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European Marine Research Infrastructures for the next Decade

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Basics of the development of the European Research Area

The ERA concept combines:

- a European "internal market" for research, where researchers, technology and knowledge freely circulate;
- an effective European-level coordination of national and regional research activities, programmes and policies;
- initiatives implemented and funded jointly

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European Research Area

World-class research infrastructures

cf. Lund & Donostia declarations (July 09 – Jan 10)

- Essential for Europe's researchers to stay at the forefront of research development
- Key component of Europe's competitiveness in "frontier" research

Key Challenges:

- *Overcoming fragmentation in Europe*
- *Coping with increasing costs / complexity*
- *Improving efficiency of (and access to) research services, incl. e-infrastructures*

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Scientific competition is at world level

- Is Europe able to face the challenge?
- Are member States willing to think European?

reinforcing coordination / integration is the only possible choice for RI policy at EU level

- At EU level,
- At national and regional,
- At global level...

This explains the important role of ESFRI and others...

Time for Joint Actions pooling resources

Role of ESFRI

(and of its ad-hoc Working Groups)

- To foster an “open method of coordination” between different countries
- To discuss the long term vision at European level and to support the development of a European RI policy
- To bring initiatives and projects to a point where decisions by ministers are possible

First roadmap in 2006 → Update in Dec 2008 → Update in Dec 2010

A stimulation and incubator role

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Research infrastructures for marine and maritime research

- Ad Hoc ESFRI working group, “European Strategy on Marine Infrastructure”, 2003
- Thematic ESFRI working group (Environment)
- Marine board, policy statements and position papers
- The Aberdeen declaration, EurOCEAN 2007 conference: “...shared use, planning and investment of critical infrastructure on a European-wide basis”
- EC Communication “A European Strategy for Marine and Maritime Research”
    - ✓ Expert group on MRI (chair: Rudy Hermann)

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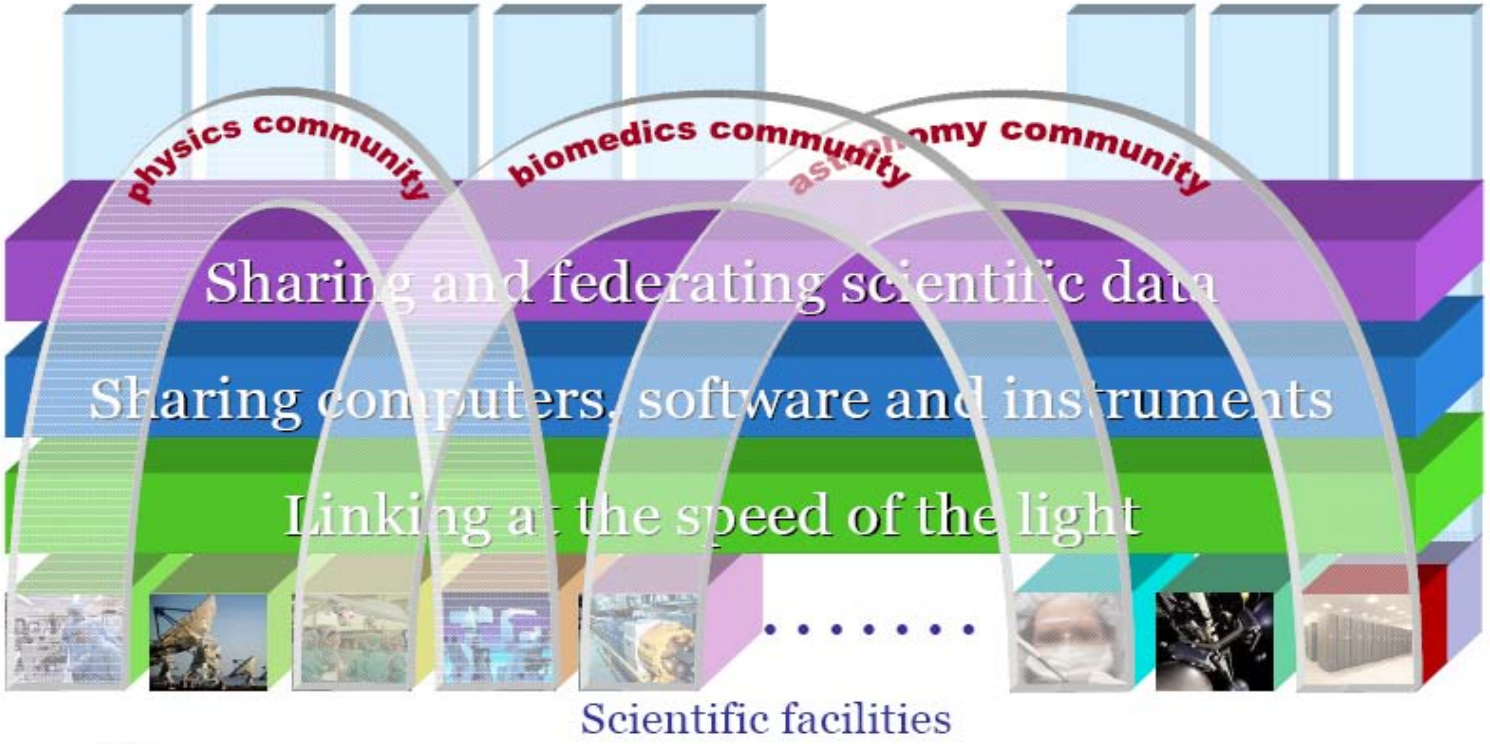
e-Infrastructures interconnecting communities



