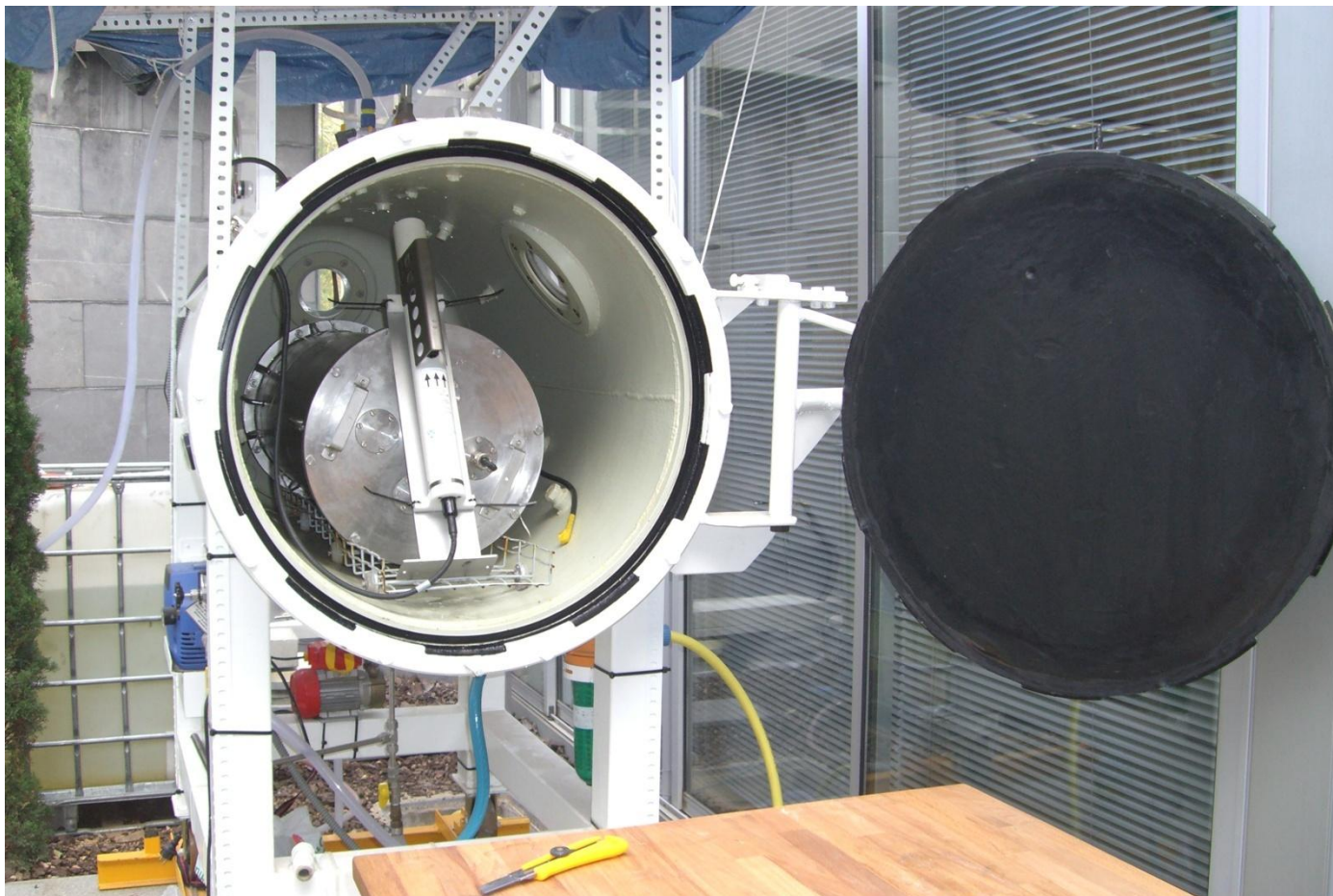
Mechanical

Hardness, Brinell	190	--	--	
Hardness, Rockwell C	21	--	--	
Hardness, Knoop	212	--	--	Converted from Brinell hardness.

OBSEA: Pressure Chamber



OBSEA: Pressure Chamber



OBSEA: wet-mate connectors (Ethernet+Power)



GISMA Connectors

Cable Principal. Connector híbrid 8 fibres i 2 contactes adaptat a cable de 31.8mm submergible a 3500m connexió en sec

Cable Sensors. Connector elèctric 7 contactes per a cable de fins a 16mm submergible a 5000m connexió a 50m

Cable Sensors. Connector elèctric 7 contactes per a cable de fins a 20mm submergible a 3000m connexió a 1000m per ROV



Qtty	Descripció	Preu	Total
1	Connector complet cable principal. Part cable	5.678,48 €	5.678,48 €
1	Connector complet cable principal. Part xassís	2.184,42 €	2.184,42 €
1	Joc taps protecció (submergibles M-F)	567,68 €	567,68 €
6	Connector complet cable sensors 50m. Part cable	532,06 €	3.192,36 €
6	Connector complet cable sensors 50m. Part xassís	374,31 €	2.245,86 €
6	Joc taps protecció (xassís submergibles cable no)	198,62 €	1.191,72 €
6	Connector complet cable sensors 1000m. Part cable	3.223,64 €	19.341,84 €
	Connector complet cable sensors 1000m. Part xassís	1.565,79 €	9.394,74 €
6	Joc taps protecció (xassís submergibles cable no)	1.278,51 €	7.671,06 €
Total connectors estació a 50m			15.060,52 €
Total connectors estació a 1000m			44.838,22 €

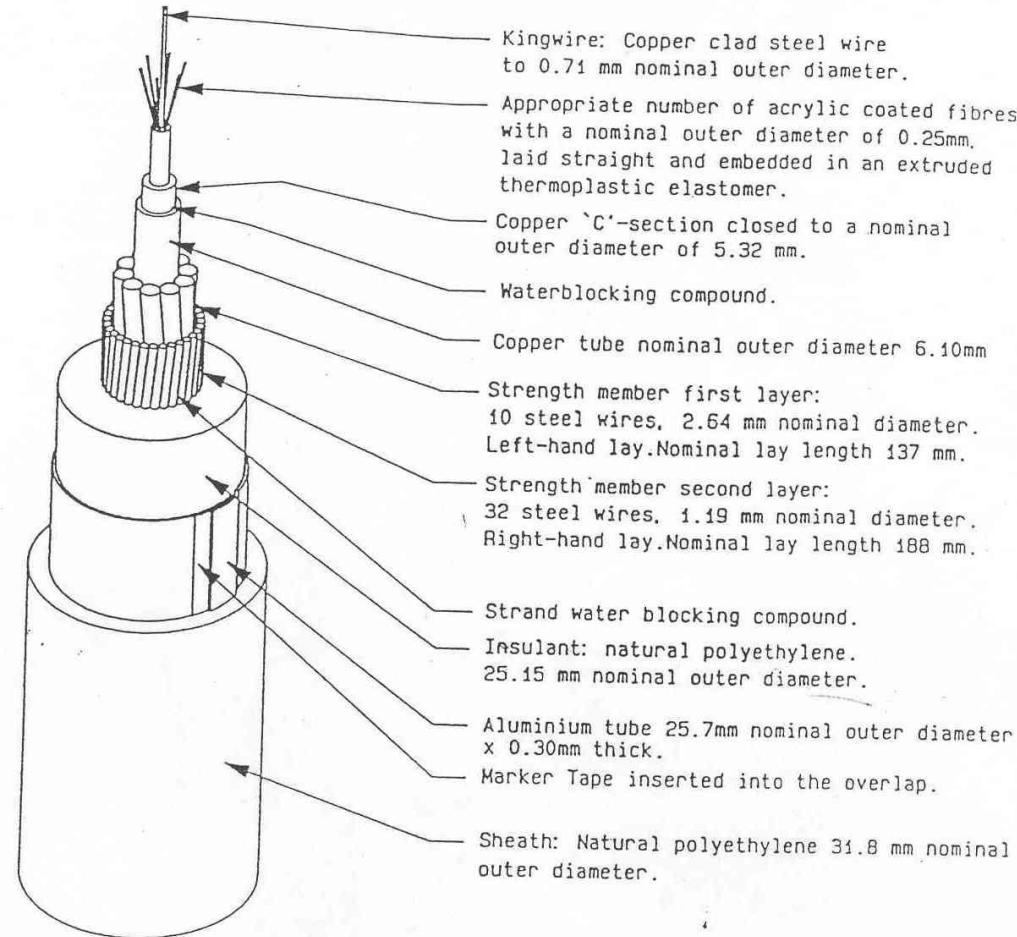
OBSEA: Cable

Off shore cable thanks to Telefónica:

- 5km, 6 F.O. 2 conductors

On shore cable

- 1 km, 8 fibres monomode,
3 conductors de 10mm² de coure



OBSEA: Off Shore Power Supplies



300Vdc – 11A. Suministro de potencia al nodo submarino a través del cable. Un PLC gestiona el número de fuentes en serie necesarias para suministrar la potencia suficiente. El PLC es controlado y monitorizado via Eth mediante protocolo SNMP

