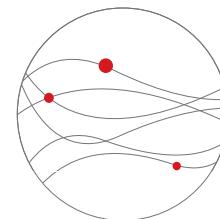




# NeXOS - Next generation, Cost-effective, Compact, Multifunctional Web Enabled Ocean Sensor Systems - Empowering Marine, Maritime and Fisheries Management

J. Pearlman, E. Delory, A. Castro, C. Waldmann, F. Pearlman  
GEPW8 Athens, June 2014

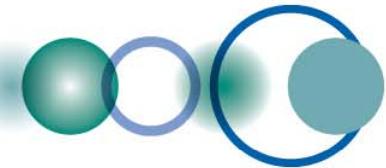


**neXOS**  
OCEAN SENSORS

# NeXOS factsheet

Next generation, Cost-effective, Impact, Multifunctional Web Enabled Ocean Sensor Systems Empowering Marine, Maritime and Fisheries Management

- Project number: 614102 (FP7-OCEAN 2013.2)



# GEO Blue Planet SB01

- **Focus** - *Provide sustained ocean observations and information* to underpin the development, and assess the efficacy, of global-change adaptation measures (such as those related to vulnerability of coastal zones, sea-level rise, and ocean acidification). *Improve the global coverage and data accuracy* of coastal and open-ocean observing systems (remote-sensing and in-situ). ... Establish a global ocean information system by making observations and information, generated on a routine basis, available through the GEOSS Common Infrastructure...

**C1 Sustained  
Ocean  
Observations and  
Information**



# Community Issues and trends

- Increasing need for ocean information
  - Essential Ocean Variables - EOV
  - balanced by the budget limitation and challenges of comprehensive observations
- Incorporating new technologies - electronics, communications, interoperability
- Balancing the possible information overload - real time verses broad geographic coverage; high accuracy verses more pervasive lower accuracy
- Transition of research to production and operations (how to transition to mass production and low cost) talk about scales of coverage over time
- Identifying new markets for instrumentation

# Overview of NeXOS objectives

## Holistic View - End to End Approach

- Optic and acoustic sensors compact with web enablement
- Standardization of data into community formats
- Multi-platform characteristics (sensors can function in multiple environments)
- Guided by applications for transition to production



Call FP7-OCEAN-2013

Innovative multifunctional sensors for *in situ* monitoring of marine environment and related maritime activities

# Where is NeXOS going?

*A holistic approach for increasing cost-effectiveness of ocean observations through:*

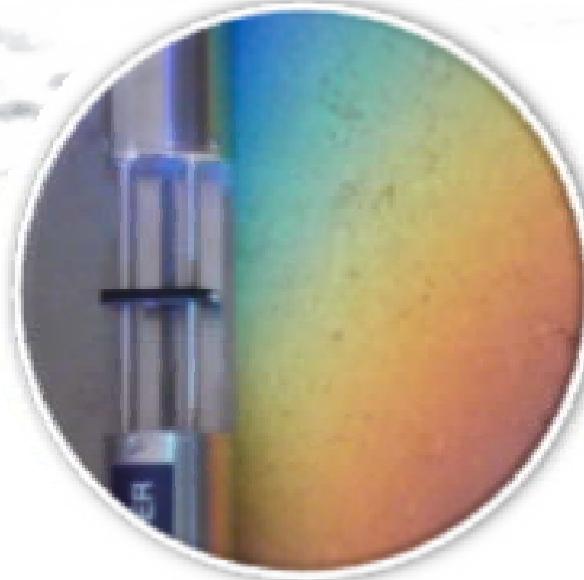
- Data interoperability "out of the box" with "sensor web enablement for interoperability: "plug and work"
- Multifunctional sensing: do more with instruments without increasing their price
- Smart antifouling system: Less maintenance
- Multiplatform: increase the sampling resolution using low-cost and platforms of opportunity
- Addressing the full life cycle from design to operations

# NeXOS Program Implementation

- Narrow down requirements through scenarios
- Deliver the new sensors (optical and acoustic)
  - Make sensors smarter (e.g. searchable, standard interfacing)
  - Make data more accessible and interoperable
  - Increase sensor reliability
- Validate and demonstrate in the field
- Perform a study of market status and needs – address transition to production