e-infrastructure

European Commission
Information Society and Media

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Towards an 'eco-system' of Research Infrastructures within ERA

a) Large (single-sited) facilities
b) Distributed European Facilities
c) Network of national facilities

Based on

a) a consistent roadmap from the European stakeholders
b) Links with universities & schools
c) Network of industrial suppliers / users

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RIs for Marine sciences FP6+7

About 60M€ of EC funding (2005-2012)

Aurora Borealis, 4.5 m€
EMSO, 3.9 m€
Euro Argo, 3.0 m€

FP7 PP

Jerico, 6.5 m€; etc.

Eurofleets, 7.2 m€
Mesoaqua, 3.5 m€

FP7 I3

BlackSeaScene, 3.4 m€
SeaDataNet 8.7 m€

FP6 I3

BlackSeaSCENE, 2 m€

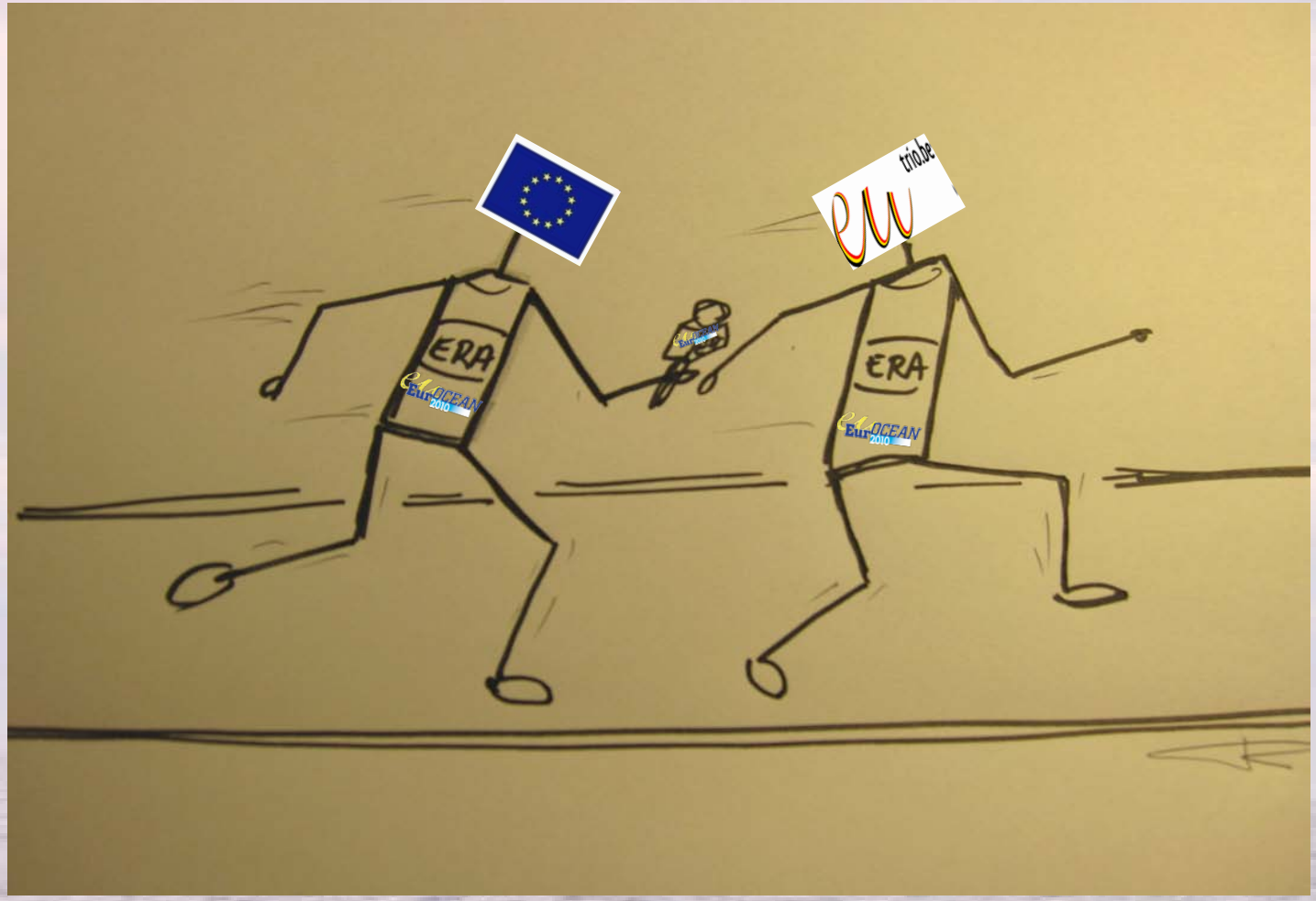
FP6 CA

CeMACE, DesignACT 1,5 m€

FP6 CNI

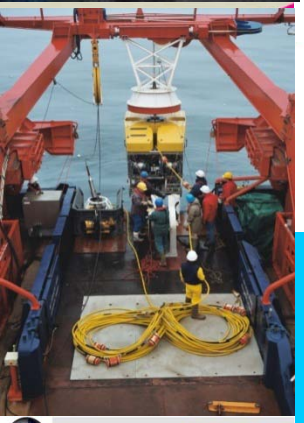
2005 2006 2007 2008 2009 2010

Not forgetting scientific instrumentation, bio-informatics, EMBRC, Lifewtach, etc.


ERA
ERA
triobe

Marine Research Infrastructures
consists of a plenitude of
multifunctional equipment,
instrumentation platforms
and solid or virtual constructions
serving a broad range of
multidisciplinary user communities
GOOS
Global Ocean Observing System

