



## First project progress report

**Project no. 287575**

# Innopho21

## Innovation and Implementation Strategy Photonics21

Instrument: Coordination Action

Thematic Priority: Information Society Technologies

### D 5.4

Public Chart Set

Due date of deliverable: **Month 9**

Start date of project: 01.09.2011

Duration: 36

Project co-funded by the European Commission within the Seventh Framework Programme (2008-2011)		
Dissemination Level		
<b>PU</b>	Public	x
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	

Organisation name of lead contractor for this deliverable:

VDITZ

**The**  
**European Technology Platform**  
**Photonics21**  
**A Brief Portrait**

# **About Photonics**

## **A Key Enabling Technology**

## Photonics – The Science and Technology of Harnessing Light

***Photonics is the science and technology of the harnessing of light.***

***Photonics encompasses the generation of light, the detection of light, the management of light through guidance, manipulation and amplification, and most importantly its utilisation for the benefit of mankind .***

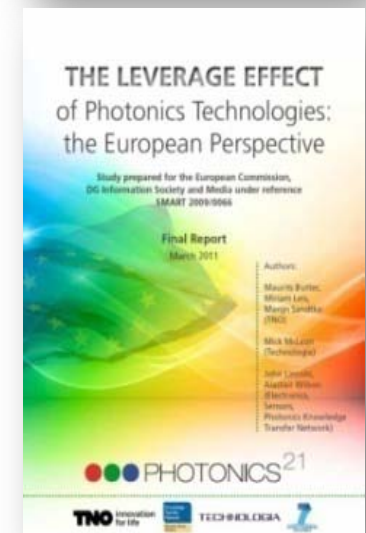
***Photonics bears the same relationship to light and photons as electronics does to electricity and electrons.***



*The future generation will rely on energy efficient lighting solutions © Philips*

# Photonics – A Key Enabling Technology with Enormous Economic Potential

- ▶ The current global photonics market is estimated to be €300 billion. Europe's share is ~ €60 billion - representing 20% of the total market.
- ▶ The European photonics industry has many market-leading industrial players and more than 5000 highly innovative SMEs.
- ▶ Photonics employs ~ 300,000 employees directly, with subcontractors employing many more.
- ▶ Between 2005 and 2008 this rapid growth resulted in more than 40,000 new jobs being created in Europe
- ▶ The estimated annual growth rate is ~ 8-10%. – estimated market size in 2015 is ~ € 480 bn according the KET-Report
- ▶ A EU commissioned study “The Leverage Effect of Photonics Technologies” estimates, that photonics positively impacts 10 % of the European economy
- ▶ Photonics contributes to the solution of many societal challenges like ageing society, energy efficiency and the knowledge society



## Photonic will Impact Most Areas of our Lives

- ▶ **Future internet infrastructure**, high speed fiber networks with multi-terabit capacity are backbone for web 2.0 & 3.0 products & internet of things
- ▶ **New laser-based manufacturing processes** will allow mass customization, rapid manufacturing and zero-fault production
- ▶ **New approaches in healthcare** moving from cost-intensive treatment after onset, to detection and prevention of disease at earliest possible stage
- ▶ **Intelligent lighting** based on LEDs, OLEDs, sensor networks and microprocessor management provides lowest energy consumption
- ▶ **Organic (hybrid) photovoltaics** and digital lighting control systems enable 'energy-positive' buildings
- ▶ **Photonic sensing and imaging** can monitor production processes, control power consumption and enable higher levels of security and safety
- ▶ **Integrated Components & Systems** are decisive for developing smart technologies for cost-effective manufacturing



# How Photonics can contribute to a more Sustainable Economy

## ▶ Eco Efficient Design

- ▶ Light weight construction – laser processing
- ▶ Material savings – precision laser cutting

