



# **WATERBORNE**

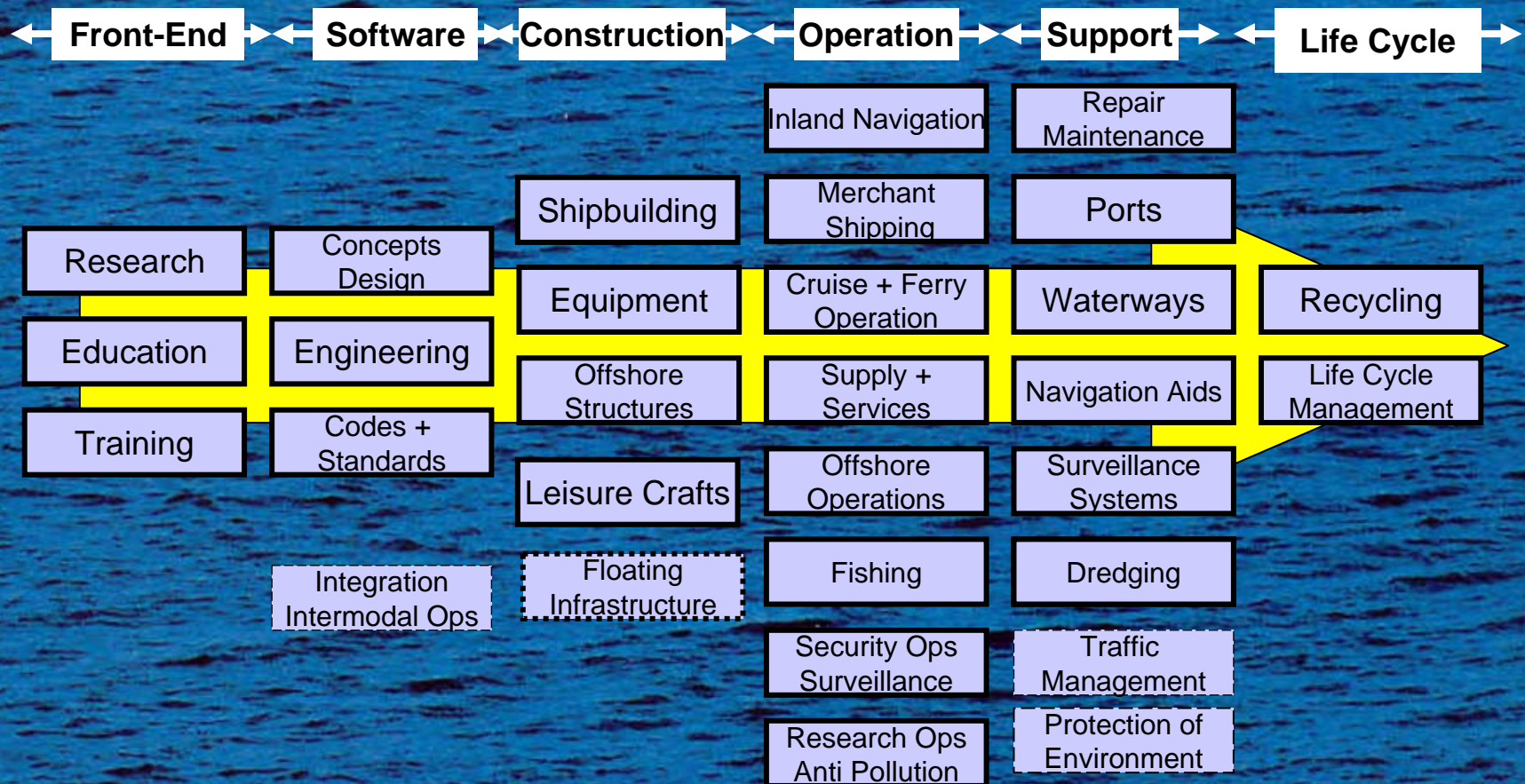
## Technology Platform

**Pierre Besse**

WATERBORNE Support Group Chairman  
Research Director  
BUREAU VERITAS

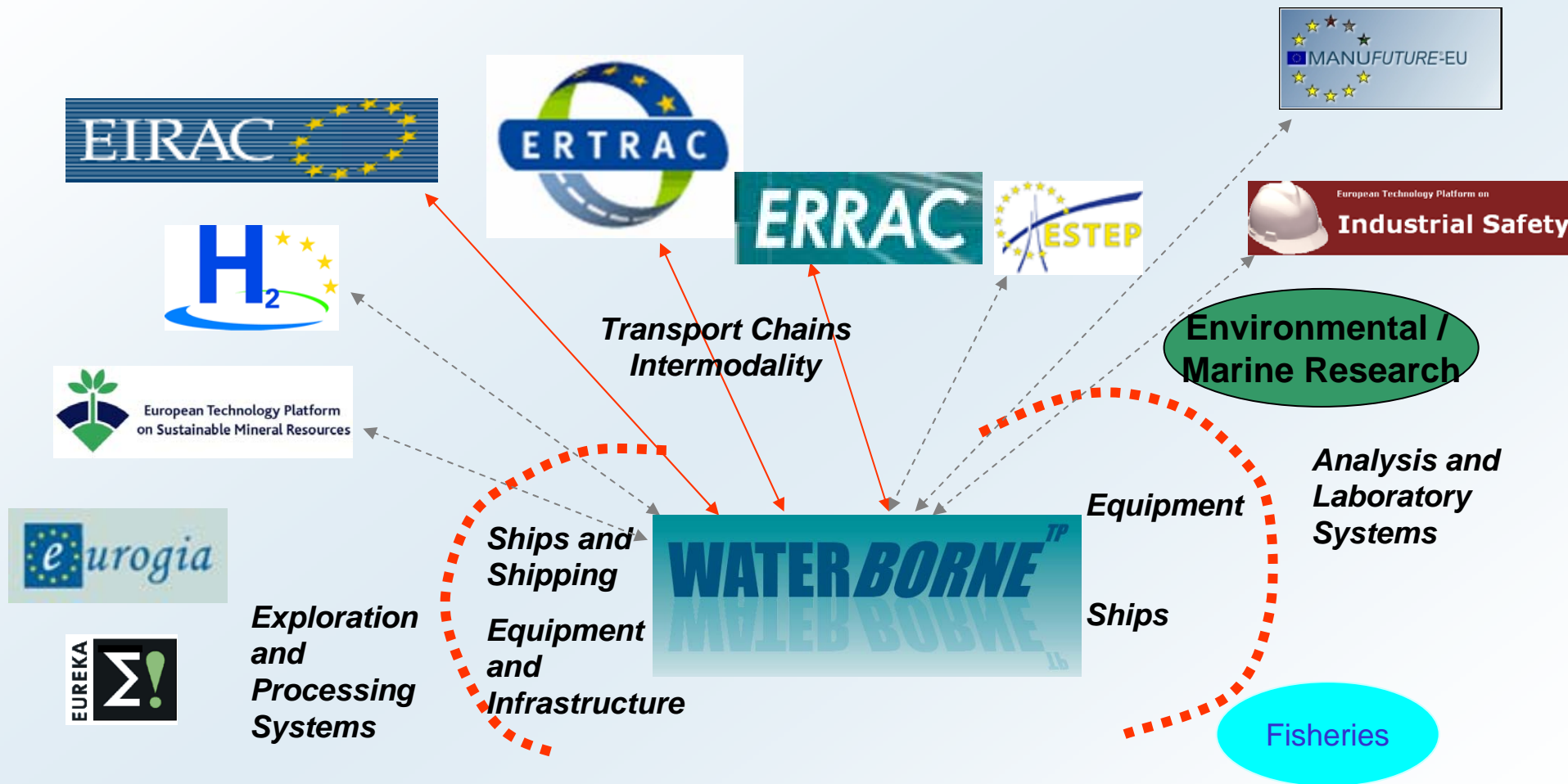
FP7 Information Day on Surface Transport  
Madrid, 16 Feb. 2007

