ICT WP2011-2012 session:

Objective 3.5: Core and Disruptive Photonic Technologies
Objective 3.6: Flexible, Organic and Large-Area Electronics and Photonics

DG INFSO Photonics Unit

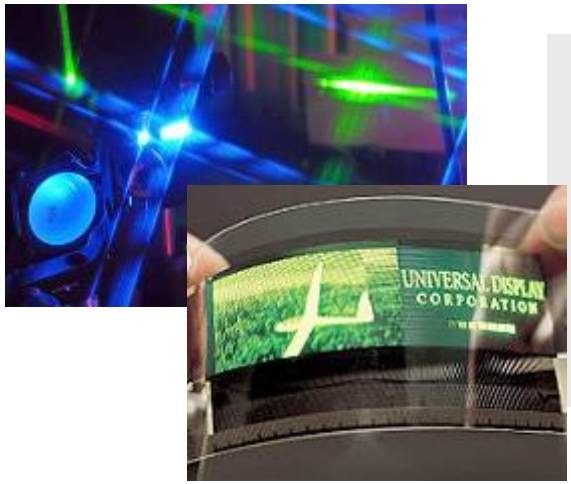
Thomas Skordas

Head of Unit

Overview of the session

- Introduction (Thomas Skordas)
- Overview of objective 3.5 in call 7 (Michael Hohenbichler)
- Overview of objective 3.6 in call 7 (John Magan)
- Wrap up (Thomas Skordas)
- Questions & Answers

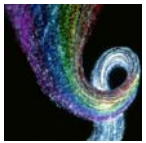
ICT WP 2011-2012
Priorities for Photonics and OLAE



