NCP meeting
13 May 2011, Brussels

ICT WP2011-2012 – call 8:

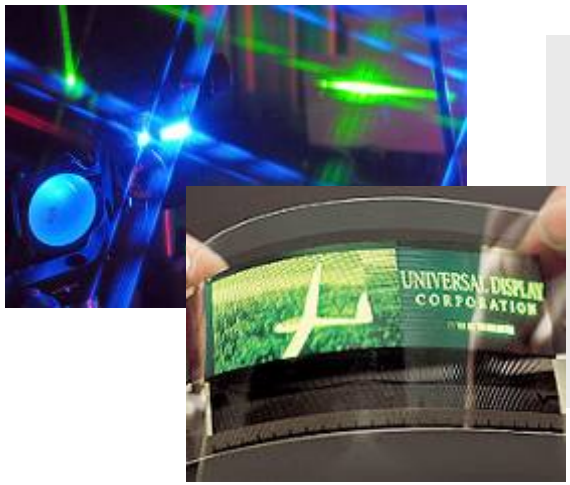
Objective 3.5: Core and Disruptive Photonic Technologies

DG INFSO Photonics Unit

Bart Van Caenegem

Project Officer

ICT WP 2011-2012
Priorities for Photonics and OLAE



- Reinforce European strengths in key application sectors and technologies
- Create **breakthrough advances** for new products and markets

Supplemented by actions to:

- Foster cooperation with Member States and support coordination of **innovation clusters, national platforms** and **Photonics21 ETP**
- Support **SMEs**, and **training & education** leading to a competitive advantage of European photonics and OLAE industry

Photonics and OLAE in FP7:

89 R&D currently running projects

Budget 300 M€

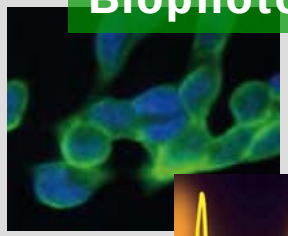
Manufacturing

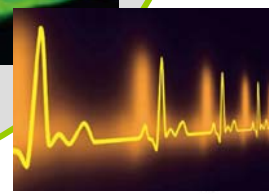
Safety & Security

Lighting & Display

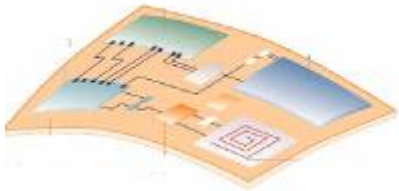
Photonics and OLAE Technologies

Biophotonics



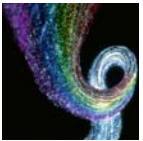


Flexible electronics & Smart Textiles



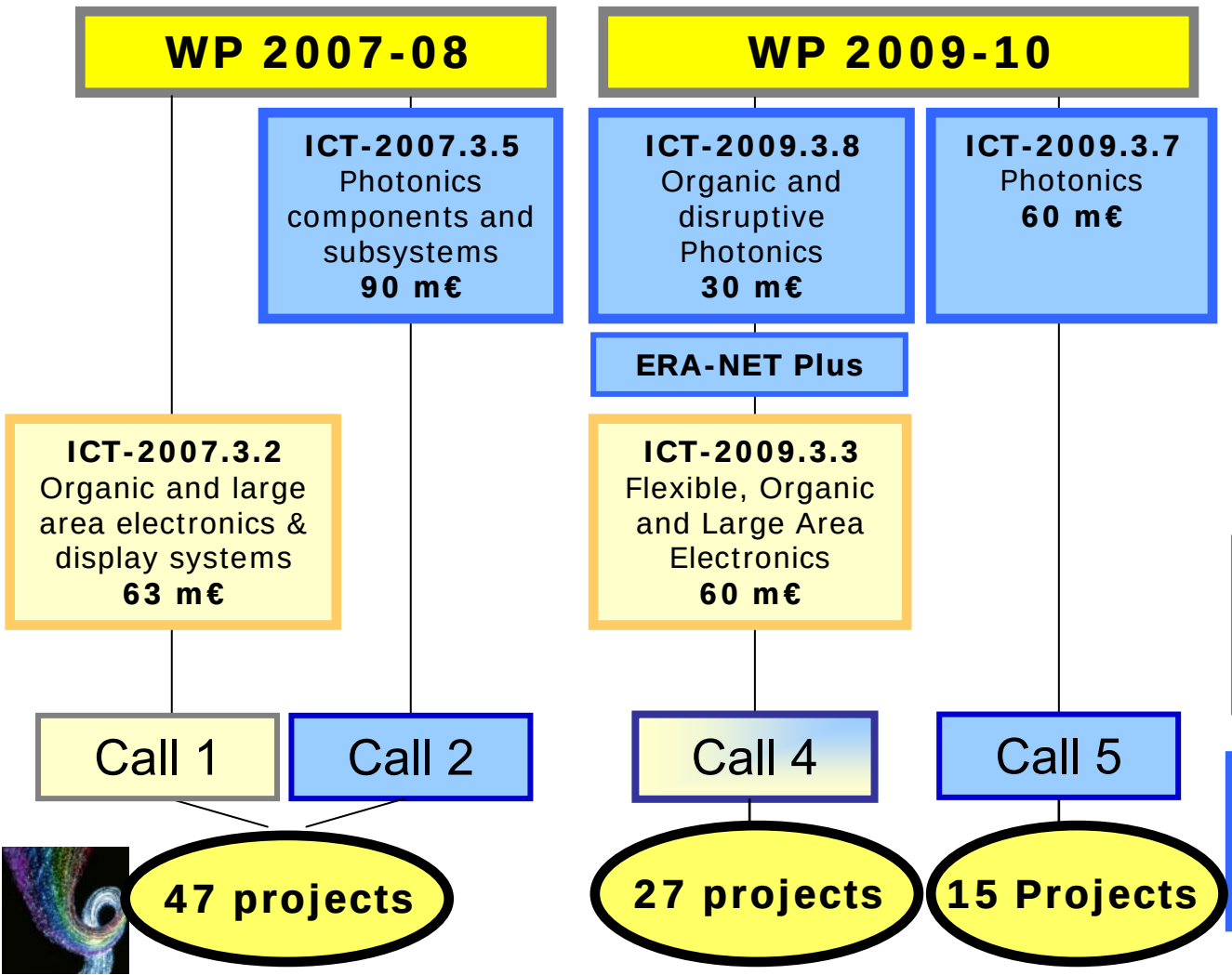
Organic PVs

Communications



European Commission
Information Society and

Photonics and Large Area & Organic Electronics: FP7 budget evolution



ICT WP 2011-12

Challenge 3: Alternative Paths to Components and Systems

Objective 3.5 "Core and Disruptive Photonic Technologies"

117 M€

a) Core photonic technologies

Application-specific photonic components & subsystems for:

1. Optical data communications
2. Biophotonics for early, fast and reliable medical diagnosis of diseases
3. Imaging & sensing for safety and security
4. Lighting and displays

Cross-cutting technology:

5. Photonics integration platforms — IP

Call 8, 2011 IP + STREP

b) Disruptive photonic technologies → Call 7, 2010, STREP

c) ERANET-Plus action → Call 8, 2011, EN+

d) Pre-Commercial Procurement action → Call 8, 2011, CP

e) Coordination and Support actions → Call 7, 2010, CSA

including ERA-NET action

Objective 3.5 "Core and Disruptive Photonic Technologies"

a) Core photonic technologies

Call 8, opens 20 July 2011, closes 17 Jan 2012, 79 M€

Target Outcomes:

Advance R&D in core photonic technologies. Focus is on:

1. **Application-specific photonic components and sub-systems**
   Priority is on novel or 'break-through' approaches, rather than incremental developments
2. **Cross-cutting technology for device integration**

→ **Actions should be driven by user-requirements**

Expected Impact:

1. **Reinforce European industrial leadership, competitiveness and market share and/or provide significant societal impact**
2. **Secure a European manufacturing base for integrated components and secure industrial leadership**

Objective 3.5 "Core and Disruptive Photonic Technologies"

a.1 - Optical data communications

IP & STREP

Call 8, opens 20 July 2011, closes 17 Jan 2012

i. Communication networks: more transparent, dynamic, energy efficient and faster

- **Core networks:** Technology for truly cost effective transport at 100 Gb/s per channel, scalable towards 100 Tb/s systems;
- **Access networks:** Affordable technology enabling 1-10 Gb/s per client over more than 100 km

ii. Optical interconnects:

- Cost and energy effective technology for Tb/s optical links in short range communication
- Applications range from on-board and board-to-board links at smaller scale to links in data centres and LAN

"Radio-over-fibre" techniques (in access or LAN networks)