# Waterborne Transport and Operations - Complex Value Chains and extensive know-how Synergies

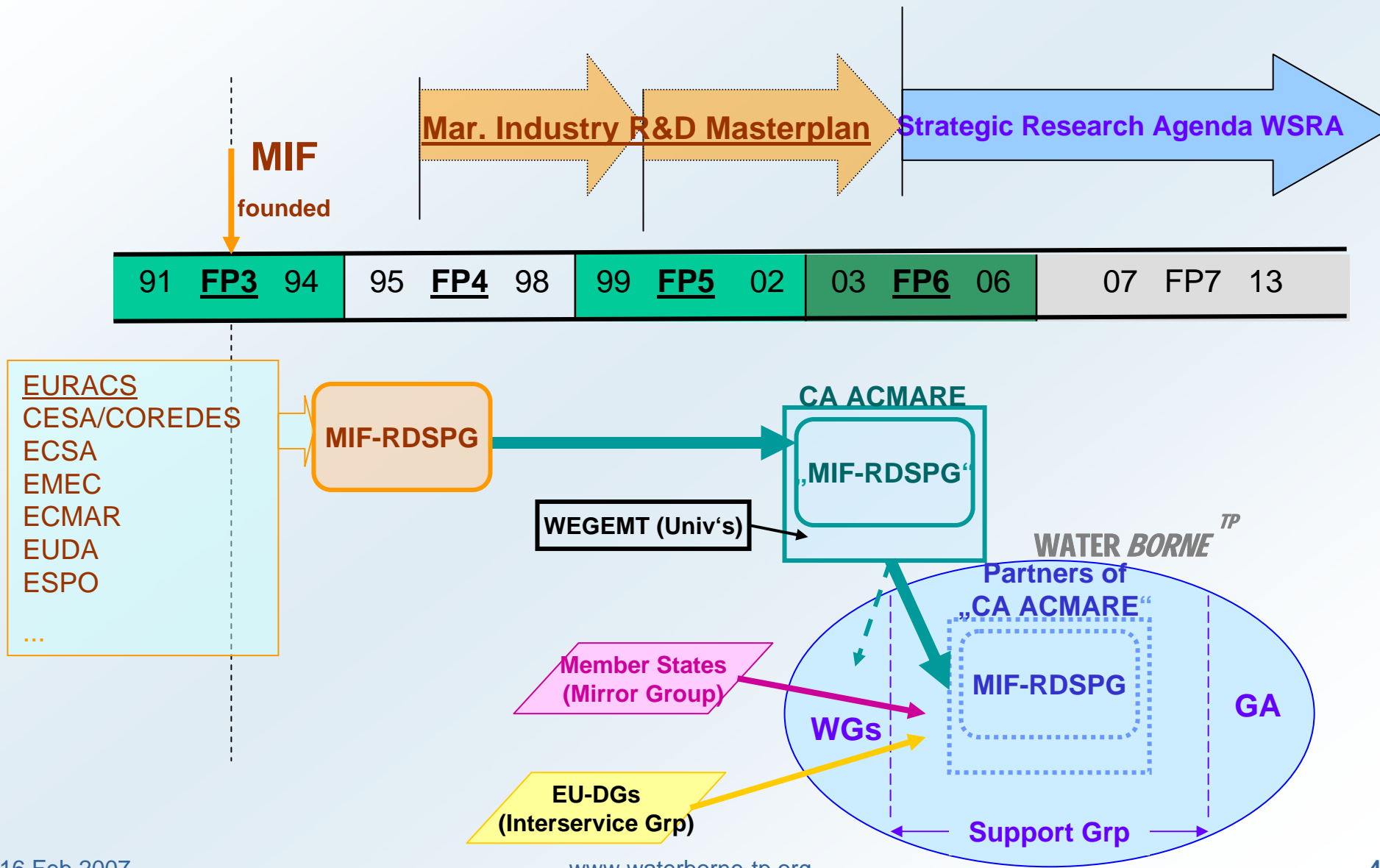




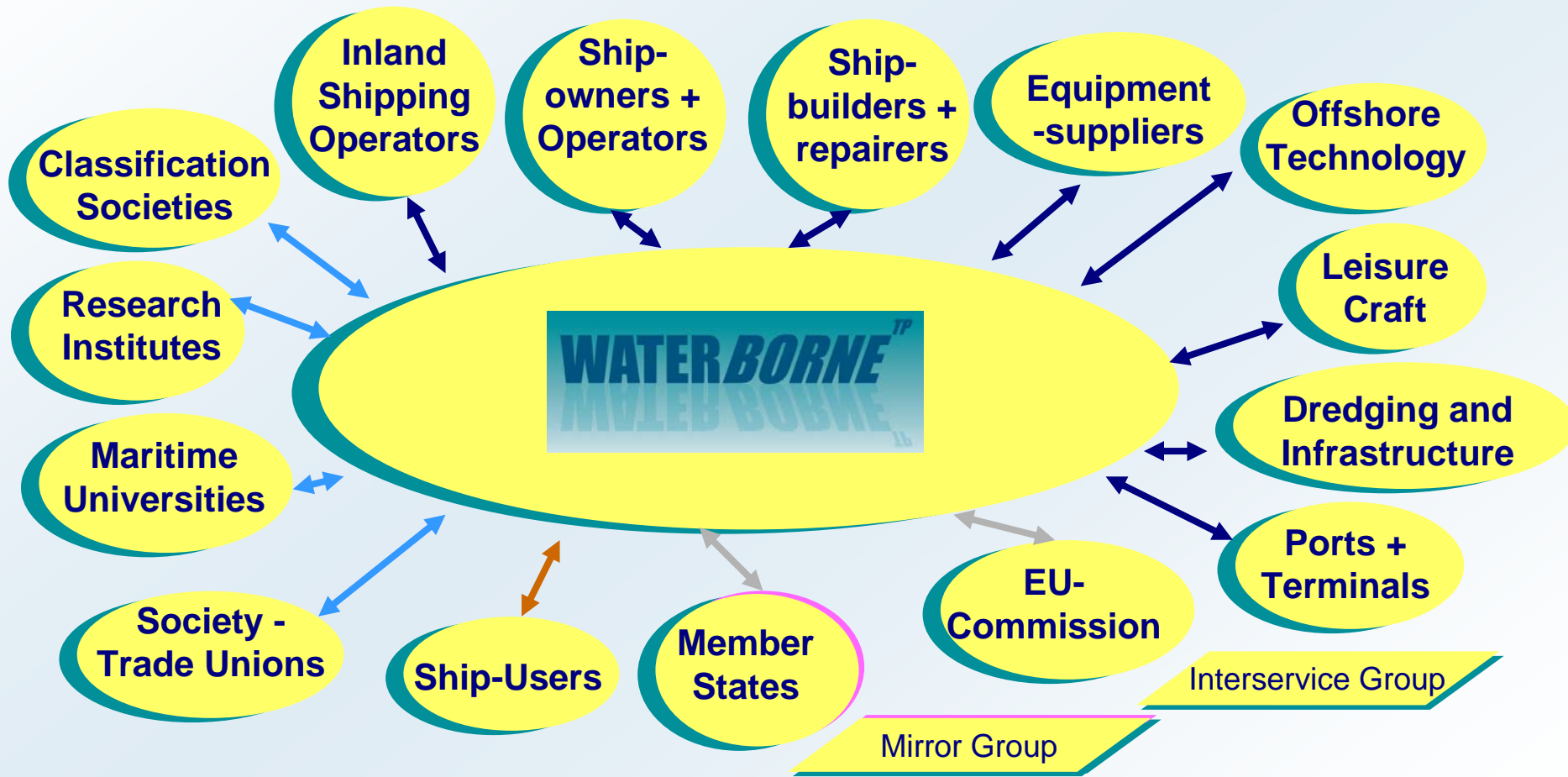
## Interfaces to other EU-RDI Technology Areas:



# Maritime R&D-Coordination on EU Level:



# All the StakeHolders are involved



# Terms of Reference:

Reliable „Bottom up“-Structure for Definition of R&D Policy

Chairman  
Govert Hamers  
(CESA)  
Vice-Chairmen  
Duncan Forbes  
(EMEC)  
Bernard Anne  
(EURACS)

[Chair]

High Profile Industry Representatives

General  
Assembly

Industrial Leaders

Member  
States  
Mirror Group

Support Group

R&D Managers

Chairman  
Prof. Niko Wijnolst  
(NL)  
Secretary  
Nick Heyes  
(UK)

Working Groups

Experts

Chairman  
