

Requirements for a Photonics PPP in Horizon 2020 – Working across borders, sectors and technologies to foster growth and jobs.

*Smarter spending - the need for increased international
collaboration and improved alignment in times of constraint budgets*

Ursula Tober

Photonics21 / VDI-Technologiezentrum

HORIZON 2020 EASTERN PARTNERSHIP (EaP) INFORMATION DAY

Research & Innovation in Information and Communication Technologies

Yerevan, 26. September 2013

What I like to share with you today.....

- **Introduce Photonics as a global industry with enormous economic potential for growth and jobs**
- **Show Europe's position in this global industry – it's strength and it's challenges**
- **Introduce Photonics21 – The European Technology Platform – an international Organization**
- **Introduce the recent discussion towards Horizon 2020**
 - **our positions and expectations on a Photonics PPP**
 - **our position on closer international cooperation for “smarter spending” and better alignment in times of constraint budgets**

Photonics – A Key Enabling Technology with enourmous economic potential

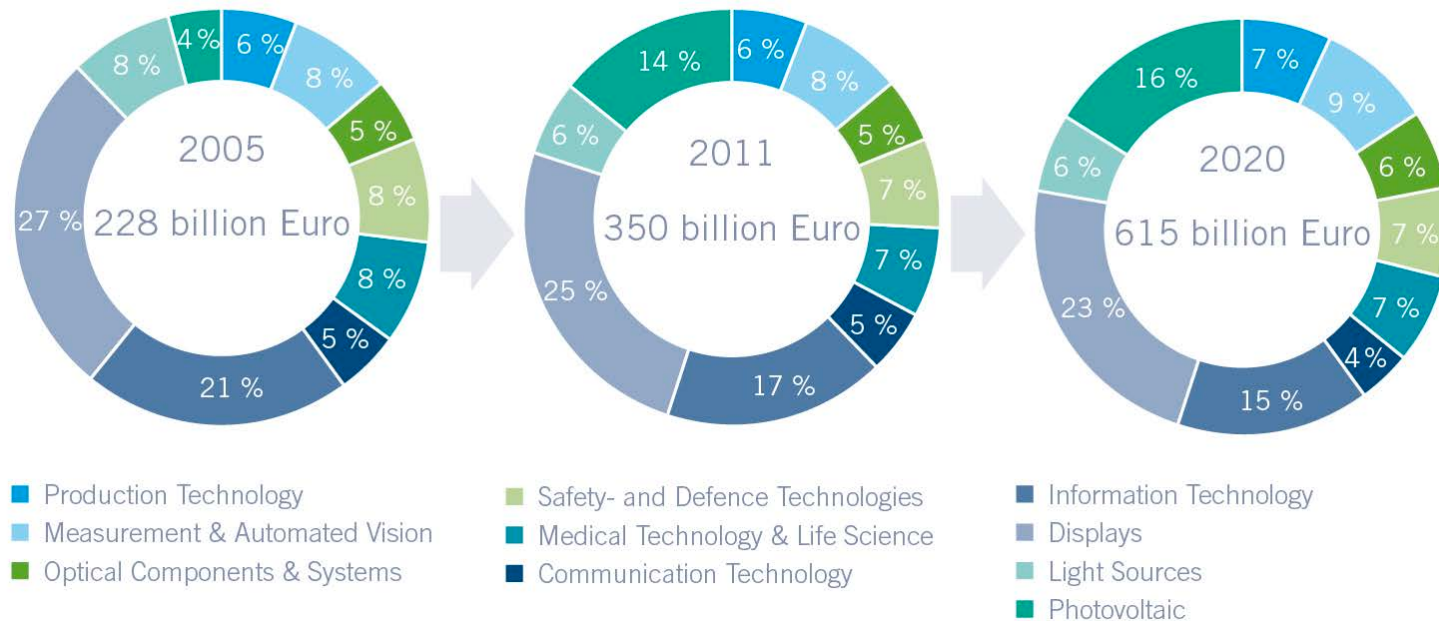
Photonics – A Key Enabling Technology with Enormous Economic Potential

