

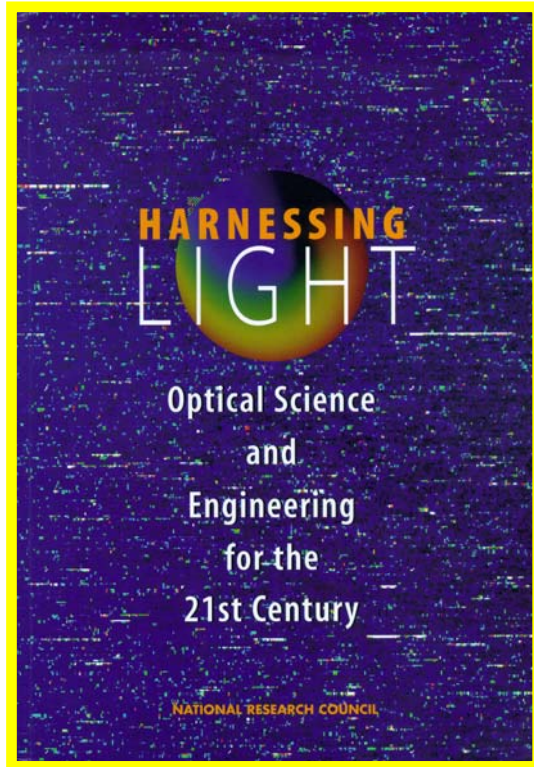
Photonics²¹

Advocating for optics and photonics in Europe

Malgorzata Kujawinska
Vice President Photonics21



Advocating for optics and photonics: Historical documents

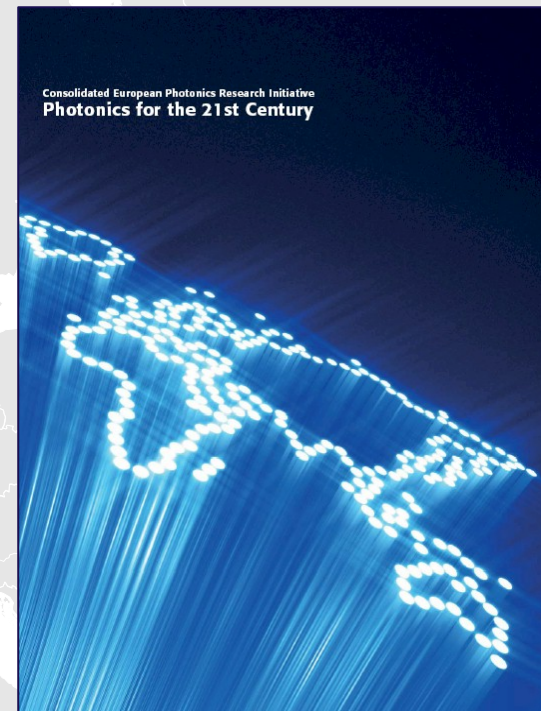


1997 - USA



2001-Germany

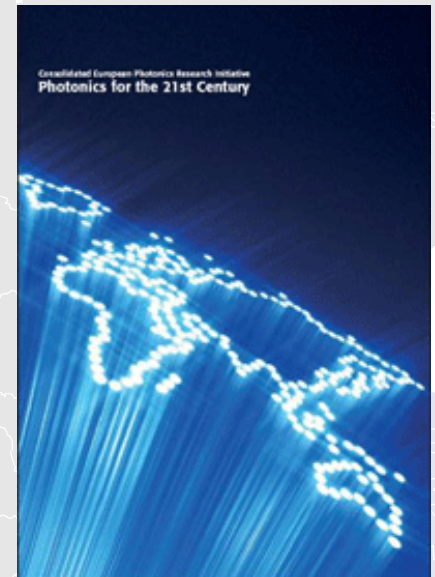
2005/2006 - ETP



2004/2005- EPIC

European Technology Platform Photonics21: Genesis

- **Autumn 2004:** Launch of an industry-led (EPIC) Photonics initiative encouraged by the European Commission
- **February 2005:** Publication of the joint strategic vision paper “Photonics for the 21st Century”
Document signed by 65 main photonics players
- **December 2005:**
Foundation of the ETP Photonics21 in Brussels
Signed at the beginning by 80 stakeholders
(mainly industry)



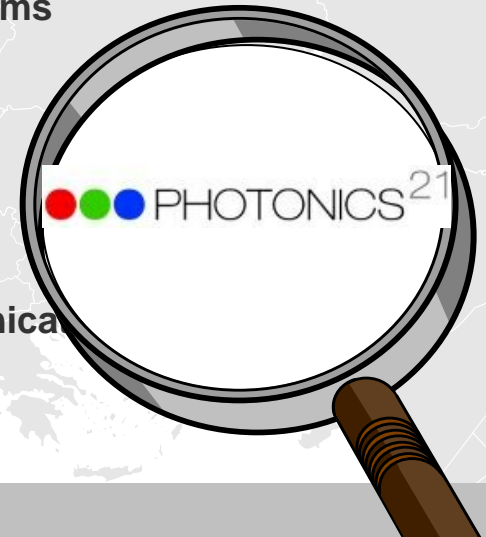
Today: 29 Technology platforms !

