WP3: STATUS & ROADMAP

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WP3: HARMONIZING TECHNOLOGICAL ASPECTS

General Objectives:

- *To provide a common base for the operational use of FerryBoxes, gliders, fixed platforms along European coasts*
- *To review the current status of existing systems in operational use in European seas*
- *To define the best technical practices for compatible, robust and cost-effective systems*
- *To define procedures for harmonizing and merging quality assessed FerryBox and Fixed Platform data at regional (ROOS) level*
- *To define procedures and technological solutions for integration and testing of new sensors on these systems*

TASK LEADERS:

Task 3.1 FerryBox: *NERC (David)*
& NIVA & SYKE (Dominique & Seppo)

Task 3.2 Glider: *CSIC (Simon)*

Task 3.3. Fixed Platform: *CEFAS (Rodney) & CNR (Stefania)*

Task 3.x.3 test & application of new sensors: *HZG (Willi)*

WP 3.1 FERRYBOXES TASKS:

3.1.1: *Review current status of existing FB systems (flow-through systems, sensors, quality control, data handling)*

3.1.2: *Best practice of FB systems (flow-through system, sensors, operation procedures, antifouling, control mechanisms, data handling)*

3.1.3: *Harmonization and merging quality assessed data from FB systems in ROOS regions*

3.1.4: *Test and integration of new sensors and best practices (tightly linked to WP10).*

WP 3:

STATUS TASK 3.1 FERRYBOX (FB) (responsible David Hydes):

Task 3.1 FerryBox:

- Review current status FerryBox (T 3.1.1):
  - 1st Version of questionnaire circulated in August 2011
  - 2nd Version (with extra columns regarding WP4) circulated in January 2012
- 1st JERICO FerryBox workshop (30-31 August 2011 at HZG)
- Report of 1st JERICO FerryBox workshop (distributed Nov. 2011)
- Best practice of FB systems (T 3.1.2):
  already discussed in 1st workshop, will be finalized in 2nd workshop (Oct 2012?)

- *D 3.1. report status FerryBox (M09 = Jan 2012): in preparation, delayed delivery June 2012, Basis will be the Excel sheets from questionnaire*

JERICO FB WORKSHOP 30-31 AUGUST 2011

Report

First JERICO FerryBox workshop

Contributing to the activities of workpackages 3, 4 and 5

Joint
European
Research
Infrastructure network for
Coastal
Observatories

Helmholtz-Zentrum Geesthacht

30th -31st August 2011.

Prepared by

W. Petersen, M. Hartman, D. Hydes, G. Petihakis

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QUESTIONNAIRE FB EQUIPMENT I