Pierre Besse  
(EURACS)  
Secretary  
Michael vom Baur  
(CESA)



The Waterborne  
Transport Sector  
(maritime + inland)  
will be part of a  
major Thematic  
Priority in  
European R&D  
(e.g. FP7)

The Technology Platform **WATERBORNE** was launched at MIF-plenary on 25.Jan 2005 in Bremen in Presence of the Vice-President of the Commission, Günter Verheugen, the Director „Transport“ of DG RTD, Jack Metthey, and the Head of Surface Transport Unit, Louisa Prista.

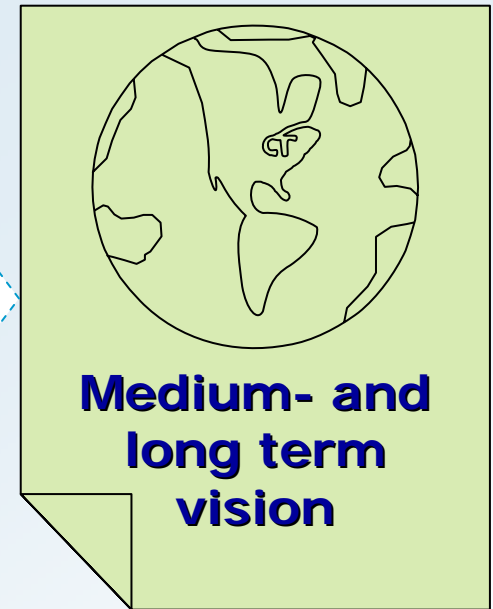
# Main Mission of the Technology Platform:



**Where are  
we today?**



**How do we  
get there?**



**Where do  
we want to  
be in 20XX?**



## VISION 2020

Waterborne Transport & Operations  
A Key Asset for Europe's Development and Future