- **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€

Photonics and OLAE Technologies

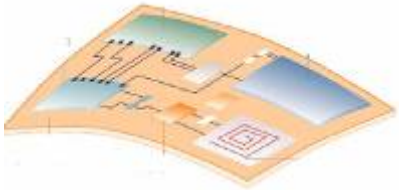
Manufacturing

Safety & Security

Lighting & Display

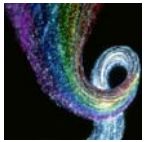
Biophotonics

Flexible electronics & Smart Textiles



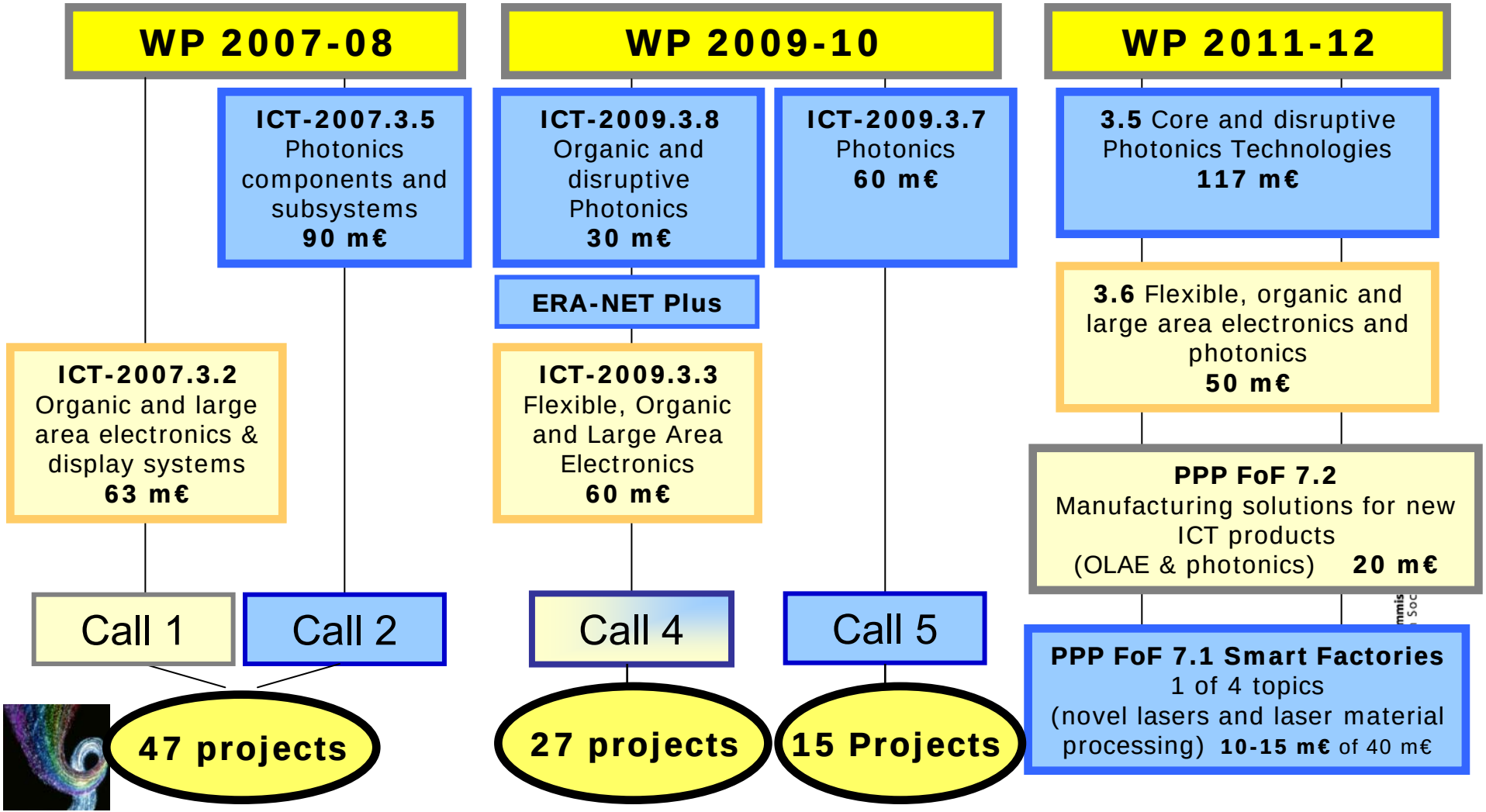
Organic PVs

Communications



European Commission
Information Society and

Photonics and Large Area & Organic Electronics: FP7 budget evolution



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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, PCP

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

including ERA-NET action

Objective 3.5 "Core and Disruptive Photonic Technologies"

b) Disruptive Photonic Technologies

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

Only STREP

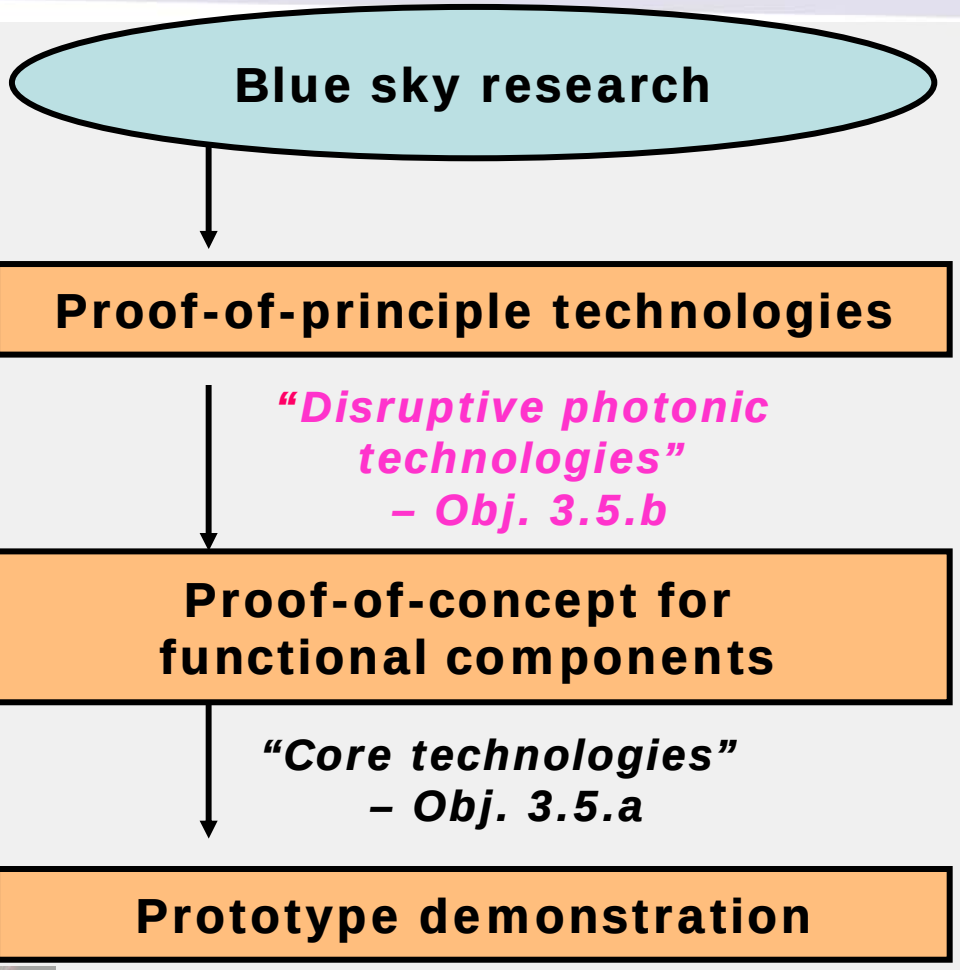
Disruptive photonic technologies

... 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, photonic crystals, ...) or new materials