Topics include:

- Hydrogen and Fuel Cell
- Nanoelectronics
- NanoMedicine
- ...
- Water Supply
- Photovoltaics – Solar cells
- ...
- Global Animal Health (GAH)
- ...
- Embedded Systems
- ...
- Manufacturing
- ...
- Robotics
- Photonics (28th)
- Satellite communication



A European Technology Platform for global animal health - Vision 2020



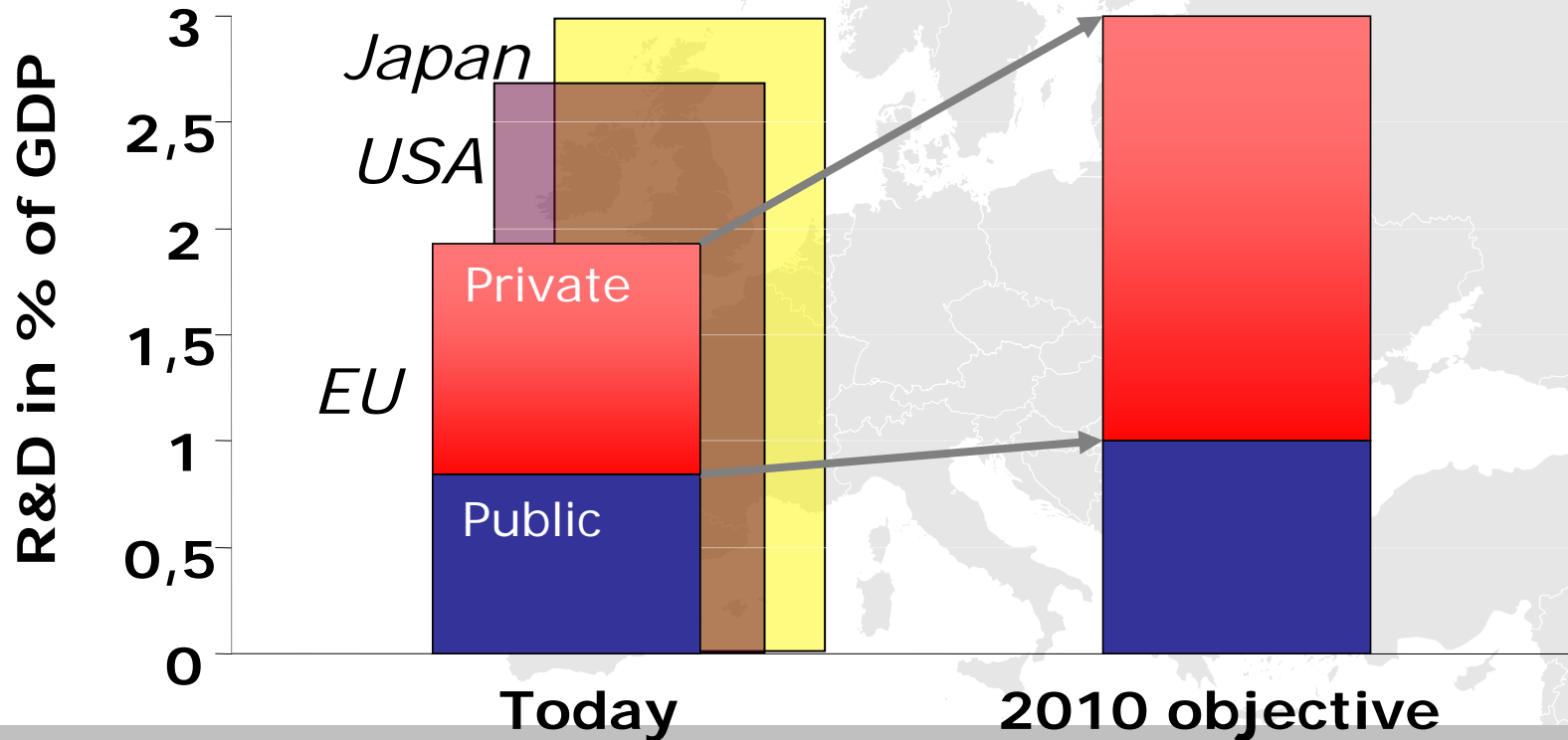
Why Technology Platform



The "Lisbon Agenda": A member states political initiative

Lisbon (March 2000): Europe the most dynamic/competitive Knowledge based society
 Göteborg (June 2001): A strategy for sustainable development and growth
 (Environment, Economy, Employment)
 Barcelona (March 2002): Education, training and RTD:

In practice:



Recent History - Photonics21

- December 2005 – Launch Meeting of Photonics21 opened by Commissioner Reding. Photonics21 has 280 members
- April 2006 - First version of the Strategic Research Agenda has been delivered to Commissioner Reding at Photonics Europe.
- December 2007 – 3rd full meeting of Photonics21. Photonics21 has 960 members.

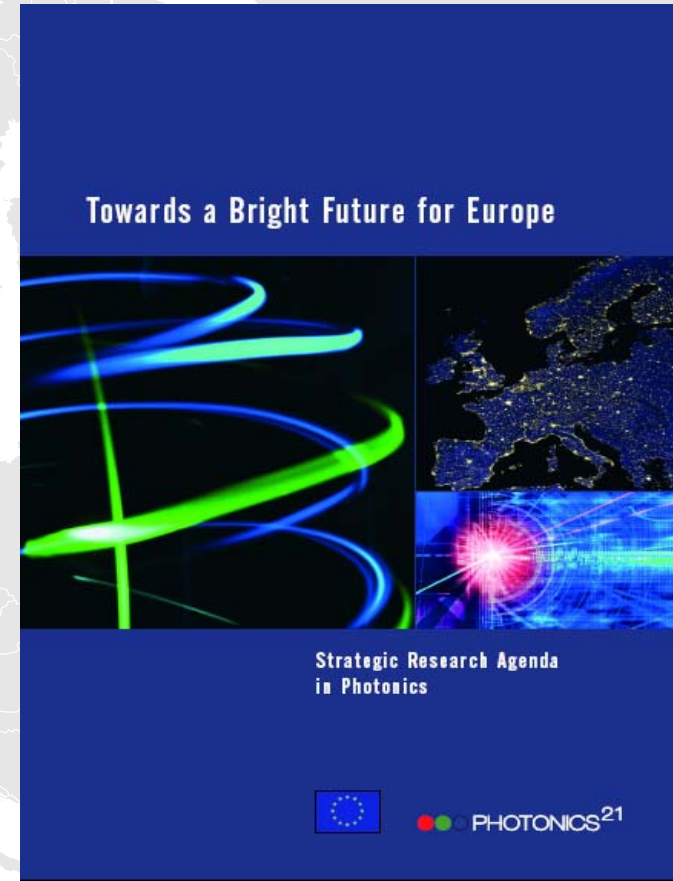


ETP Photonics21: Objectives

The European Technology Platform (ETP) Photonics21 is a European membership association with no legal form.

