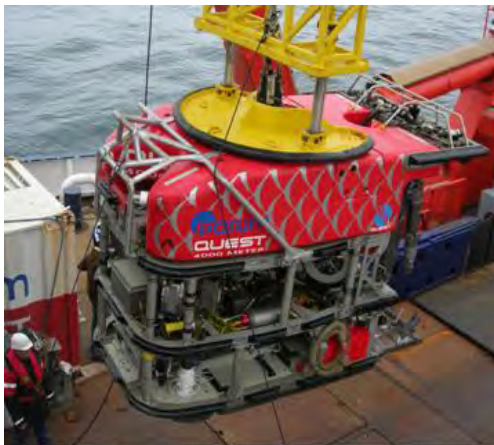


From Marine Research to Maritime Economy

A Catalyst's View

Workshop “The European RTD Policy in Support to the Maritime Economy”
Paris, 5 February 2015



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Head Technology Transfer



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Alfred Wegener Institute
Helmholtz Centre for Polar and Marine Research



- 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

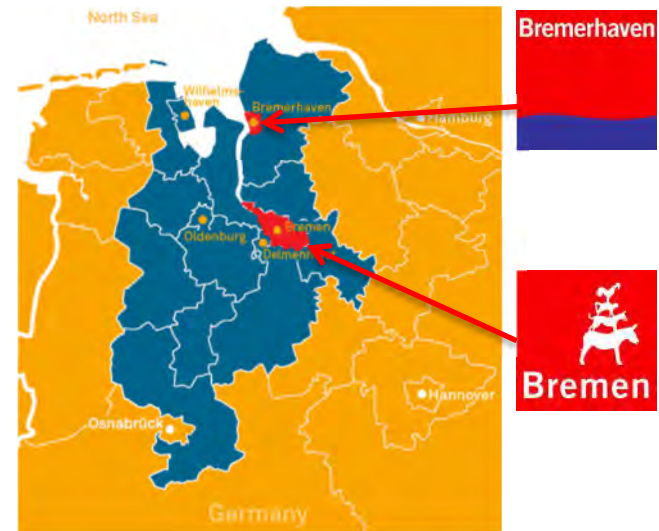


The Marine/Maritime Cluster DE Northwest



Maritime Focus Areas

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



Maritime Cluster Bremen some KPIs:

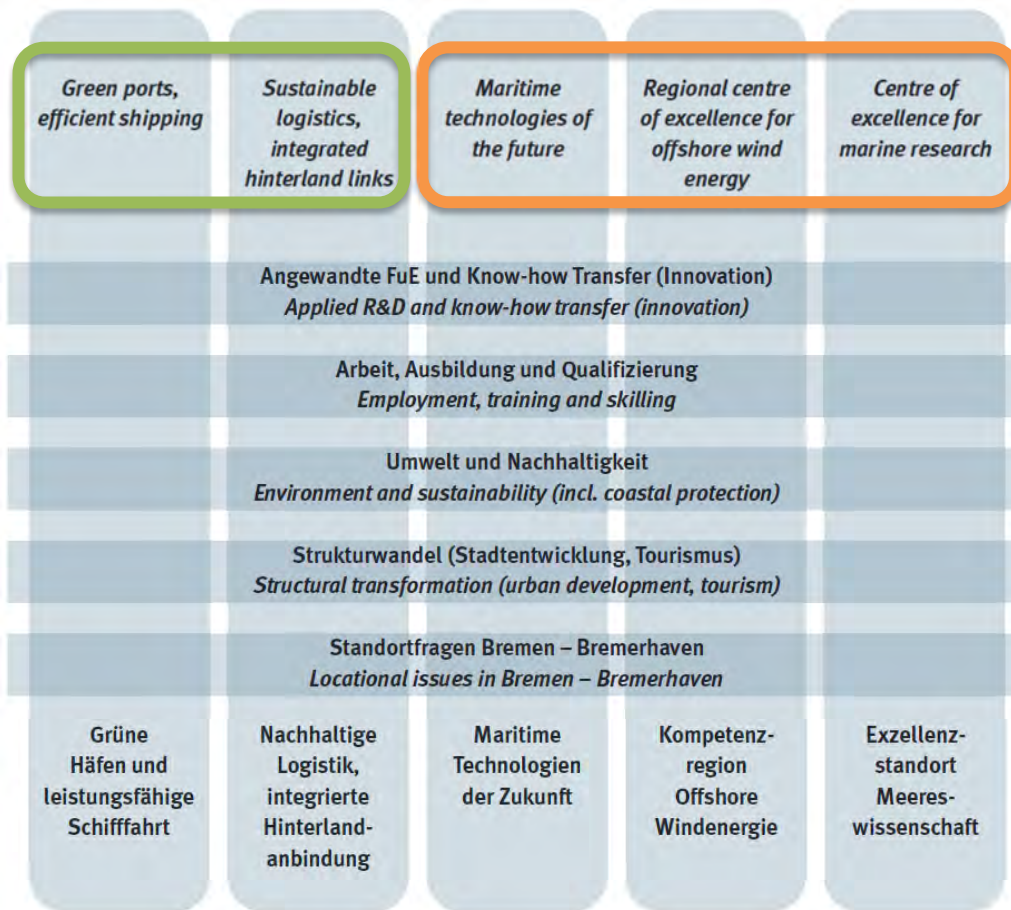
41.000 Maritime Jobs, 8 b€ Turnover, 1767 Companies
~ 33% of gross domestic product