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

Objective 3.5 "Core and Disruptive Photonic Technologies"
Positioning in the R&D life cycle



FET-like activities

Obj. 3.5.b :

- No restriction to particular applications / technologies

Obj. 3.5.a :

- Focussed on pre-selected applications / technologies where Europe is strong

Objective 3.5 "Core and Disruptive Photonic Technologies"

b) Disruptive Photonic Technologies

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

Only STREP

The idea behind:

- Bring *new technologies* from basic research to applications
  - … for replacing established technologies by new ones with higher potential
  - … for enabling new applications
- The *proof-of-principal* for the new technology should already exist
- The *proof-of-concept for functional components* should demonstrate their industrial potential in the relevant aspects like functionality, performance, component size or cost reduction. This includes also the related manufacturability aspects.
- Involve industrial players

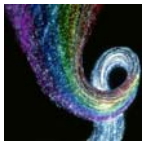
b) Disruptive Photonic Technologies

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

Only STREP

Further Comments:

- Mainstream technologies (i.e. technologies that have already reached the mainstream of component R&D) do not qualify as a starting point.
- New ways of using mainstream technologies (e.g. new combinations or new applications of mainstream technologies) are not in the focus.



Objective 3.5 "Core and Disruptive Photonic Technologies"

b) Disruptive Photonic Technologies

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

Only STREP

Examples for illustration purposes:

- Nano-photonic structures and new materials for PICs of higher performance, functionality or complexity
- New photonic functions realised in optical fibres by integrating non-conventional materials
- Components for quantum communication
- Electro-optic modulation and signal processing exploiting new materials, structures or slow-wave effects
- New photonic approaches for life sciences, imaging, lighting, information displays, optical memory and storage, high-performance lasers, …
- . . . . . .

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 cooperation 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

→ Driven by the key Stakeholders in Photonics!

e) Coordination and Support Actions (2)

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

Expected impacts: CSAs should further the …

1. *[ERANET:]* … cooperation and alignment between **national / regional and EU-wide research programmes**
2. *[High-power lasers:]* … synergies in R&D on **high power / high energy lasers** and opening of new market opportunities
3. *[Innovation Clusters:]* …overall effectiveness of **regional clusters and national technology platforms**
4. *[International cooperation:]* … cooperation between **European players and their counterparts elsewhere** on common goals
5. *[EU-wide coordination:]* … consensus building on **European research priorities and strategies**
6. *[Access:]* … **uptake of advanced photonics technologies** by SMEs and researchers
7. *[Education and training]* … **industry / academia collaboration in education and training**, leading to increased industrial competitiveness

Challenge 3 - Objective 3.5
Instruments and indicative budget

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

Call 8, opens 26 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€**

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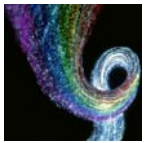
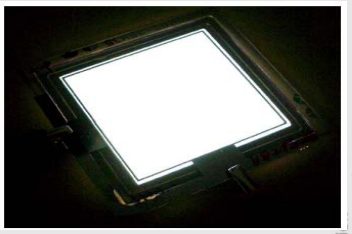


ICT WP 2011-12
Objective 3.6 "Flexible, Organic and Large Area Electronics and Photonics"

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 50 M€

- **OLAE:** flexible, organic and large area electronics
  - Organic Electronics
    includes smart textiles
  - Organic Photonics
  - *OLED Displays*
  - *OLED Lighting*

Picture Courtesy of Thin Film electronics



- **OLAE objective → mid-term Research**
- **Full value chain to be addressed**
  → especially for IPs; STREPs also, as far as possible
- **End-of-life / disposal / recyclability issues to be addressed**

ICT WP 2011-12

Challenge 3: Alternative Paths to Components and Systems

Objective 3.6 “Flexible, Organic and Large Area Electronics and Photonics”

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 50 M€

a) OLAE Technology and components

advanced OLAE technology, device concepts, processes and materials considering the full value chain

b) OLAE systems and applications

Demo of advanced technology and the integration of components through new or improved systems and devices