World Market Photonics

Will Be A 615 Billion Euro Market In 2020 – CAGR >> GDP



Key Data Photonics World 2005, 2011 and Expectations 2020

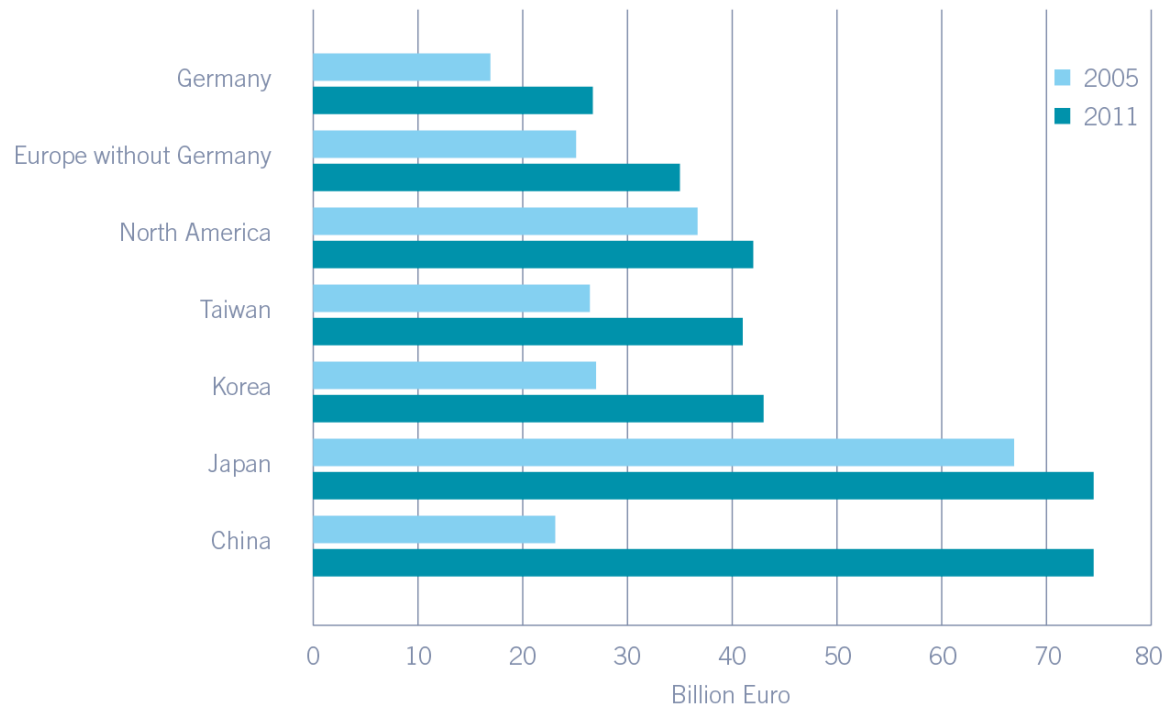


Bubble size indicates worldwide production volume in 2011

Source: BMBF, SPECTARIS, VDMA, ZVEI (pub.), 'Branchenreport Photonik 2013', Optech Consulting, Study 'Photonik 2013'/Own calculations

Photonics Production 2011 vs. 2005 - China Caught Up To Japan

Photonics Production By Countries, 2011 vs. 2005



Source: Optech Consulting, 2013

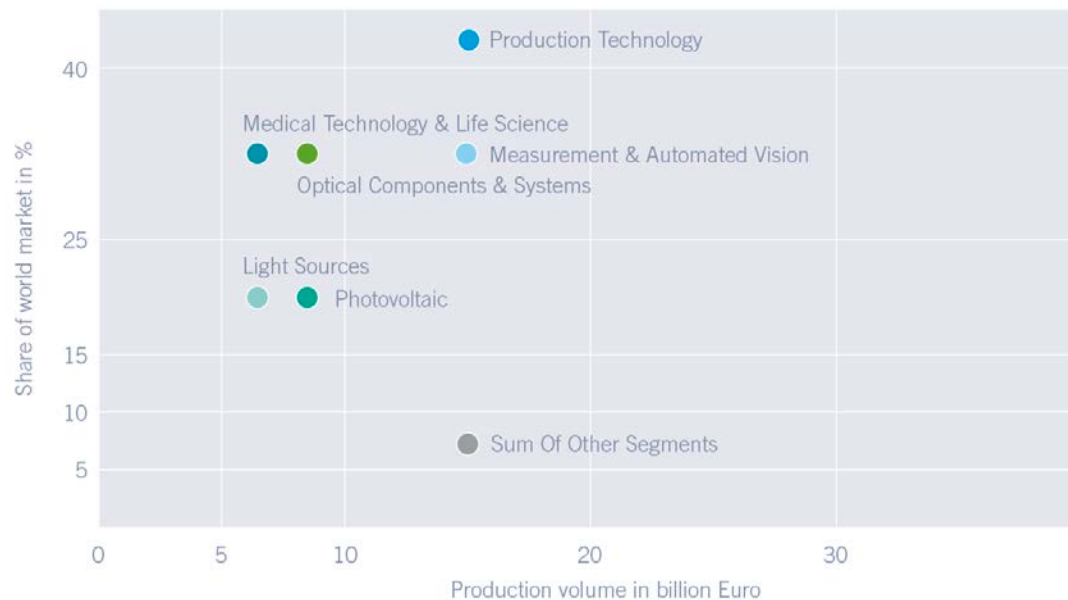


Photonics in Europe: Leading Positions in Core Segments.....

