



## **Objective 3.5:**

# **Core and Disruptive Photonic Technologies**

DG INFSO Photonics Unit  
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Project Officer

# *Overview of the session*

*14:45 – 16:15, CURIE ROOM ©*



- **Presentation of Objective 3.5**
- **Q&A on the presentation**
- **presentation of**
  - **research and technology demands**
  - **research and technology offers**
- **further Q&A and networking**

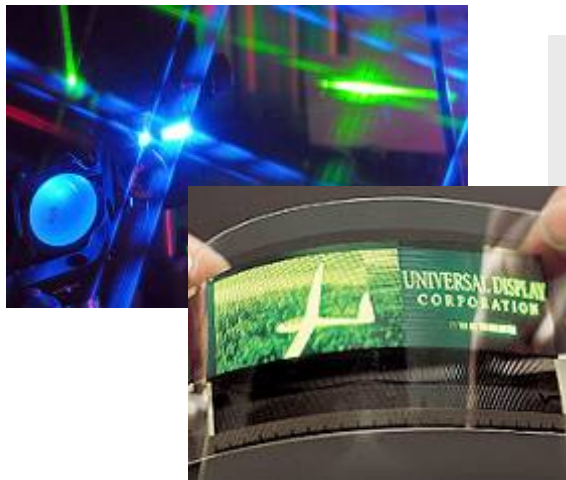
# *Overview of the presentation*



- **Introduction and overview**
- **Objective 3.5 in call 8**
- **Practical information on the evaluation and on writing proposals**
- **Questions & Answers**