Objectives:

- Establish strategic links and align common efforts in Photonics R&D;
- Transform knowledge into leading-edge technologies and products which are competitive on a global scale;
- Define medium to long-term research and technological development objectives;
- Provide for the necessary research environment capable of accelerating Photonics research in Europe.

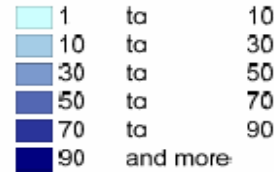


Photonics21 Strategic Research Agenda published in April 2006

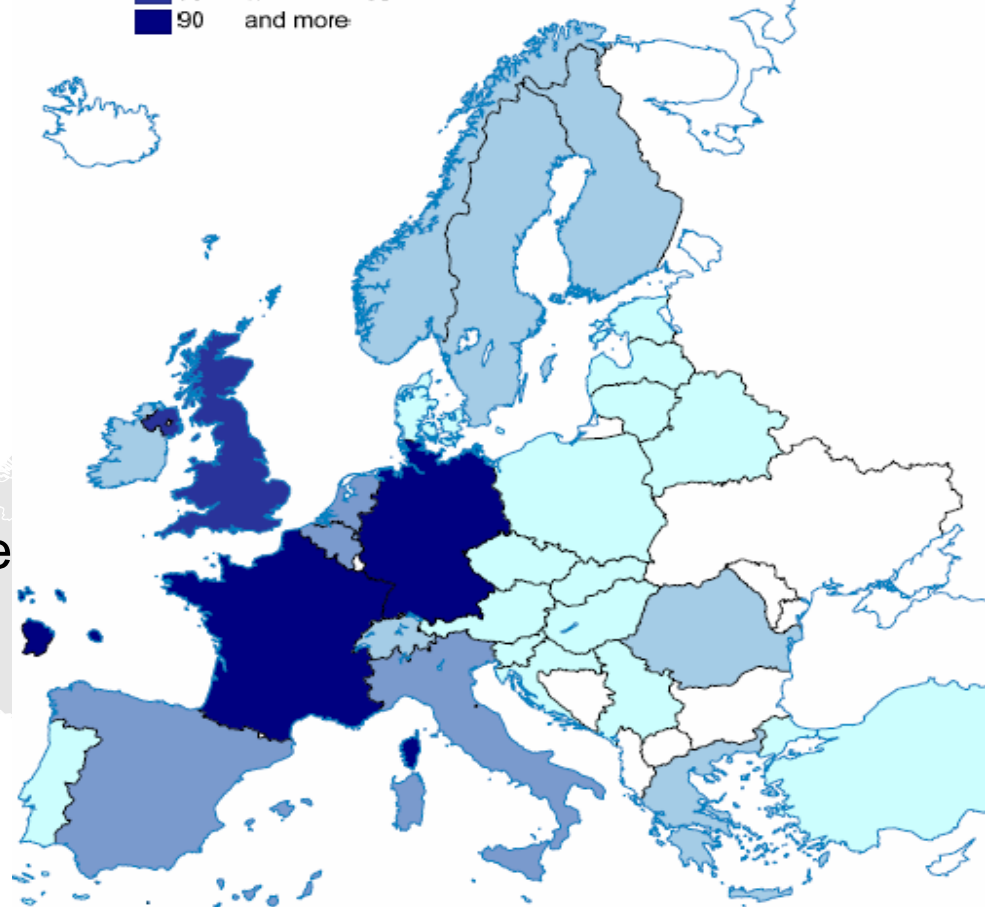
Photonics21 members

- 950 members from 35 countries
- 90% members located in EU-27
- Balanced membership composition (50% industry <--> 50% science)
- SMEs represent the majority of the industrial members