## ▶ Eco Efficient Products

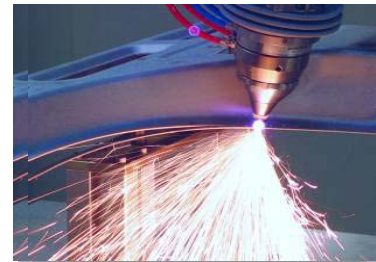
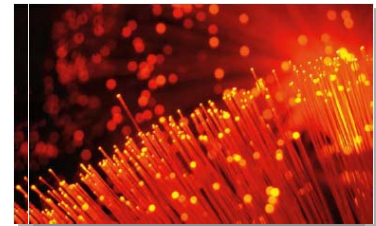
- ▶ Solid State Lighting
- ▶ Optical Fiber Network
- ▶ Organic Photovoltaics

## ▶ Eco Efficient Production

- ▶ Environmental monitoring – smart sensors
- ▶ Enhanced safety and security – smart sensors

## ▶ Eco Efficient Materials

- ▶ Organic electronics
- ▶ Nano structured materials



## Sustainable Products - Triple Win with Green Photonics

### Ecology

#### Less CO<sub>2</sub> emissions:

- LED/OLED can save an additional 30% energy in lighting by 2030
- Limit growth of energy consumption of ICT
- Sensors will enable reduction of power consumption during production and increase environmental safety



### Economy

#### Additional growth:

- Disruptive photonic technologies as key driver for profitable growth
- Save hundreds of billion Euros on global energy bill
- New market segments
- Driving force for more jobs
- Laser enable profitable production



### Society

#### Lower cost & higher quality of life:

- Energy saving saves money
- Sensor networks for safety
- Green technology & emotion
- More comfort
- Faster communication
- Higher safety (automobiles)
- No hazardous materials





# About Photonics21

## A European Technology Platform

## Photonics21: Our Aim - Unifying the Community

*Situation in 2005, before Photonics21 was established:*

- ▶ *European photonics community was not existing*
- ▶ *Photonics was not perceived as a strategically relevant technology by the European Commission or member state governments*
- ▶ The European Technology Platform **Photonics21** was founded in 2005 to unite the European photonics community and to speak with a single voice.
- ▶ Photonics21 is built on personal membership and is free of charge.
- ▶ Photonics21 unites the European photonics industry and research institutions.