OBSEA: Electronics

- System based on a 32bits ColdFire microprocessor from Freescale
- Instrument Connectors Power supply management using relays.
- Power consumption monitoring.
- Batteries Management
- Temperature and Humidity information inside the cilinder.
- Communication by SNMP



OBSEA: Electronics

2 batteries of liti-ion 22,2V and
5.3 Ah ref 393420 Amopack
model 6S1P MP174865

2 Ethernet Switch RuggedCom
Model:RS900G-48-D-2LC25-00



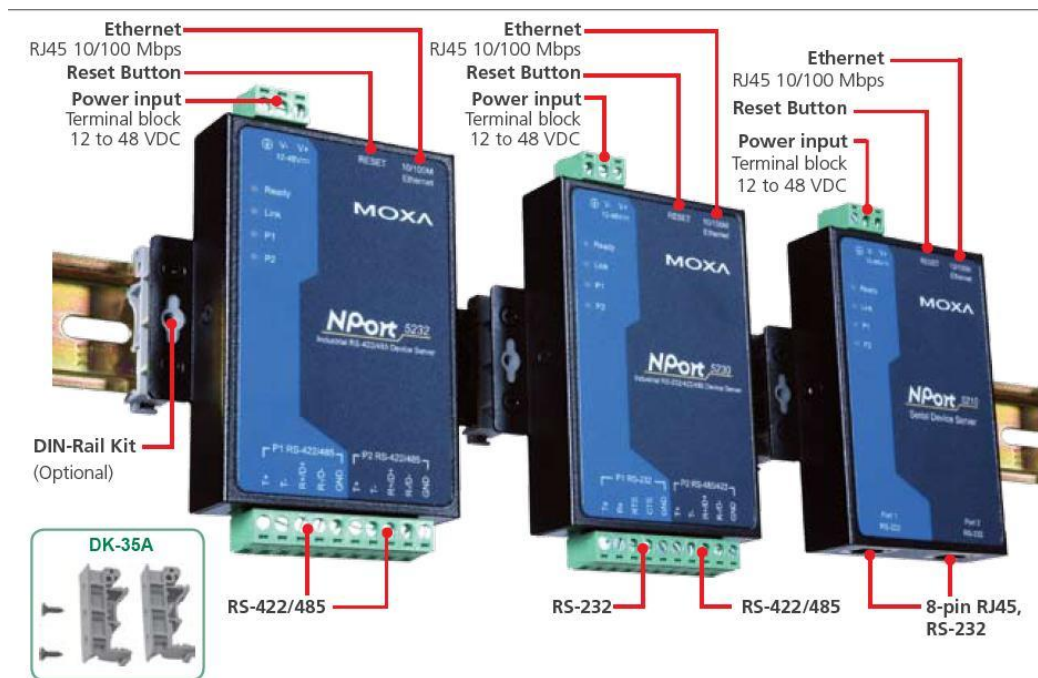
OBSEA: Instrumentation



ADCP (Acoustic doppler current profiler)



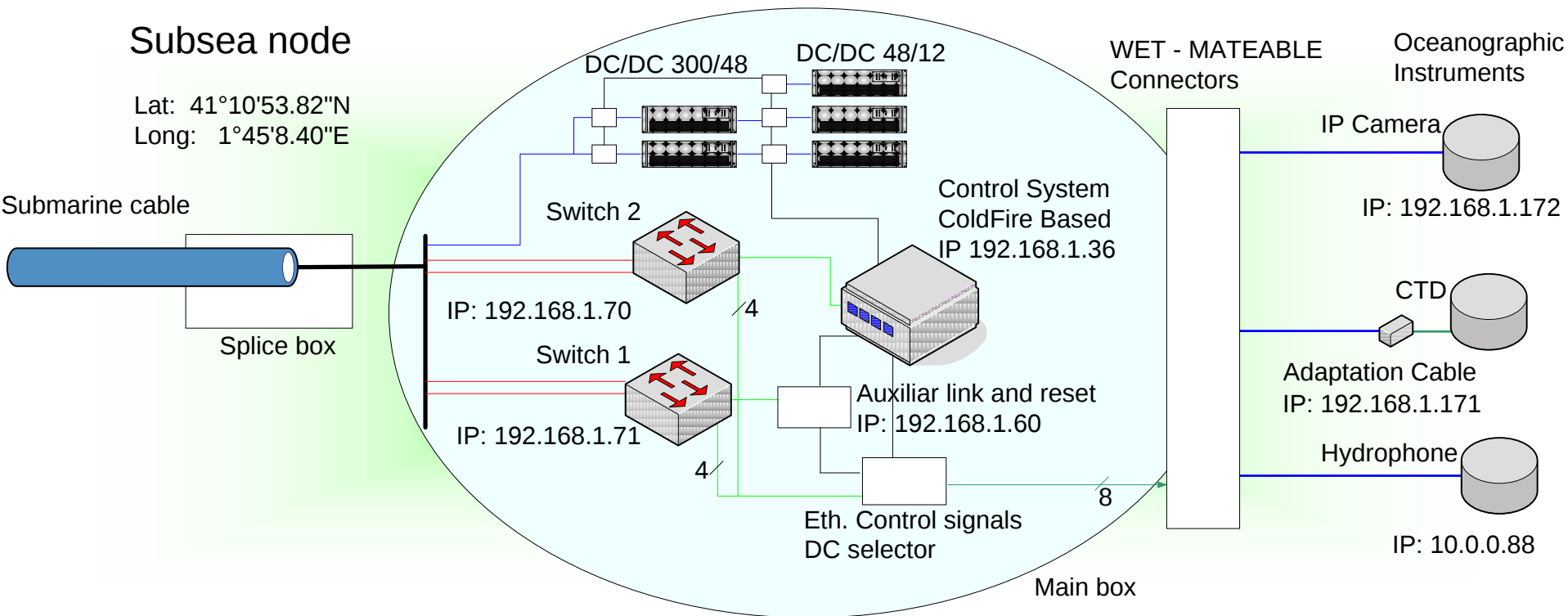
OBSEA: Serial to Ethernet converters



Conversores Ethernet (TCP) - Serie (RS232)

Los conectores del nodo submarino ofrecen comunicación Ethernet. Todos los equipos NO-Ethernet utilizan un gateway (Eth-Serie) tipo NPORT de MOXA

OBSEA: Offshore submarine node



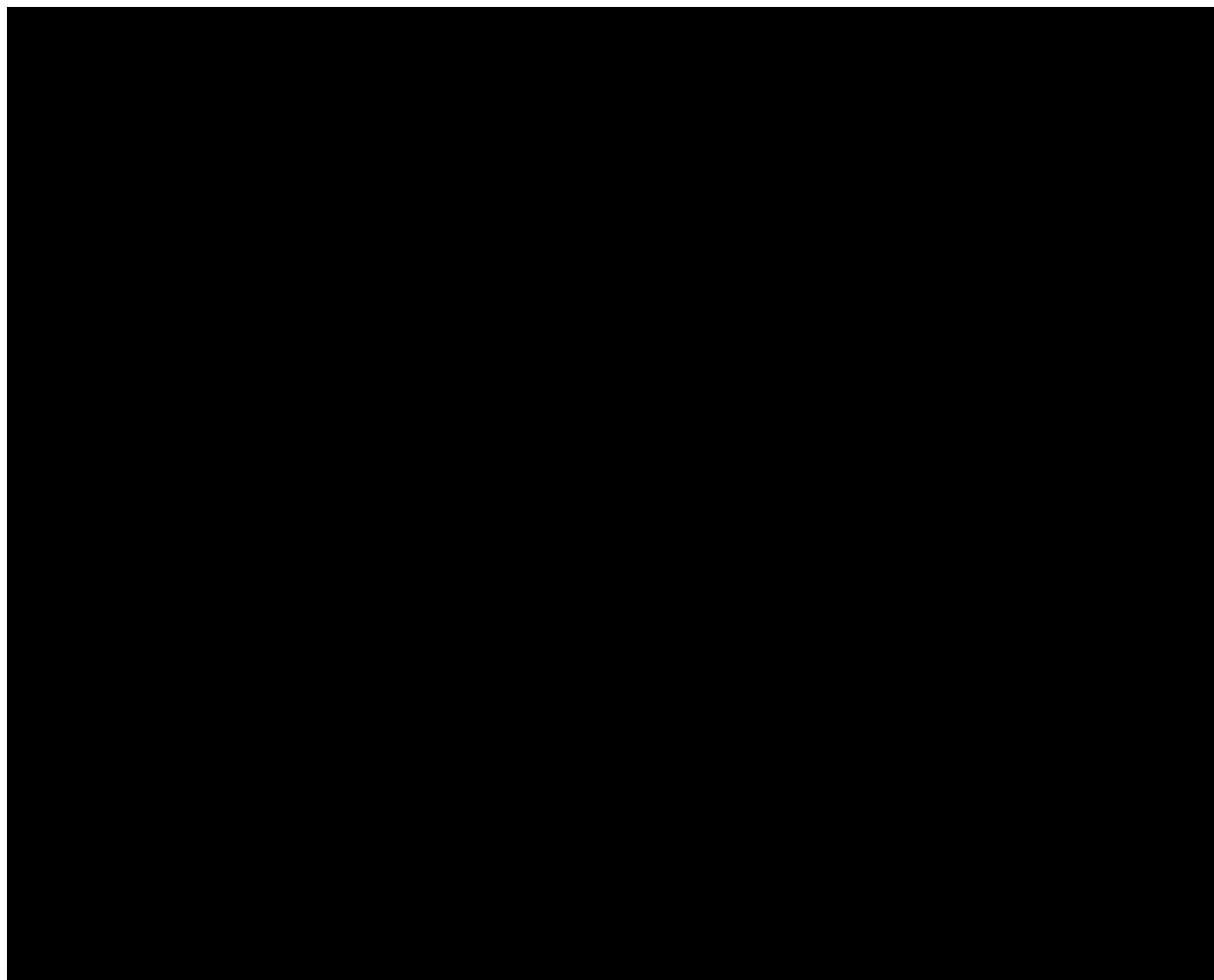
OBSEA: summary video about off-shore node



