



Photonics in Europe – From Science to Market

Burgdorf, 27 June 2013

EU Photonics in Horizon 2020

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EU 2020 Strategy & Photonics

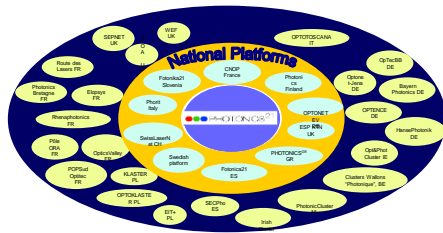
Policy actions



Key Enabling Technologies

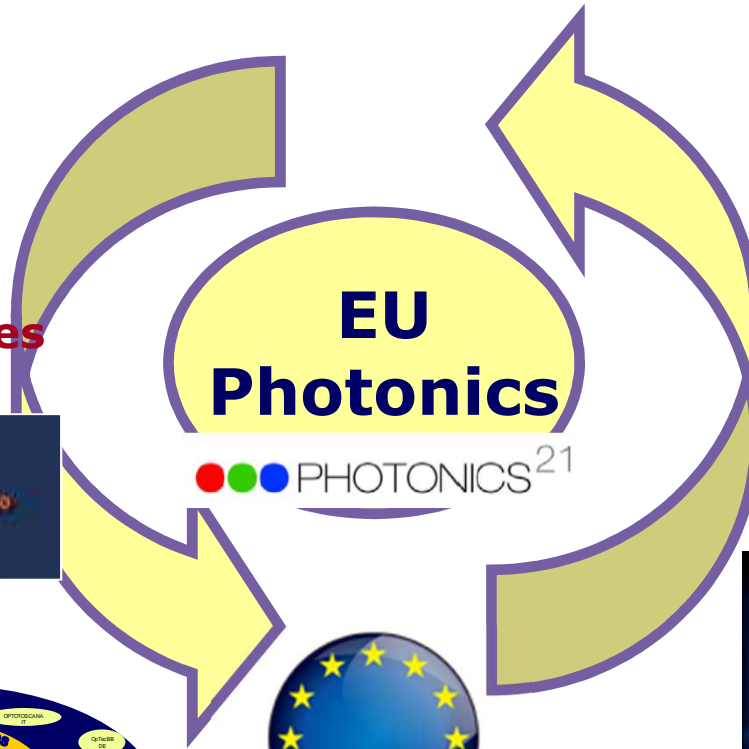


Green Paper on SSL



Photonics Clusters

Research & Innovation actions



Photonics in Horizon 2020



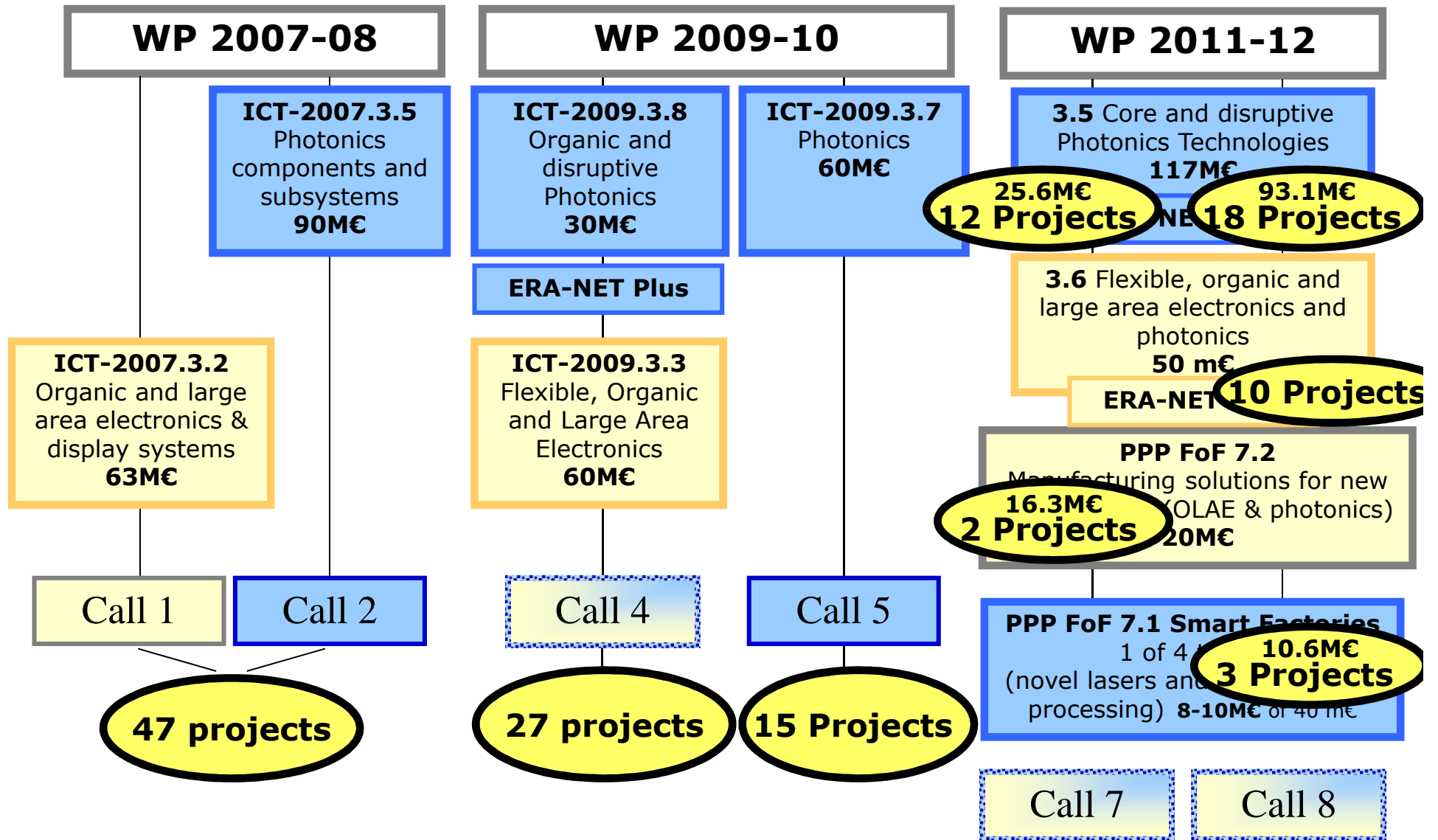
Photonics R&I projects 2007-2012: 96 projects, ~355 M€