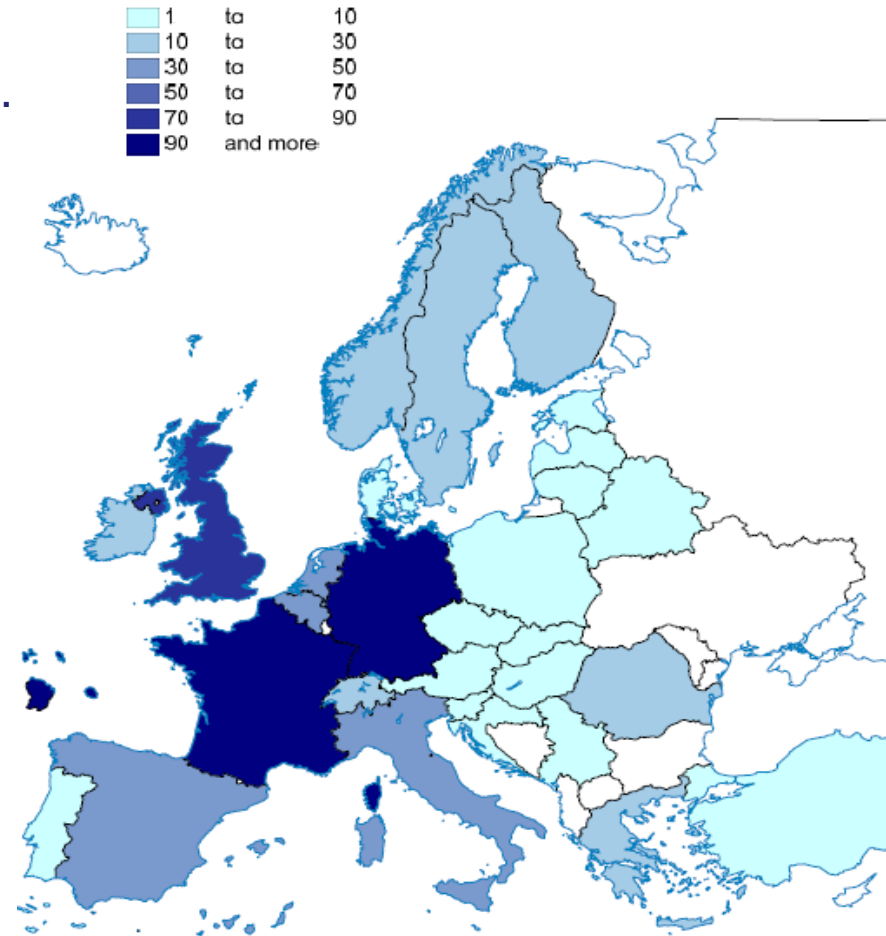


**Inform ♦ Network ♦ Meet ♦ Join**

## Our Members - Representatives from Industry, Academia and Politics

**Photonics21 members represent leading photonics stakeholders along the whole economic value chain throughout Europe.**

- More than 2000 members from all the EU countries
- Broad, representative membership composition
  - University, science and industry-associations
  - Multiple markets (telecommunication, lighting, manufacturing, health)
  - Throughout the value-chain (components-systems)
  - Most main industrial companies



## Photonics21 Executive Board

President:

To be elected soon

Vice Presidents:

Giorgio Anania, Chairman Cube Optics

Jaap Lombaers, Managing Director Holst Center, TNO

Malgorzata Kujawinska, Warsaw University of Technology

Bernd Schulte, COO Aixtron

Work Group Chairs:

Information &  
Communication

Alfredo Viglienzoni,  
Head New Business  
Development, Product  
Area IP & Broadband  
Ericsson

Industrial Produc-  
tion/ Manufacturing  
& Quality

Eckhard Meiners,  
CEO Trumpf Laser  
Marking Systems

Life Science &  
Health

Stefan Trager,  
Vice President Life  
Science Division, Leica  
Microsystems

Emerging Lighting,  
Electronics &  
Displays

Klaas Vegter,  
CTO Philips Lighting

Security, Metrology  
& Sensors

Peter Seitz,  
Managing Director  
Hamamatsu Photonics –  
Applied Research Europe

Design & Manu-  
facturing of Compo-  
nents & Systems

Mike Wale,  
Director Active Products  
Research Oclaro

Photonics Research ,  
Education & Training

Roberta Ramponi,  
Professor Politecnico  
di Milano

## Our Core – The Photonics21 Work Groups & Workshops

### Our target:

- Discuss & agree about photonics research and innovation topics and priorities as well as on political recommendations
- Provide input to the European Commission's Framework Programme & the different work programmes by updating the Photonics21 Strategic Research & Innovation Agenda and the Vision Papers
- Provide networking opportunities for the European photonics community

### Our set up

The seven Photonics21 Work Groups focus on photonics application areas (1-4) & on cross-sectoral issues (5-7):

- ▶ Work Group 1: Information & Communication
- ▶ Work Group 2: Industrial Manufacturing & Quality
- ▶ Work Group 3: Life Science & Health
- ▶ Work Group 4: Emerging Lighting, Electronics & Displays
- ▶ Work Group 5: Security, Metrology and Sensors
- ▶ Work Group 6: Design & Manufacturing of Components & Systems
- ▶ Work Group 7: Photonics Research, Education & Training



## Photonics21 Annual Meeting: Meet, Discuss, Inform, Network



*Pictures: Impressions from Photonics Annual Meeting 2012 in Brussels with Commissioner Kroes giving the Key Note Speech and got awarded by OSA as well as a High Ranking Panel discussion with MEP Malcolm Harbour and Zoran Stancic from DG INFSO as well as Executive Board Members Martin Goetzeler and Giorgio Anania from Photonics21*

# Young People Excellence – The Photonics21 Student Innovation Award

## Our Targets

- Honor excellent photonics research with a high industrial impact
- Promote photonics training & education within Europe
- Motivate and engage young people for photonics
- Draw attention from industry to young talents



Four times Photonics21 has awarded young people for Excellent Research



# Our Internet – Communications Platform and Member Area



Download Area



Europe FP 7 Calls



Events & News



Database



Member Area



Training & Education



Newsletter

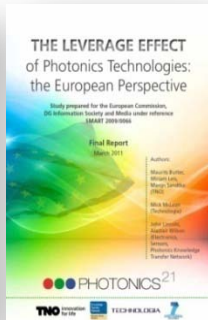


# Towards Horizon 2020

## Photonics21 Input & Recommendations

# Photoncis21: Our Milestones towards Horizon 2020

- ▶ Photonics21 input implemented into strategic documents
- ▶ Meetings with European Commission and Parliamentarians