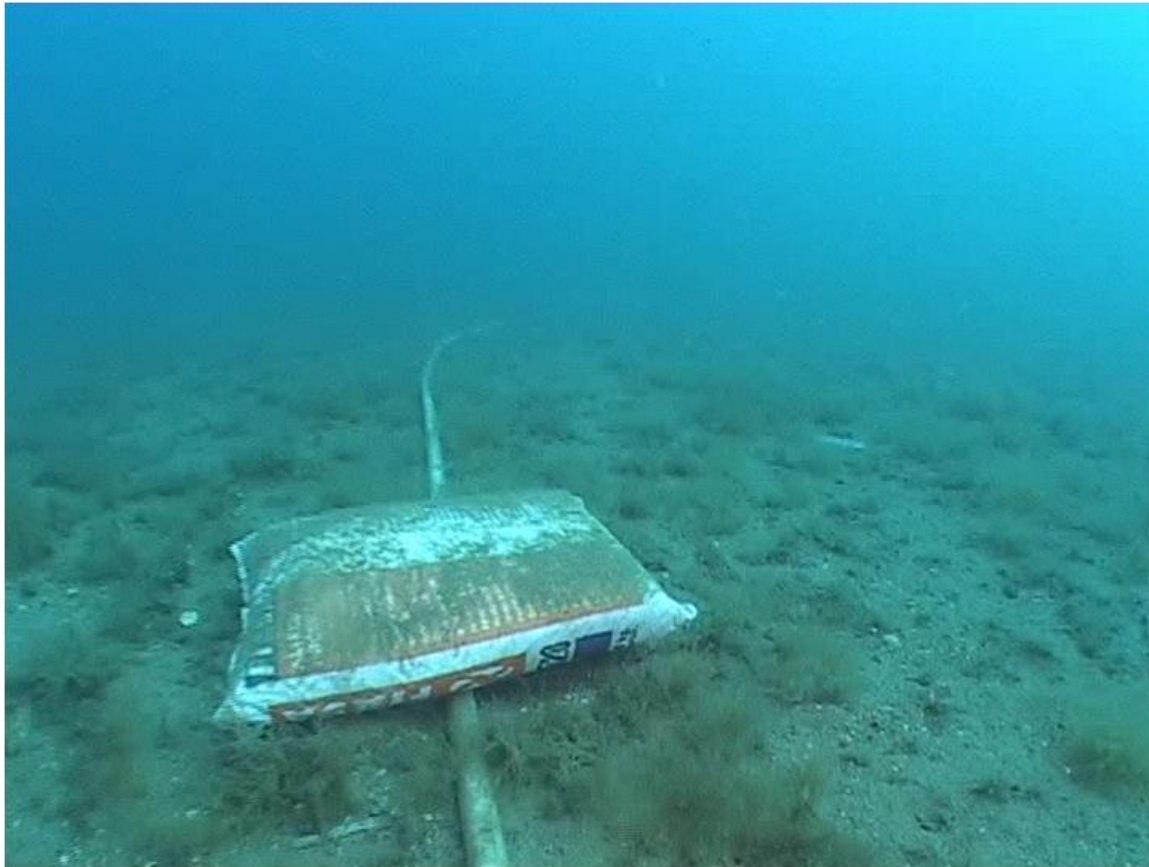
Administrative Permissions: local, regional, autonomic and central governments

- Demarcación de Costas del Ministerio de Medio Ambiente
- Direcció General de Pesca del Departament d'Agricultura Ramaderia i Pesca (deprés Agricultura, Alimentació i Acció Rural)
- Instituto Hidrográfico de la Marina, Ministerio de Defensa
- Ayudantia de Marina de Vilanova i la Geltrú
- Direcció General de Ports, Aeroports i Costes, Departament de Política Territorial i Obres Públiques
- Ajuntament de Vilanova
- Agència Catalana de l'Aigua, Departament de Medi Ambient i Habitatge
- Assegurança de Responsabilitat Civil i de danys propis

OBSEA: Deployment



OBSEA: Revision



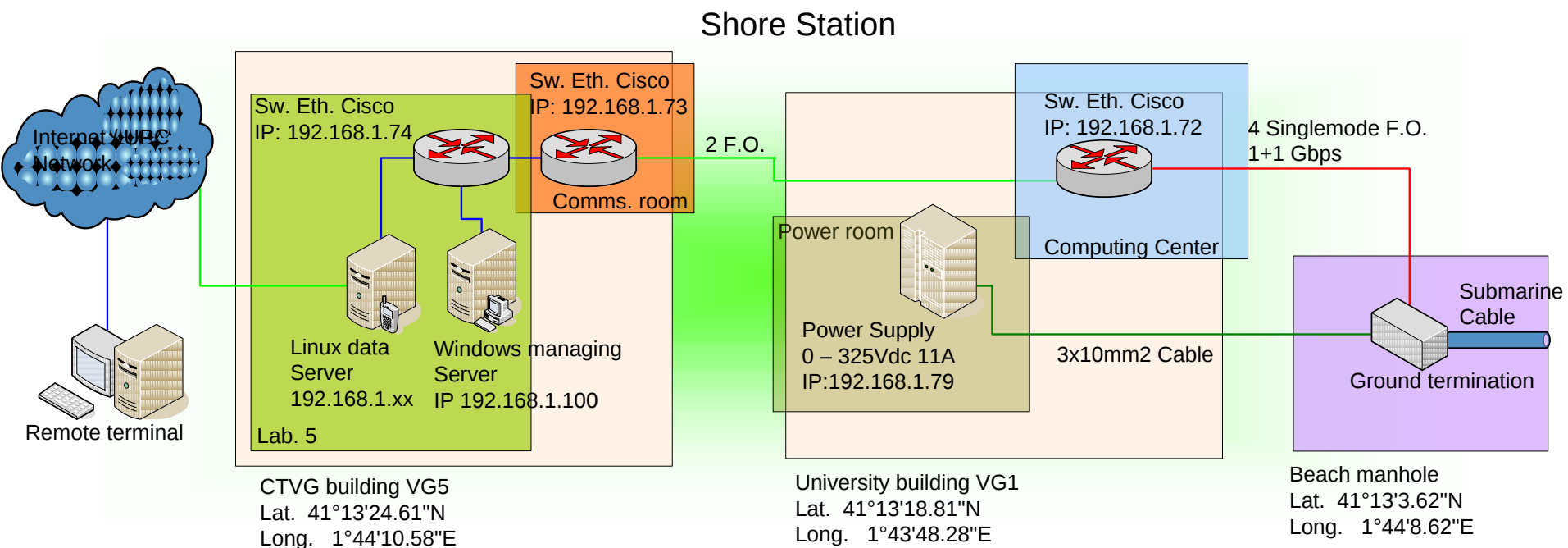
OBSEA: sea cable to land cable junction box