Areas	Number of Projects		
Optical data Communications	24 84 M€	2 IP, 20 STREPs, 1 NoE, 1 ERANET+	
Lasers and Manufacturing	5 16 M€	5 STREPs of which 4 from FoF PPP	
Biophotonics	17 75 M€	4 IPs, 11 STREPs, 1 NoE, 1 ERANET+	
SSL Lighting, Displays, & OPVs	14 77 M€	6 IPs, 6 STREPs 2 CIP SSL pilots	
Sensors for safety & security	16 44 M€	1 IP, 15 STREPs	
Technology Integration Platforms & Nanophotonics	12 49 M€	3 IPs, 6 STREPs, 2 CSA, 1 NoE	
Cross-cutting Support Actions	8 8 M€	Education and training, Roadmapping, Coordination between regional/national clusters, Coordination of the Photonics research constituency, Access to advanced technologies, Support to SMEs	



FP7-ICT WP 2007-12

Photonics and Organic Electronics



An Overview of Calls for proposals

ICT Obj. 10.1
 "EU-Japan research and development Cooperation"

Photonics:
1,5M€ of 9M€
 One STREP
 (Optical communications)

PPP FoF Obj. 7.2
 "Equipment assessment for sensor and laser based applications"

15-20 M€
 of 33.5 M€

ICT Obj. 3.3
 "Heterogeneous Integration of KETs"

Photonics + OLAE:
20-25 M€
 of 64 M€

ICT Obj. 3.4
 "Advanced computing, ... systems"

Optical interconnect in target outcome a)

Photonics:
 Part of IP

ICT Obj. 3.2
 "Photonics"