- 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



RHEINMETALL



ATLAS ELEKTRONIK

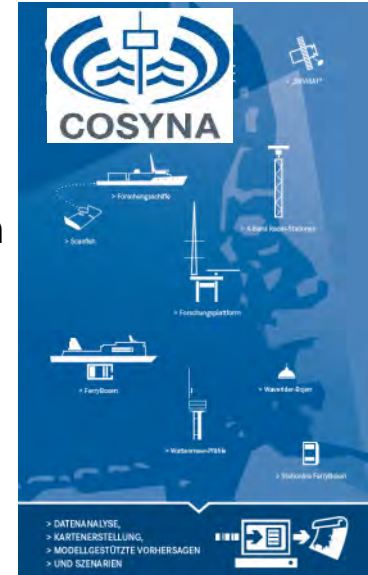
A joint company of ThyssenKrupp and EADS

Monitoring and Data Management

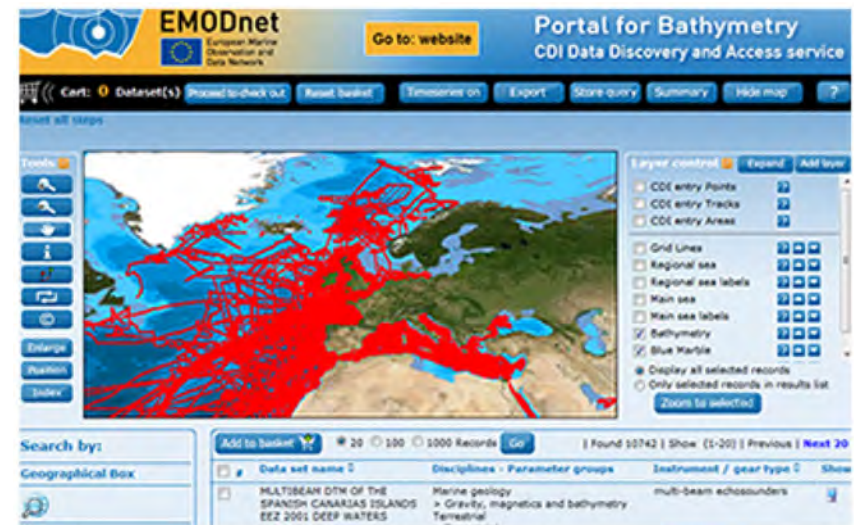
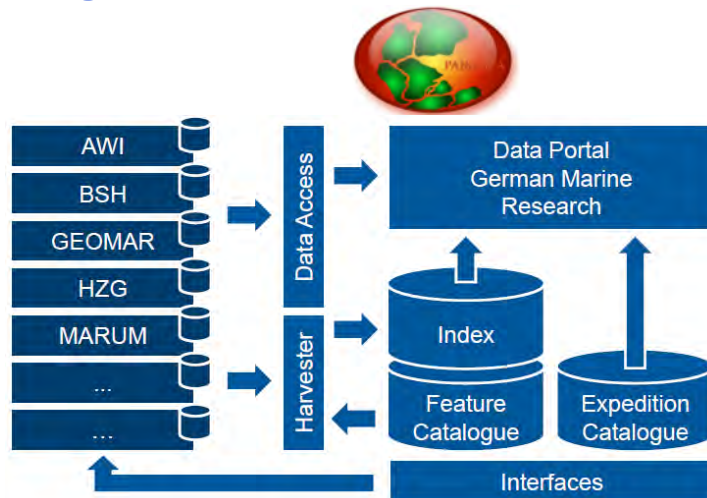


