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## The Waterborne Technology Platform

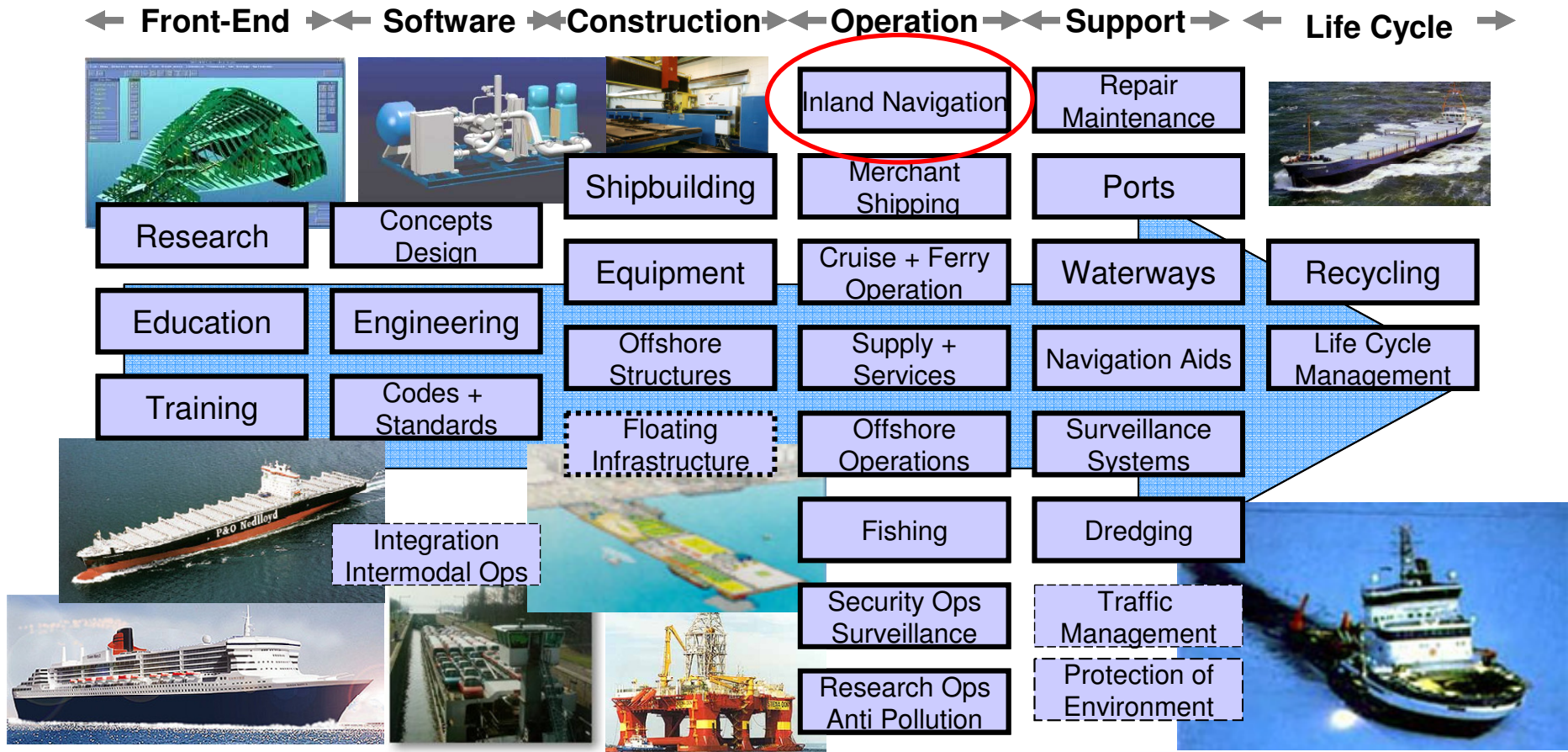
Dr. Juha Schweighofer

ETP – Quo vadis?