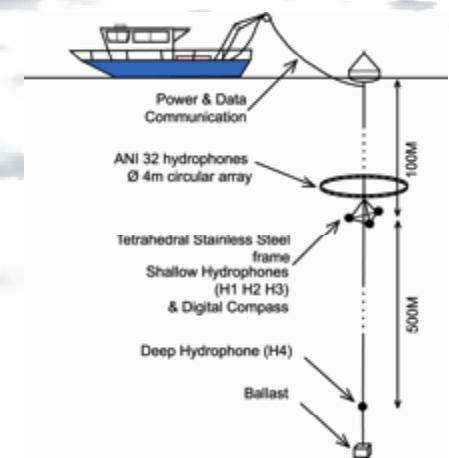
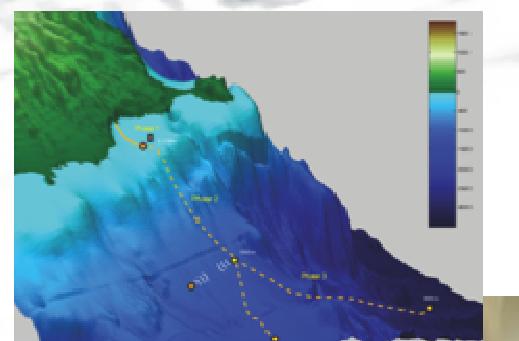
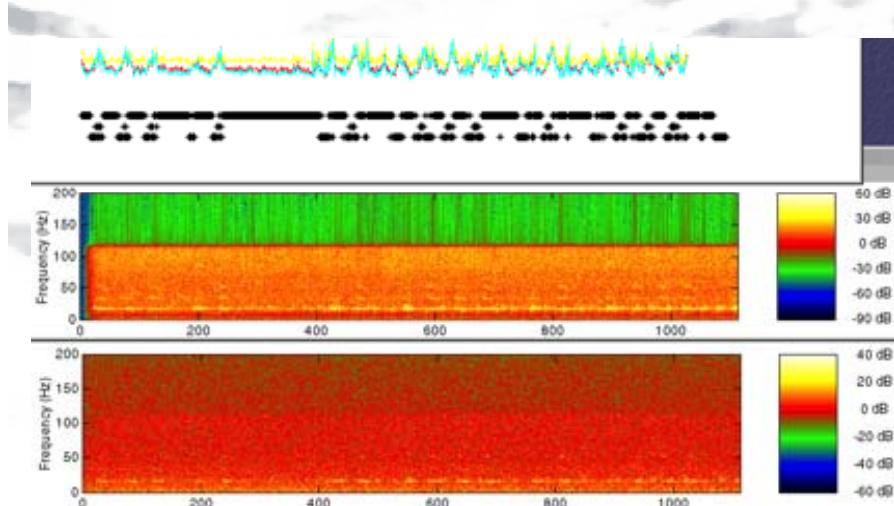
# Optical sensors

- Compact and multifunctional
- Polycyclic Aromatic Hydrocarbons
- Dissolved Organic and Suspended Matter
- Phytoplankton groups, Chlorophyll
- Carbon and related



# Passive Acoustics

- Compact and multifunctional sensors
- Noise SPL measurements and statistics
- Classification of sounds
- Sound source localization



# RECOPESCA & EAF projects

A participative approach to collect data  
on fishing activities and environmental parameters

- Integrated multidisciplinary system
- A sample of voluntary fishing vessels fit out with sensors (data logger)
  - Recording data on fishing effort, catches and physical parameters (temperature and salinity, turbidity coming soon) → Concrete achievement of participative approach
  - A sample of vessels representative of the whole fishing fleets (métier, fishing areas, length), at a national scale
- A modular and affordable system adapted to:
  - active or passive gears
  - the different types/lengths of vessels
- Recopesca relies on and feeds existing operational data centers:
  - Coriolis, for operational oceanography
  - The Fisheries Information System (SIH) of Ifremer and its database *Harmonie*