61M€

Call EU-Japan
 DDL 29 Nov 12

Call FoF
 DDL 4 Dec 12

Call 10
 DDL 15 Jan 13

Call 11
 DDL 16 Apr 13

1 project

2 projects

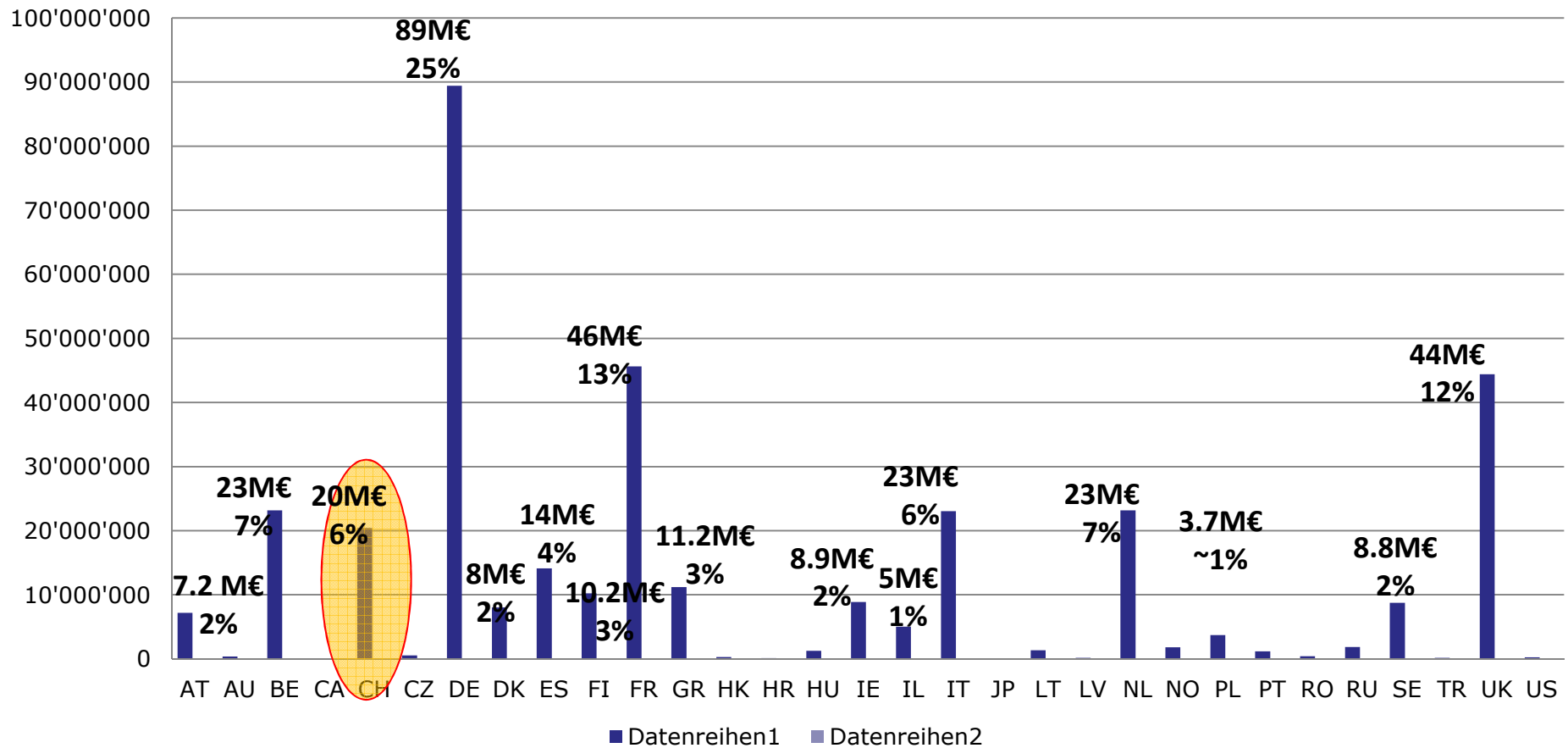
**5 projects +
 1 PCP project in SSL**

20 projects

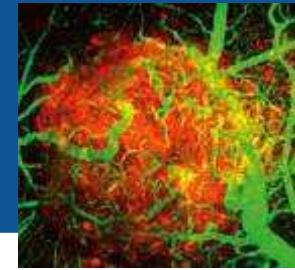
projects either under negotiation or to be negotiated

Participation in ICT FP7 Photonics R&I

EU Photonics - Funding per country - FP7 ICT Calls 1-9 Total ~355 M€



Photonics S&T Challenges: Bio-photonics



Understanding, Preventing, Treating Diseases

→ high sensitivity, selectivity, resolution, depth of penetration

Light is the key to observe and understand life on a cellular level

Measures contact-free, fast, and precisely

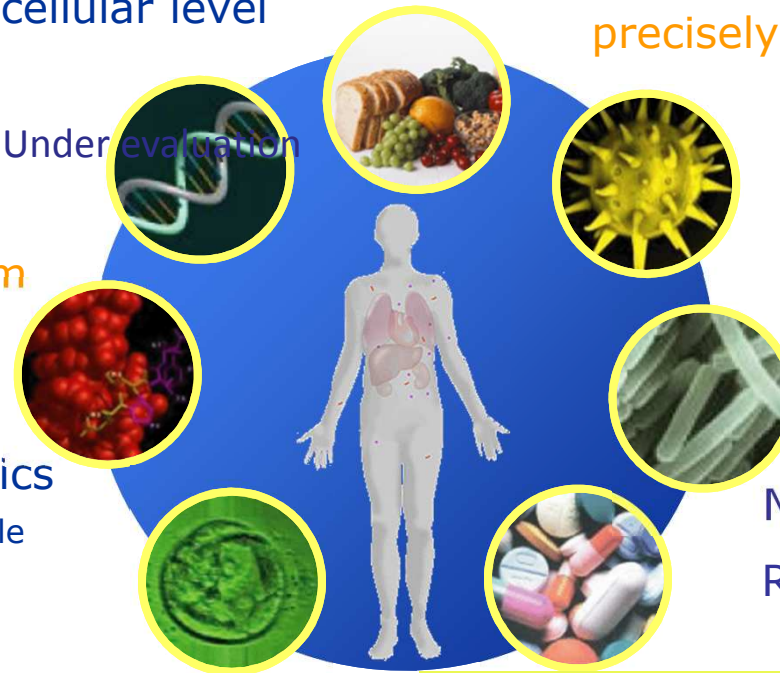
Manipulate living cells without damaging them

