From Marine Research to Maritime Economy

A Catalyst’s View

Workhop “The European RTD Policy in Support to the Maritime Economy”
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Outline

• The “Bremen Cluster” (Region Northwest)
  Marine Research - Maritime Industries
  • Exemplary Flagship Initiatives
• Marine / Maritime Superstructures in Germany
• Regional Cluster Policy and EU Funding
  • Example: AWI and EU FP7 Projects
• Challenges and Outlook
The Marine/Maritime Cluster DE Northwest

***Maritime Focus Areas***
- Ports Logistics
- Logistics
- Wind Energy
- Biotechnology
- Marine Research/Education
- Maritime Tourism
- Integrated Coastal Zone Management

**Maritime Cluster Bremen some KPIs:**
41,000 Maritime Jobs, 8 b€ Turnover, 1767 Companies
~ 33% of gross domestic product
- Grown structures, complementary structure with tradition and innovation
- Broad in-depth coverage of maritime economic sectors
- Partner for other maritime clusters in Europe / worldwide
- Unique combination of maritime, space/aeronautics and logistics branches
The Marine/Maritime Cluster DE Northwest

Maritime Action Plan Bremen: From marine research to maritime economy

Example 1: Research Institutions*

*) including regional partners

Example 2: Shipping Companies*

*) Possibly not complete / not up-to-date

Abbildung: Bremische Aktionsfelder im Rahmen der nationalen und europäischen integrierten Meerespolitik
Figure: Bremen's fields of action within the framework of German and European integrated maritime policy
The Marine/Maritime Cluster DE Northwest

Exemplary Flagship Initiatives

- **WAB – Wind Energy Network** of the German northwest
- Major contact for offshore wind industry
- Since 2002 > 350 private sector and institutional members
- Cover all areas: RTD, production, installation, operation & maintenance.

**MARISSA: Maritime Safety & Security Applications**

Industry cluster joining maritime knowhow for increased safety and security at sea and in harbors including

- Ports, sea routes and logistics
- Environmental surveillance and protection
- New technologies for changing markets
- Regional ➔ national cluster structures

Leadpartners

- Logistics
- Resources
- Sea Traffic
- Marine Environment
- Harbors & Offshore Structures
- Ship Safety & Security
- WFB Wirtschaftsförderung Bremen GmbH
- ASTRUM
- ATLAS ELEKTRONIK
- RHEINMETALL
- OHB SYSTEM
- SIGNALIS
- HELMHOLTZ ASSOCIATION
Monitoring and Data Management

Large long-term observation and monitoring activities

- Participation of science institutions, authorities and companies for the use in research and business

  ➔ Assessment of climate change; hazard prevention; resource exploration

Example: **COSYNA** - Coastal Observing System for Northern and Arctic Seas (observation + remote sensing + modelling)

 ➔ **Big Data** ➔ **PANGAEA** ➔ **MaNIDA** ➔ **EMODnet**
Marine/Maritime Superstructures in DE

Industry and Research Associations

- German Association for Maritime Technologies GMT
- Consortium German Marine Research KDM
- German Engineering Association VDMA
- Shipbuilders and Marine Technology Association VSM
- German Ship Owners Association VDR
- Maritime Cluster Northern Germany MCN

National Coordination Roadmap Maritime Technologies (NMMT)

- Strategic instrument to inter-link the development of maritime activities
- Specific action planning for individual sub-branches
- Coordinated by the Federal Ministry for Economic Affairs and Energy
- Accompanied by National Maritime Conferences (every two years)
Cluster Policy and EU Funding

Cluster strategy – instruments to strengthen cluster development

- Financing for SME and third-party-funds
- International markets acquisition and market entry
- Development and use of regional networks
- Technology- and knowledge-transfer
- Construction of innovative Centers
- Acquisition and settlement of companies
- Properties and Location development
- Qualification

Specifically supported by EU RTD programs (+ European Regional Development Fund ERDF)
Example AWI: Primary Task Basic Research

**Climate: Development, Reconstruction, Prediction**
- Reconstruction from climate archives (ice shields, marine sediments)
- Comprehension of climate variability
- Models \(\rightarrow\) trends, prediction
- Contribution to IPCC Reports

**Polar and marine ecosystems / matter cycles, Coastal Environments**
- Function, importance, changes, anthropogenic impact of CO\(_2\) and CH\(_4\) emissions
- Ecosystem functioning, biodiversity
- Ecological accompanying research
- Arctic coastal erosion
- Permafrost research