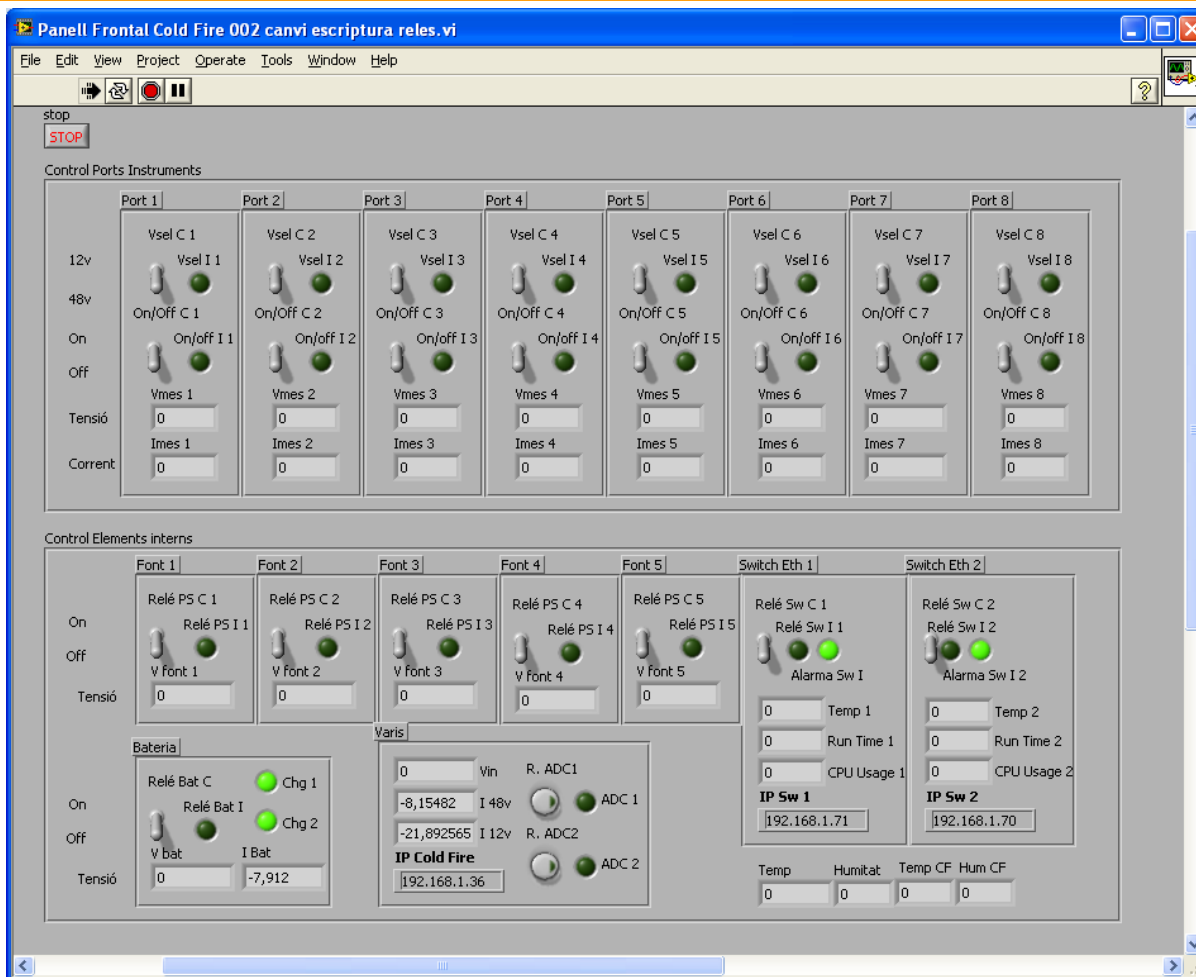
OBSEA: sea cable to land cable junction box: beach manhole



OBSEA: On Shore general squema



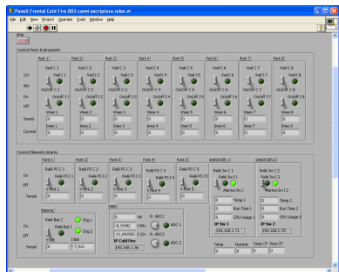
OBSEA: Manual management of power supply on the instrument connectors. LabVIEW application using SMPT protocol



48 or 12V supply control and voltage/current monitoring of each instrument connector. It allow hard-reset to the instruments.

Communication between main uP ColdFire Controller at Obsea and Onshore host using Ethernet and **SNMP** (Single Network Management Protocol)

OBSEA: SNMP

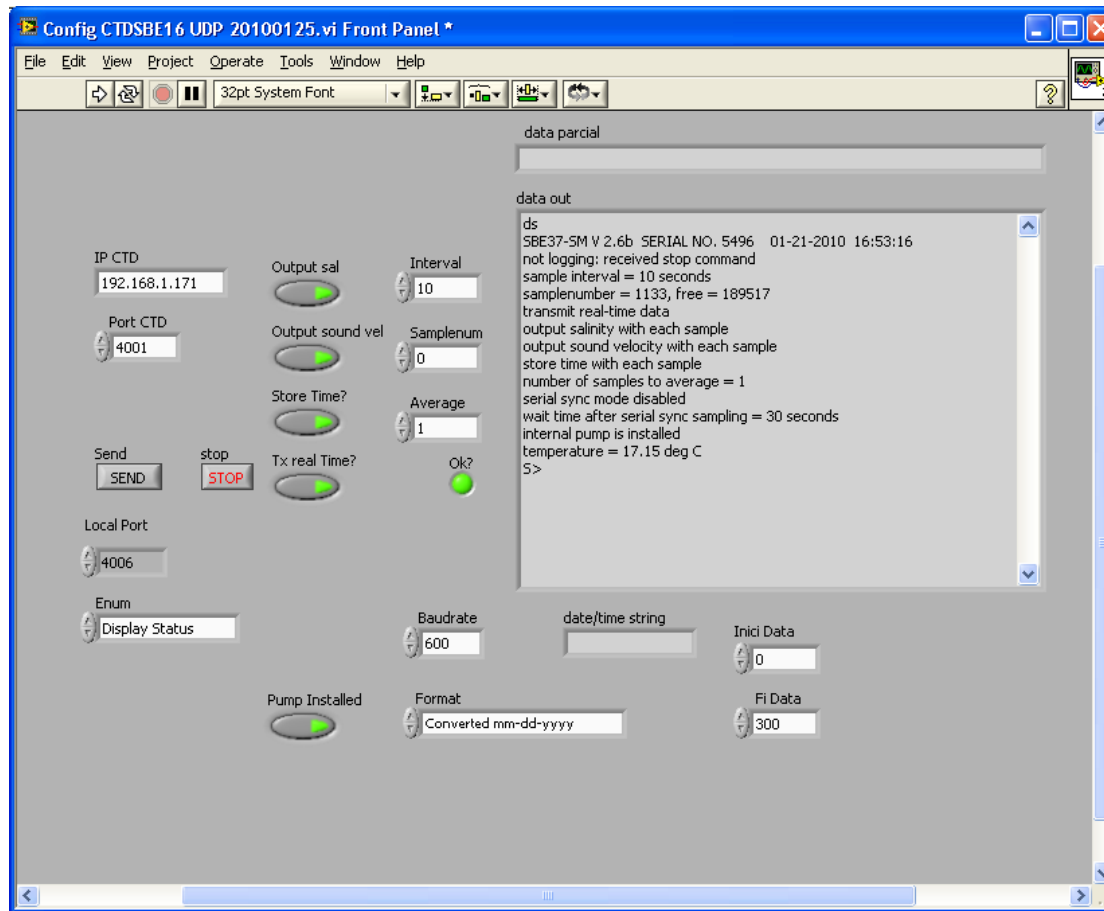


Simple Network Management Protocol (SNMP) is a UDP-based network protocol. It is used mostly in network management systems to monitor network-attached devices for conditions that warrant administrative attention. SNMP is a component of the Internet Protocol Suite as defined by the Internet Engineering Task Force (IETF). It consists of a set of standards for network management, including an application layer protocol, a database schema, and a set of data objects.

SNMP exposes management data in the form of variables on the managed systems, which describe the system configuration. These variables can then be queried (and sometimes set) by managing applications.

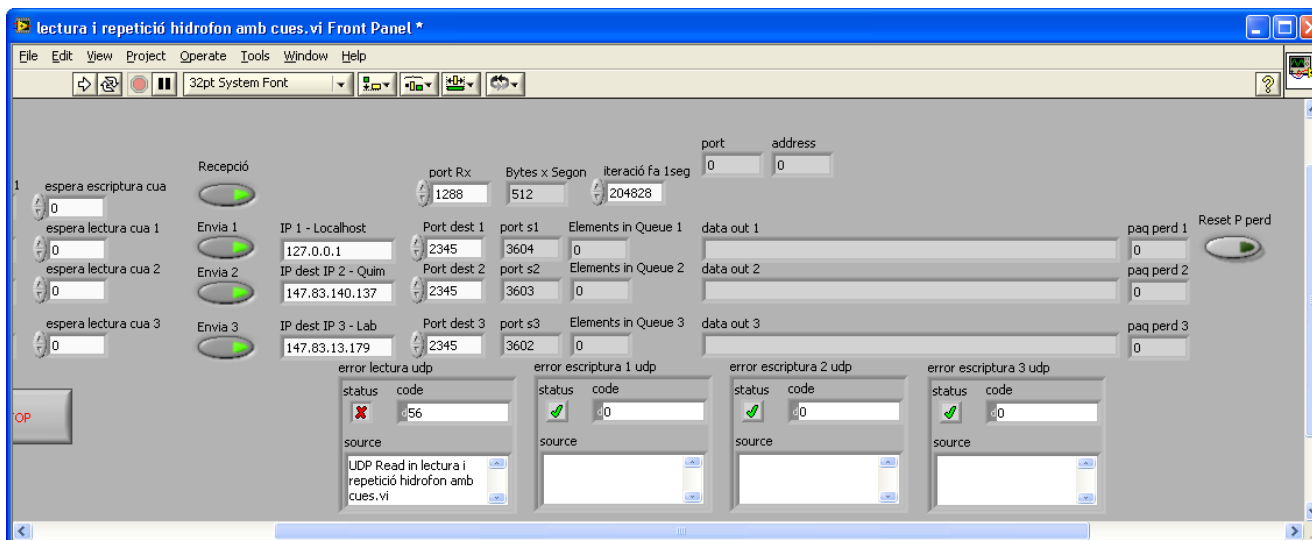
Source: wikipedia

OBSEA: CTD management.