Under evaluation

Oncology: In-vivo fluorescence diagnosis
Ophthalmology, sepsis,
...

Point-of-care diagnostics involving low cost & disposable solutions

New Drugs,
Regenerative medicine



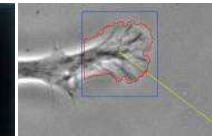
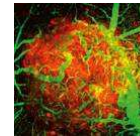
Courtesy Kishan Dholakia / SUPA

Biophotonics funding 2007-2013



19 projects
76 M€

4 IPs, 13 STREPs,
1 NoE,



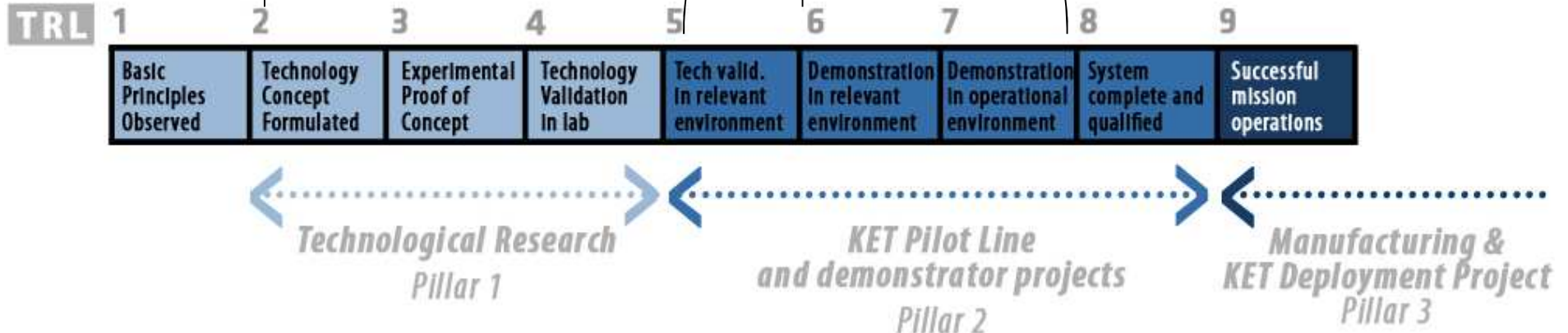
10 M€

11 proposals received.
Under evaluation



15 M€

26 proposals received.
Under evaluation



Biophotonics funding 2007-2013



CIP pilot actions: Biophotonics solutions for diagnosis, monitoring or treatment of disease



Funding Instrument: Pilot B – 3-4 actions for up to 10 M€ in total

Focus and outcomes:

- Demonstrate in real application settings innovative biophotonics based solutions for the **diagnosis, monitoring** or **treatment** of disease.
- Further develop, improve and assess the solutions under a sufficient range of realistic conditions and disease profiles.
- Outcome: solutions which have been evaluated by professional end-users and which demonstrated **significant advantages** with respect to current approaches, with the ultimate goal being their introduction into the market place.



BiophotonicsPlus

European Competition for Collaborative R&D Funding

Participating
Countries & Regions



CATALONIA



FLANDERS



GERMANY



ISRAEL



LATVIA



TUSCANY

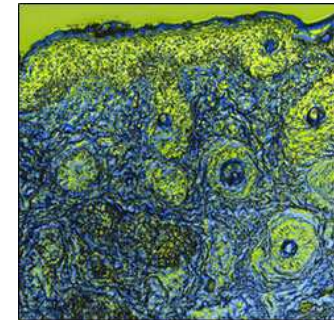


UNITED KINGDOM

ERANET+

15 M€ Cofunded by European Commission
and

**Germany, Israel, Tuscany (Italy), United Kingdom, Flanders (Belgium),
Catalonia (Spain), Latvia**



Scope

Line A. Translation into practical applications

- primary funding line (use of the about 80 % of the available funds);
- addresses end-user-oriented industrial research projects.