ESFRI: fostering integration of and interaction of MRI



Research Vessels
Underwater vehicles

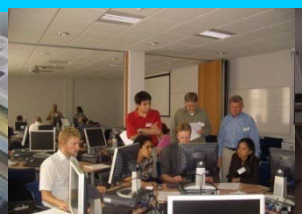
Large exchangeable Instrumentation

Fixed & Distributed Observatories

Data- & information Centres,
Virtual Labs

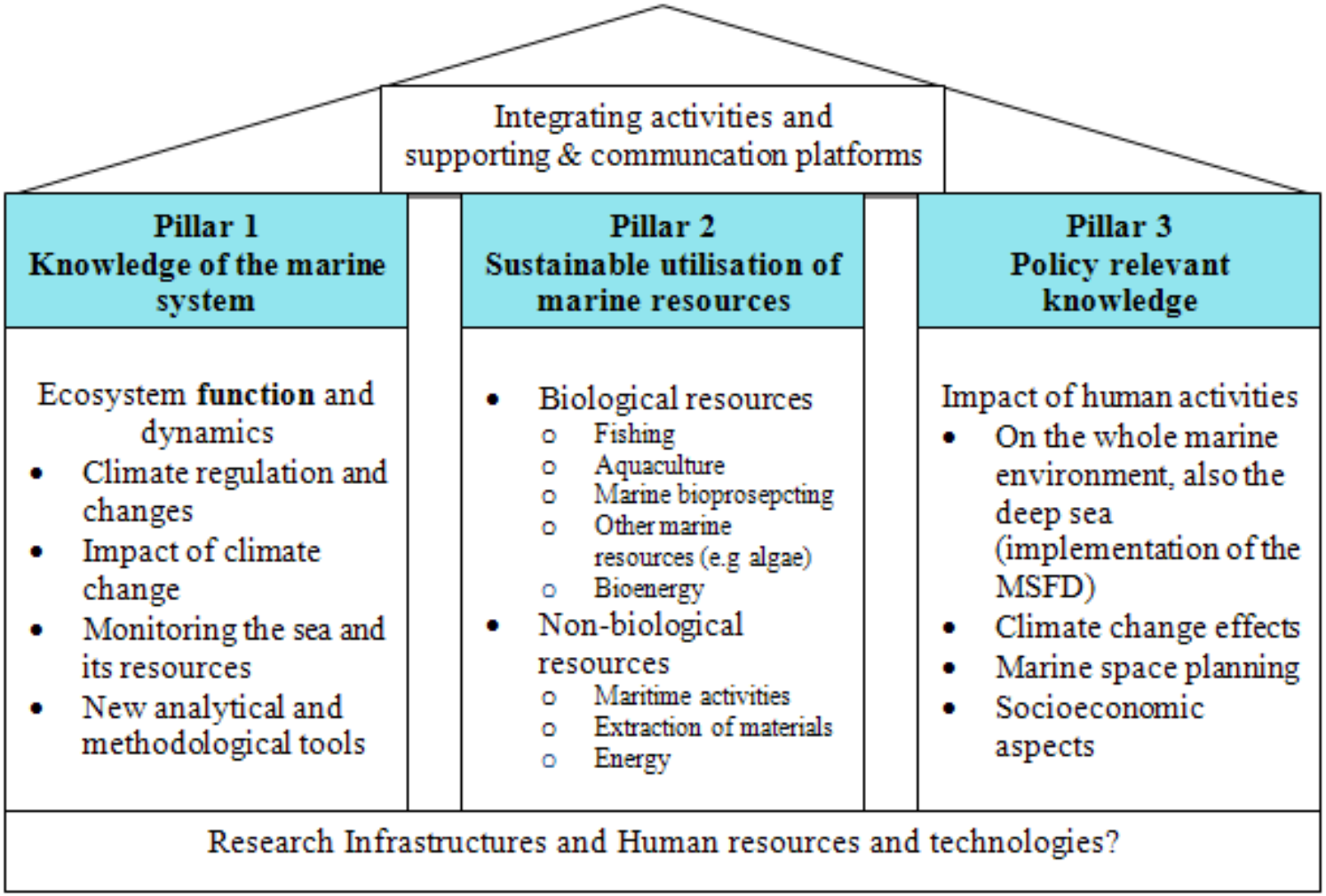
Skilled Technicians &

- **ERICON–AB,** European Polar Research Icebreaker- Aurora Borealis
- **EMSO**, European Multidisciplinary Seafloor Observatory
- **EURO-ARGO,** Research infrastructure for ocean science and observations
- **ICOS,** Integrated Carbon Observation System
- **LIFE WATCH,** Science and technology infrastructure for biodiversity data and observatories
- **SIOS,** Svalbard



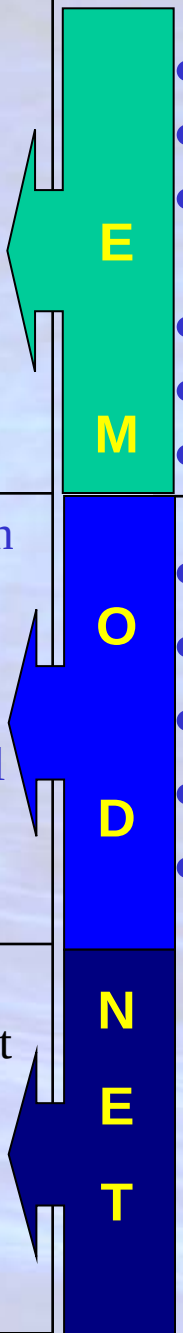
High Quality Researchers

Joint Programming Initiative 'Oceans'



Policy / Societal needs e.g.		Potential MRI
Marine Strategy Framework Directive	1. Biodiversity, alien species, fish stocks, food webs, seabed integrity / habitats 2. Eutrophication 3. Hydrographical conditions 4. Contaminants 5. Litter – 6. Noise / Energy	• EMSO, EUROSITES? • Ships of opportunity? • Mapping of Seabeds / habitats? • LIFEWATCH? • EUROFLEETS?… • *Regional Networks*
Ocean / Climate Interactions	1. Ocean circulation system, ocean / atmosphere interactions 2. Impact of climate change on marine environment 3. Impact of climate ch. on coastal areas	• EURO-ARGO? • RAPID-ARRAY? • PIRATA? • TENATSO? • GLOSS-ESEAS?…

Operational Oceanography	1. Marine safety
	2. Marine and coastal environment
	3. Weather / climate & seasonal forecasting
	4. Marine resources
		• GMES marine RS
		• GMES in situ
		  • EURO-ARGO
		  • EMSO