1	Operator:	HZG	HZG	HZG	HZG						
2	Ships	Tor Dania (TD)	LysBris (LB)	FunnyGirl (FG)	FunnyGirl (FG)						
3	Company										
4	Routes	Cuxhaven - Immingham	Norway,Germany, England, Spain	Helgoland-Büsum	Helgoland-Cuxhaven						
5	Frequency	5 per weak	fortnightly	daily (summer)	daily (winter)						
6	Parameter	Measurement principle	Sensor	Manufacturer	Unit	Detection range	Accuracy	Resolution	Typical obs. Range (min. - max.)	Maintenance procedure	Maintenance interval
7	Water temperature	PT100	EXCELL TSG PT100	FSI (USA)	°C		0.1	0.01	2 – 25	cleaning, calibration check	yearly
8	conductivity	inductively	EXCELL TSG	FSI (USA)	ms/cm	0 – 50 psu	0.02	0.001	10 – 36 psu	cleaning, calibration check	6-monthly
9	Turbidity	light scattering (red)	CUS31-W2A	Endress & Hauser (Germany)	FTU	0 – 999	10%	0.001		cleaning, calibration check	monthly
10	Turbidity	light scattering (blue)	Scufa II	Turner design (USA)	NTU	0 – 50	tba	0.05	-	cleaning, calibration check	monthly
11	dissolved oxygen	Clark electrode	COS4-2	Endress & Hauser (Germany)	mg/l	0 – 20	0.2% F.S.	0.2 % F.S.	8 – 15	cleaning,calibration check	monthly
12	dissolved oxygen	dynamic luminescence quenching	Oxygen Optode 3830	Aanderaa	micro-Moles/l	0 - 500	<8uM or 5%	<1% or 0.4 %	200-400	cleaning,calibration check	monthly
13	pCO2	membran system, NDIR detection	HydroC CO2	Contros	ppm	0-1000		1	100-1000	recalibration	6-monthly
14	pH	pH-electrode (gel)	CPS11	Endress & Hauser (Germany)		0-12	0.05	0.01	7.5 – 9.0	cleaning, calibration check	monthly
15	pH	pH-electrode (gel)	EGA140 SMEK	Meinsberg (Germany)		0-12	0.05	0.01	7.5 – 9.0	cleaning,calibration check	monthly
16	chlorophyll-a	fluorescence	Scufa II	Turner design (USA)	µg/l	0 – 200	tba	0.5	0.5 – 35	cleaning, calibration check	monthly
17	algae groups (chlorophyll-a)	fluorescence (excitation at different wavelengths)	Algal-Online-Analyser(AOA)r	bbe-moldaenke (Germany)		1 – 200	0.1	0.5	depends on algae group	cleaning, calibration check	yearly
18	CDOM	fluorometric	Cyclops 7	Turner design (USA)	ppb QS	0.4-2500		0.1	0-3	cleaning	monthly

CEFAS | CNRS_INSU | HCMR | HZG | IMR_1 | IMR_2 | NIVA | NOCS GB_ES | SMHI SE_Fi_De | SYKE Fi_De

QUESTIONNAIRE FB EQUIPMENT II

detailed description can be provided in a separate document

detailed description can be provided in a separate document

- general problems
- experience with new sensors
- aspects to be addressed in FCT
- comments

Maintenance procedure	Maintenance interval	Quality control-verification-in-situ	Calibration	Calibration interval	bottleneck for calibration	Biofouling cleaning interval	Bottleneck for biofouling cleaning	Quality assessment and other remarks	Feedback on experience with the sensor	Installed on ship
cleaning, calibration check	yearly	randomly	manufacturer	2-yearly	no	after each cruise	-		very small drifts	TD, LB, FG
cleaning, calibration check	6-monthly	-	bottle samples	monthly	no	after each cruise	-	Inter-calibration with laboratory measurements.	very small drifts	TD, LB, FG
cleaning, calibration check	monthly	-	bottle samples	monthly	calibration from bottel samples difficult for low (<2mg/l) SPM concentrations	after each cruise	-	Comparison with filtrated samples; uncertainties due to small air bubbles with different quality of SPM.	some times problems with airbubbles,	TD, LB
cleaning, calibration check	monthly	-	bottle samples	monthly	calibration from bottel samples difficult for low (<2mg/l) SPM concentrations	after each cruise	-		some times problems with airbubbles	TD, LB, FG
cleaning,calibration check	monthly	-	bottle samples (Winkler)	monthly	only samples during maintenance in the habour	after each cruise	-	Calibration outside of the flow through system.	drift very small if cleaning is performed frequently	TD
cleaning,calibration check	monthly	-	bottle samples (Winkler)	monthly	only samples during maintenance in the habour	after each cruise	-		very stable over long time periods	TD, LB, FG
recalibration	6-monthly	-	manufacturer	yearly	drift can not be controlled between calibr intervals	after each cruise	-		missing long time experience, just installed in May 2011	TD, LB
cleaning, calibration check	monthly	yes	with pH standards	monthly	calibration difficult due to temperature problems	after each cruise	-	Calibration outside of the flow through system.	high drifts, relativly high noise	TD, LB
cleaning,calibration check	monthly	yes	with pH standards (pH=7 and pH=9)	monthly	calibration difficult due to temperature problems	after each cruise	-		very high precision, less noise, quite stable	TD, LB, FG
cleaning, calibration check	monthly	-	bottle samples	monthly	samples are cooled however filtration for some samples only after serveral hours	after each cruise	-	Inter-calibration with HPLC measurements; different quality of SPM.	some times problems with airbubbles	TD, LB, FG
cleaning, calibration check	yearly	-	manufacturer	2-yearly	no	after each cruise	-	Inter-calibration with HPLC measurements; different quality of SPM.	less problems with air bubbles, differentiation between algal group more qualitativ	TD, LB
cleaning	monthly	-	manufacturer	2-yearly	no	after each cruise	-	only factory calibration	very stable, no standards for calibration available	FG