→ Consortia should include researchers, component manufacturers and suppliers of communication equipment

a.2 - Biophotonics for early, fast and reliable medical diagnosis

Call 8, opens 20 July 2011, closes 17 Jan 2012

IP & STREP

- Early, fast and reliable diagnosis of diseases
  (e.g. cancer, infectious and eye-related diseases)
- Applications: From point-of-care diagnosis to functional imaging
- Typical issues: High sensitivity, selectivity, resolution, depth of penetration
- Emphasis on strongly interdisciplinary work involving also medical/biomedical end-users
- Technical results should undergo preclinical validation, with clinical trials being excluded

a.3 - Imaging and sensing for safety and security

IP & STREP

Call 8, opens 20 July 2011, closes 17 Jan 2012

i. **CMOS integrated,** high-performance mega-pixel **image sensors** operating at room temperature and low power. Focus is on:
   - **Single-photon detection** (video-rate readout speed, very high dynamic range)
   - **Functional integration based on smart pixels** (sub-picosecond time resolution, hyper-/multi-spectral resolution, polarisation sensitivity)

ii. **Widely tuneable** high-performance **photonic sources** for highly sensitive, selective and reliable **detection of hazardous substances**

Overarching issues:

- Design goals: **compact** and **cost-effective** devices
- Technical results should be **validated** for **safety and security applications**

→ **Consortia should include researchers, component manufacturers and suppliers of safety & security imaging/sensing equipment**

a.4 – Lighting and Displays

IP & STREP

Call 8, opens 20 July 2011, closes 17 Jan 2012

High brightness LEDs and light engines

Focus on:

- Improved efficacy at high brightness (warm white with efficacy > 130 lm/W, CRI ≥ 90, consistent colour over 25000 hours)
- High brightness, high efficiency green components intensity peak around 540 nm
- Novel approach to white components (e.g. new phosphors, monolithic sources, hybrid approaches)

→ **System integration issues may be addressed (to some extent)**

→ **Significant system / operating cost reduction potential expected**

→ **Consortia should involve LED suppliers and/or manufacturers**

Objective 3.5 “Core and Disruptive Photonic Technologies”

a.5 – Cross Cutting Technology

Call 8, opens 20 July 2011, closes 17 Jan 2012

Only IP

Photonics integration platforms for high volume manufacturing of photonic integrated circuits ("PICs") that combine active and passive components

- Address a range of **different application fields**
- Address also the relevant **design, modelling and simulation tools** and **generic manufacturing and packaging technology**
- Present a **credible route to industrial manufacturing in Europe**
- The technology must be **scalable** for increasing PIC complexity

b) Disruptive Photonic Technologies

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 20 M€

Only STREP

Disruptive photonic technologies

... are technologies at the proof-of-principle stage that offer a potential break-through in functionality, performance, component size or cost

...often exploit effects at the limits of light-matter interaction (e.g. plasmonics, nano-photonics, ...) or new materials

In Call 7

- **Objective**
  - Bring them from the research lab closer to applications
  - Demonstrate their industrial potential through a functional component
- **Expected impact**
  - Longer-term potential for industrial leadership or societal benefits
  - Opportunities for new applications

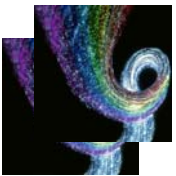
Objective 3.5 "Core and Disruptive Photonic Technologies"

c) ERANET-Plus action

Call 8, opens 20 July 2011, closes 17 Jan 2012, 10 M€

- A **joint call for proposals** on a photonics topic of strategic interest, **involving national and/or regional grant programmes**
- **Expected Impact:**

  Foster cooperation and alignment between national/ regional/ EU-wide research programmes in topics of strategic interest



d) Pre-Commercial Procurement (PCP)