Line B. Investigation on new tools or methods

- secondary funding line (use of up to 20 % of the available funds);
- smaller projects only (up to 1 M€ total costs);
- addresses projects at an early stage of industrial research.



Horizon 2020 R&I in the EU: 2014-2020

EC proposal: 80 B€



**Horizon
2020**

■ **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

Photonics

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



Leadership in enabling & Industrial Technologies



Creating Industrial Leadership & Competitive Frameworks

Leadership in enabling and industrial technologies **13.8 B€**

■ ICT

8 B€

- 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**

1.6 B€

■ Nanotechnologies

■ Advanced Materials

■ Advanced Manufacturing and Processing

■ Biotechnology

3.8 B€

0.5 B€

**KETS
5.9 B€**

■ Space

*~30% to
cross-cutting KETS*



Photonics in Horizon 2020 A Public Private Partnership (PPP)



Implement Photonics in Horizon 2020 through a PPP

- The proposed Horizon 2020 legal text foresees a potential PPP for Photonics
- ~1.6 B€ foreseen for both photonics and micro- and nano-electronics



PPPs in Horizon 2020

[COM(2011) 809 final of 30 NOV 2011]

Article 19: Public-Private Partnerships

1. *Horizon 2020 may be implemented through PPPs where all the partners concerned commit to support the development and implementation of R&I activities of strategic importance to the Union's competitiveness and industrial leadership or to address specific societal challenges*
2. *Involvement of the Union in those partnerships shall make use of the pre-existing and lean governance structures and may take one of the following forms:*
 - b) entering a contractual agreement between the partners ..., which specifies the **objectives** of the partnership, respective **commitments** of the partners, **key performance indicators**, and **outputs** to be delivered, including the identification of research and innovation activities that require support from Horizon 2020
3. *Public-private partnerships shall be identified in an open and transparent way based on all of the following criteria:*
 - (a) the added value of action at Union level
 - (b) the scale of impact on industrial competitiveness, job creation, sustainable growth and socio-economic issues, including societal challenges
 - (c) the long-term commitment from all partners based on a shared vision and clearly defined objectives;
 - (d) the scale of the resources involved and the ability to leverage additional investments in research and innovation
 - (e) a clear definition of roles for each of the partners and agreed key performance indicators over the period chosen

Photonics PPP and Horizon 2020



Strategic R&I Roadmap

TOWARDS 2020 – PHOTONICS DRIVING ECONOMIC GROWTH IN EUROPE

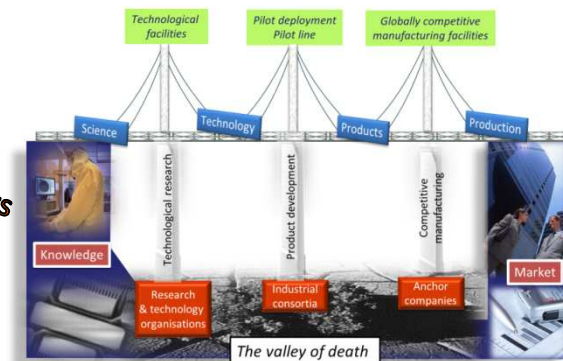
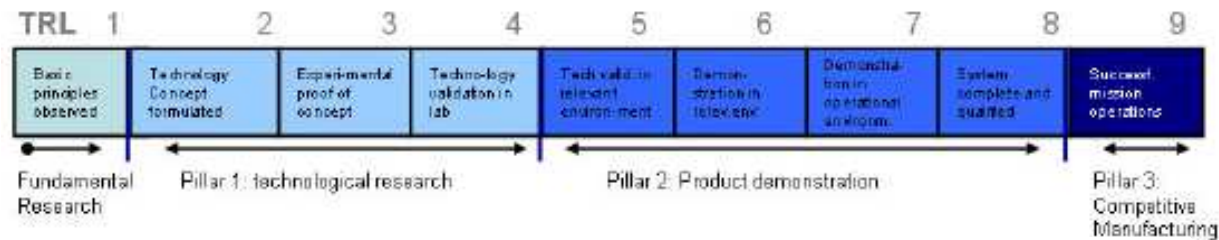
Multiannual Strategic Roadmap 2014–2020

●●● PHOTONICS²¹

Brussels, 29-30 April 2013

Major Objectives

- Address the full Innovation and Value Chain
- Strategic Alliances across the value chain
- Bridge the Valley of Death





Photonics PPP: Commitments

■ Commitments of the Private Partner:

- To invest in growth & jobs (in Europe)
- To operate in open & transparent set-ups (no “closed shops”):
representativeness – openness – transparency → Governance!
- To provide data at regular periods on KPIs & milestones for monitoring progress or exploitation in Europe (as a sector and individually)

■ Commitments of the Public Partner (EC):

- To invest on the PPP [ceiling budget over the PPP lifetime]
- To propose for decision an annual WP agreed within the PPP
- To use transparent accounting methods to measure contribution of the private partner

■ Other Issues:

- Member States can be involved in a PPP
- Coordination with national / regional levels
(smart specialisation under the new Cohesion policy)

Photonics PPP

What will it mean for you?