- Europe was able to stabilize it's global market share at **18 %**
- European Photonics production grew from 43,5 bn. Euro to **~65 bn. Euro**
- Europe has an excellent global position in the following core segments:



Europe, Domestic Production And World Market Share 2011



Source: Optech Consulting, 2013

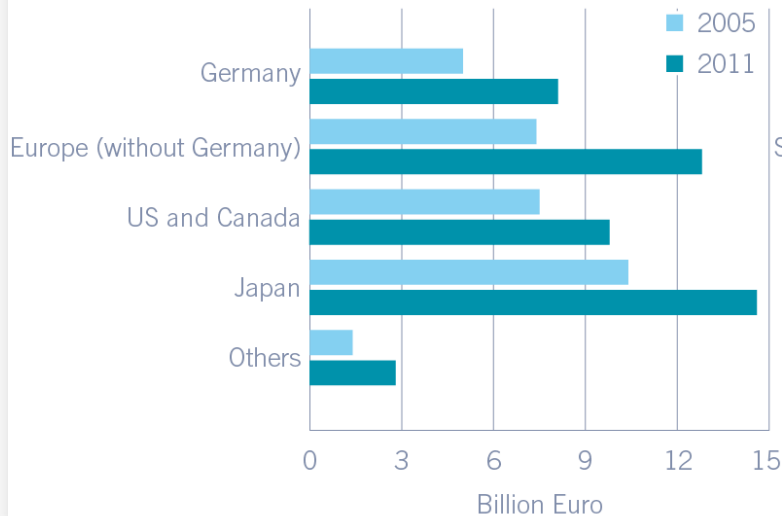
- **55 %** In Production Technology demonstrating its lead in the Laser and Lithography Systems
- **40 %** share in Optical Components & Systems
- **35 %** in Measurement & Automated Vision
- **30 %** In Medical Technology & Life Sciences
- approximately **30 %** in Safety & Defence Systems

Bubble size indicates worldwide production volume in 2011

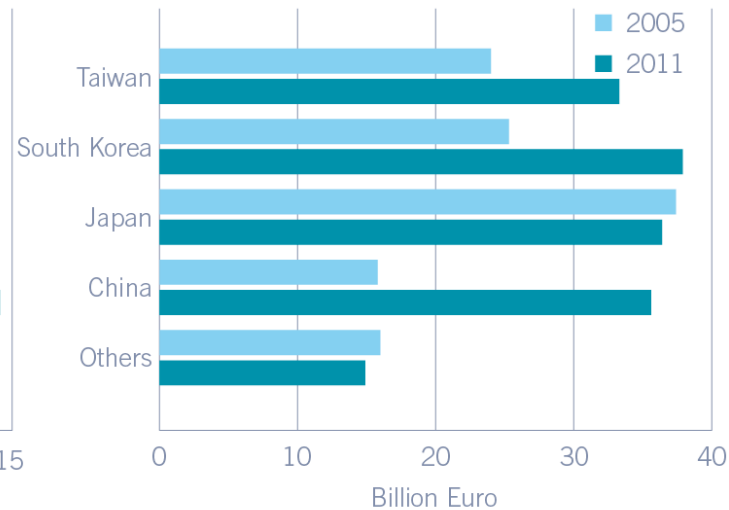
Source: BMBF, SPECTARIS, VDMA, ZVEI (pub.), 'Branchenreport Photonik 2013', Optech Consulting, Study 'Photonik 2013'/Own calculations

Photonics Focus Areas – Trend Towards Specialisation in the Regions

Production oriented Photonics,
Production by Countries, 2011 vs. 2005



Information Technology oriented Photonics,
Production by Countries, 2011 vs. 2005



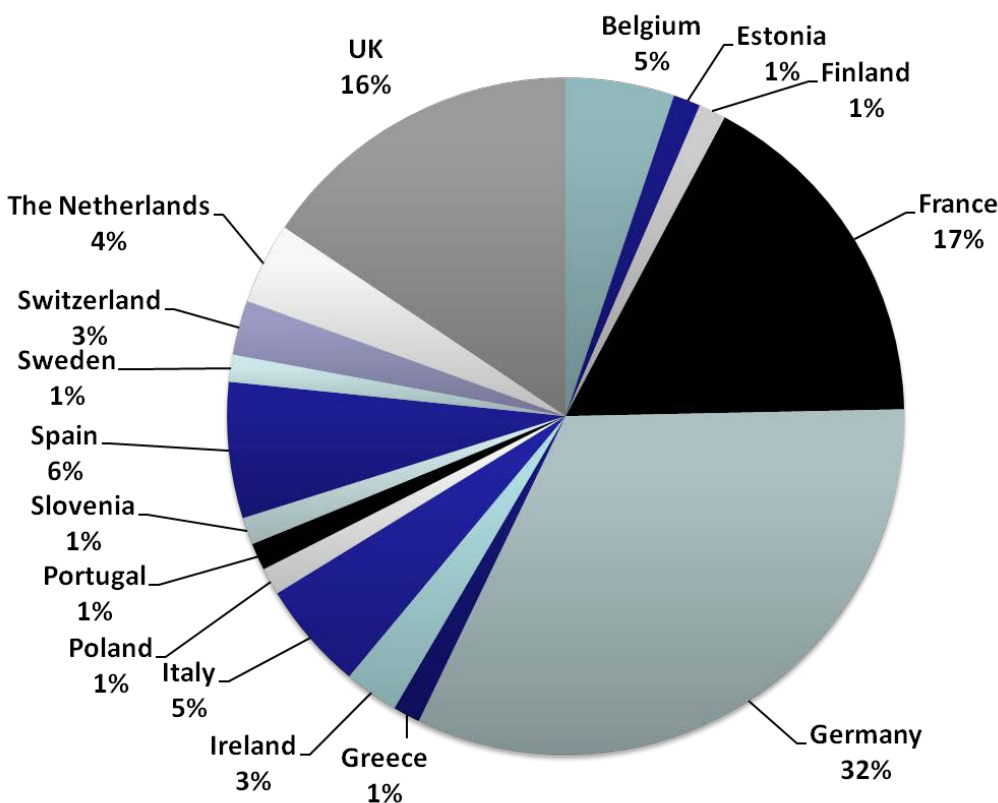
Source: BMBF, SPECTARIS, VDMA, ZVEI (pub.), 'Branchenreport Photonik 2013', Part 2: Study Results, Optech Consulting, Studie Photonik 2013