Large long-term observation and monitoring activities

- 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



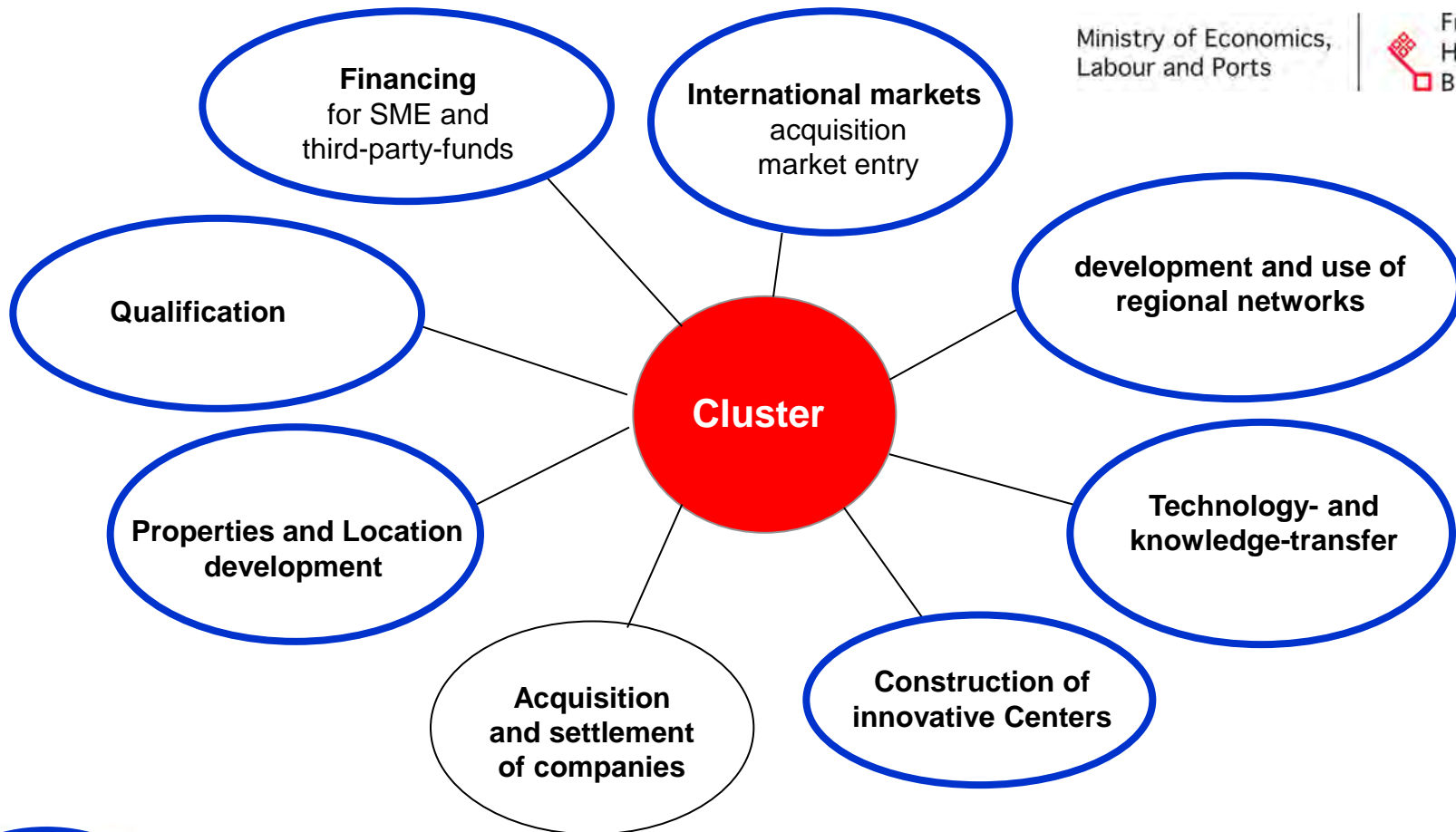
National Coordination Roadmap Maritime Technologies (NMMT)