**WATERBORNE<sup>TP</sup>**

## STRATEGIC RESEARCH AGENDA

### OVERVIEW

Waterborne Transport & Operations  
Key for Europe's Development and Future



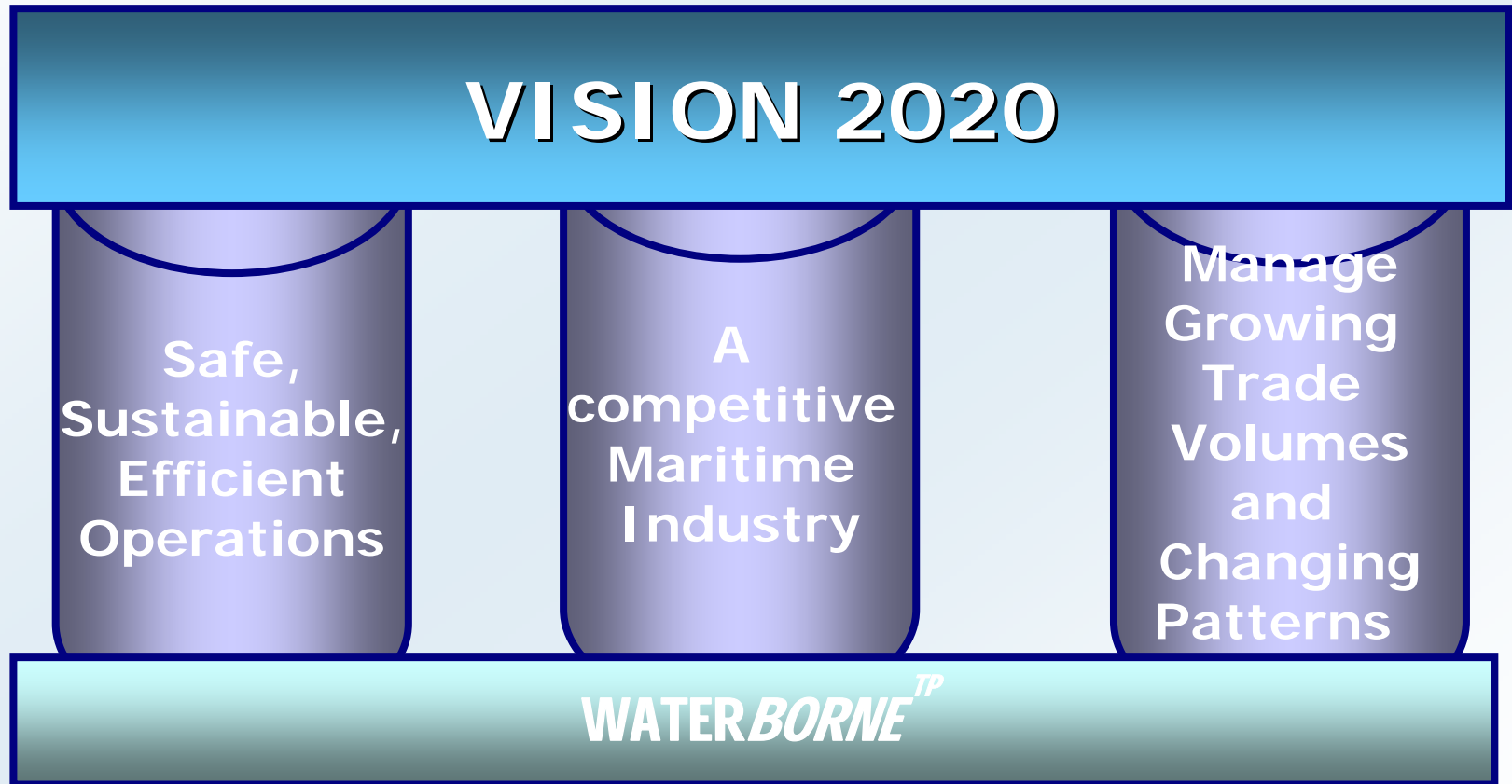
**WATERBORNE<sup>TP</sup>**



**Austrian Presidency Conference on European Technology Platforms  
Vienna, 4-5 May 2006**

## Medium to Long Term Vision

3 „Pillars“ have been defined:



# WSRA

## Key Priorities (1)

### ➤ **Safe, sustainable and efficient waterborne transport**

- ✓ Synergy of safety + security through Goal/Risk Based Design
- ✓ Towards the „zero ship accidents“ target
- ✓ The „crashworthy vessel“
- ✓ „Low emission“ vessels and waterborne activities
- ✓ Enhanced waterborne security

### ➤ **A competitive European waterborne industry**

- ✓ Innovative vessels and floating structures
- ✓ Tools for accelerated innovation
- ✓ Next generation ship and yacht production processes
- ✓ Effective waterborne operations
- ✓ Technologies for new and extended marine operations
- ✓ Enhanced sub sea capability

# WSRA

## Key Priorities (2)

### ➤ **Manage growing trade volumes and changing patterns**

- ✓ Faster planning and implementation of ports and infrastructure facilities
- ✓ More effective ports and infrastructure
- ✓ Intelligent Transport Support Technologies, Integrated ICT solutions
- ✓ Traffic management strategies

### • **Critical Enablers:**

- Human Resources Base, Education and Training
- Defending Intellectual Property (IPR)
- Political Framework: Joint Initiatives and Level Playing Field

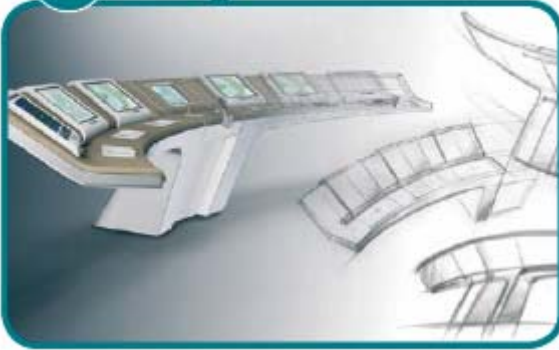


# WATERBORNE Strategic Research Agenda

## Example: Competitiveness topics

3 key challenges have been identified:

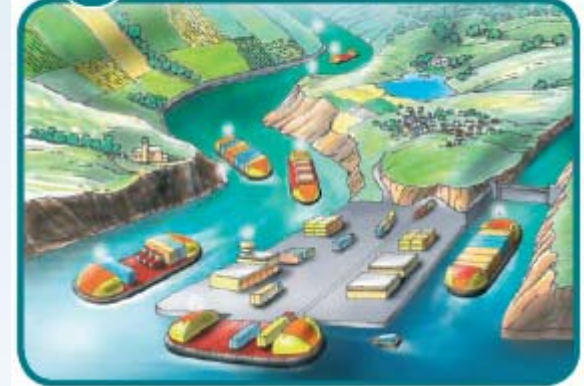
### 1 Design Innovation



### 2 Efficient Production



### 3 Effective Operations



# WATERBORNE Strategic Research Agenda

## Example: Competitiveness topics (2)

### ➤ Competitive European Maritime Industry

#### ✓ Innovative Vessels and Floating Structures

##### ✓ Life Cycle Philosophy

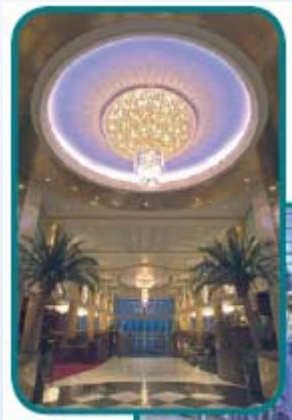
- ✓ (e.g. design of new, competitive and cost effective vessels and equipment maximum life cycle value through minimum economic risks and reduced cost and risk of operation, ownership and disposal)

##### ✓ New Vessels for Changing and New Markets

- ✓ (e.g. new types of vessels to exploit changing and emerging markets and to satisfy increasing customer expectations)

##### ✓ Design Innovation and Systems Optimisation

- ✓ (e.g. designs undergo continuous and rapid evolution so that demand for very large cruise and container ships is met economically)



# WATERBORNE Strategic Research Agenda

## Example: Competitiveness topics (3)

3 critical technology areas have been identified for marine equipment:

### 1 The energy efficient ship



### 2 Intelligent automation and navigation systems, and information management.



### 3 Ship/shore interface design and logistic chain integration.



# WATERBORNE Strategic Research Agenda

## Example: Competitiveness topics (4)

### ➤ Competitive European Maritime Industry

#### ✓ Innovative Marine Equipment and Systems

##### ✓ Power Generation

✓ (e.g. LNG, Diesel reformation technology )

##### ✓ Propulsion Efficiency

✓ (e.g. Advanced design techniques on existing & new propulsion technologies)

##### ✓ Electric Propulsion

✓ (e.g. high-speed drives and generators, new super-conducting technology)

##### ✓ Automation, Control and Navigation

✓ (e.g. distributed control systems)

##### ✓ Intelligent Data Management

✓ (e.g. higher degrees of automation & decision support in all areas)

##### ✓ Cargo Handling Systems

✓ (e.g. new designs for simplified mooring, loading and unloading)

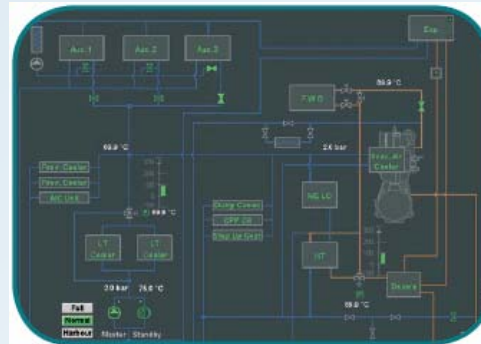




## Example: Competitiveness topics (5)

## Competitive European Maritime Industry

- ✓ Tools for Accelerated Innovation
  - ✓ Tools for Design and Analysis
    - ✓ (e.g. Advanced Design and Knowledge Management Tools)
  - ✓ Simulation Software for Process Acceleration and Minimising Risk
    - ✓ (e.g. performance simulations tools of the transport chain, vessel and systems)
  - ✓ Product Model and Inter-System Data Communication
    - ✓ (e.g. better communication between product data models and CAD/CAM/CIM data representations.)