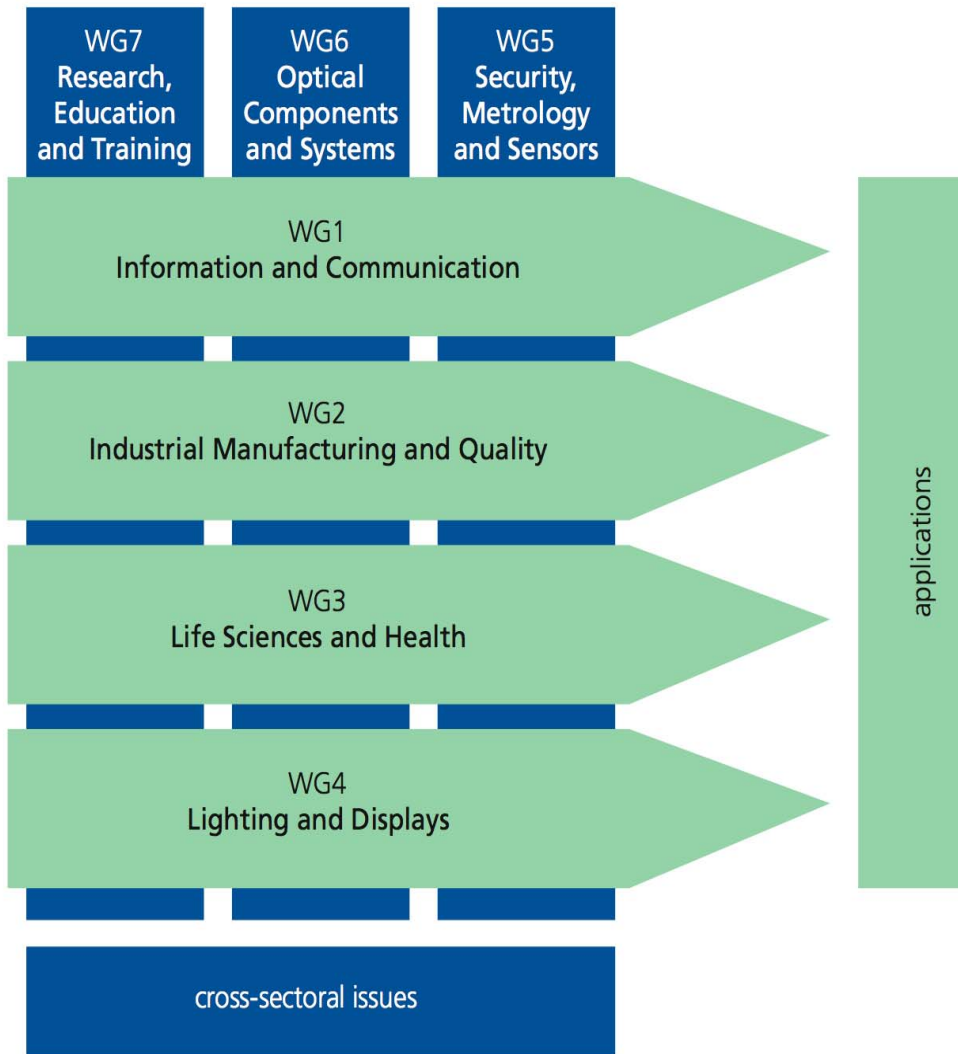
Photonics21 unites the majority of the leading Photonics industries and relevant R&D stakeholders along the whole economic value chain throughout Europe.



Non European members from USA, China, Canada, Korea,...

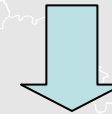


Work groups



Photonics21 comprises seven work groups:

- Four: focusing on different fields of application
- three: on cross-sectoral issues.



Work group representative discussed Photonics21 research priorities for FP7 ICT work programme 2009/2010 with the European Commission February 2008, Brussels.

Photonics in European Research Programmes

- **Photonics is given a higher profile in Framework Programme 7**
- **Funding for photonics is increased by 40% to 90 M€ for 2007-2008**
- **Dedicated Photonics Unit set up in European Commission**



Photonics21 activities and achievements

Photonics recognized as strategic technology for Europe

Recommendations of the SRA widely considered in the first work programme of FP7 and national funding activities.
Photonics unit within the European Commission established



Photonics21 at the European Parliament

April 2008, Strasbourg. Photonics21 president Martin Goetzeler, CEO OSRAM, headed a delegation to meet with the European Parliament Science Technology Options Assessment Panel (STOA-Panel).

The aim of the meeting was to demonstrate how Photonics will contribute to major European societal challenges such as the ageing society, the next generation information society and energy efficiency.



Photonics21 activities and achievements

Photonics21 Strategic Research Agenda constantly updated

- Annual Meeting defines overall strategy (250-300 attendees)
- 2 work groups workshops per year aiming at the determination of strategic research priorities (total of 14 workshops/year: 400-450 attendees in total)

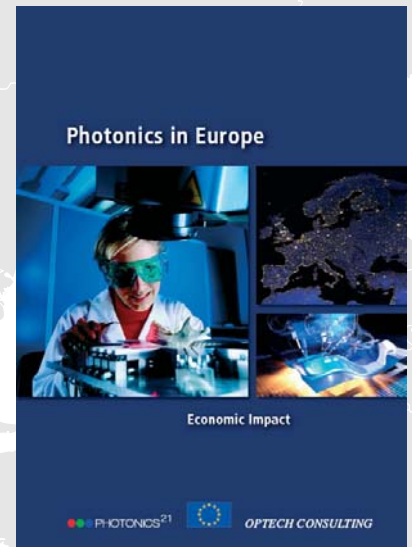


„Photonics in Europe – Economic impact“ study published

More than 5000 Photonics companies located in Europe
(majority SME),

246000 people employed in Photonics industry 228 billion EUR
world market will grow to 439 billion EUR by 2015 Europe
has 19% of worldwide production volume and leads many
key sectors