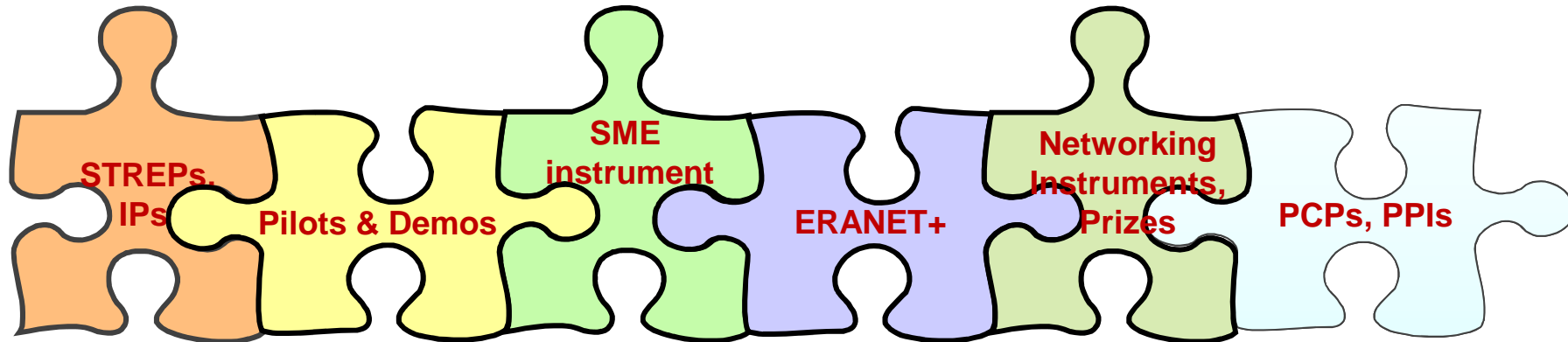
WHAT DOES CHANGE

- Long-term commitment from the EC
(overall indicative budget for the PPP)
- Long-term commitment by industry to invest + demonstrate it!
- The definition of the R&I priorities for the work-programmes of Horizon 2020
- KPIs and their monitoring



WHAT DOES NOT CHANGE

- The rules for participation → those of Horizon 2020
- Final responsibility for Work Programme stays with EC and is subject to comitology
- Implementation remains with the EC
(selection of proposals, negotiation, review of progress and payments)