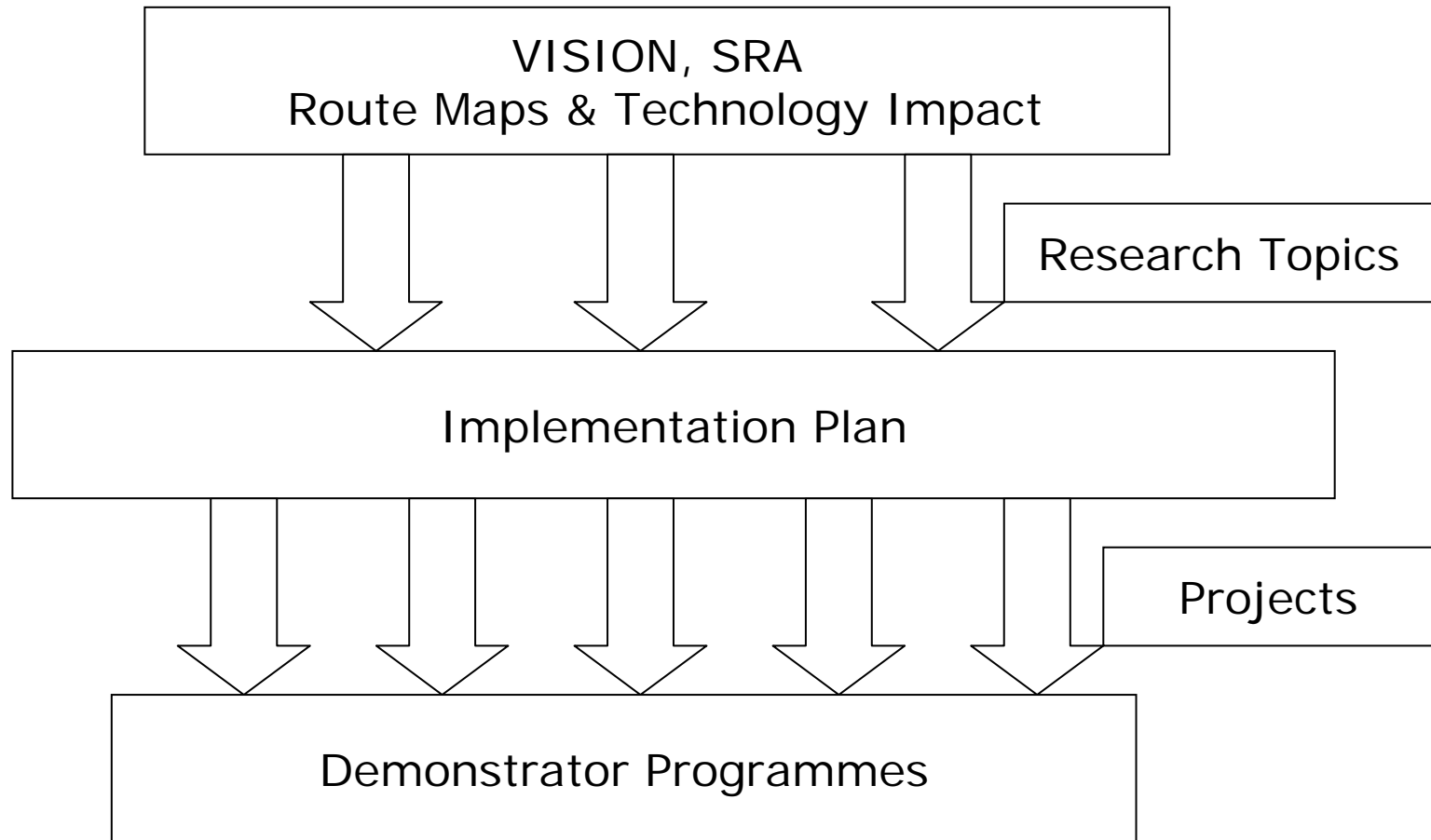


# **WATERBORNE**

## Strategic Research Agenda Implementation Plan

Work in Progress

# How do we structure the Implementation Plan?



# WSRA IP: Research Topics

## ➤ Waterborne Pillar

- Research Priority
  - ✓ Research Topic
    - o Research Programme
    - o Pre-requisites
    - o Research timescales
    - o Budget estimates
    - o Technology, Tools and Processes
    - o Expected research Outcomes
    - o Route Map/Demonstration/Implementation



# Research Topics: Example

## 2 Safe, Sustainable and Efficient Waterborne Operations Implementation Plan

### 2.1 Implementing Goal Based/Risk Based Frameworks for Cost Efficient safety/

#### 2.1.1 Implementing Risk Based Regulation and Approval

##### 2.1.1.1 Goal based regulations and approval

###### Research Objectives

Future generations of passenger ships, such as cruise liners, ferries and RoPax vessels, may require enhanced redundancy concepts to fulfil the operators' demands in terms of safe, economic and environmental friendly operation of the vessels. The development of enhanced redundant ship systems will be determined by a goal/risk - based approach over the whole lifecycle of the ship.

The following main objectives need to become addressed before goal-based / risk-based regulations and approval are implemented:

- A modernized regulatory framework needs to be established at IMO. This will be under the headline of the safety-level approach to goal-based standards, and it includes the debate on acceptable risk levels and public risk perception.
- Approval for risk-based designed ships and ship systems needs to be standardised following the first version developed by the running project SAFEDOR.
- Operation of risk-based ships needs to be addressed taking into account existing codes and practices
- Enabling smooth classification and port-state-control for risk-based ships

###### Research Programme

- Pre-requisites: Successful development of the SAFEDOR FP6 Research project and of those aspects of INTERSHIP which are directly relevant to risk-based ship design by the middle of 2009
- Research Timescales: 2010-2020
- Budget requirements: €20m