**Operation of research infrastructures**
Research icebreaker, ships, airplanes, polar field stations

**Knowledge and technology transfer into society**
### EU-Activities

**Recent FP7 Projects with AWI involvement (as active in 2012)**

<table>
<thead>
<tr>
<th>Project</th>
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</tr>
</thead>
<tbody>
<tr>
<td>PAGE21</td>
<td>Changing Permafrost in the Arctic and 1st Global Effects in the Century</td>
</tr>
<tr>
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<td>Acoustic Technology for observing the interior of the Arctic Ocean</td>
</tr>
<tr>
<td>ARCRISK</td>
<td>Impacts on health in the Arctic and Europe owing to climate-induced changes in contaminant cycling</td>
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<td>CARBOCHANGE</td>
<td>Changes in carbon uptake and emissions by oceans in a changing climate</td>
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<tr>
<td>EPOCA</td>
<td>European Project on Ocean Acidification</td>
</tr>
<tr>
<td>HERMIONE</td>
<td>Hotspot Ecosystems Research and Management on European Seas</td>
</tr>
<tr>
<td>HYPOX</td>
<td>Components</td>
</tr>
<tr>
<td>ICE2SEA</td>
<td>Estimating the future contribution of continental ice to sea-level rise</td>
</tr>
<tr>
<td>KNOWSEAS</td>
<td>Knowledge-based sustainable management for Europe's seas</td>
</tr>
<tr>
<td>MEDSEA</td>
<td>Mediterranean Sea acidification under changing climate</td>
</tr>
<tr>
<td>MIDTAL</td>
<td>Microarrays for the detection of toxic algae</td>
</tr>
<tr>
<td>PAST4FUTURE</td>
<td>Climate change - Learning from the past climate</td>
</tr>
<tr>
<td>RECONCILE</td>
<td>Reconciliation of essential process parameters for an enhanced predictability of Arctic systems</td>
</tr>
<tr>
<td>SHIVA</td>
<td>Stratospheric ozone - impacts on climate and ecosystems</td>
</tr>
<tr>
<td>SANGOMA</td>
<td>Stochastic Assimilation for the next generation ocean model applications</td>
</tr>
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<td>SIDARUS</td>
<td>Sea Ice Downstream Services for Arctic and Antarctic Lister and Stations</td>
</tr>
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**FP7 - COOPERATION - Ocean**

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### Impressive! But what can be improved in terms of transfer?

- **RTD Funding should motivate involvement of private companies, particularly SMEs** (as H2020 is aiming at)

- Direct involvement of private sector partners

### Others

- GAP2: Bridging the gap between science, stakeholders and policy makers. Phase 2: Integration of evidence-based knowledge and ist application to science and management of fisheries and the marine environment
- CHEMSEA: Chemical Mutations Search and Assessment (Baltic Sea Region Programme)
- EMODNET: Preparatory Action for European Marine Observation and Data Network-Lot3-Chemistry
RTD Landscape


Marine Research  Maritime Engineering  Suppliers  Manufacturers
Observation  Monitoring  Surveillance  Operation & Maintenance

RTD Funding  Innovation Support

Typical Problems:
• Low permeability between different sectors in EU (DE); insufficient matching between RTD and market needs; even between sub-branches poor communication
• Lack of entrepreneurial thinking amongst scientists / engineers (no market view, academic values system, administrative hurdles)
• Skepticism against innovation (“unproven technologies”)
Challenges in Technology Transfer

- **Knowledge** and **technological innovations** have to be transferred / exchanged multidirectionally between sectors / stakeholders.

- Relevant **data** and **infrastructures** have to be accessible / shared in a reasonable / fair mode.

- Best available knowledge and technology (in terms of sustainability) has to be considered in the context of **standardization**.

- Also **small & medium enterprises** are to be involved appropriately in the **value chains** since they mostly are flexible and innovative.

- **Sensitivity for IP** and fair IP sharing / exchange models to be applied / developed.
Will H2020 Meet the Challenges?

Promising new approaches

- Increasing involvement of SMEs
- Coverage of wider range of the innovation chain
- Stronger linkage between technological development and social issues
- Simplified access to funding (for SMEs)

Performance to be shown in the future

- New instruments such as EIT KICs and JRCs
- Effectiveness of SME / private sector activation
- Impact of H2020 on academic value systems (publication vs. inventions / innovation / transfer)
- Are sector interfaces (e.g. TTOs) taken into account appropriately to catalyse innovation transfer effectively?
- Not just projects (WPs in parallel) but output-oriented proactive collaboration
Summary

- Please talk and listen to each other (even if others speak other languages)

- Think projects output-oriented (invention → validation → innovation → market) instead of project/WP-oriented (proposal → funding → WP → report → next project)
Thank you for your attention!