El CTD es un equipo que utiliza un protocolo no estándar, propietario del fabricante y la comunicación se realiza vía serie RS232. Se utiliza un conversor Eth-Serie de manera que desde la red, y en este caso mediante una aplicación en LabVIEW se puede configurar y monitorizar el estado del equipo. Es aplicación sólo se utiliza en la instalación y testeo. En condiciones normales no se utiliza.

OBSEA: Hidrophone



HTTP configuration and TCP, or UDP point to point data transfer.

A dedicated application receives dataframes from the hydrophone and re-sends them to other applications.

OBSEA: Low Level Data management

Each instrument has his own instrument driver application written in C, C++, JAVA or LabVIEW. The instrument driver is reading the instrument data and generating an NMEA style dataframes that are broadcasted to the network using UDP. Other services or applications get this information:

“NMEA style” data frame broadcasted by UDP.

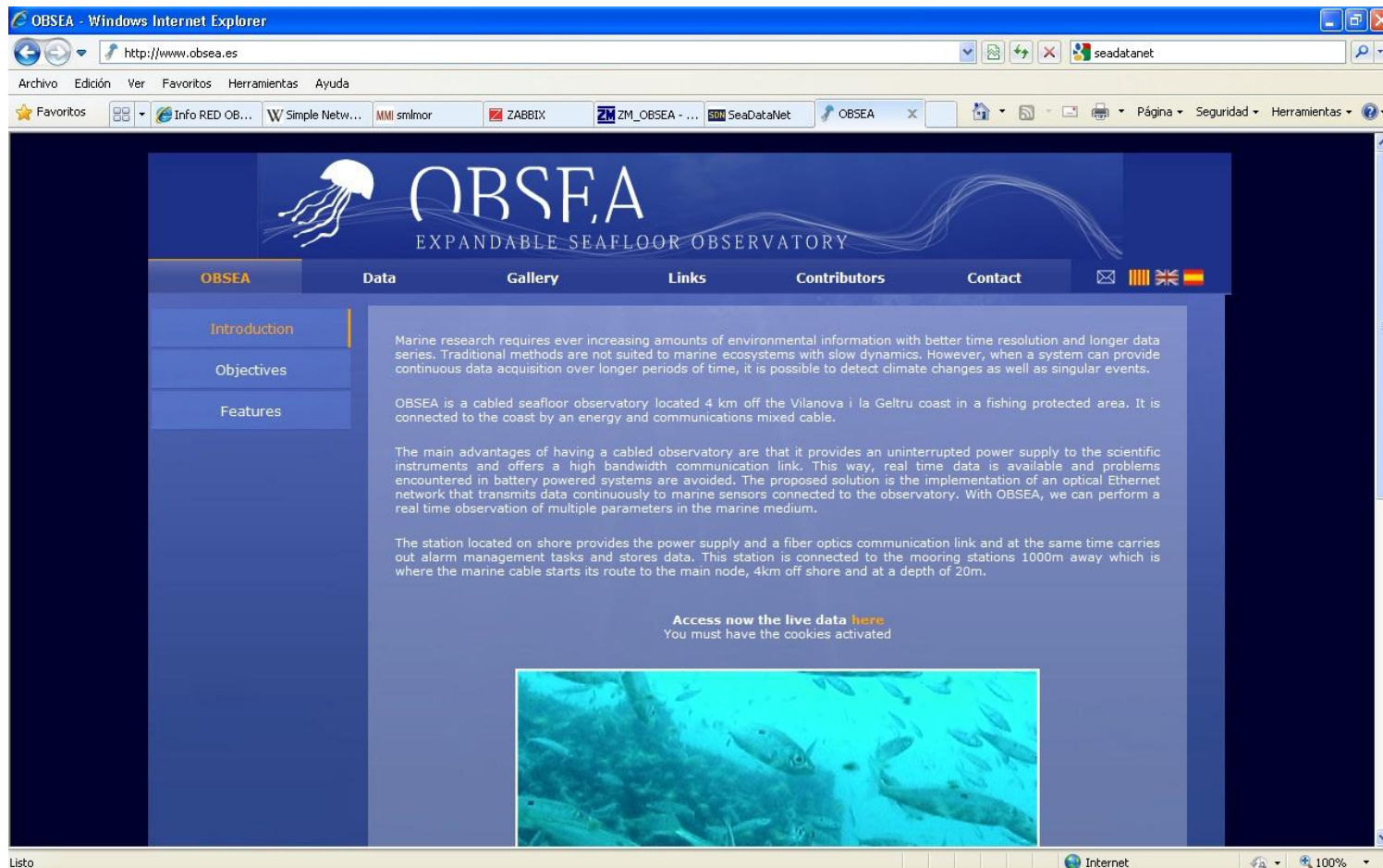
\$OBSMET,HHMMSS,DDMMYYYY,DATO1,DATO2,DATO3,ETC....

Services picking up these data frames:

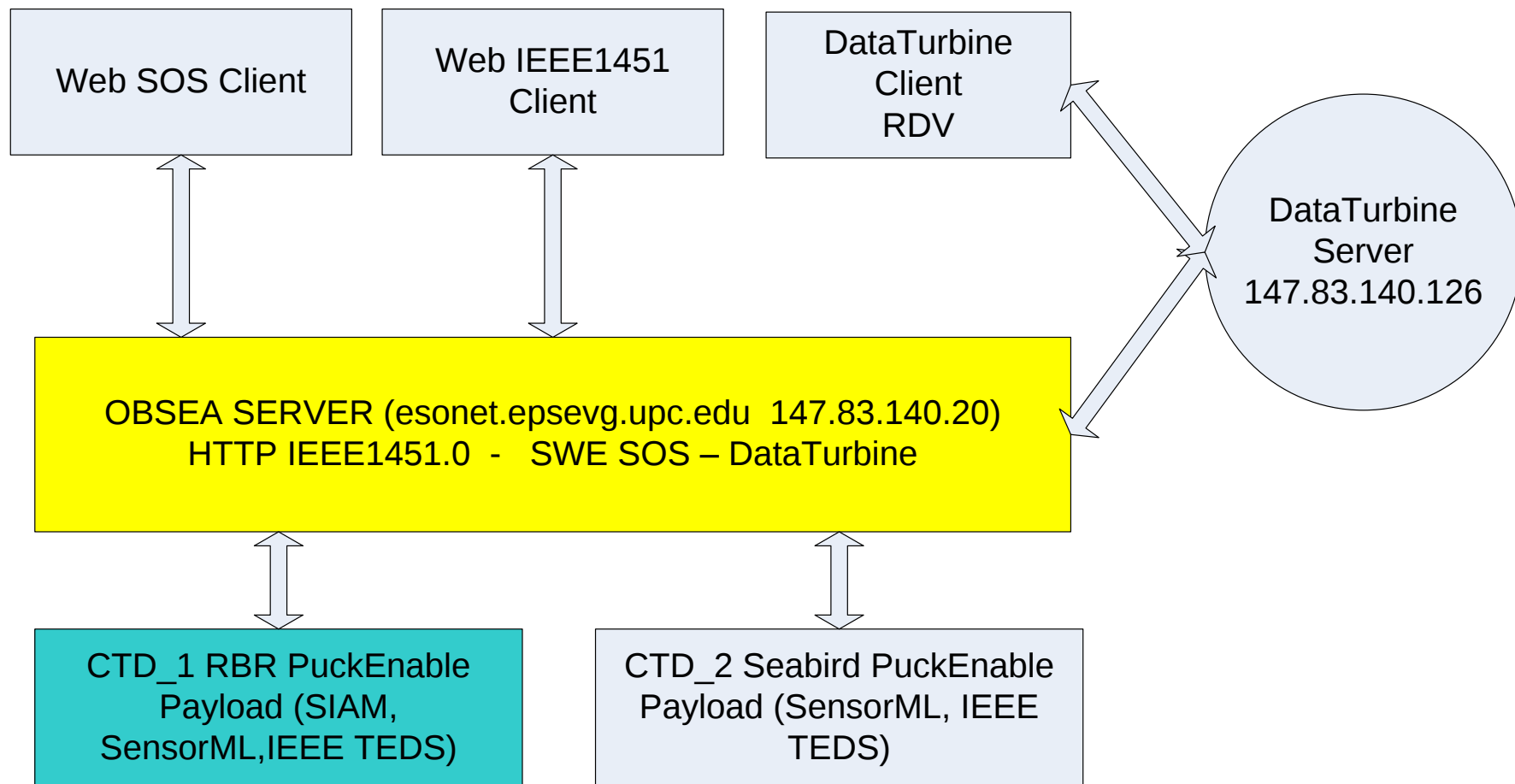
- DDBB archive
- Raw data archive
- Web services
- Zabbix interface
- Data Turbine interface
- IEEE1451.0 Data Server
- OGC SWE SOS services