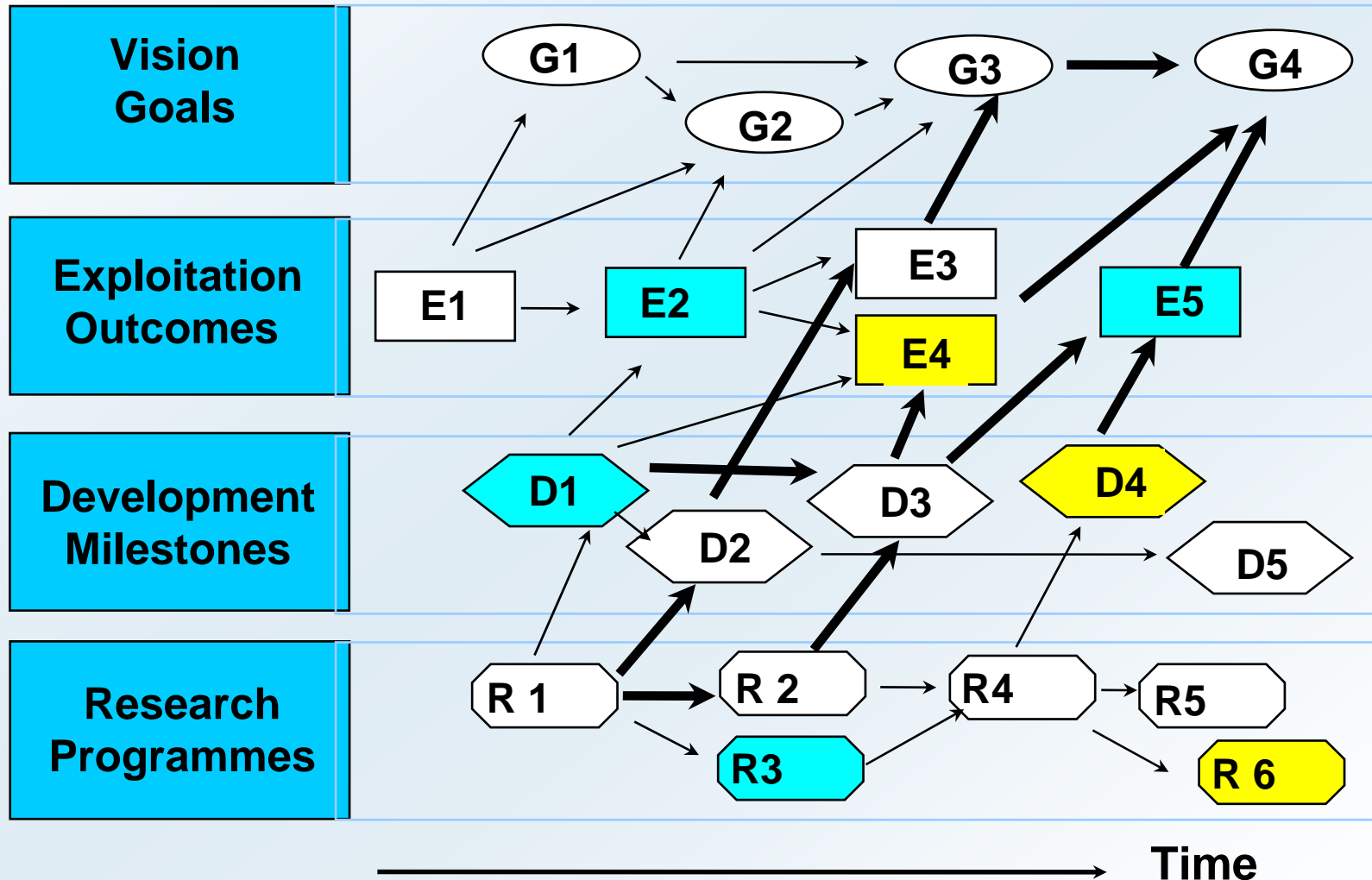
###### Technology, Tools & Processes

- The current level of safety or risk for ship types
- Risk acceptance criteria related for human life and the environment
- Risk evaluation models for ship types and main ship systems including the necessary data
- Hull and ship operation monitoring system and data treatment for risk based maintenance regime
- A risk-based maintenance and inspection regime.
- Pilot applications to identify the effects of introducing risk-based goals into the regulatory framework for maritime transport
- Qualification scheme for review and approval personnel and training for PSC officers
- A risk-based ISM-code for application on a risk-based designed ship

###### Expected Research Outcomes

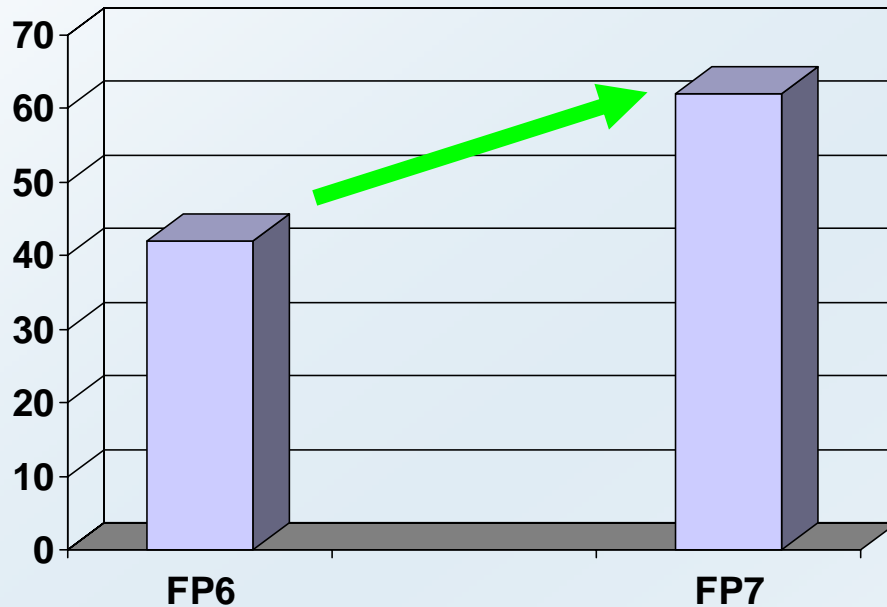
- |      |  |
|------|--|
| 2015 | High level standards for development and approval of risk based rules / regulations for standard ships<br>A standardized approval for risk-based designed ships to reduce costs and improve quality<br>A modernized regulatory framework at IMO based on the safety-level approach together with appropriate acceptance criteria |
| 2020 | Standards for documenting the risk-based elements of ships<br>Industrial application of remote real-time monitoring, support and maintenance   |