CEFAS | CNRS_INSU | HCMR | HZG | IMR_1 | IMR_2 | NIVA | NOCS GB_ES | SMHI SE_Fi_De | SYKE Fi_De

D 3.1.
REPORT STATUS FERRYBOX (M09 = JAN 2012):

Report on current status of FerryBox: Task 3.1 - Report of the first Workshop on experiences using a FB system (systems, sensors, quality control, data handling), best practice and identifying problems and lacks of best practice [month 9]

Content:

- Definition part
- questionnaire and the results (routes, equipment…)
- proposed best practices for :
  - installation (housing, cables, pumping, debubbling, …
    see 1st version from Pierre (NIVA))
  - sensors (brand, measuring principle…)
  - antifouling (cleaning)
  - maintenance (calibration, cleaning…)
  - communication (remote control, data transmission…)
  - data handling &metadata (database, public access…)
  - Quality control (in-situ, bottle samples, factory calibration…)
  - post processing (quality flags)

RECOMMENDATIONS ON INSTALLATION AND DESIGN OF FERRYBOX SYSTEMS

Pierre Jaccard, Kai Sørensen,

Contents

Abstract
Shipping Company
Ship Type
Route
Regulations
Location on Ship
Inlet
- Regulations
- Types and dimensions of pipes
- Valves
- Include Servicing in Design
- Distance to Sensors

Choice of System
Pump
- Location of the Pump
- Integrated System
- Subsystem

Piping
- Regulations
- Include Servicing in Design
- Dimensions of Pipes

Electrical Considerations
- Regulations
- Onboard Routines
- Power Consumption
- UPS

Signal Transmission
Navigation from Ship
Sensors
Data Transmission

WP 3.2 GLIDER TASKS:

3.2.1: *Review current status of glider operation in Europe*

3.2.2: *Define the best technical practices for operation a fleet of glider*

WP 3:

STATUS TASK 3.2 GLIDERS (GL) (responsible Simon Ruaz):

- *review the current status of gliders (T 3.2.1)*
- *Workshop on gliders (May 2012 ? organized by Simon)*
  co-ordination with EU project GROOM?*
- *define the best technical practices (T 3.2.2)*

D 3.2. Report on current status of gliders observatories within Europe (M15 = Jul 2012)

* GROOM: Gliders for Research, Ocean Observation and Management, Start Oct. 2011, Duration 36 months

WP 3.3 FIXED PLATFORM (FP) TASKS:

3.3.1: *Review of the current status of all existing fixed observing site*

3.3.2: *Workshop to identify elements of fixed platform technology which clearly represent best practice*

3.3.3: *Harmonization and merging quality assessed data from fixed platform systems in ROOSes*

3.3.4: *Comparison of new sensors and assessment of their applicability for fixed stations <-> WP 10*

WP 3:

STATUS TASK 3.3
FIXED PLATFORMS (FP) (responsible Rodney Forster (CEFAS)):

- *Review of the current status of all existing fixed observing sites (T 3.3.1)*
  questionnaire (shared Excel document) started in February 2012
- *Fixed Platforms (FP) workshop (T 3.3.2)*
  (29th February – 2nd March 2012 in Rome organized by Stefania (CNR))
- *Harmonization and merging quality assessed data from fixed platform (T 3.3.3)*
  harmonise the outputs of fixed platforms with other systems such as FerryBox/.
  The test sites for this will be the North Sea (Cefas, HZG, Ifremer) and Adriatic (CNR).
- *Comparison of new sensors and assessment for FPs (T 3.3.4)*
  in conjunction with WP 10
  first meeting on Friday 02 March 2012