Revenues of European industry increased by 12% to 49 bln
EUR in 2006

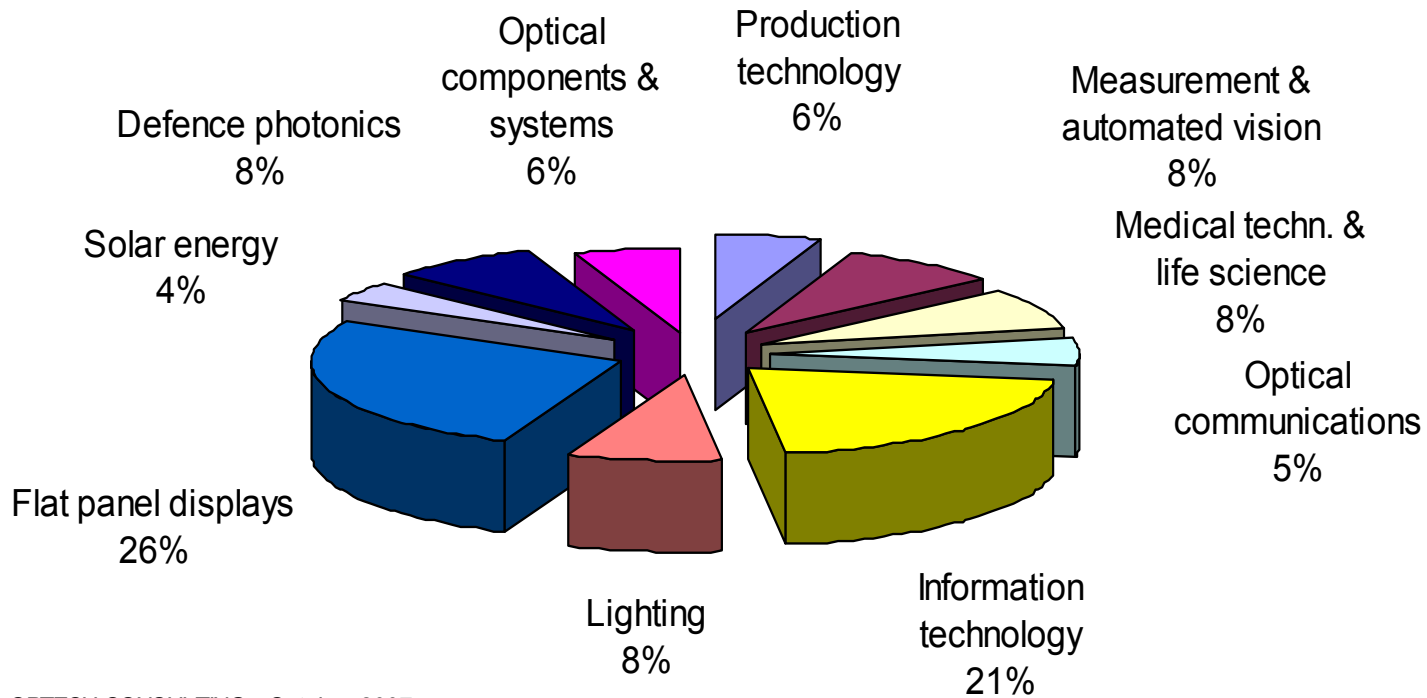


Download: www.photonics21.org

World Market 2005 (production)