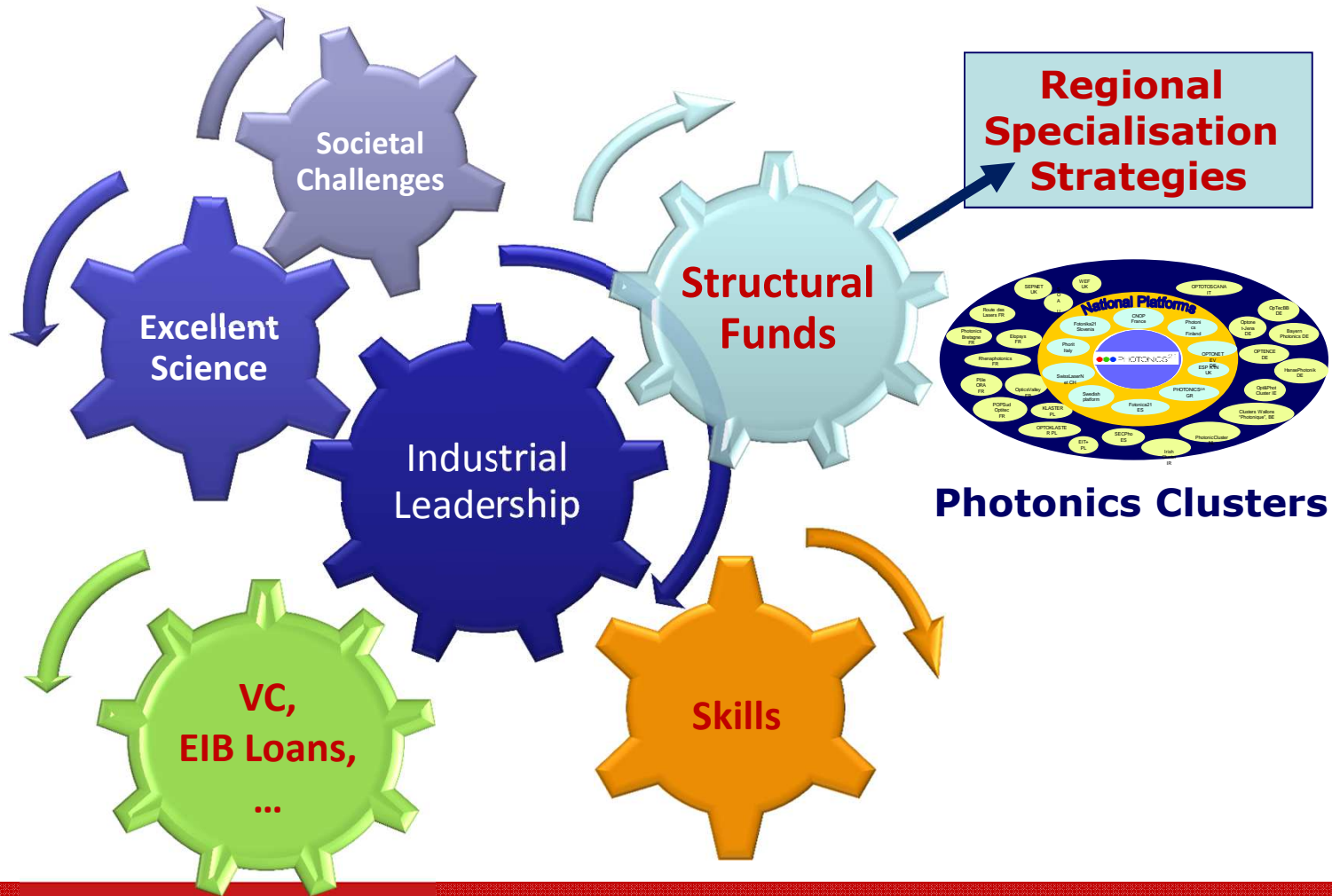


- **R&D:** Roadmap-based and disruptive R&D
- **Innovation:**
 - *TRLs 5-8: Pilot manufacturing lines; Large scale demonstration activities; ...*
 - *Innovative SMEs: open schemes; access to technology and support services*
 - *Support Actions: Inducement prizes; Procurement of Research and Innovation; Support to inter-cluster collaboration*
- **Coordination & Networking**
 - *Coordinated R&I Activities with national and regional programmes (e.g. ERANETs)*
 - *Networking / Attracting / Educating people: Road-mapping and Networking, Education, Training and skills development; Outreach, ...*



Photonics PPP

A Leverage Effect for European Growth!



PPP is at the core of an industrial strategy for Europe



Photonics PPP in Horizon WP 2014-2020

Photonics PPP – Work programme 2014

RTD	1. Optical communication technologies for data centres 2. Beam delivery chain for high power lasers for manufacturing 3. Biophotonics for low-cost screening of diseases 4. Photonics for imm visualisation systems 5. Cost-effective mid 6. Electronic-Photon 7. Disruptive Research
Innovation	8. Pilot deployment of 9. Large-scale deploy 10. Pilot line(s) for III
ERANETs	Actions with the Mer
Other Actions	1. Networking, Coord 2. Inducement prizes

Photonics PPP – Work programme 2015

RTD	1. Optical data communication technologies for SW defined optical petabit networks 2. Optical data communication technologies for ubiquitous broadband fibre access networks 3. High-throughput manufacturing 4. Circuit technology for PICs 5. Emerging technologies 6. Ubiquitous broadband 7. S 8. States 9. to Researchers and SMEs and
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Work in progress!