Haus der Forschung, Vienna, April 22, 2009

# Waterborne Transport and Operations

## Complex Value Chains and extensive know-how Synergies



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# Waterborne Technology Platform

Representatives of the Waterborne TP.  
Source: Waterborne Strategic Research  
Agenda



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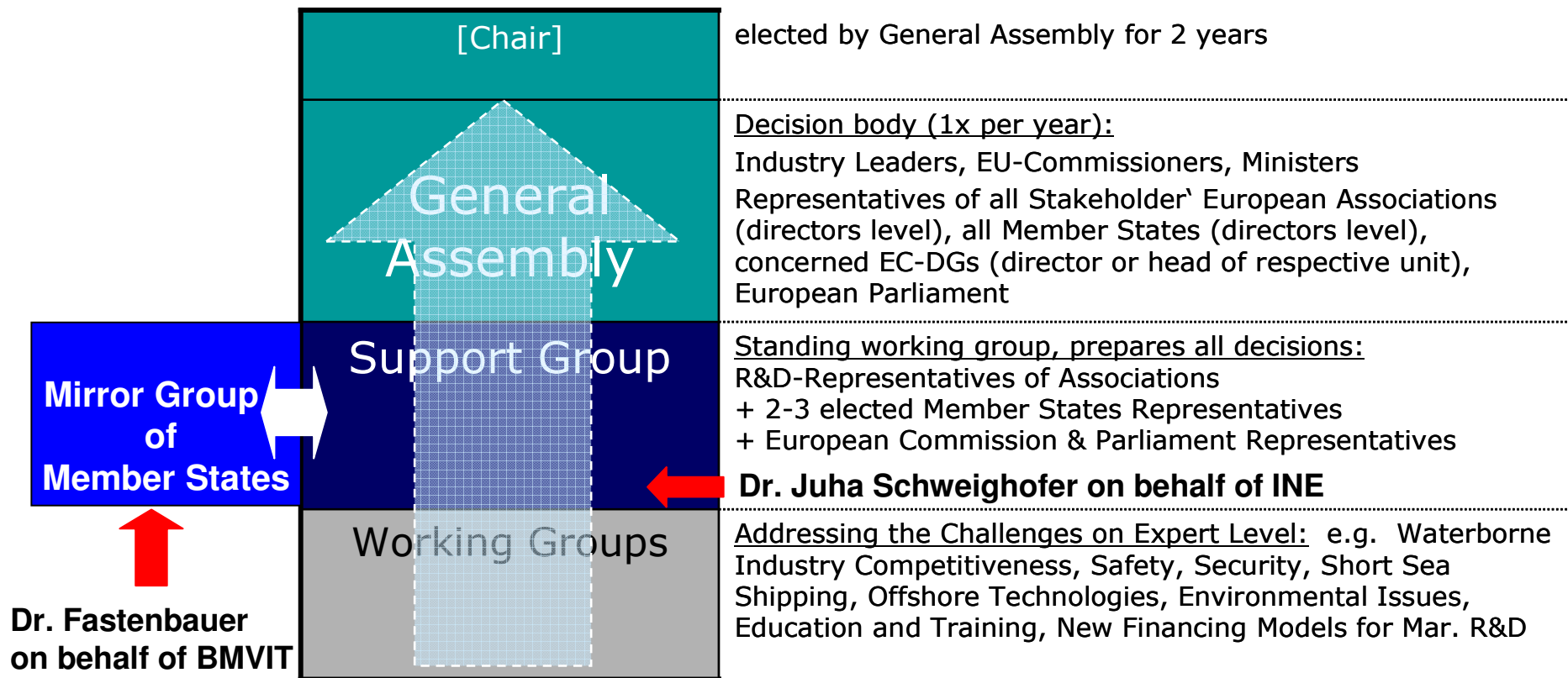
# Waterborne Technology Platform

- A European Union Forum of stakeholders:  
EU maritime industry, science, society, EC, Member States, ...
- Definition and implementation of future "waterborne" R&D
  - Vision 2020
  - Strategic Research Agenda (WSRA)
  - Implementation Plan  
(project descriptions)
- Used as input to EU research policy and funding programs (e.g. FP7)