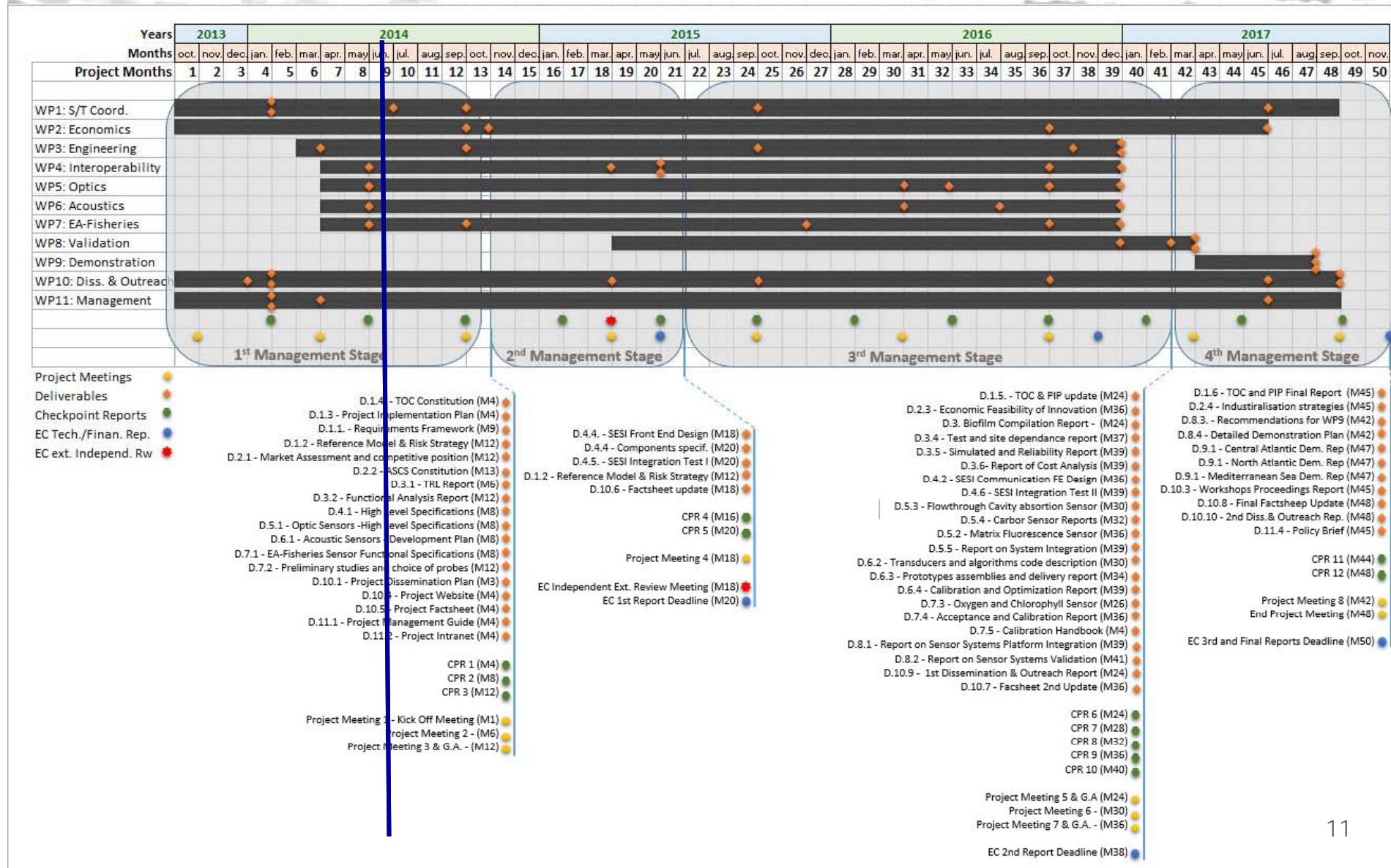
**Coriolis**  
OPERATIONAL OCEANOGRAPHY

<http://www.coriolis.eu.org>

 Système  
d'Informations  
Halieutiques

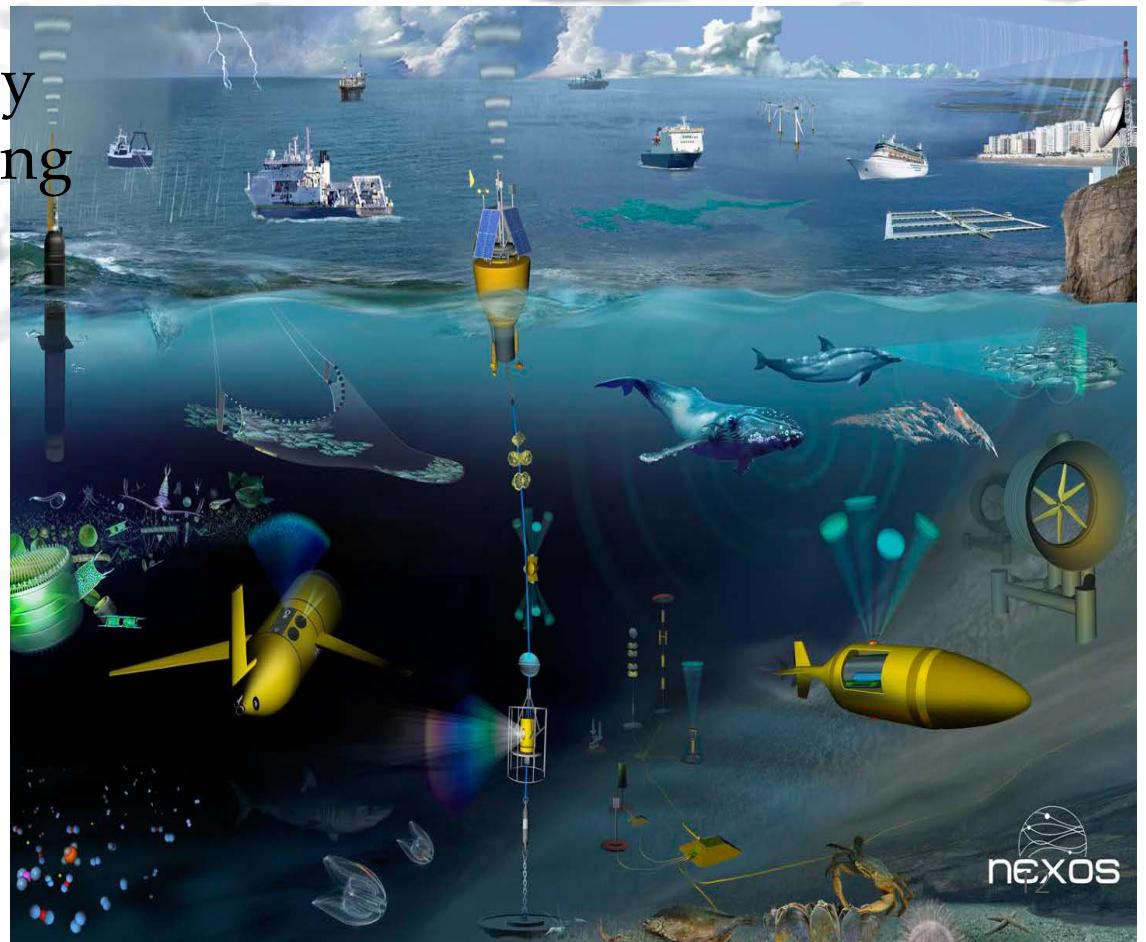
[www.ifremer.fr/sih](http://www.ifremer.fr/sih)

# NeXOS Development Schedule



# Application Areas

Science research  
Marine management  
Marine renewable energy  
Environmental monitoring  
Fisheries  
Off-Shore industry  
Others





# NeXOS – Supporting GEO

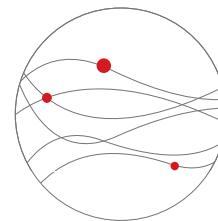
- Supporting Essential Ocean Variables (EOV) with a new generation of observations
- Improve readiness level through maturing new technologies
- Facilitating use of GEO standards, best practices and interoperability



# Thank You



[www.nexosproject.eu](http://www.nexosproject.eu)



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