- 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)

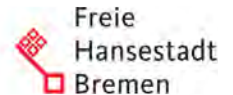
Cluster Policy and EU Funding



Cluster strategy – instruments to strengthen cluster development



Ministry of Economics,
Labour and Ports



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 → trends, prediction
- Contribution to IPCC Reports



Polar and marine ecosystems / matter cycles, Coastal Environments

- Function, importance, changes, anthropogenic impact of CO₂ and CH₄ 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)

Project	Title / Objectives
FP7 - COOPERATION - Environment	
PAGE21	Changing Permafrost in the Arctic and its Global Effects in the Century
ACOBAR	Acoustic Technology for observing the interior of the Arctic Ocean
ARCRISK	Impacts on health in the Arctic and Europe owing to climate-induced changes in contaminant cycling
CARBOCHANGE	Changes in carbon uptake and emissions by oceans in a changing climate
EPOCA	European Project on Ocean Acidification
HERMIONE	High Arctic Ecosystems Resilience and Impacts on European Seas
HYPOX	Components
ICE2SEA	Estimating the future contribution of continental ice to sea-level rise
KNOWSEAS	Knowledge-based sustainable management for Europe's seas
MEDSEA	Mediterranean Sea acidification under changing climate
MIDTAL	Microarrays for the detection of toxic algae
PAST4FUTURE	Climate change - Learning from the past climate
RECONCILE	Reconciliation of environmental parameters for an enhanced predictability of Arctic stratospheric ozone
SHIVA	Stratospheric ozone: human impacts in a varying atmosphere
SANGOMA	Stochastic Assessment for Ocean Management
SIDARUS	Sea Ice Downstream Services for Arctic and Antarctic Users and Stakeholder
FP7 - COOPERATION - Ocean	
ACCESS	Arctic Climate Change, Economy and Society
ECO2	Sub-seabed CO2 Storage: Impact on Marine Ecosystems
MICRO B3	Marine Microbial Diversity, Bioinformatics and Biotechnology
VECTORS	Vectors of Change in Oceans and Seas Marine Life, Impact on Economic Sectors