NEW

Call 8, opens 20 July 2011, closes 17 Jan 2012, 3 M€

PCP action in Photonics

CP-CSA

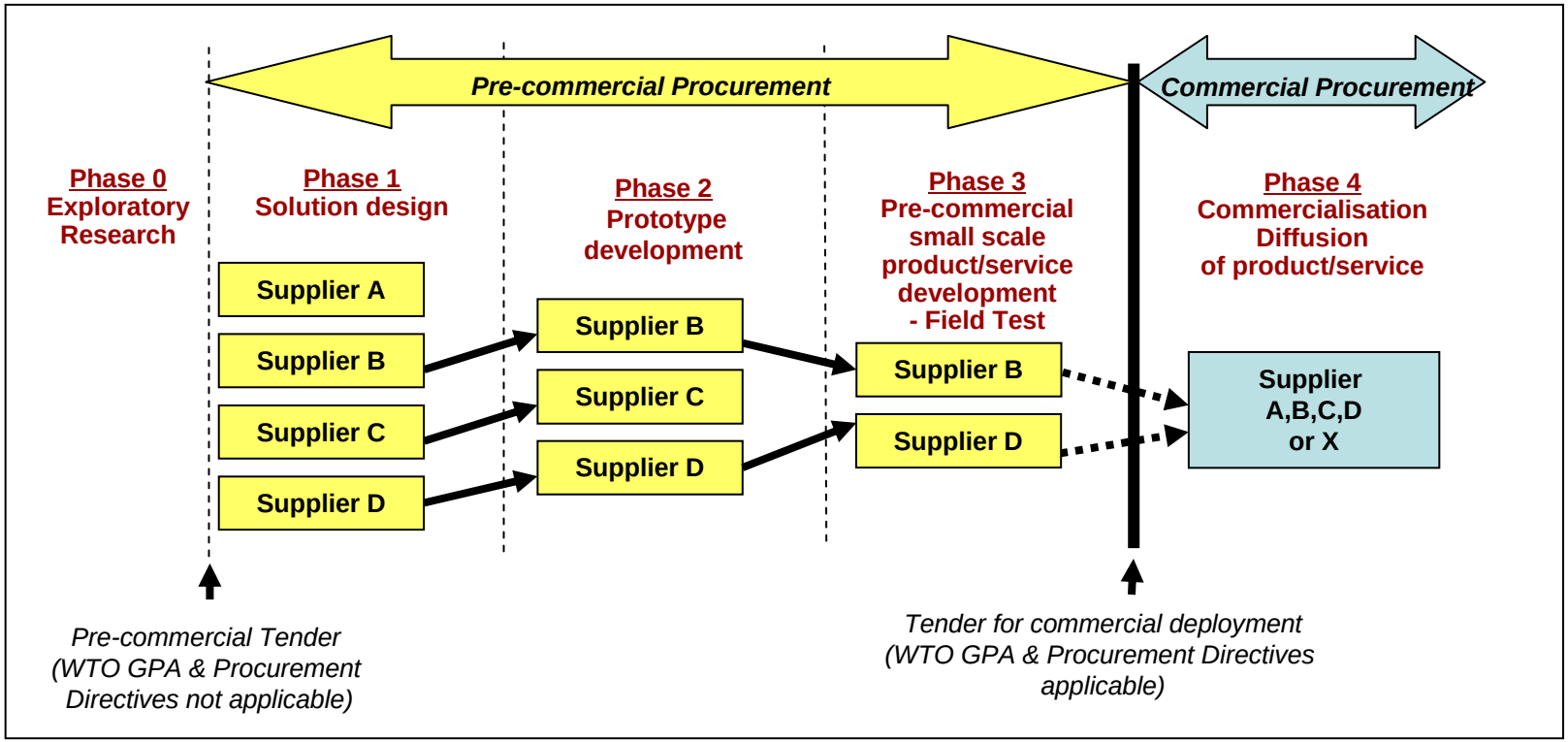
Aim: To achieve significant quality and/or efficiency improvements to public sector challenges through innovative photonics-based solutions

Expected Impact: accelerate the introduction of advanced photonic technologies and applications on the European market

A PCP action supports cooperation between public authorities to define together the mid-to-long term solution requirements and to procure **R&D services**, ensuring:

- Benefit and risk sharing between procurers and suppliers
- Competition and transparency in the procurement process
- Compliance with legal framework without entailing State Aid

d) Pre-Commercial Procurement (PCP) (2)



e) Coordination and Support Actions (CSA)

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 5 M€

1. ERA-NET for the coordination of national R&D programmes/activities
2. Technology road-maps for high power / high energy lasers
3. Coordination betw[illegible]usters
4. Targeted internati[illegible] activities
5. Coordination of the European photonics RTD constituency in Photonics21
6. Access of SMEs and researchers to advanced technologies, design expertise and/or manufacturing facilities
7. Education and training actions

In Call 7

→ Involve the key Stakeholders in Photonics!

Challenge 3 - Objective 3.5
Instruments and indicative budget

Call 7, opens 28 Sept 2010, closes 18 Jan 2011

Call 8, opens 20 July 2011, closes 17 Jan 2012

- **a.1 - a.4** *(Communications, Biophotonics, Safety & Security, Lighting & Displays)*: **IP and STREP**
- **a.5** *(Photonic Integration Platforms)*: **IP**

Call 8 — 79 M€

A minimum of 50 % to IPs and a minimum of 30 % to STREPs

- **b** *(Disruptive Technologies)*: **STREP** — **Call 7** — **20 M€**
- **c** *(ERANET+)*: **ERANET-Plus** — **Call 8** — **10 M€**
- **d** *(PCP)*: **CP-CSA** — **Call 8** — **3 M€**
- **e** *(Coordination & Support Actions)*: **CSAs** — **Call 7** — **5 M€**

More information

- General information about the calls:
  - **On Cordis FP7 homepage:** http://cordis.europa.eu/fp7/home_en.html
- Specific information on photonic related calls:
  - **On Cordis Photonics homepage/calls:** http://cordis.europa.eu/fp7/ict/photonics/calls_en.html
- Presentation on:
  - «How to write a good proposal»: See Cordis Photonics homepage/calls