Vision Document

Leverage Study

Final KET Report

Ph21 PPP-Proposal

Green Paper Horizon 2020

Parliamentarian Luncheon Event

Meeting with Neelie Kroes

April

May

June

June

July

September

March

3 Executive Board subgroups to work out details of PPP: strategic objectives - industry commitment - governance

Towards Horizon 2020

2011

2012

# Advocating Photonics as a Key Enabler - Our Voice was Heard

## Leverage study:

- ▶ Vice-President Kroes highlighted the huge economic impact of Photonics in Twitter

## Parliamentarian Luncheon Event:

- ▶ Strong support from 15 European Parliamentarians on Photonics PPP
- ▶ Photonics contribution to European competitiveness mentioned on personal webpage of MEP Carvalho

## Research Review, The Parliament:

- ▶ MEP Harbour: “European policymakers need to make sure that they... make Europe the photonics champion of the world”



# Horizon2020: Our Recommendations and Input

Our input → in Horizon2020 draft:



▶ **Focus:** Clear priorities for „Key Enabling Technologies“ ✓

▶ **Speed to market:** Inclusion of the entire value chain ✓



▶ **Simplification:** Reduced administrative burdens ✓

▶ **Know-How:** Highly skilled workforce ✓

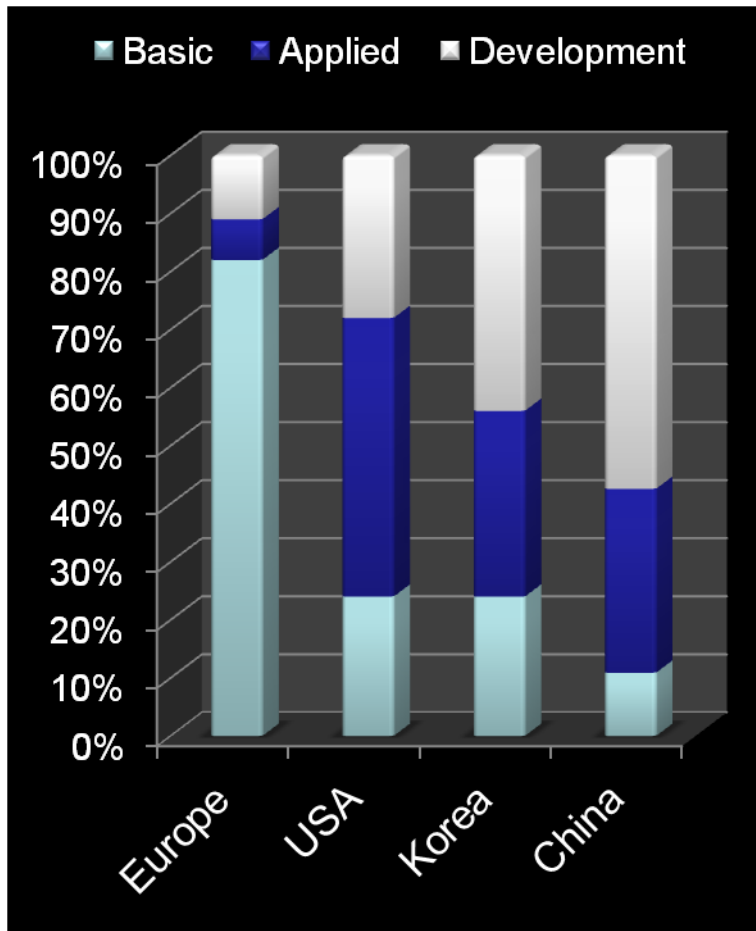


▶ **Critical mass:** Funding budget that makes a difference



▶ **Innovators:** Access to venture capital & SME support ✓

## Our Analysis: Europe is lagging funding along the Value Chain



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

### Benchmarking

- ▶ Many of Europe's competitor nations have a focus on translating basic science via technology building blocks into advanced processes, products and systems