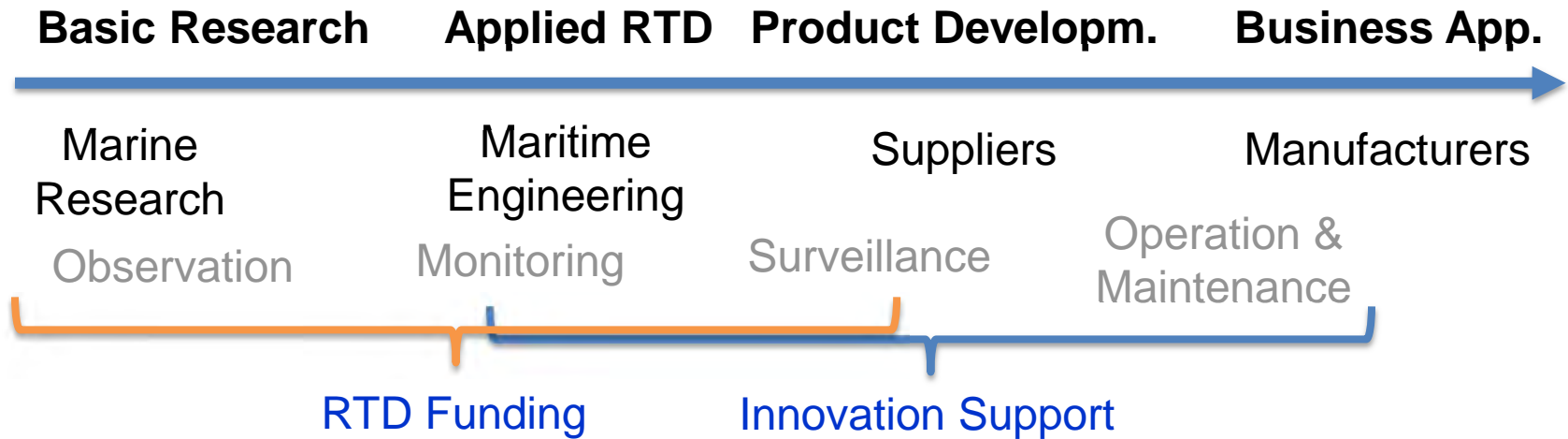
Project	Title / Objectives
FP7 - COOPERATION - Information and Comm. Technology	
APARSEN	Alliance Permanent Access to the Records of Science in Europe
FP7 - IDEAS - ERC Grants	
ABYSS	Assessment of Bacterial Life and Matter Cycling in Deep-Sea Surface Sediments
PHYTOCHANGE	New Approaches to Assess the Responses of Phytoplankton to Global Change
FP7 - PEOPLE - Marie Curie actions	
CALMAR	Calcification by Marine Organisms Marie Curie Initial Training Networks (ITN)
EMBRC	European Marine Biological Resource Centre
EMSO	European Multidisciplinary Seafloor Observation
ERICON AB	The European Research Polar Icebreaker Consortium Aurora Borealis
EUFAR II	European Fleet for Airborne Research
EUROFLEETS	Towards an alliance of European research fleets
GROOM	Gliders for Research Ocean Observation and Management
IARCCAN	International Terrestrial Arctic Collaborative Network
SIOSED	Sea Ice Observing System for Data Exchange
SIOS-PP	Svalbard Integrated Arctic Earth Observing System - Preparatory Phase
FP7 - CAPACITIES - Science in Society	
GAP2	Bridging the gap between science, stakeholders and policy makers . Phase 2: Integration of evidence-based knowledge and its application to science and management of fisheries and the marine environment
Others	
CHEMSEA	Chemical Mutations Search and Assessment (Baltic Sea Region Programme)
EMODNET	Preparatory Action for European Marine Observation and Data Network-Lot3-Chemistry

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

RTD Landscape

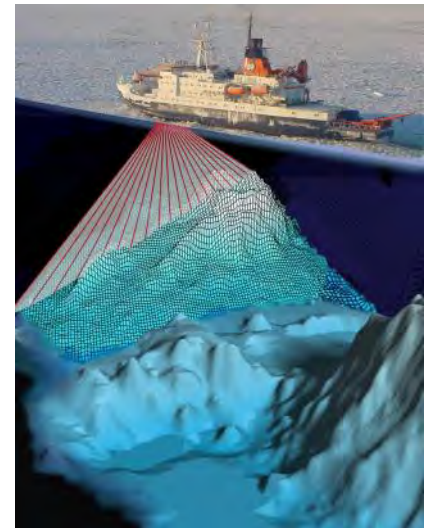
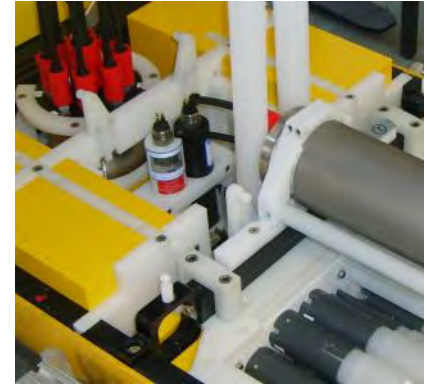


- Typical Problems:
- Low permeability between different sectors in EU (DE); insufficient matching between RTD and market needs; even between sub-branches poor communication
 - Lack of entrepreneurial thinking amongst scientists / engineers (no market view, academic values system, administrative hurdles)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

→ Challenges in Technology Transfer



- **Knowledge** and **technological innovations** have to be transferred / exchanged multi-directionally 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



- **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!