Photonics21

**A European Technology Platform (ETP)
Representing the Photonics Community**

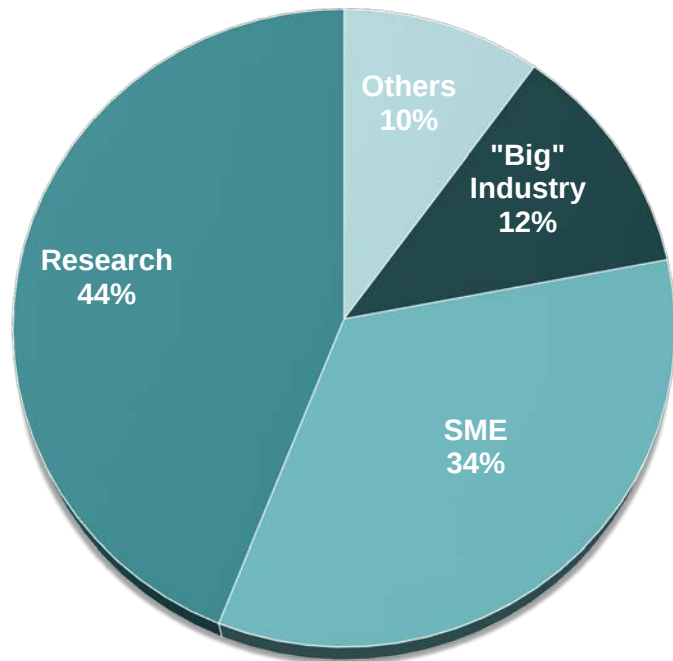
Photonics21: International Organization – Broad Representation



- **Mission: Unify the Photonics Community**
- Establish links between industry, science and politics in photonics R&D&I
- Align public financing with industry-perceived priorities
- Better transform knowledge into leading-edge products
- Define a photonics strategy for Europe

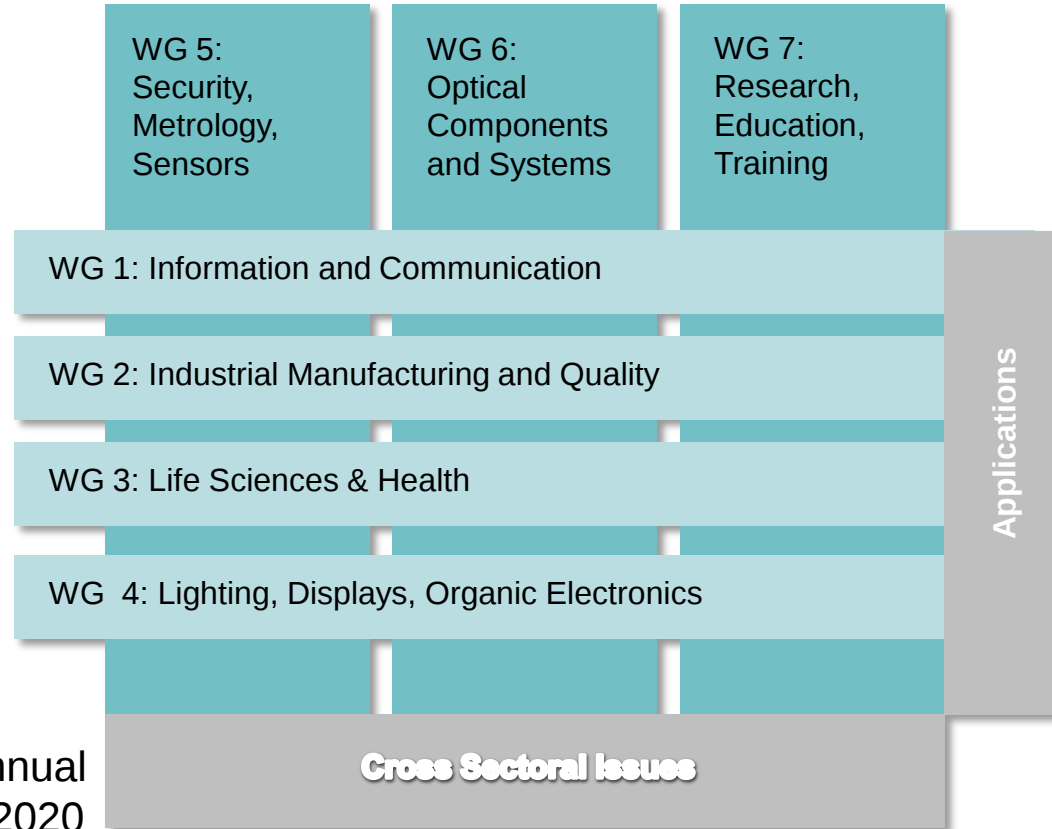
Approximately 2000 Members representing the Photonics Community