Photonics World Market by Sector, 2005

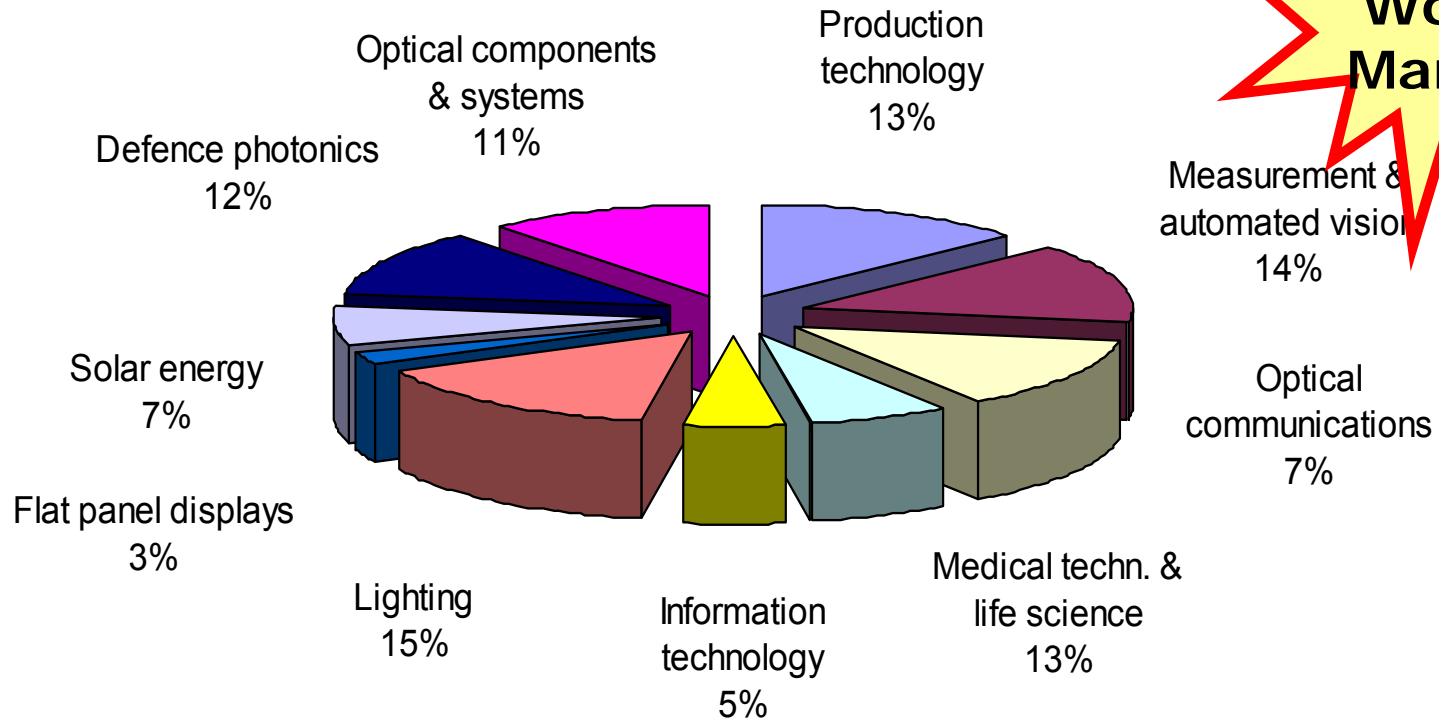
Total: EUR 228 Billion



European Market, 2005

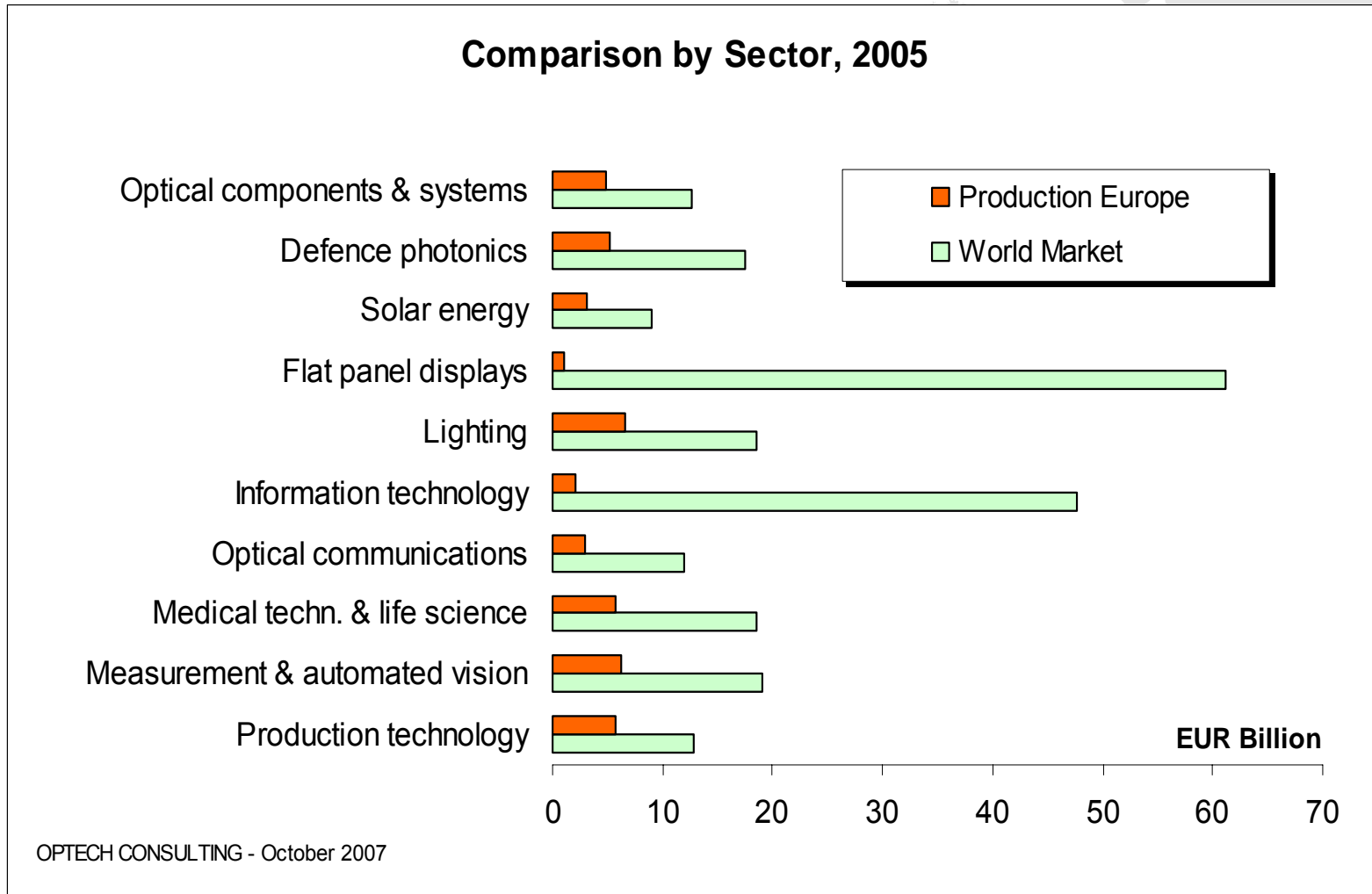
European Photonics Production by Sector, 2005

Total: EUR 43.5 Billion



**19% of
World
Market**

Comparison by Sector

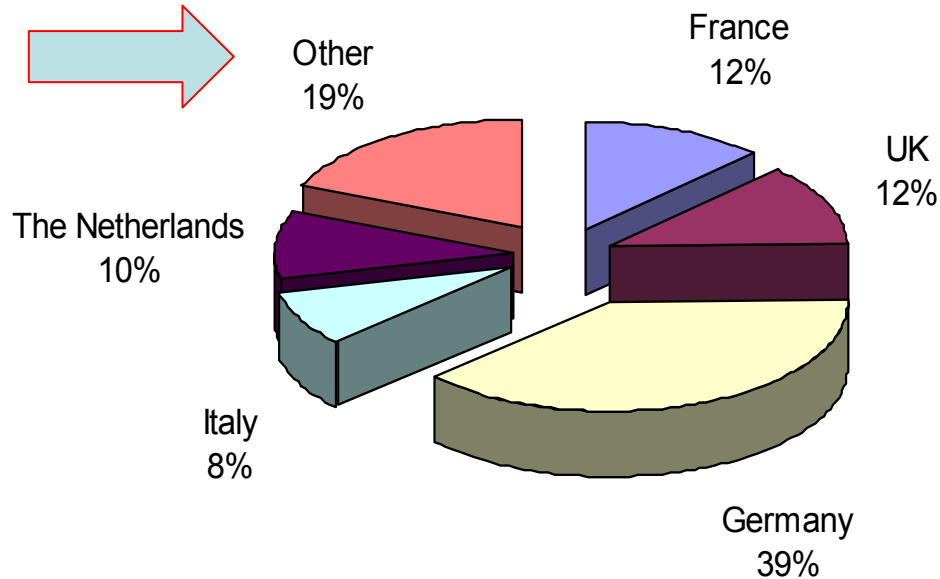


European Production by country

Photonics, European Production Volume by Country, 2005

POLAND ???? →

Total: EUR 43.5 Billion



The Market Observations

- Understanding EU strengths: a must to guide research strategy and to get political support
- **Industrial ≠research strength**
- Inventory of national strength: essential
- Identify opportunities