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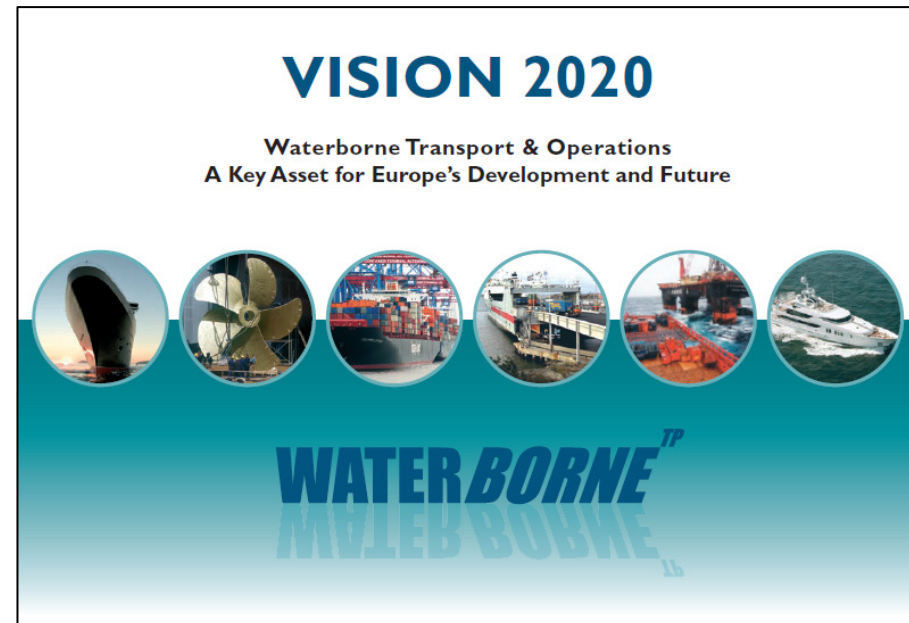
# Functional Structure of the platform:

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



# Vision 2020

- Waterborne (maritime industry)  
= seaborne + offshore +  
inland navigation
- Safe, sustainable and efficient  
waterborne transport
- A competitive European  
waterborne industry
- Management and facilitation  
of growth in transport volumes  
and changes in trade patterns



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# Waterborne Strategic Research Agenda - WSRA

- Topics with respect to RD&I => achievement of targets of Vision 2020
- Vertical WP:
  - Shipbuilding,
  - Shipping,
  - Offshore Technology,
  - Infrastructure,
  - Leisure
- Horizontal WP:
  - Equipment and Systems,
  - Competitiveness factors,
  - Integrated Value Chain,
  - Safety,
  - Education,
  - Security



# WIRM 2007

- WSRA Implementation Route Map
- Concrete project descriptions
  - Research objectives
  - Research programme
  - Technology, tools, & processes
  - Expected research outcomes



### 2.3.3.3 New Generation Inland Navigation

#### RESEARCH OBJECTIVES

In order to compete successfully on the worldwide market and to contribute efficiently to EU transport policy (NAIADES) as well as to accommodate the forthcoming economical growth and transport demand of Europe, in particular, in the new member states, the trans-European inland waterways including the Danube Corridor have to be considered. They offer tremendous potential for transport of goods due to significant free transport capacities.

Development of European inland navigation requires consideration of:

- Innovative vessel concepts and modernisation of existing vessels for local conditions, logistic concepts, maximum cost efficiency and minimum Life Cycle Costs (LCC)
- Improved port and hinterland logistics, including cargo handling, and integrated concepts for door-to-door transport
- Reduced fuel consumption and environmental impact, emissions to air and water
- Reduced weight for increased cargo carrying capacity or less draught
- Safe and acceptable operation addressing changes of floating position, manoeuvring, and interaction between vessels and surroundings
- Improved safety with respect to collision and grounding, including the consideration of failure mechanisms and residual strength.