Photonics21: Our Core Input Forum – The Work Groups

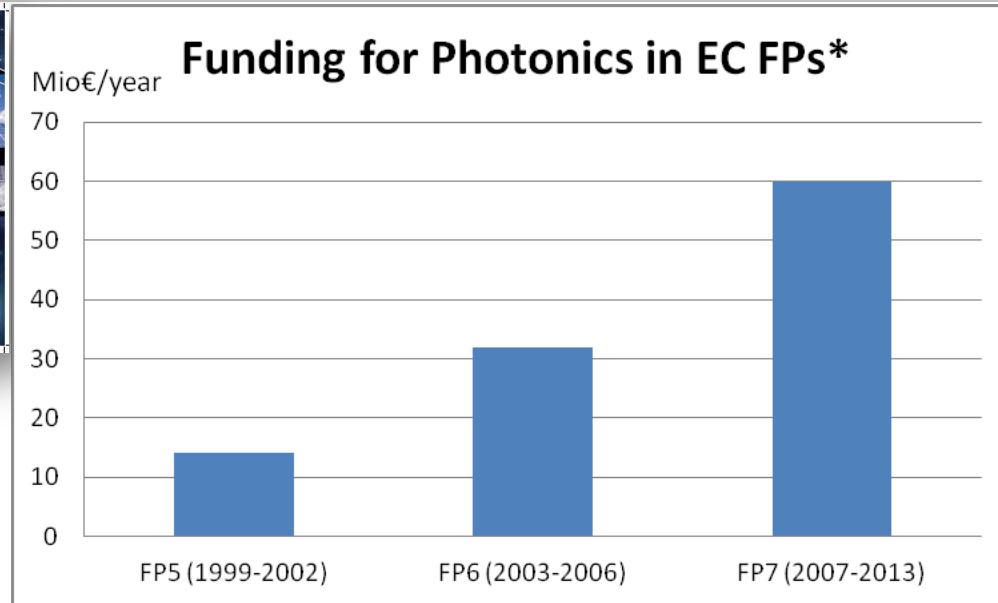


Tasks:

- Discuss and Align Input for the Multiannual Roadmap and call topics for Horizon2020 Photonics PPP work Programme
- Provide networking opportunities for the European photonics community
- Support for Advocacy Events



Photonics21: Increasing Recognition of Photonics at EU level



*ICT Part of the FP: Photonics Unit



European Commission, 2009: *“Photonics is recognised as a Key Enabling Technology (KET), together with nanotechnology, micro- and nanoelectronics, advanced materials and biotechnology.”*

Photonics Innovation Ecosystem: Clusters and Technology Platforms



- **The Photonics Ecosystems** exists is made up of high-level research groups and strong photonics industry consisting of both SME's and large companies.
- **National platforms and the European platform** are networks form private and public players aiming to rise the awareness of photonics
- **Regional innovation clusters** are composed of large companies, SME's, start-up's public and private research centers, universities, specialized suppliers, investors and regional and governmental agencies. They are focused on specialized regional photonics development strategies for specific application areas, where the regional builds

Photonics21

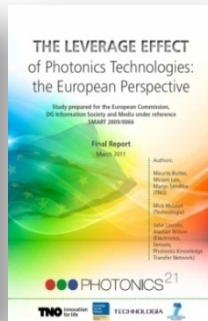
On our Way towards Horizon 2020 and a Photonics PPP

Photonics 21 – Our Key Milestones towards Horizon 2020

- ▶ 2009: Photonics was nominated to be a Key Enabling Technology
- ▶ 2011: Final KET Report analyzing Strength & Weaknesses of EU Innovation Policy
- ▶ 2012: Photonics21 asked to propose a Photonics PPP
- ▶ 2012: Discussing Budget and Content of Horizon 2020
- ▶ 2012: Preparing Multiannual Strategic Roadmap / Content and Focus for Horizon 2020
- ▶ 2013: Discussing Structure of Future Photonics PPP – Final Proposal and BoS