# 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€



## Lighting & Display



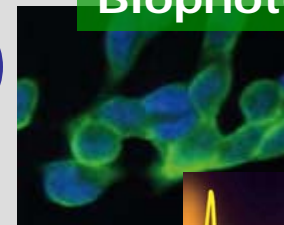
## Manufacturing



## Safety & Security



## Biophotonics



## Communications



# Photonics and OLAE Technologies

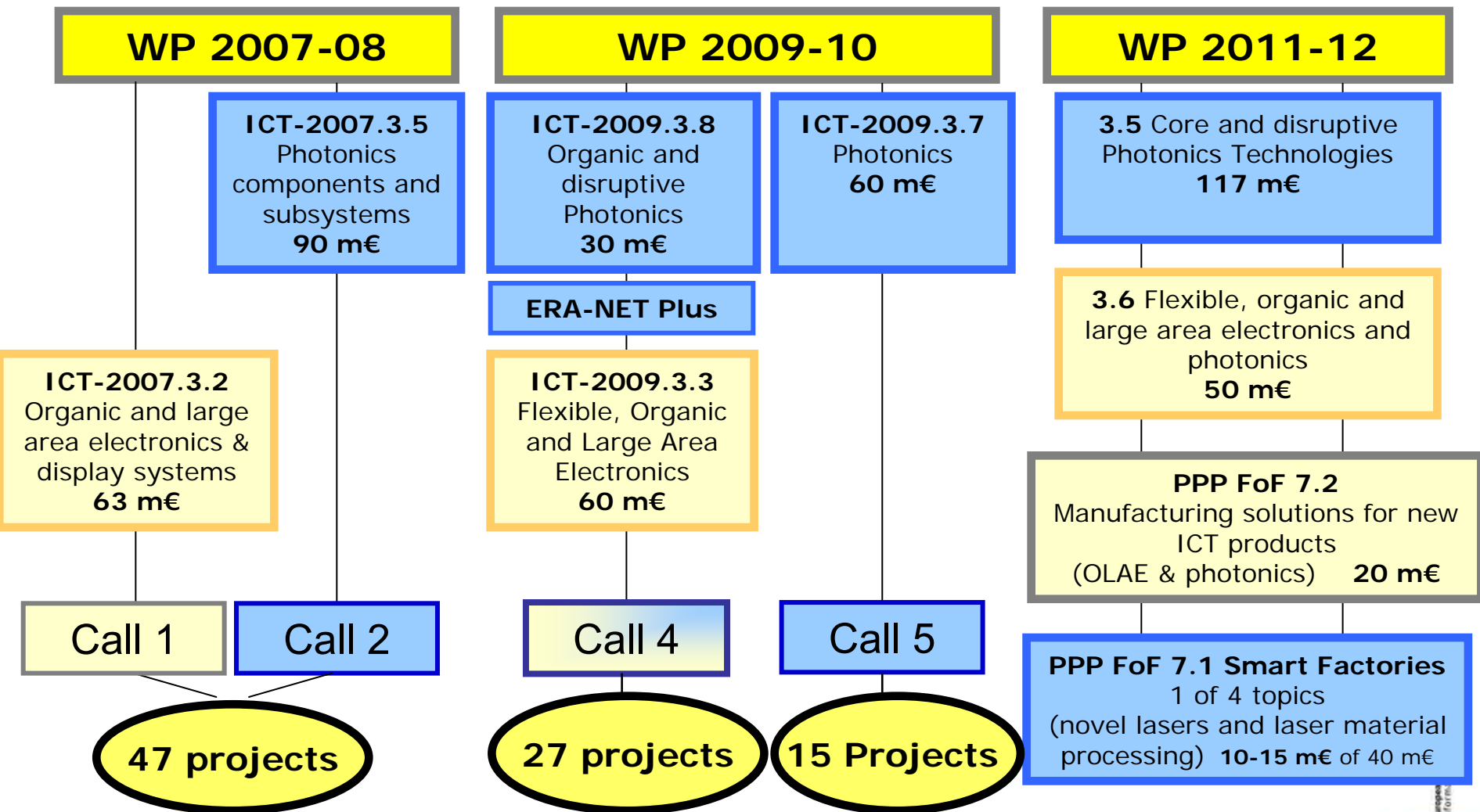
## Organic PVs



## Flexible electronics & Smart Textiles



# Photonics and Organic & Large Area Electronics: FP7 budget evolution



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# ICT WP 2011-12 Challenge 3 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  
 79 M€

**b) Disruptive photonic technologies**

Call 7, 2010, STREP, 20 M€

**c) ERANET-Plus action**

Call 8, 2011, EN+, 10 M€

**d) Pre-Commercial Procurement action**

Call 8, 2011, CP, 3 M€

**e) Coordination and Support actions**

Call 7, 2010, CSA, 5 M€

# Objective 3.5

## 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

IP & STREP  
(50-30% rule)

## Objective 3.5

### a) Core 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

## Objective 3.5

### a) Core photonic technologies



## 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

## Objective 3.5

### a) Core photonic technologies

#### a.3 - Imaging and sensing for safety and security



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

**IP & STREP**

- 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

# Objective 3.5

## a) Core photonic technologies

### a.4 – Lighting and Displays



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

**IP & STREP**

## 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

### a) Core 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

## Objective 3.5

# b) Disruptive Photonic Technologies



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

### Disruptive photonic technologies

- ... are technologies at the proof-of-principle stage that offer a potential breakthrough in functionality, performance, component size or cost
- ... often exploit effects at the limits of light-matter interaction (e.g. plasmonics, nanophotonics, photonic crystals, ...)