### Our Recommendations

- ▶ Excellent R&D results – we have a world leading position
- ➔ **Continue – stay at the forefront**
- ▶ Our weakness – “Valley of Death”
  - slow transition from photonic inventions to industrial deployment
  - not sufficiently materializing on our scientific success & excellence

➔ **The Challenge – include Value Chain**

# Final KET Report: It is all About Overcoming the Valley of Death

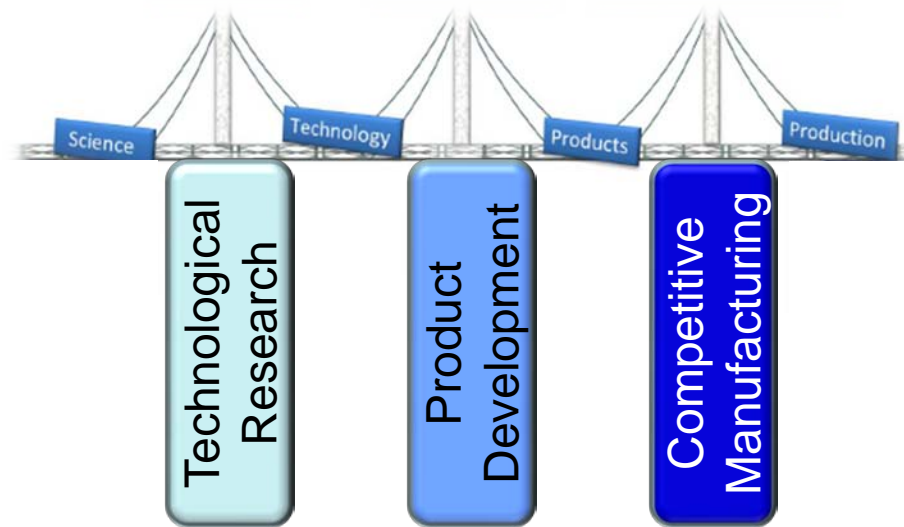
## Key messages:

- ▶ KETs are crucial to sustainable European economic growth
- ▶ Europe is failing in efforts to turn science into products, market share and jobs
- ▶ Refocus and rebalancing of EC Research and Innovation budget necessary



## A three pillar approach to bridge the valley of death:

- ▶ From basic science to technology
- ▶ From technology to products
- ▶ From products to large scale production



According to: High Level Expert Group on Key Enabling Technologies – Final Report, July 2011