2014 WP on Cross-Cutting KETs

RTD	1. New materials and devices for OLEDs and displays
Innovation	2. Open system architectures for SSL

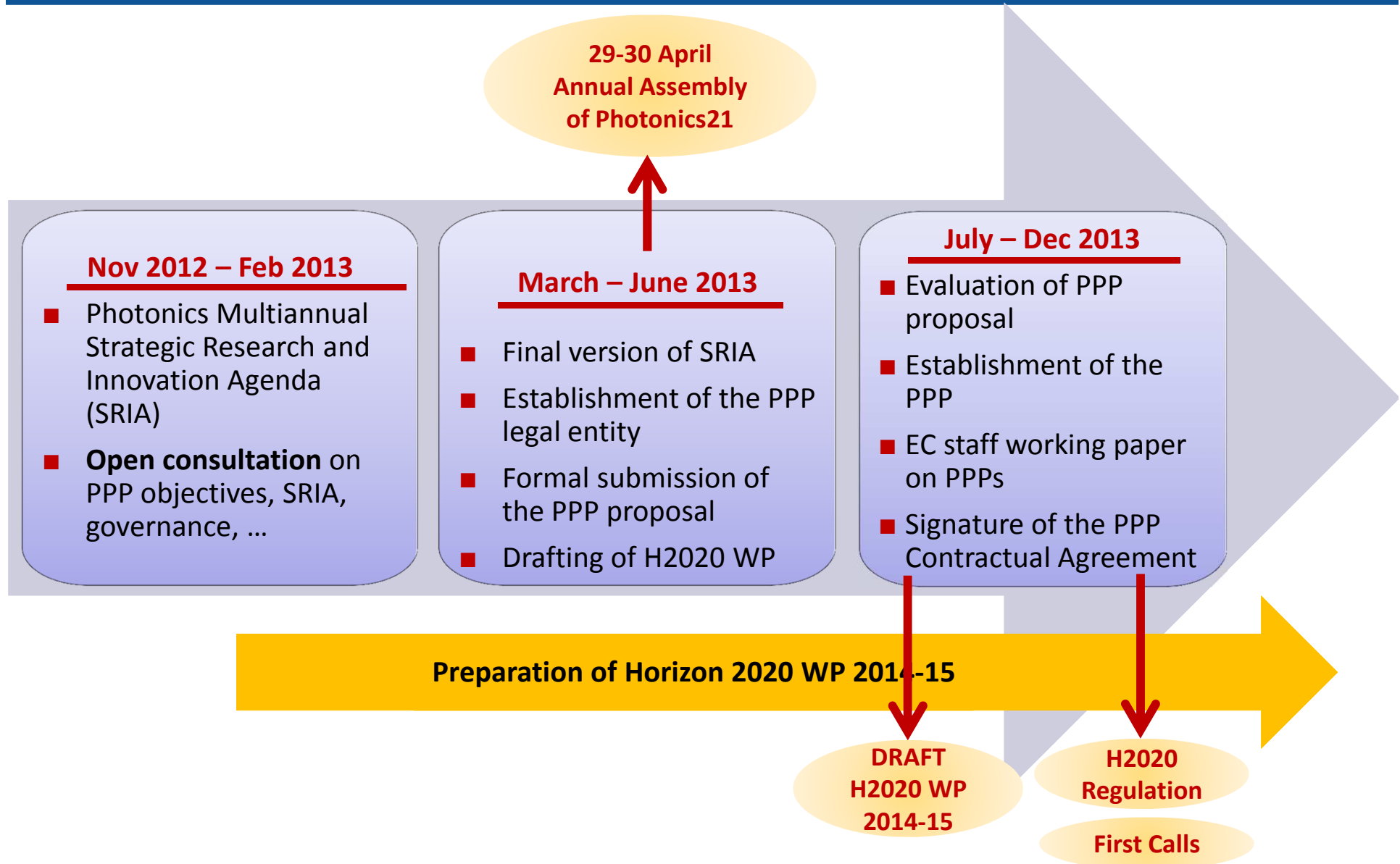
2015 WP on Cross-Cutting KETs

Innovation	1. ICT-KET integrated platforms for healthcare and well-being 2. Pilot line for OLEDs on flexible substrates 3. Pilot line for analytical mid-infrared (MIR) micro-sensors 4. Pilot line for Silicon photonics
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PPP Factories of the Future

RTD	1. Zero-defect manufacturing 2. Additive Manufacturing and laser printers
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Roadmap towards Photonics PPP



- **25 June 2013: press release on conclusion of negotiations on Horizon2020**

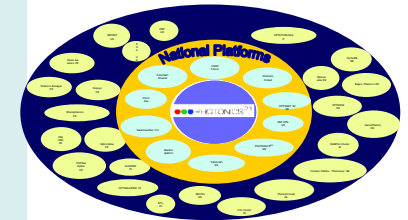
(<http://ec.europa.eu/research/index.cfm?pg=newsalert&year=2013&na=na-250613>)

- **H2020: from Science to Market**

- **The PPP and role of clusters**

- **ICT event 2013 in Vilnius (06-08 November)**

<https://ec.europa.eu/digital-agenda/en/ict-2013>



Photonics Clusters



Photonics in FP7-ICT - see:

<http://cordis.europa.eu/fp7/ict/photonics/>