**Only STREP**

**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 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



## Objective 3.5

### 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

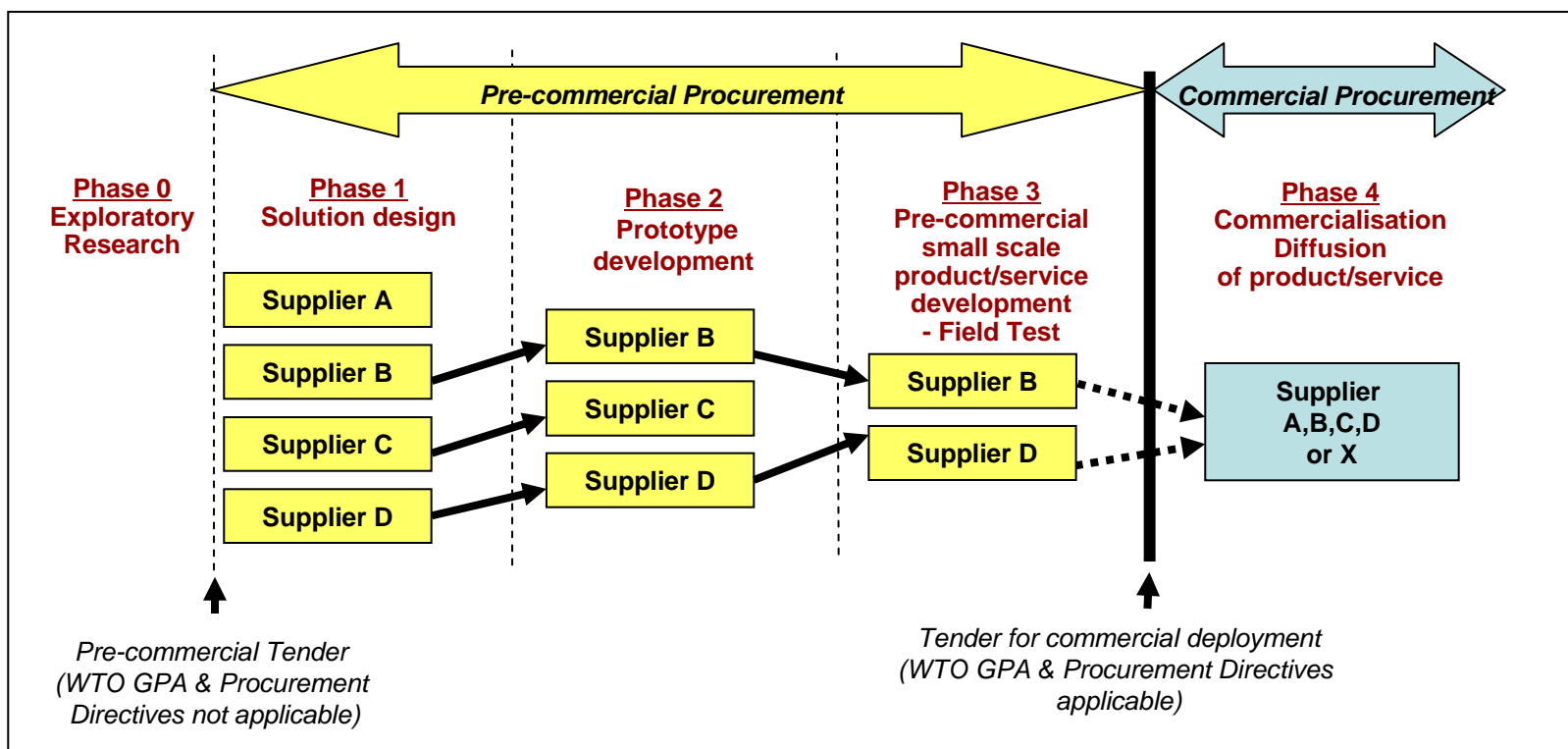
A **PCP** action supports cooperation between **public authorities** to define together the mid-to-long term solution requirements and to procure **R&D services**, ensuring:

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

# Objective 3.5



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



## Objective 3.5

### 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 between innovation clusters
4. Targeted international 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**

**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€**

**Call 8**

**79 M€**

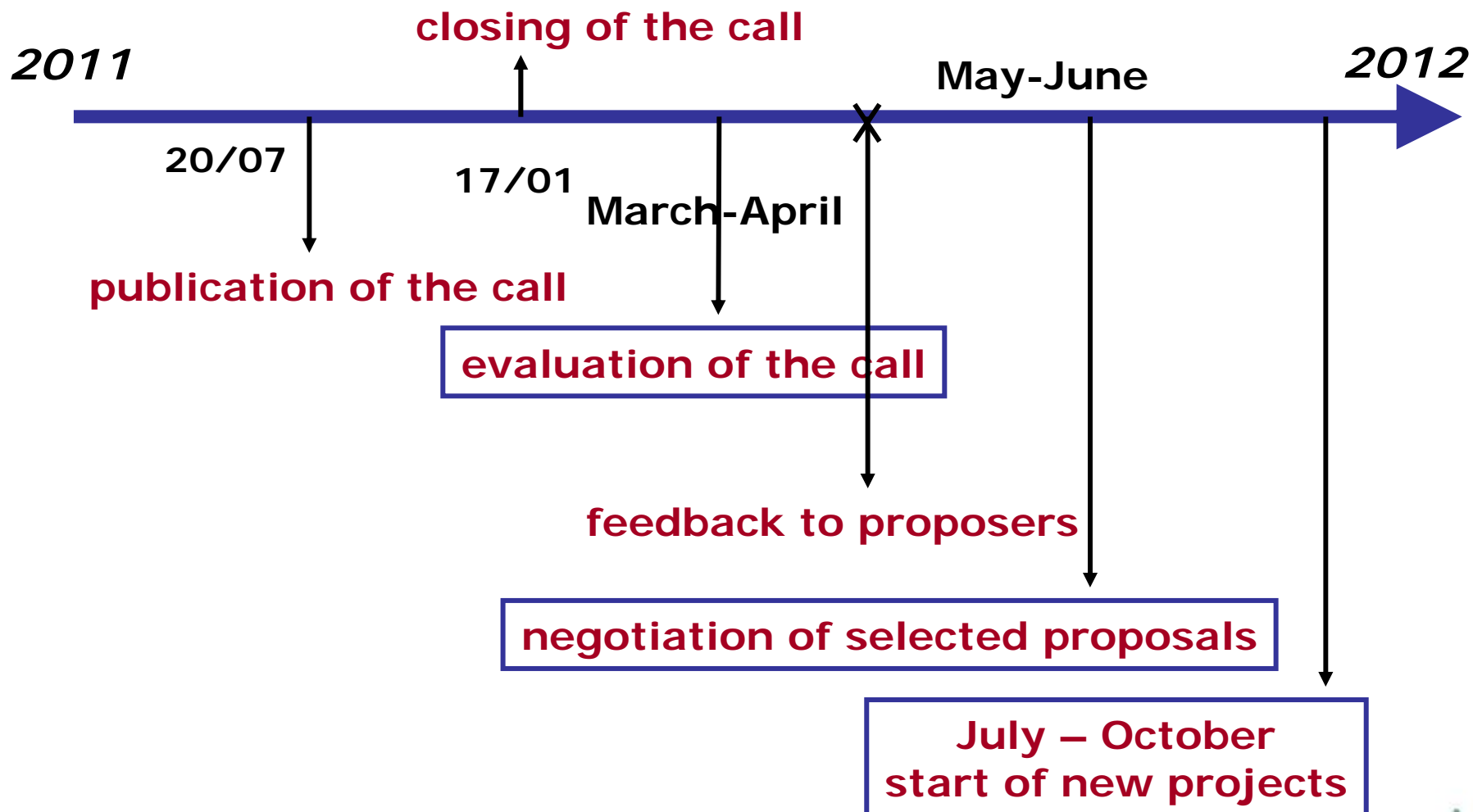
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# Tentative timing of call 8