Photonics21 activities and achievements

- Photonics21 Mirror Group for better coordination of national funding strategies



- Political mirror group established in July 2007, three meetings took place in the past 10 months
- Countries involved (15): UK, France, Sweden, Germany, Italy, Spain, Poland, Netherlands, Austria, Switzerland...
- Set up of an **ERA-Net Plus** with potential topics:
 - biophotonics – molecular and functional imaging,
 - lighting/photovoltaic – photonics for energy efficiency,
 - Internet access technologies – next generation broadband

Recent History – Photonics National Platforms

- Photonics made a priority in UK research strategy – “Photonics: A UK Strategy for success – Painting a bright future “
- National Platform set up in Slovenia – Fotonika21.
- National Platform set up in Switzerland, SwissLaserNet.
- National Platform set up in Spain, Fotónica21
- National Platform in process of being set up in Italy – PHORIT
- National Platform in process of being set up in Greece



Photonics Society of Poland – basis for Polish National Platform ?????

Photonics21 activities and achievements

Enhance Photonics Education in Europe

The lack of highly qualified professionals in Photonics is a major threat to European Photonics industry. Photonics21 will:

- bring together scientists and company representatives to **align Photonic education with industry needs**
- initiate cooperative structures between companies and educational institutions

Invitation to attend Work Group 7 workshop in Photonics –
“**Industry Input to Photonics education**”,

4th June 2008, Brussels

Sessions with focus on:

- Outreach
- 3rd and 4th level education
- Lifelong learning



Now 2 Erasmus Mundus Masters:
Photonics
OpSciTech

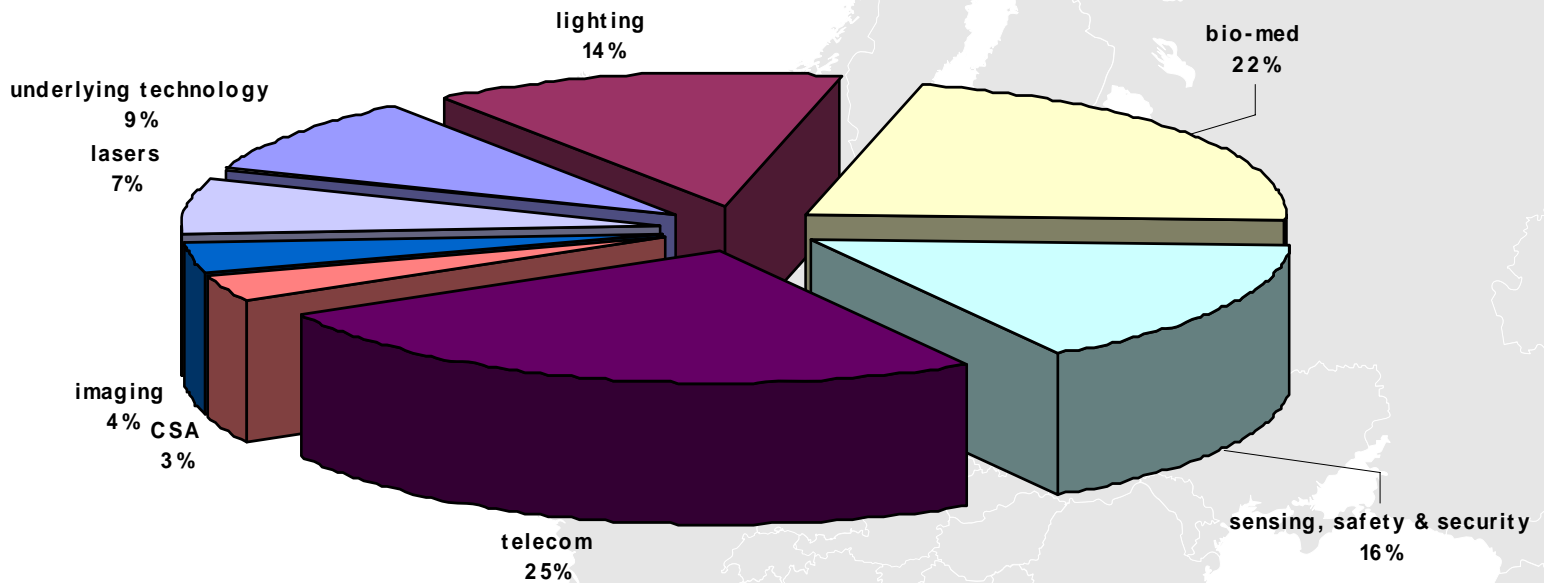
Opportunities – Recent Funding Results

Call Objectives

- a) Core photonic components & subsystems
lasers, lighting, fibres, imaging, sensing
- b) Application-specific photonic components & subsystems
core/access networks, bio-med, sensing
- c) Underlying technologies
- d) Complementary measures
assessment, networking
- e) Support measures
access, education, work-groups

Output per domain in % of funding

Total : 90 M€



CSA: - coordination and support actions

Opportunities – Future Funding Directions (draft)