PRESENTACIÓN MARTECH

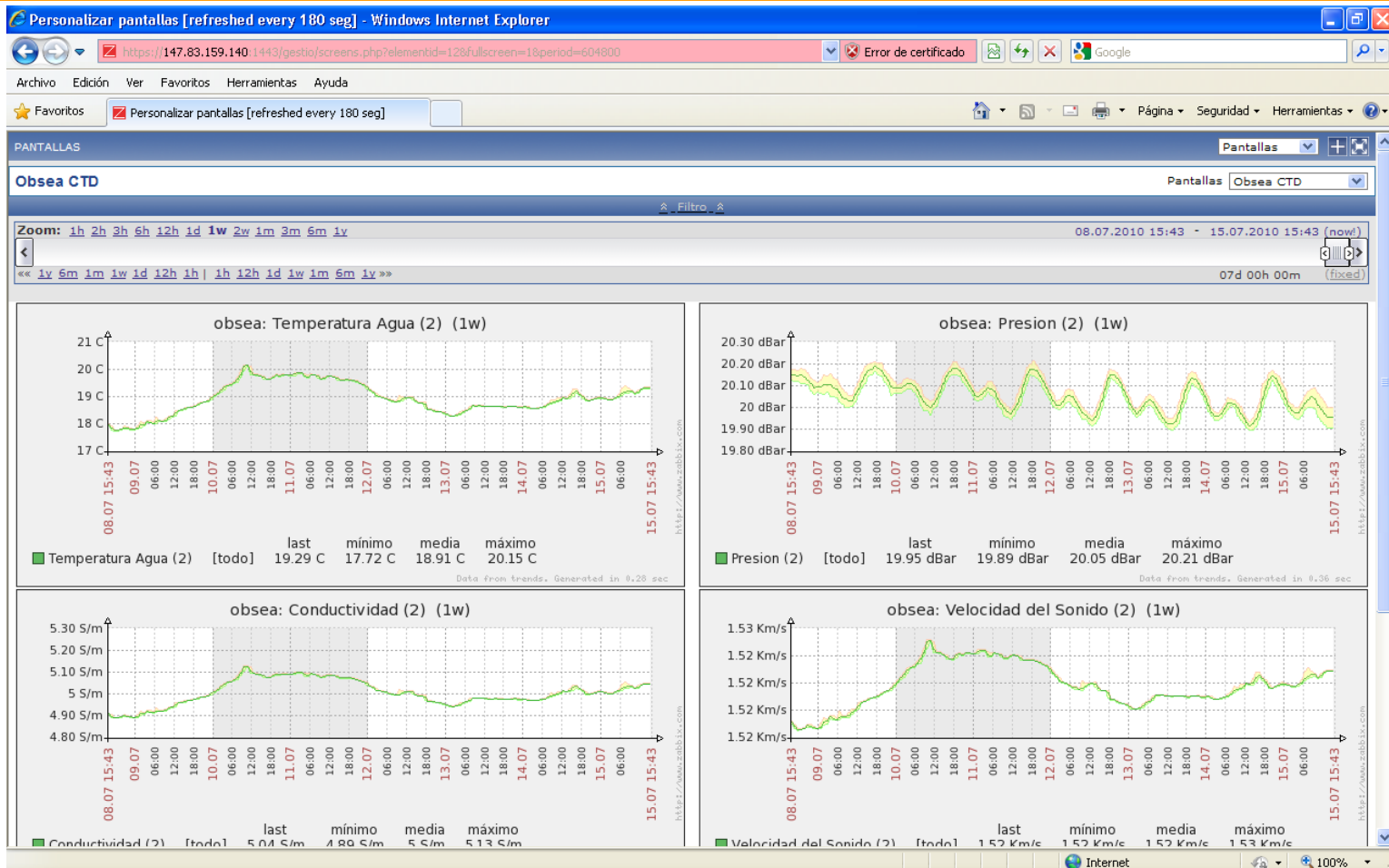
OBSEA: Education & Outreach... obsea web



OBSEA: Standard Data accessibility



OBSEA: Zabbix, alarms management and archive



OBSEA: Data Turbine or IEEE1451.0

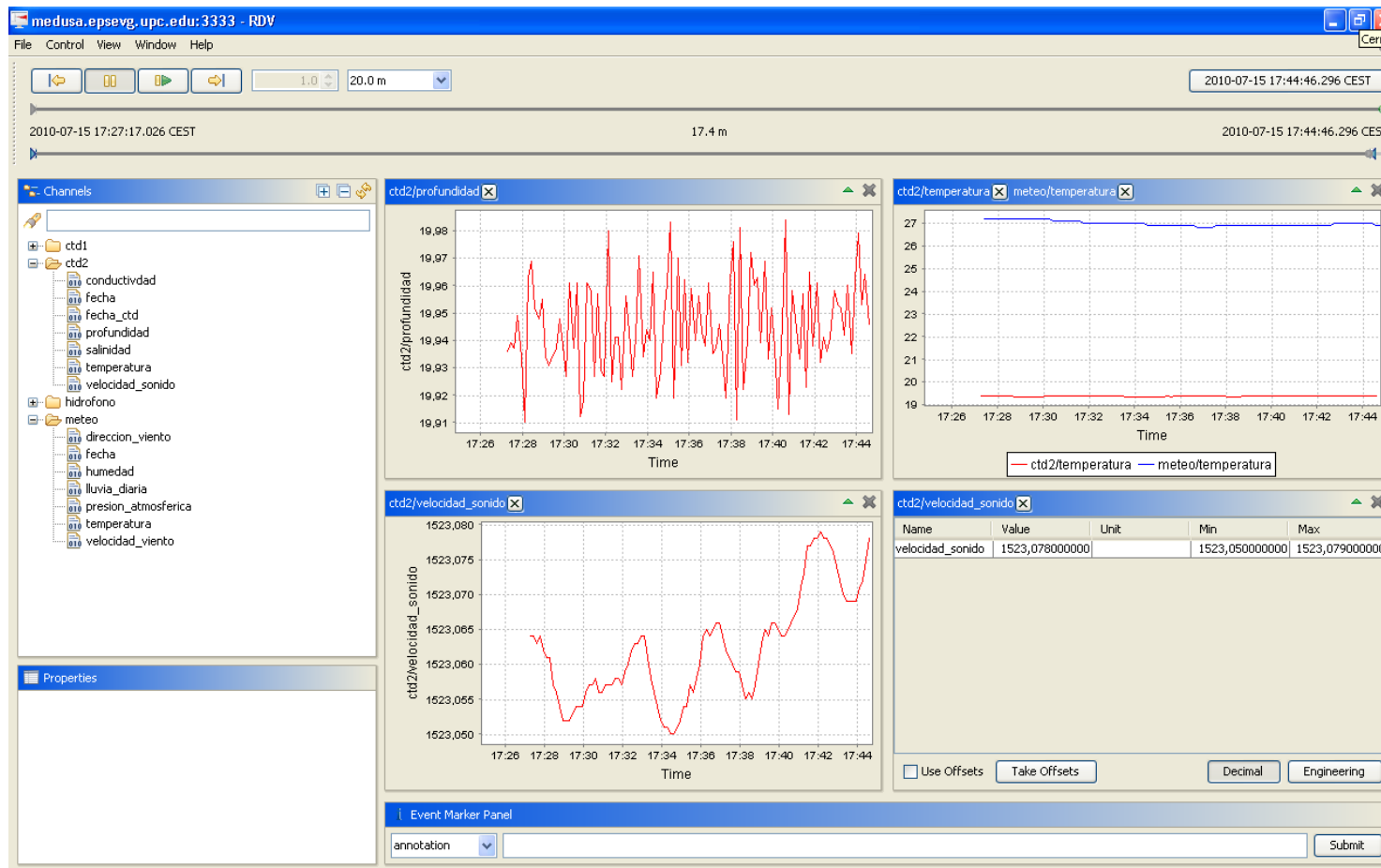
RDV: <http://code.google.com/p/rdv/>

- IP obsea data turbine server: 147.83.159.140 Port: 1335

IEEE1451.0 server status

- http://sites.upc.edu/~www-sarti/OBSEA/genera_map.php

OBSEA: Data Turbine or IEEE1451.0



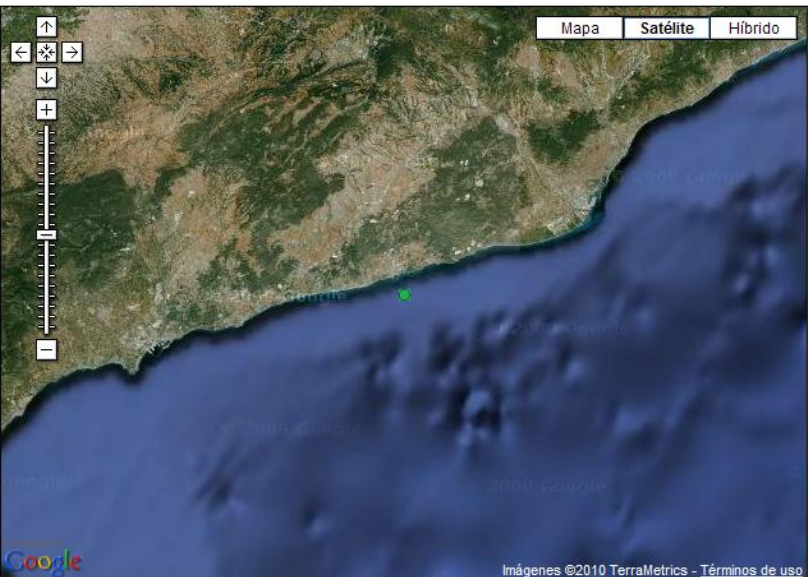
OBSEA: Data Turbine or IEEE1451.0

Google Maps - Windows Internet Explorer

http://sites.upc.edu/~www-sarti/OBSEA/genera_map.php?dns=esonet.epsevg.upc.es&ncap=4&submit=Submit