## Contact persons and pre-proposal check procedure



Objective 3.5: Send your questions to:  
[infso-photonics@ec.europa.eu](mailto:infso-photonics@ec.europa.eu)

### Pre-proposal check procedure (tentative):

- You can send a standard form (see the "Guide for Applicants" once published') to [infso-photonics@ec.europa.eu](mailto:infso-photonics@ec.europa.eu)
- Until three weeks before closing of the call
- The advice/feedback from the EC is informal and non-binding



- General information about the calls:
  - On Cordis FP7 homepage:  
[http://cordis.europa.eu/fp7/home\\_en.html](http://cordis.europa.eu/fp7/home_en.html)
- Specific information and session presentations:
  - The Propers' day Website / this session
  - On Cordis Photonics homepage/calls:  
[http://cordis.europa.eu/fp7/ict/photonics/calls\\_en.html](http://cordis.europa.eu/fp7/ict/photonics/calls_en.html)
- How to submit a proposal: see other conference session (FP7 rules and proposal making)
- Presentation «How to write a good proposal»:  
See Cordis Photonics homepage/calls

# Understanding the evaluation criteria



## 1. S&T Excellence

- Objectives/Relevance
- State-of-the-Art
- Approach/Work plan/Risk assessment

weight 1, threshold 3/5

## 2. Implementation

- Management
- Individual participants
- Consortium as a whole
- Resources

weight 1, threshold 3/5

## 3. Impact

- Impact in relation to the expected impacts listed in the work programme
- Exploitation and dissemination, IPR handling

weight 1, threshold 3/5

Overall threshold 10/15



## *Most common mistakes*



- Idea does not fit into the call or only partially addresses the focus of the call
- Science for the sake of science
- Spending the majority of the effort describing the scientific objectives and approach - criterion 1
- Spending the minimum of time on the other aspects, management, impact, exploitation – criteria 2 and 3.  
Easier to earn points.
- Things are so obvious to the proposers that they forget to explain them
- Neglecting to address:  
What can it be used for? Why is this method better? How will the results be used? What is the path to commercialization? IPR issues, management issues, ...

## *Final Advice*



- Read and understand the call text.
- Discuss the proposal with all partners.
- Do not submit last minute.
- Understand the evaluation criteria and make sure you cover the essential points.
- Explain your approach comprehensively from the very beginning (what do you want to achieve, how and what for).
- More text does not equal more points. Be concise, avoid redundancy and be clear!
- Get somebody who was not involved to read your proposal and ask his/her advice to improve.



## *Register as expert*

The Commission seeks experts for research related activities, e.g. for

- evaluations
- project reviews
- etc.

**Register in the FP7 experts' database :**

**<https://cordis.europa.eu/emmfp7/index.cfm?function=welcome>**

## *Questions and answers*



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