One or two large-scale projects or, alternatively, five medium scale projects are required in order to account for European inland navigation as a whole, Due to the rather old fleet, immediate actions are requested for the Danube and Rhine fleets.

#### RESEARCH PROGRAMME

Pre-requisites: Completion of CREATING EU Project

Research Timescales: 2008 - 2020

Budget requirements: to be determined

#### TECHNOLOGY, TOOLS & PROCESSES

- Development of concepts for new and modular inland vessels (Container, Tanker, RoRo, Bulk and General Cargo) and modernisation of existing vessels
- Operational analysis and simulation of integrated transport chains, including LCC considerations
- Improved and innovative cargo handling systems
- New hull forms and technologies for reduced fuel consumption and wash, and enhanced manoeuvrability in restricted waters
- Emission-reduction techniques, and new propulsion and auxiliary energy systems (e.g. but not limited to fuel cells), as well as improved waste water management and environmentally friendly coatings
- Improved hull structures and new materials (e.g. double hull, sandwich structures and composite) for weight reduction and improved crash worthiness
- Development and implementation of unified rules and guidelines for inland vessel design, preferably goal based

#### EXPECTED RESEARCH OUTCOMES

- Availability of new modular inland-vessel designs with optimal hydrodynamic and safety properties and increased efficiency of transport
- Modernisation of the existing fleet focused on efficiency, environment, safety and cargo handling
- Increased transport of goods on the inland waterways, relieving congestion on road and rail and fostering incentives for international industrial investors
- Unified rules and guidelines for the inland vessel design.

WIRM 2007, example of project description

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# Waterborne TP – key priorities for R&D

Safe, sustainable and efficient waterborne operations	A competitive European maritime industry	Manage & facilitate growth and changing trade patterns
<ol style="list-style-type: none"><li>1. Implementing goal based/ risk based frameworks for cost efficient safety</li><li>2. The „Zero-Accidents“ target</li><li>3. The „Crashworthy“ vessel</li><li>4. „Low Emission“ vessels and waterborne activities</li><li>5. Enhanced waterborne security</li></ol>	<ol style="list-style-type: none"><li>1. Innovative vessels and structures</li><li>2. Innovative marine equipment and systems</li><li>3. Tools for accelerated innovation</li><li>4. Next generation production processes</li><li>5. Effective waterborne operations</li><li>6. Technologies for new and extended marine operations</li></ol>	<ol style="list-style-type: none"><li>1. Accelerated development of new port and infrastructure facilities</li><li>2. Interoperability between modes</li><li>3. More effective ports and infrastructure</li><li>4. Intelligent transportation technologies and integrated ICT solutions</li><li>5. Understand environmental impact of infrastructure building and dredging</li><li>6. Traffic management strategies</li></ol>

# Priority research topics for IWT (1)

- New vessel concepts for multimodal transport (long term effect)
- Modernisation of existing fleet (short term effect)
- Improved fuel efficiency by improved hull forms and propulsion systems taking into account fairway conditions (e.g. shallow water)
- Lightweight structures for increased cargo carrying capacity

# Priority research topics for IWT (2)

- Efficient operations in terminals and ports and cargo handling
- Development of traffic management systems and services
- Optimisation and automation of ship operation (RIS, tempomaat)
- Consideration of climate change with respect to infrastructure and technical requirements of vessels

# Future of Waterborne TP

- EU Project CASMARE (FP7) – **C**oordination **A**ction to maintain and further develop a **S**ustainable **M**aritime **R**esearch in **E**urope
- Follow-up of CA ACMARE (initiation of Waterborne TP)
- Activities:
  - Implementation and delivery of Waterborne research strategy
  - Raise awareness with respect to strategy
  - Broaden consensus between stakeholders
  - Emphasis on national programmes and industry activities
  - Stimulation and mobilisation of research resources
  - Assessment and monitoring of RDI results from EU and national programmes
  - Links with other ETPs (transport, Manufuture, marine science)

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