Archivo Edición Ver Favoritos Herramientas Ayuda

Favoritos Google Maps



Mapa Satélite Híbrido

Imágenes ©2010 TerraMetrics - Términos de uso

introduzca el DNS NcapId:

DNS

DNS

Submit

sosplot - Windows Internet Explorer

http://mmisw.org/sosplot/?_admin=y

Archivo Edición Ver Favoritos Herramientas Ayuda

Favoritos sosplot

Locations retrieved: 1 (in 78 ms)
Reload: false

Location: [41.181908,1.752342](#)

Seabird CTD (4/1)

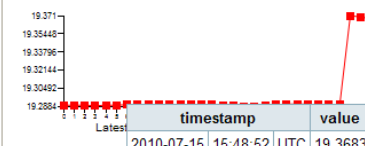
▼ 1: water temperature degrees Celsius

Channel: OOldemo/Seabird CTD (4/1)/1: water temperature degrees Celsius

Period: 10 sec

Refresh Real-time open in new window

1: water temperature degrees Celsius



timestamp	value
2010-07-15 15:48:52 UTC	19.3683

► 2: conductivity S/m

► 3: water pressure dbars

► 4: salinity PSU

sosplot 1.8 (based on cocomet viewer v0.07)

Locations update timer: secs special location: special NCAP: Start timer Stop timer

OBSEA: ZoneMinder, Video Management and broadcasting

OBSEA: Standard Data accessibility

Open Geospatial Consortium, Inc.

Date: 2010-01-21

Reference number of this document: 09-156r2

Version: 0.1.9

Category: OGC™ Engineering Report

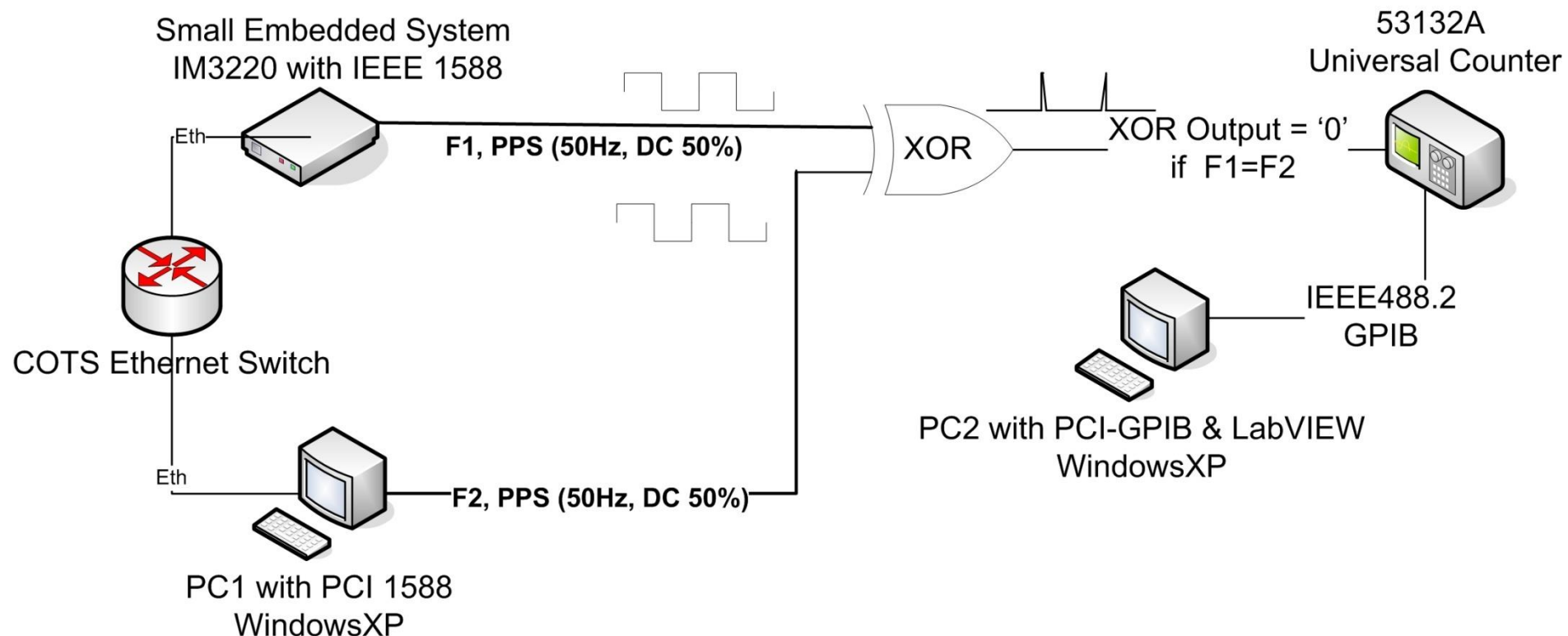
Editor: Luis Bermudez

OGC® Ocean Science Interoperability Experiment

Phase II Report

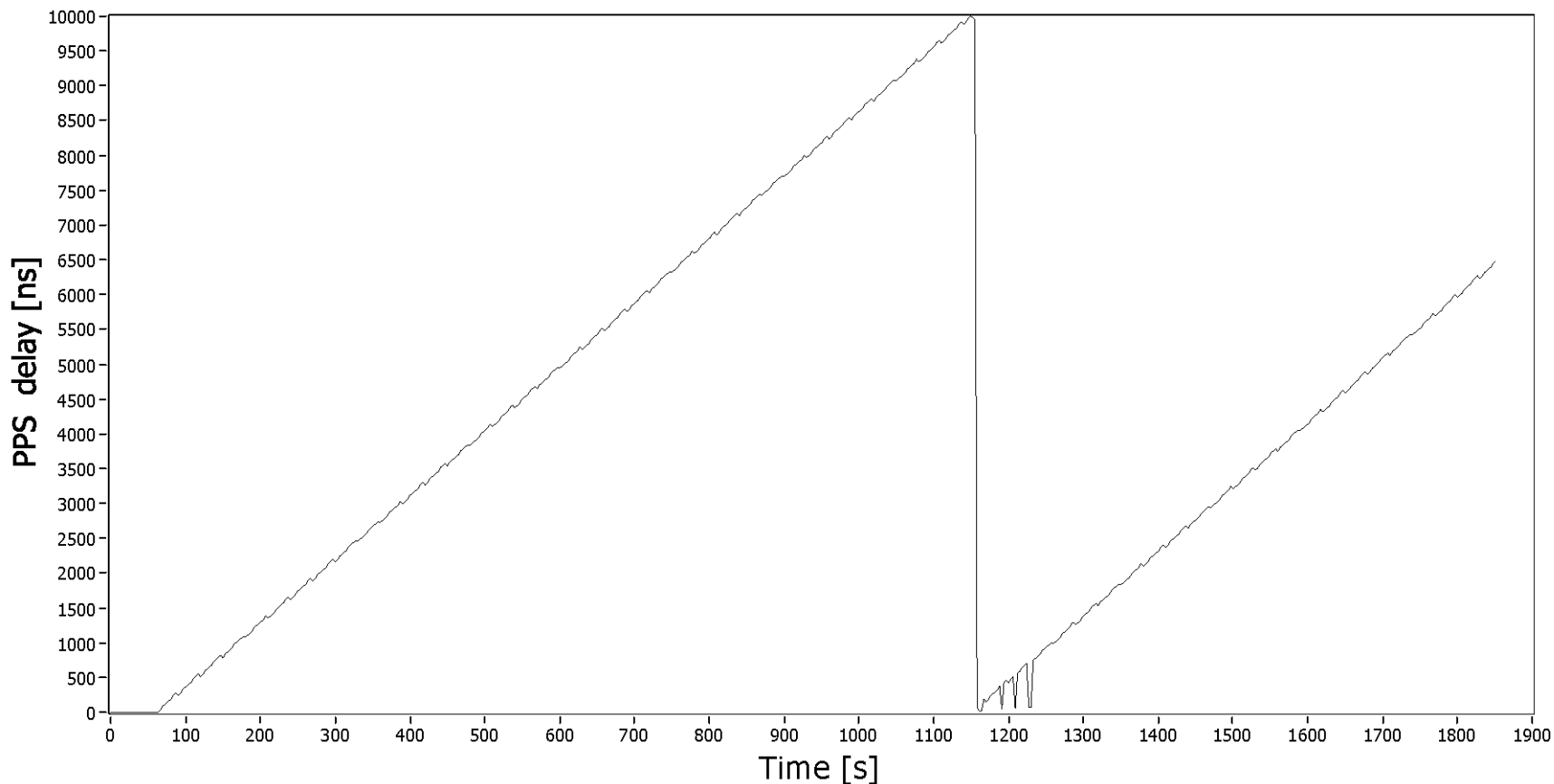
Copyright© 2009 Open Geospatial Consortium. All Rights Reserved To obtain additional rights of use, visit <http://www.opengeospatial.org/legal/>.