Vision Document



Leverage Study



Final KET Report



Photonics 21 PPP Proposal



Meetings with Neelie Kroes



Advocacy Tours/Events



Multiannual Roadmap



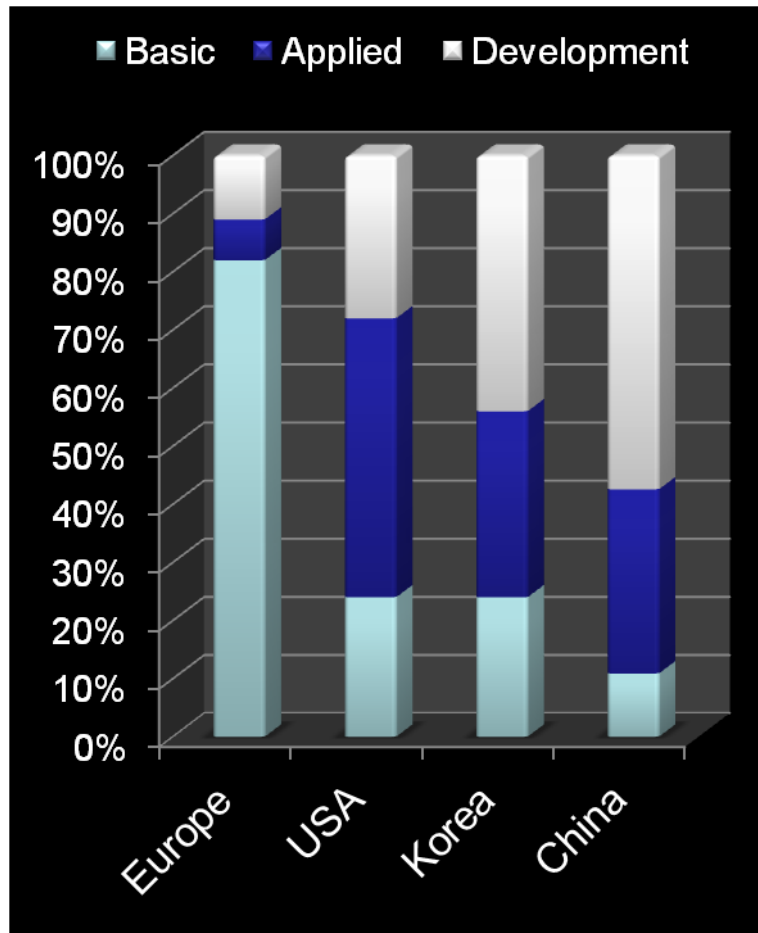
Final PPP Proposal

Towards Horizon 2020

2009

2013

The KET Analysis as Key Basis: Need to Overcome the “Valley of Death”



Source: KET Report: Strategic focus on applied research and development

The KET High Level Group's findings

- ▶ Europe has the highest share in basic research
- ▶ Europe has excellent R&D results – and often a world leading position
- ▶ However what we are lacking is
 - ▶ Speed to Market / Transfer of Inventions to Commercialization
 - ▶ Competitive Funding Structures
 - ▶ Support by e.g. Public Procurement
 - ▶ Value Chain Inclusion in Innovation Process

Founding a Photonics PPP in Horizon 2020 – Our Main Targets

What we expect and advocate

- ▶ Long-term commitment in funding
- ▶ Partnership at eye level
- ▶ Significant budget that reflects the means of Photonics as a KET
- ▶ Lean, simple and efficient structures



What we offered and committed to

- ▶ Investing in Europe's long-term competitiveness and growth
 - 4:1 leverage EU funding by private investment → 200 mio/yr (=1,4 bn public money) x 4 = overall ~ 7 bn Euros investment
 - 70,000 – 100,000 additional jobs in Europe
- ▶ Measure success by Key Performance Indicators (KPIs)

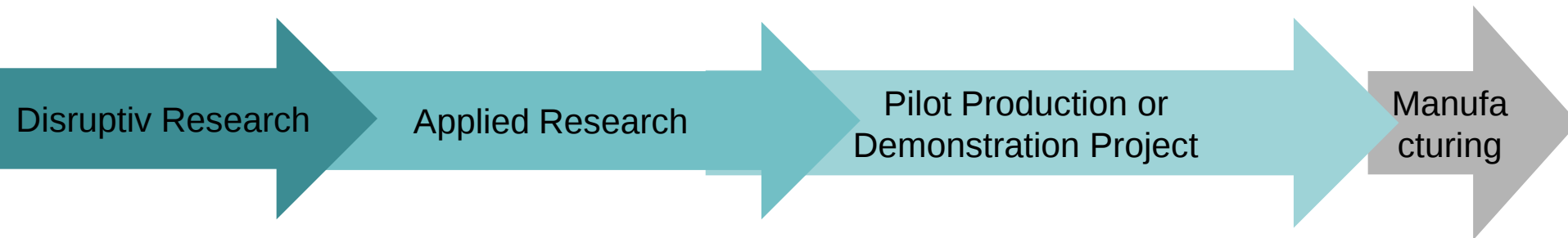
KET Recommendations for Horizon 2020: Closer to Market Activities

Horizon2020 – Focus for Photonics PPP Projects



KET Report: The Technological Readiness Level (TRL)

Former FP 7 funding – ending far from market



Challenge: Closer to the market activities are often > 10 times more expensive

Join Forces in Times of Constraint Budgets - Our Advocacy Tour in Brussels



Our Key Messages:

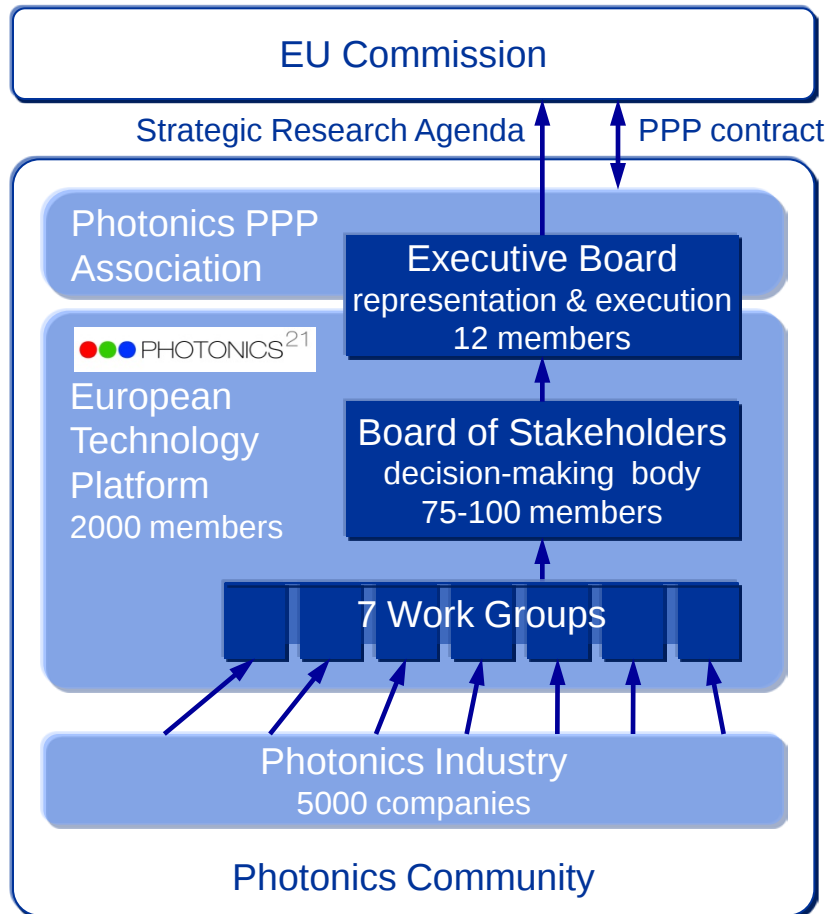
- Introduce Photonics as a Key Enabling Technology and demonstrate it's contribution to EU Economy
- Promote the introduction of a Photonics PPP in Horizon 2020 and Demonstrate our Commitment
- Support a better Alignment of Smart Specialization and Horizon 2020
- Join Forces of EU and Members States



Photonics PPP in Horizon 2020: What is expected from us.....

- **Commitments from industry but also from other stakeholders such as academia and research institutes include:**
 - to providing solutions that address the major societal challenges;
 - to work closely with SMEs;
 - to skills creation and to improving education curricula;
 - to wide promotion and dissemination activities.
- **Measure Key Performance Indicators (KPI's):**
 - Industry Investment in EU (e.g. tangible/intangible assets; R&D&I efforts);
 - Job creation in Europe;
 - Market share of the European photonics industry;
 - Education, training and skills developments
 - PPP Success Stories – commercialization of new applications and products
- **Value chain correctness of PPP projects**
 - strong involvement of end-use industries
 - cross-sectoral view

Implementation of the Photonics PPP – Future Governance Model



- A lean Photonics PPP Association becomes the formal contact partner for the EC in a PPP.
- The EB constitutes the association members.
- The association will be fully controlled by the Photonics21 BoS.
 - All strategic decisions are taken by the BoS. (The association is only executing.)
 - The BoS ensures that the strategies of the Photonics21 Work Groups and the BoS are implemented in the PPP.
- Additional change in the Photonics21 Terms of Reference: in future, new BoS members will be elected by the Work Groups.