## Founding a Photonics PPP in Horizon 2020 – Our 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 offer

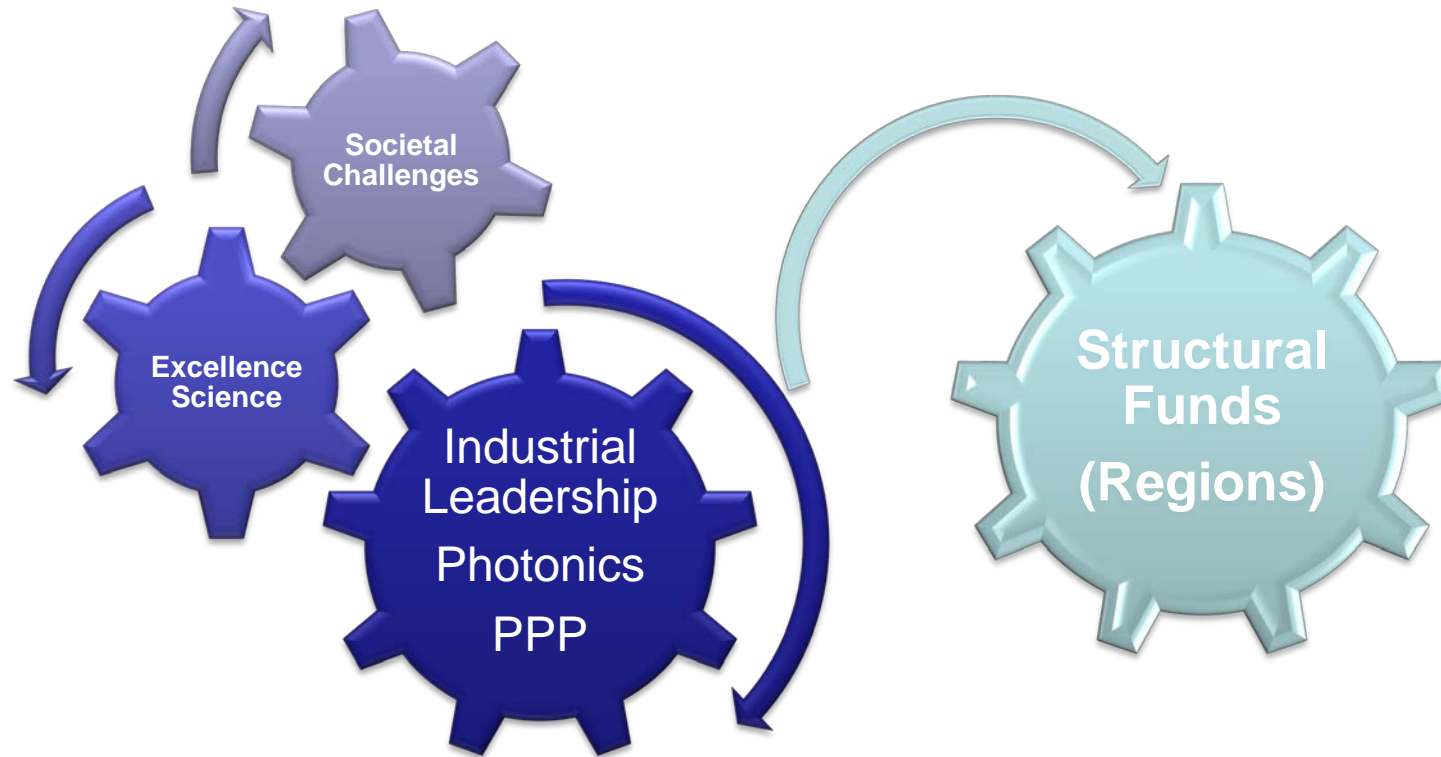
- ▶ Investing in Europe's long-term competitiveness and growth
  - 4:1 leverage EU funding by private investment → ~ 7 bn Euros
  - 70,000 – 100,000 additional jobs in Europe
- ▶ Measure success by Key Performance Indicators (KPIs)

## Our Integrated Approach in a PPP to bridge the Innovation Gap

- **Disruptive and Road-Map based Core Photonic Technologies**
  - Roadmap-based research – value chain approach, involvement of end users
  - Disruptive technology - breakthrough advances for disruptive research
- **Demonstration Programmes**
  - Deployment programmes to leverage EU infrastructure to create jobs..
  - Coordinated market pull/push measures seed and accelerate market penetration
- **Photonics Manufacturing Platforms – Manufacturing in Europe**
  - Generic photonic foundries – improve infrastructure for photonics manufacturing
  - Establish public-private pilot production facilities for industry/research
- **Innovative Photonics SMEs**
  - “Light touch’ open schemes
  - Fast-track funding allowing prototyping & short-term commercialization
- **Support Actions**
  - Education, training and skills development
  - Standardization & International Cooperation & Outreach.



## A Photonics PPP – Our Hub for reaching out to EU Programmes



- ▶ Photonics PPP aims to be the platform to reach out to multiple sources
- ▶ Make Photonic a dedicated priority in European funding programs
- ▶ Allow the combination of EU funding programmes and Initiatives

## Photonics PPP: Where we stand in the process and next steps

**Today**



Annual Meeting 2012  
Further coordination with and input from Board of Stakeholders on EB PPP proposal

Annual Meeting 2012  
Work groups start roadmapping activities towards a PPP

March 2012-  
Sep 2012  
Further Consultation with BoS and EC

Sep - Oct 2012  
Final Photonics21 PPP Proposal  
Negotiation with the EC

November 2012  
PPP roadmaps finalized

Dec 2012 / Jan 2013  
Approval Photonics PPP for Horizon 2020

**If you have any questions about Photonics21 you can contact the Photonics21 Secretariat:**

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**Thank you very much for your attention!**