Photonics Applications

- **Communication**
- **Lighting and efficient light sources**
- **Biophotonics – imaging and diagnosis**
- **Imaging for safety and security**
- **Highly Integrated, hi-power lasers for ICT and manufacturing**

Plus

- **Cost effective, versatile foundry processes**
- **Access to technology and expertise for SMEs**
- **Education – outreach and transnational 3rd level programmes**

Opportunities – Future Funding Directions (draft)

Organic Photonics and other disruptive technologies

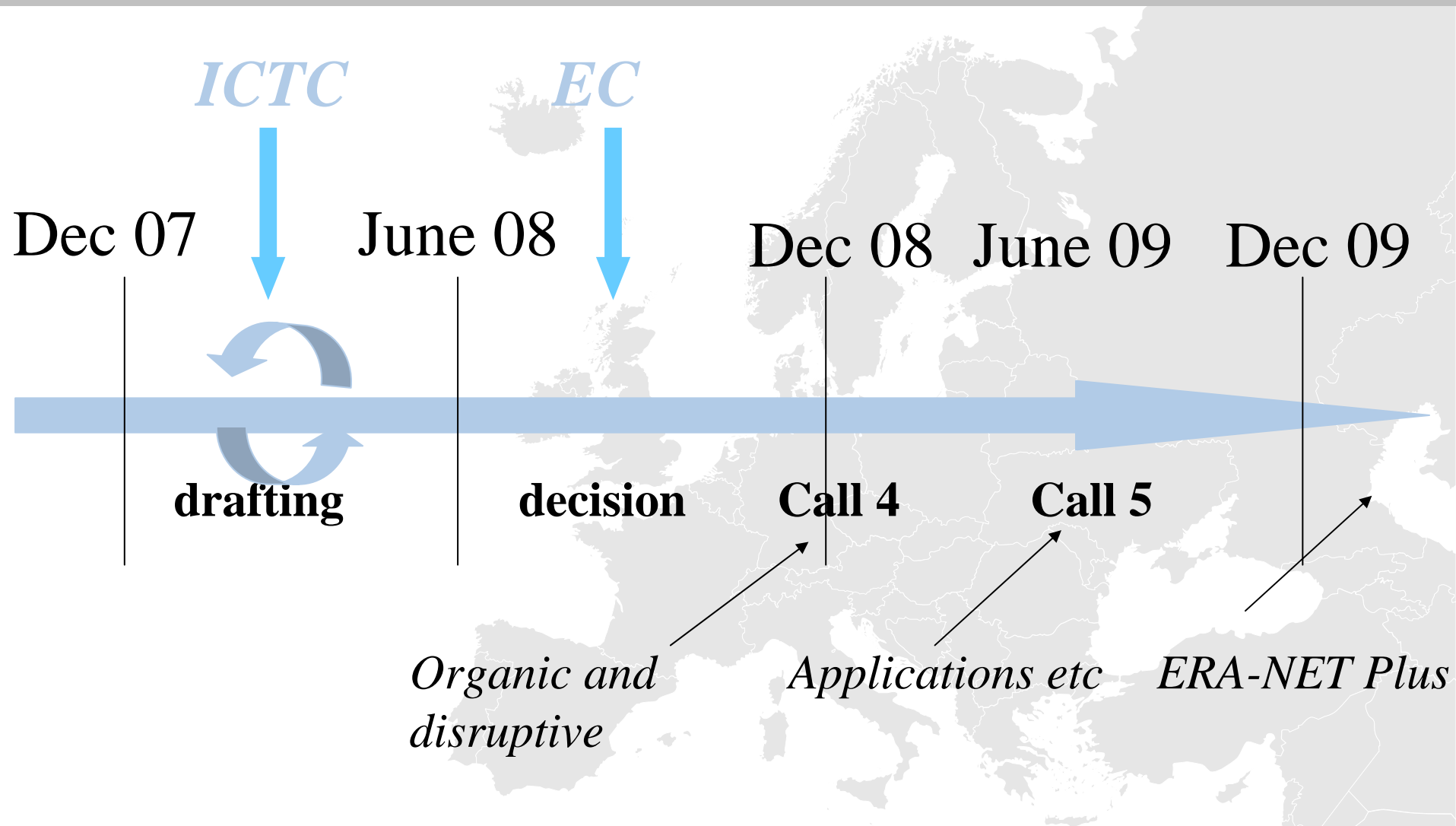
- **OLEDs**
- **Organic photovoltaics**
- **Organic guiding structures sensors, lasers, amplifiers**
- **Disruptive photonics technologies for transition from advanced research to industrial technologies**

Opportunities – Future Funding Directions (draft)

ERA-NET Plus

**Next Generation broadband
or
biophotonics**

WP '09-'10 timing



Challenges

- Visibility for photonics, increased and more effective investment in research.
- Training the next generation of scientists and engineers – quantity and quality – from primary school to university – girls/women in science.
- Turning great science into great products – entrepreneurship.

Conclusions

- There are great market opportunities for European photonics.
- European has important strengths in many key sectors.
- Photonics is beginning to get the recognition it deserves.

BUT

Conclusions

- There will never be enough research funding.
- The big challenges cannot be solved by any one player.
- The only real solution is ...

PARTNERSHIP



Public-Private Partnership for research

- Partnership between the EU, Member States and industry to fund research



ERA-NET Plus

**Joint
Technology
Initiatives**

AND PARTNERSHIP AT NATIONAL LEVEL

Public-Private Partnership for Education

Partnership to produce more and better qualified engineers and scientists for European photonics.

Partnership between photonics companies and educators.

- ✓ to get more children (particularly girls) interested in science
- ✓ to better align 3rd level photonics education with industry' needs, with the support of industry
- ✓ multidisciplinary and entrepreneurship





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