OBSEA: Precision Time Protocol tests



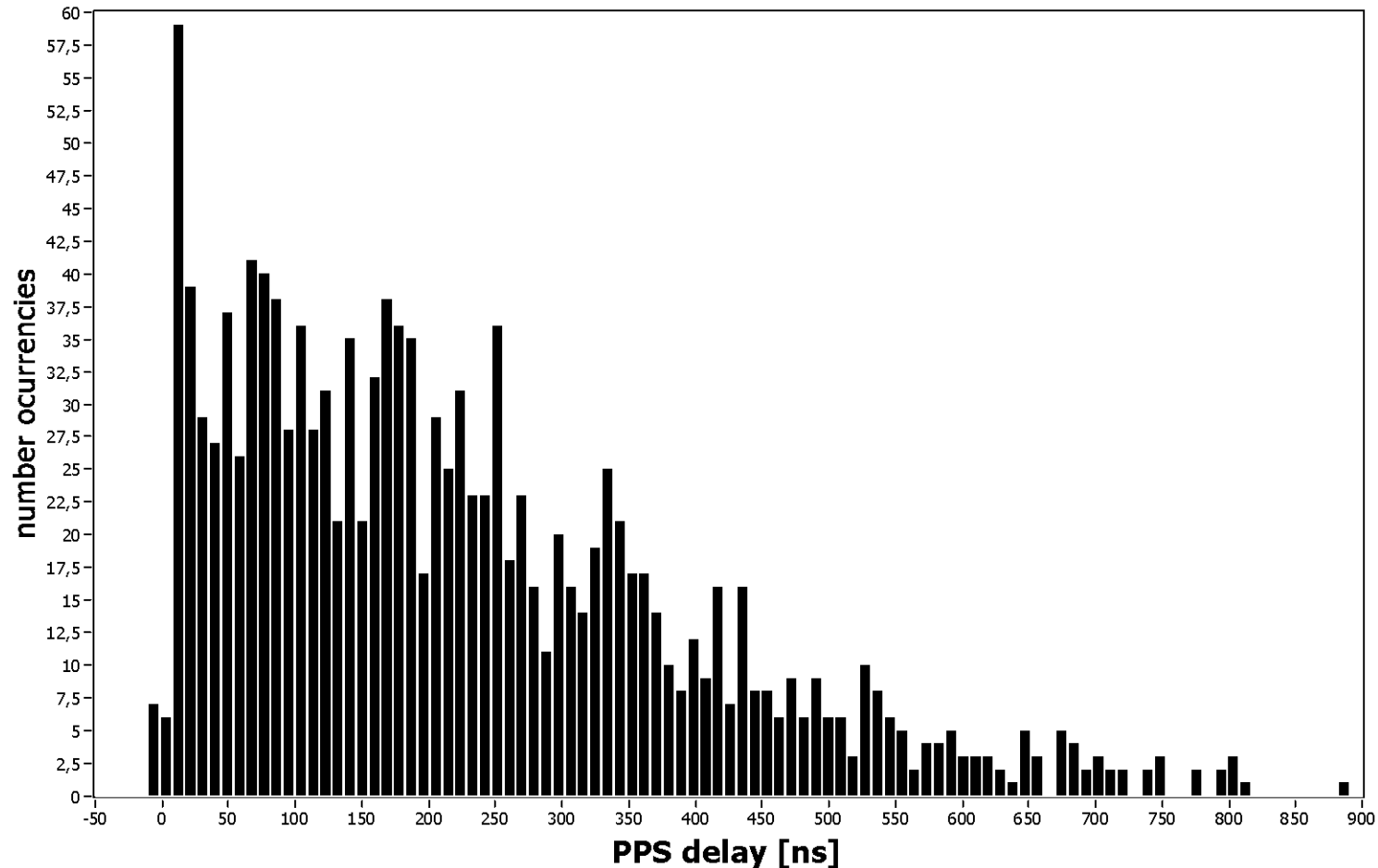
PTP IEEE1588 TESTS RESULTS PRESENTATION

OBSEA: Precision Time Protocol tests

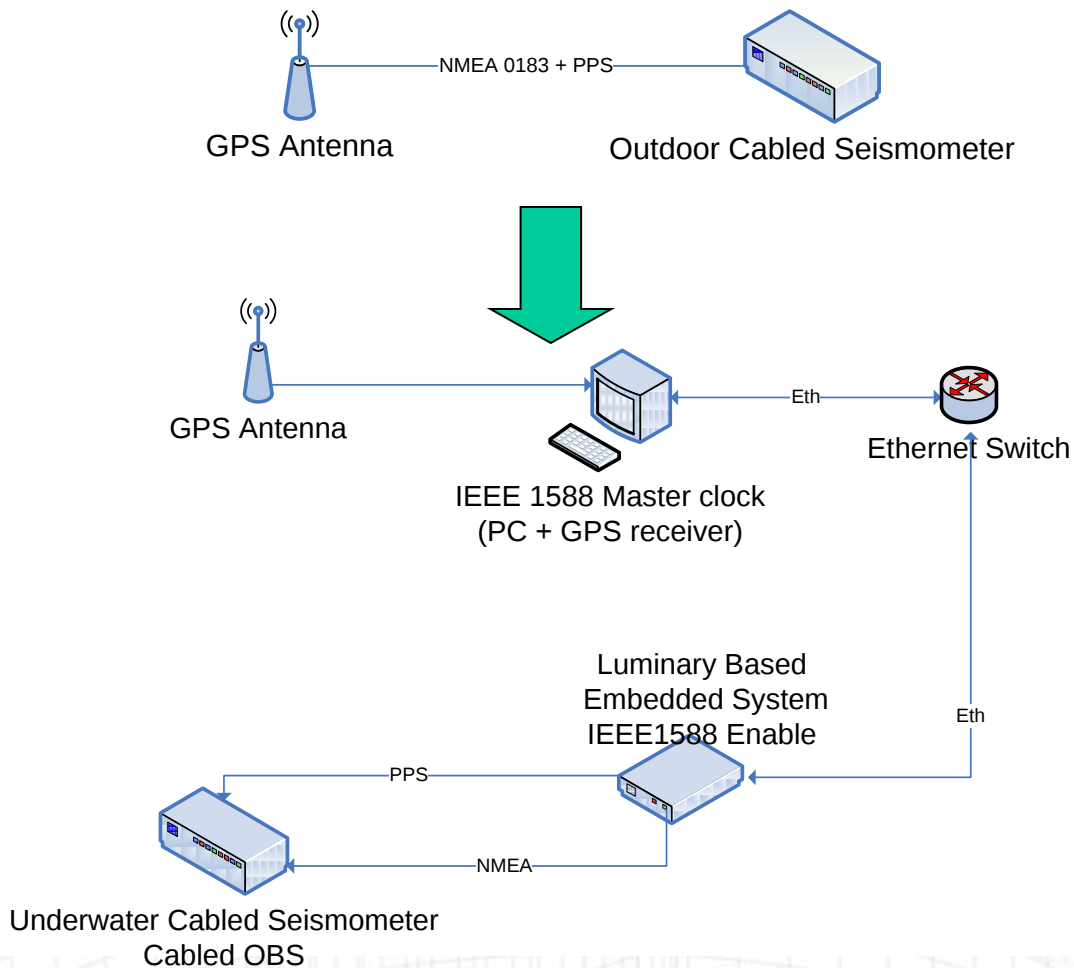


F1 to F2 delay measurement

OBSEA: Precision Time Protocol tests



OBSEA: Precision Time Protocol utilization



OBSEA: PTP IEEE1588

- IEEE1588

[Results of PTP tests with Obsea Ethernet Swithes Presentation](#)

OBSEA: Hydrophone data processing

- <http://lido.epsevg.upc.es>
- <http://listentothedeep.net>

OBSEA: Ongoing tasks

- Cabled OBS using PTP for time synchronization
- Improve Zabbix configuration to ensure Data Quality
- Improve Zabbix configuration for alarms generation
- Development of the OBSEA Ontologies
- IEEE1451.0, IEEE1451.2 and STWS implementations
- PUCK protocol testing
- OGC-SWE standards implementations
- Deployment of a lighting system
- Installation of a surface buoy with a Meteorological Station connected to OBSEA and a Iridium Communication to test low bandwidth communications protocols
- [General Reference Model](#) for Ocean Observatories:
- Aging tests for dynamic marine cables for “green energies” at sea
- SeaDataNet... NetCDF access to the information
 - <http://www.seadatanet.org/>
 - ISO 19115

OBSEA: interesting links

- www.obsea.es
- http://sites.upc.edu/~www-sarti/OBSEA/genera_map.php
- http://esonet.epsevg.upc.es:8080/1451/ref_model.html
- <http://esonet.epsevg.upc.es:8080/oostethys/index.html>
- <http://esonet.epsevg.upc.es:8080/1451/testclient.htm>
- http://www.openioos.org/real_time_data/gm_sos.html#
- http://www.openioos.org/real_time_data/sos_esonet.html#
- <http://www.aceytuno.com/index.php?sec=camaraSubmarina>
- www.aceytuno.com
- <http://147.83.140.20:8081/redmine/projects/obsea/issues>

OBSEA: Thanks for your attention.