		  • LIFEWATCH?



Recent declarations from the Marine Board much welcome:

Need for “a long term, stable and integrated network of strategic marine observatories, installed and operated through multi-national cooperation and support, providing consistent in situ data from seas and oceans in support of the EU Integrated Maritime Policy and as a driver for smart, sustainable and inclusive growth in Europe”.

“Long term time series datasets from the marine environment are of critical importance”

Key challenges for Marine Research including Research Infrastructures

- Building on former and ongoing initiatives (incl. ESFRI, ERANET SEAS-ERA), no other choice than fostering European approach, build a long-term vision and... act! Joint Programming Initiative “Oceans” will mature and deserves formal long term commitments.
- RIs: although they are serving essential research (and monitoring) and addressing grand challenges, there is still need to develop, reach sustainability and move to pan-European strategy and governance

Key challenges for Marine Research including Research Infrastructures

- A “European Ocean Observing System” (without s) can only be envisaged if all stakeholders agree on objectives and priorities... on pooling resources... and fill the gaps!
- The relevant cyber-infrastructures are progressing but still a lot to do towards full open access to data, interoperability (incl. GEOSS compatibility) and full use of e-services (grid, GEANT, high-performance computing)
- Capacity and willingness (or not) to *work together* to face more complex problems and research internationalization

THANK YOU

for your Attention