# WSRA IP: Route Map

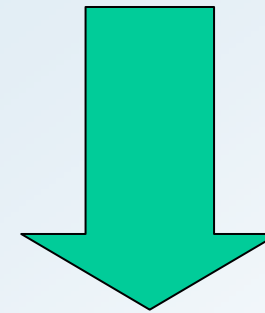


# FP7: 2007-2013

Estimated Annual Average Funding Volume for „WATERBORNE“

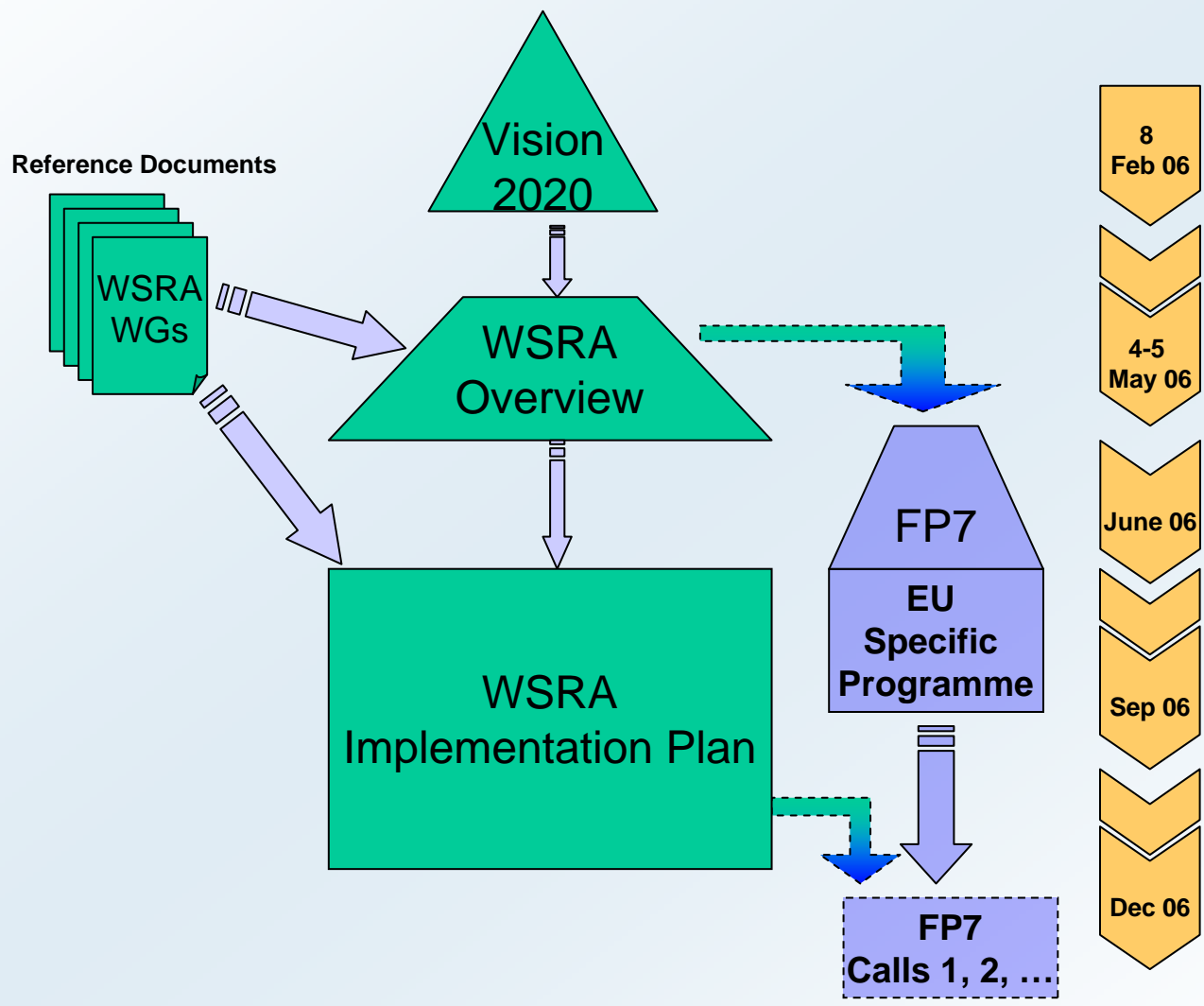


FP6: 2<sup>nd</sup> row Priority



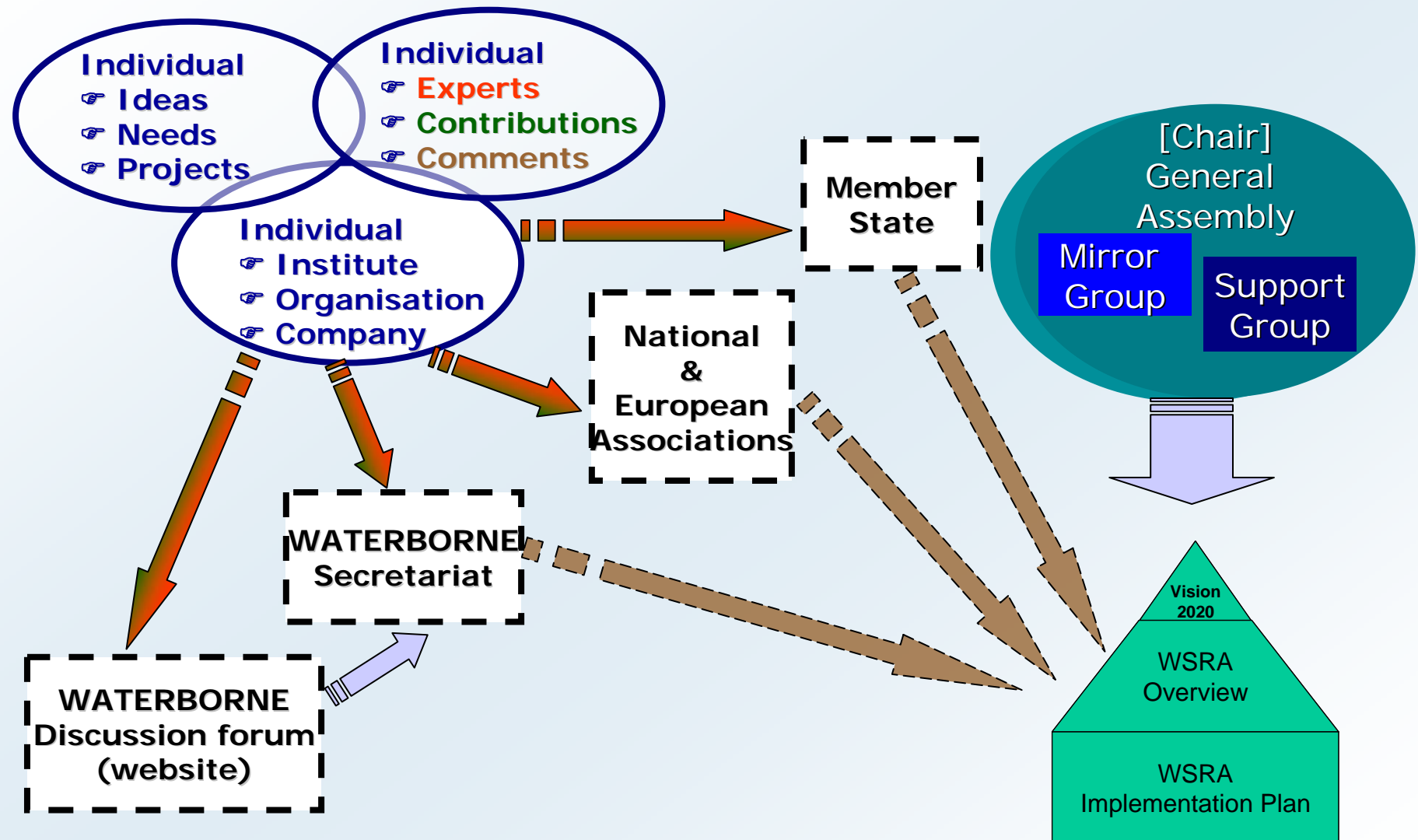
FP7: 1<sup>st</sup> row Priority

# Overview of the WATERBORNE activities :



# Openness & Transparency

Bottom up approach in practice :





# Conclusions

- Waterborne is the R&D Wing of the MIF
- Innovation is of increasing importance for the entire business, and the purpose is to achieve the Lisbon objective
- Waterborne is a good platform to discuss and launch new larger common initiatives.
- Waterborne includes the Member States, thus using more efficiently the tax-payer money for public funding of R&D
- Waterborne provides an excellent opportunity to coordinate the use of European, National, Regional funds.
- Waterborne is a direct contributor to FP7.

# Contacts:



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- Website:

[www.waterborne-tp.org](http://www.waterborne-tp.org)



**WATERBORNE<sup>TP</sup>**

**We are proud to contribute !**

**Thank you for your attention!**