Photonics21

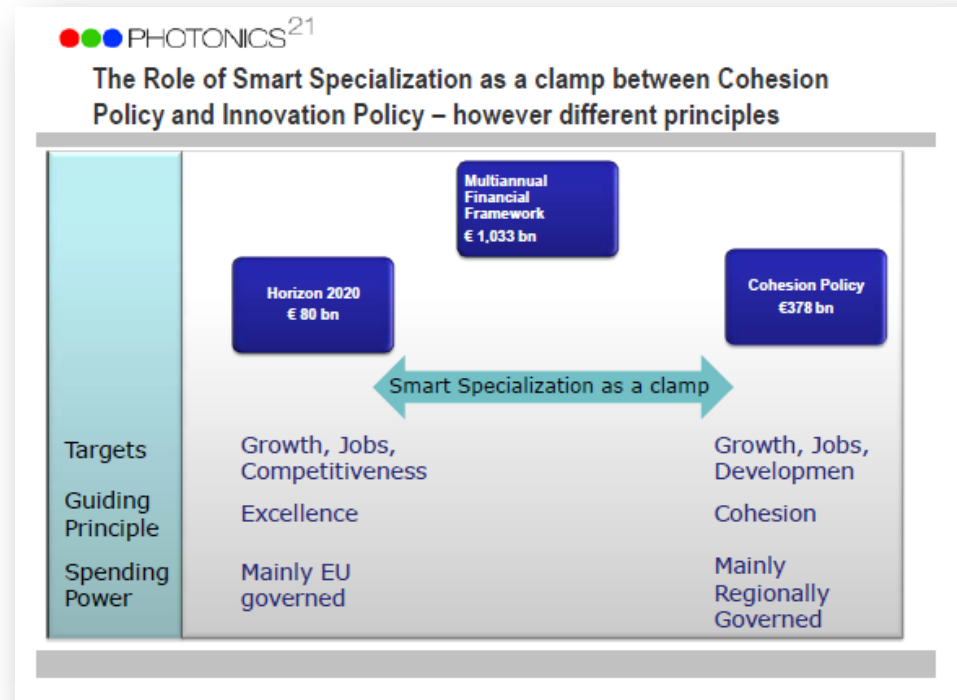
International Cooperation The Photonics Innovation Ecosystem

International Cooperation in Times of Constraint Budgets

- Opportunities
 - Best use of all resources available – sharing best practices
 - Bundling international efforts and budgets - Avoiding Double Efforts
 - Foster intercultural exchange and inclusion
 - Focus on areas with excellent prospects – Smart Specialization
- Current Risks
 - Growing disparity amongst Member States
 - High unemployment rate in many Member States
 - Budget-Cut's - Lack of money for long-term investments
 - Reincarnation of patriotic voices and national focus

Photonics21 supports the Smart Specialization Concept

- ▶ Make KETs a dedicated priority in European funding programs
- ▶ Include dedicated KET activities in research, innovation and regional policy
- ▶ Allow the combination of EU funding programmes – e.g.
 - ▶ Horizon2020
 - ▶ Structural Funds
 - ▶ Public Private Partnerships)
- ▶ Focus on building Regional Excellence
 - ▶ Focus on specific strength
 - ▶ Not everything for everybody



Opportunities for Photonics Clusters, Companies and Research Affiliations

Innopho21 – International Cooperation and Member State Engagement

The Innopho21 Project in FP I. Work Package 4:

- *Help structuring and enlarging the European photonics community, focusing on the involvement of Central and Eastern European Countries (CEC) and New Member States (NMS) (WP4: Integration)*

Innopho21 – WG4 - Some of the tasks.....

- Support the self-organisation of National Photonics Communities
 - Identify high level Photonics representatives on political, scientific and industrial level from the respective country
 - Supporting Processes for Strategic Research and Innovation Agenda
 - Secure best practice sharing – support other member states
- Develop dedicated and tailor-made Photonics Advocacy Concept for the Countries
- Support trans-national collaboration by providing a database as a prerequisite and exchange platform

On EU Level

- Include Country Representatives and Council Chain in our Photonics21 Advocacy Concept
- Support Exchange with Member States

Example for Bi-Lateral Cooperation: German - Russia

- Bi-lateral cooperation started 1992
- Application oriented:
 - Building a network of industry related Testing, Consulting and Education Centers in the field of Laser Technology
 - Aiming for a more Intense networking of Russian and German industry and research centers
- Research oriented
 - Common Russian-German (BMBF and FASIE): Funding Competition in the field of Optics and Photonics for applied photonics with focus on supporting SME's.
 - Started in 2011 – currently 3 projects selected in the field of basic research
 - In addition – German side tries to further involve Russian partners in EU projects



Focus on International Excellence - Training & Education of Young People



The Photonics21 Student Innovation Award

- Honors excellent industrial-related photonics research works
- Promote photonics training & education within Europe
- Motivate and engage young people for photonics



Our Photonics Ambassador

- Commissioner Neelie Kroes appointed Jana Huisman as young ambassador for photonics education
- She is assessing international photonics training and education activities

Wrap Up - International Cooperation in Times of Constraint Budgets

- **Photonics is a global Key Enabling Technology with enormous economic potential**
 - Global Growth far above GDP growth
 - Trend towards Specialization in the Regions
- **International Cooperation is decisive to**
 - get “smarter” in spending – seeking and leverage synergies
 - focus on strength – wisely spend the money
 - be really inclusive – value chain, regions, industry & research
 - Create a win-win situation - find best partners in a globalized world
- **International Efforts should comprise**
 - Broader Awareness of Photonics as a Key Enabling Technology
 - „More” and “more bullish” national and regional efforts and organizations
 - Building Excellence Centers – avoiding double efforts
 - Secure Best Practice Sharing
 - Mobility for Excellence in Science and highly skilled people
 - Benchmarking competitive position and progress

It is all about creating a „Win-Win“ situation for more Jobs and Growth

Thank you for your attention

For any further questions you can contact Photonics21

Website: www.photonics21.org

e-mail: secretariat@photonics21.org

email: tober@vdi.de

Twitter: www.twitter.com/Photonics21