- *D 3.3: Review of current marine fixed instrumentation*
- *(M21 = Jan 2013)*

WP 3:

FURTHER DELIVERABLES

- *D 3.4. Report on new sensor developments (M36 = May 2014)*

- *D 3.5. Conclusion report (M42 = Oct 2014)*

WP3: CONTRIBUTIONS OF PARTNERS

Overview WP3 contributions																			
		IFREMER (FR)	SYKE (FI)	IBWPAN (PL)	NIVA (NO)	OGS (IT)	CNR (IT)	HCMR (GR)	NERC (UK)	HZG (DE)	MUMM (BE)	CEFAS (UK)	SMHI (SE)	CSIC (ES)	NIOZ (NL)	MI (IE)	AZTI (ES)	INSU (IT)	PUERTOS (ES)	Number of partners involved
P.-No.		**1**	**2**	**3**	**5**	**8**	**9**	**11**	**12**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**22**	**23**	**26**	17
PM		2	4	6	5	4	7	8	13	16	3	8	4	5.5	0	2	3.7	7	6.5	104.7
WP 3.1	**FerryBox**	o	X	—	X	—	—	X	X	X	X	X	X	—	X	—	—	—	—	9
WP 3.2	**Glider**	X	—	—	—	—	—	—	X	X	—	o	—	X	—	X	—	—	—	7
WP 3.3.	**Fixed Platf**	X	—	X	—	X	X	X	X	X	o	X	X	—	—	X	X	?	X	13
X major contribution																				
o minor contribution																				
— no contribution																				

partners in total: 17

budget: ~550 T€

total personal month: 105

WP3 ACTIVITIY REPORT (M 1-9)

WPs Activity report (22/2/2012 version)

WP 3 – HARMONIZING TECHNOLOGICAL ASPECTS

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+Name of task team responsible persons:
Work package leaders' name:

Task title	Responsible persons	Institution
Task 3.1. FerryBox (FB)	David Hydes	NOCS
Task 3.2. Gliders	Simón Ruiz,	CSIC_IMEDEA
Task 3.3. Fixed Platforms	Rodney Forster	CEFAS

+Name of other participating institutions:
IFREMER, SYKE, IBWPAN, NIVA, OGS, CNR, HCMR, NERC, HZG, MUMM, CEFAS, SMHI, CSIC, MI, TECNALIA-AZTI, INSU/CNRS, PUERTOS

Progress towards objectives – tasks worked on and achievements made

During the first months we focused on the task 3.1 about FerryBoxes. Furthermore preparations started for the workshop about fixed platforms.

Task 3.1 FerryBox (FB)

Towards the task "review current status of FerryBoxes activities" a questionnaire has been developed and distributed to the partners in June 2011. The result have been presented and discussed at a two day JERICO FerryBox workshop end of August 2011. The questionnaire (Excel sheet) will be updated regularly at least once a year. From the workshop a report has been written. This report together with the results of the .questionnaire will be the basis of deliverable D 3.1. (Report on current status of ferrybox).

Task 3.2 Glider

This task will start most acitivities in the second period. A Glider workshop is planned together with the EU project GROOM (Gliders for Research, Ocean Observation and Management) in May 2012

Task 3.3 Fixed Platforms

A first draft of the agenda of the workshop about fixed platforms has been prepared. A questionnaire about fixed platforms has been developed. It has been agreed with EuroGOOS (Patrick Gorringe) to include all information already exists in the EDIOS database. the way around updated information can go back to the EDIOS/EMODNET information system.

1. Deviations from the project work programme, and corrective actions taken

There are no deviations at this stage from the plan with the exception of deliverable 3.1 which will be delayed for some months due to change of responsible person at NOCS.