Horizon 2020:
Research and Innovation in European Photonics

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Photonics Europe 2012 Industry Programme
Europe 2020 priorities and initiatives

1) **Smart growth:** developing an economy based on knowledge and innovation

   - Digital Agenda for Europe: create a single digital market based on fast internet and interoperable applications
   - Innovation Union: ...on major challenges for our society... and strengthen every link in the innovation chain

2) **Sustainable growth:** promoting a more efficient, greener and more competitive economy

   - Resource-efficient Europe
   - Industrial policy for the globalisation era: ... support business – especially small businesses – ... by supporting entrepreneurship and covering every part of the increasingly international value chain

3) **Inclusive growth:** fostering a high-employment economy delivering social and territorial cohesion

   - Agenda for new skills and jobs: helping people acquire new skills ... and ... modernising labour markets (... raise labour productivity...)

Photonics Europe, 18 April 2012
Investment in R&D is part of the solution to exit from the economic crisis
EU R&D Strategy

Policy actions

Key Enabling Technologies

Green Paper on SSL

Photonics Europe, 18 April 2012
Key Enabling Technologies initiative

High Level Group (25 Personalities)

Nanotechnology
Micro- & Nano-electronics
Photonics
Advanced Materials
Biotechnology
Advanced manufacturing systems

2nd HLG Meeting: 09 FEB 2011

Why KETs?
Strategic to develop advanced products for competitiveness and addressing societal challenges
Underpin significant value chains

http://ec.europa.eu/enterprise/hlg_kets.htm
Key Enabling Technologies High Level Expert Group

- Integrated KETs innovation policy at EU level (strategy, financing, IP)
- Need to cover the full R&D&I cycle and the full value chain
- Build, strengthen and retain KETs skills
Research in the EU
EU’s 7th Research Framework Programme: 2007-2013
Budget for 10 thematic areas: €32,4 B
Photonics in FP7 ICT Theme

~450 M€ of EU funding
> 100 R&D Projects
Photonics today... and tomorrow

- **Photonics, a Key Enabling Technology for Europe**
  - Current global market: 300 B€ → Share of Europe > 20%
  - 5000 Companies in Europe (mostly SMEs!) and more than 300,000 employees
  - Photonics has market potential impact of >10 % of the European economy

- **Future prospects:**
  - Annual growth rate > 8%. A global market in 2020 of 600 B€
  - S&T advances in many applications: all optical communication networks, energy-efficient lighting and manufacturing, photonic diagnostics and new laser-based therapeutic treatments in health care, photonics sensors for safety and security, ...
Grand Societal Challenges & Photonics

Healthcare in an ageing society
- Bio-photonics for point of care diagnosis
- New ways for detecting, treating and preventing diseases

Green economy
- Energy efficient lighting: LED and OLED
- Efficient and cheap solar cells: organic photovoltaics
- Others (clean manufacturing, energy efficient communications, etc.)

Sustainable Lifestyle
- Terabit communication networks
- All-optical computing or quantum computing

Security & Safety
- Photonics sensors for security

...
Horizon 2020
The EU Framework Programme for Research and Innovation: 2014-2020

EC proposal: 80 B€

- **Societal challenges**
  *Health & Ageing, Energy, Transport, Resource Efficiency, Climate Challenge, ...*

- **Industrial Leadership**
  *Leadership in Enabling Technologies (ICT, Nanotechnology materials, Biotechnology, Production Technologies, ...)*

- **Excellent Science**
  *ERC, Marie Curie actions, FETs, Research infrastructures*

http://ec.europa.eu/research/horizon2020

Photonics Europe, 18 April 2012
Horizon 2020: 80 B€
Objectives and structure

Europe 2020 priorities

Tackling Societal Challenges
- Health, demographic change and wellbeing
- Food security, sustainable agriculture and the bio-based economy
- Secure, clean and efficient energy
- Smart, green and integrated transport
- Climate action, resource efficiency and raw materials
- Inclusive, innovative and secure societies

Creating Industrial Leadership and Competitive Frameworks
- Leadership in enabling and industrial technologies
  - ICT
- Nanotech., Materials, Manuf. and Processing
- Biotechnology
- Space
- Access to risk finance
- Innovation in SMEs

Excellence in the Science Base
- Frontier research (ERC)
- Future and Emerging Technologies (FET)
- Skills and career development (Marie Curie)
- Research infrastructures

Photonics Europe, 18 April 2012
Leadership in enabling & Industrial Technologies

Creating Industrial Leadership & Competitive Frameworks

Leadership in enabling and industrial technologies

- ICT
  - A new generation of components and systems
  - Next generation computing
  - Future Internet
  - Content technologies and information management
  - Advanced interfaces and robots
  - Micro- and nano-electronics and photonics

- Nanotechnologies
- Advanced Materials
- Advanced Manufacturing and Processing
- Biotechnology

~30% to cross-cutting KETs

KETS

13.8 B€
1.6 B€
3.8 B€
5.9 B€
0.5 B€
Implement Photonics in Horizon 2020 through a Public Private Partnership (PPP)?

PPP → A contractual agreement which specifies:
- The objectives of the partnership
- The respective commitments of the partners
- Key performance indicators
- Outputs to be delivered including the identification of research and innovation activities that require support from Horizon 2020

Long-term commitment from all partners based on a shared vision and clearly defined objectives
WP 2013 is the final year of Framework Programme 7. - and a bridge to H2020

Will probably call for

- Dedicated actions, supporting an open innovation model for SMEs, providing access to facilities and services, etc.
- Actions to stimulate innovation by involvement actors across broader value chain.
- Piloting and showcasing innovative photonics based solutions in the application environment (e.g. biophotonics in medical/clinical environment).
- As well as R&D actions targeting various applications areas (strong emphasis on value chain)
In Conclusion

■ Photonics in the last year of FP7 ICT
  ➔ New calls for R&D in second half of 2012

■ Horizon 2020 and Photonics
  – Public Private Partnership
  – Multi-annual Strategic Research and Innovation Agenda
  ➔ Be ready in first half of 2013

■ Emphasis is on growth and jobs!

■ Skills creation (technical as well as entrepreneurial)

■ Work beyond silos!

■ Ambassadors ➔ Promoting Photonics!
Thank you for your attention!

Find out more:

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