→ IP + STREP 40 M€

c) ERANET-Plus action → EN+, 6 M€

d) Coordination and Support actions → CSAs, 4 M€

Objective 3.6 "Flexible, Organic and Large Area Electronics and Photonics"

a) OLAE Technology and Components

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 40 M€

IP & STREP

Target Outcomes

- **OLED**: Low cost production processes and enhanced parameters (>100 lm/W, ~ 5.000 cd/m², > 10.000 hours)
- **OPV cells**: mass production technology for cells supporting the targets at module level (~ 0,7€/Wp, 8-10% external efficiency, …)
- **Colour Emissive & Reflective Displays** for flexible low-cost apps

  Emissive: materials, process development

  Reflective: video-rate front-/backplanes, solid state device integration
- **Enhanced Circuitry**: complexity ≈10K transistors, mobility > 1 cm²/Vs, voltages ≈3V, circuit frequency ≈25KHz, A/D integration
- **Smart Textiles**: heterogeneous integration of multiple functions, connectivity, reliability, encapsulation, washability, durability

Objective 3.6 “Flexible, Organic and Large Area Electronics and Photonics”

b) OLAE Systems and Applications

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 40 M€

IP & STREP

Target Outcomes

- **Lighting Systems:** high quality white CRI > 90, stable over 10 years lifetime, reasonable costs
- **OPV modules** for mobile & fixed applications: ~ 0,7€/Wp, 8-10% external efficiency, improved in-coupling, ~ 20y lifetime
- **Quality Emissive & Reflective Colour Displays, Signage**
- **Flex/foil-based organic & printed electronics for mass markets**
- **Integrated Smart Systems (including smart textile):** diverse applications incl. health monitoring, large area sensing, smart labels, packaging …

Objective 3.6 "Flexible, Organic and Large Area Electronics and Photonics"

Expected Impact for a) and b)

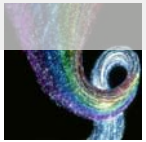
Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 40 M€

IP & STREP

Expected Impact

a) *[OLAE Technology and Components:]* Enhanced European competitiveness through **mastering the OLAE & Smart Textile value chain** (including manufacturing capability)

b) *[OLAE Systems and Applications:]* **New products and applications**; increased **market share in key applications**; established / reinforced **EU lead markets**



Objective 3.6 "Flexible, Organic and Large Area Electronics and Photonics"

c) ERANET-Plus action

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 6 M€

- A **joint call for proposals** on an OLAE topic of strategic interest, **involving national and/or regional grant programmes**

  6M€ + 12 M€ = up to 18 M€

- **Expected Impact:**

  Foster cooperation and alignment between participating states'/regions' research activities in topics of joint interest

Objective 3.6 "Flexible, Organic and Large Area Electronics and Photonics"

d) Coordination and Support Actions

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 4 M€

1. **Cooperation and coordination between OLAE competence centres**
2. **Access to OLAE technology and facilities for industry, especially SMEs, and researchers**
3. **Targeted international cooperation activities**
4. **Focused education and training actions for industry (in particular SMEs)**
5. **An ERA-NET action for the coordination of national / regional and EU-wide R&D programmes / activities**

→ Involve the key Stakeholders in OLAE!

Objective 3.6 "Flexible, Organic and Large Area Electronics and Photonics"

d) Coordination and Support Actions (2)

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 4 M€

Expected Impact:

1. *[OLAE competence centres:]* Improved coordination, creating synergies, common strategies, and pooling of resources
2. *[Access:]* Broader take-up of OLAE technology and transfer of OLAE expertise across Europe
3. *[International cooperation:]* Greater cooperation between European players and their counterparts elsewhere on common goals
4. *[Education and training:]* Increased knowledge and expertise across Europe in OLAE
5. *[ERA-NET:]* Increased cooperation and alignment between participating states'/regions' research activities in topics of joint interest

Objective 3.6 "Flexible, Organic and Large Area Electronics and Photonics"

Instruments and indicative budget

Call 7, opens 28 Sept 2010, closes 18 Jan 2011, 50 M€

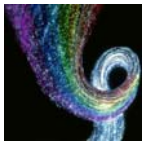
a) *(OLAE Technology and Components)*:

b) *(OLAE Systems and Applications)*: **IP and STREP**

A minimum of 50% to IPs and a minimum of 30% to STREPs — **40 M€**

c) *(ERANET+)*: **ERANET-Plus** **6 M€**

d) *(Coordination & Support Actions)*: **CSAs** **4 M€**



Opportunities for EU funding in OLAE in 2011-12

ICT Work programme 2011-12

- ***Objective 3.6:*** OLAE technology and applications

  Call 7: opens 28 Sept 2010, closes 18 Jan 2011, 50 M€

- ***Objective 7.2:*** Manufacturing solutions for new ICT products

  (i.e. OLAE: organic electronics + organic photonics)

  FoF PPP Call: opens 30 July 2011, closes 02 Dec 2011, 20 M€

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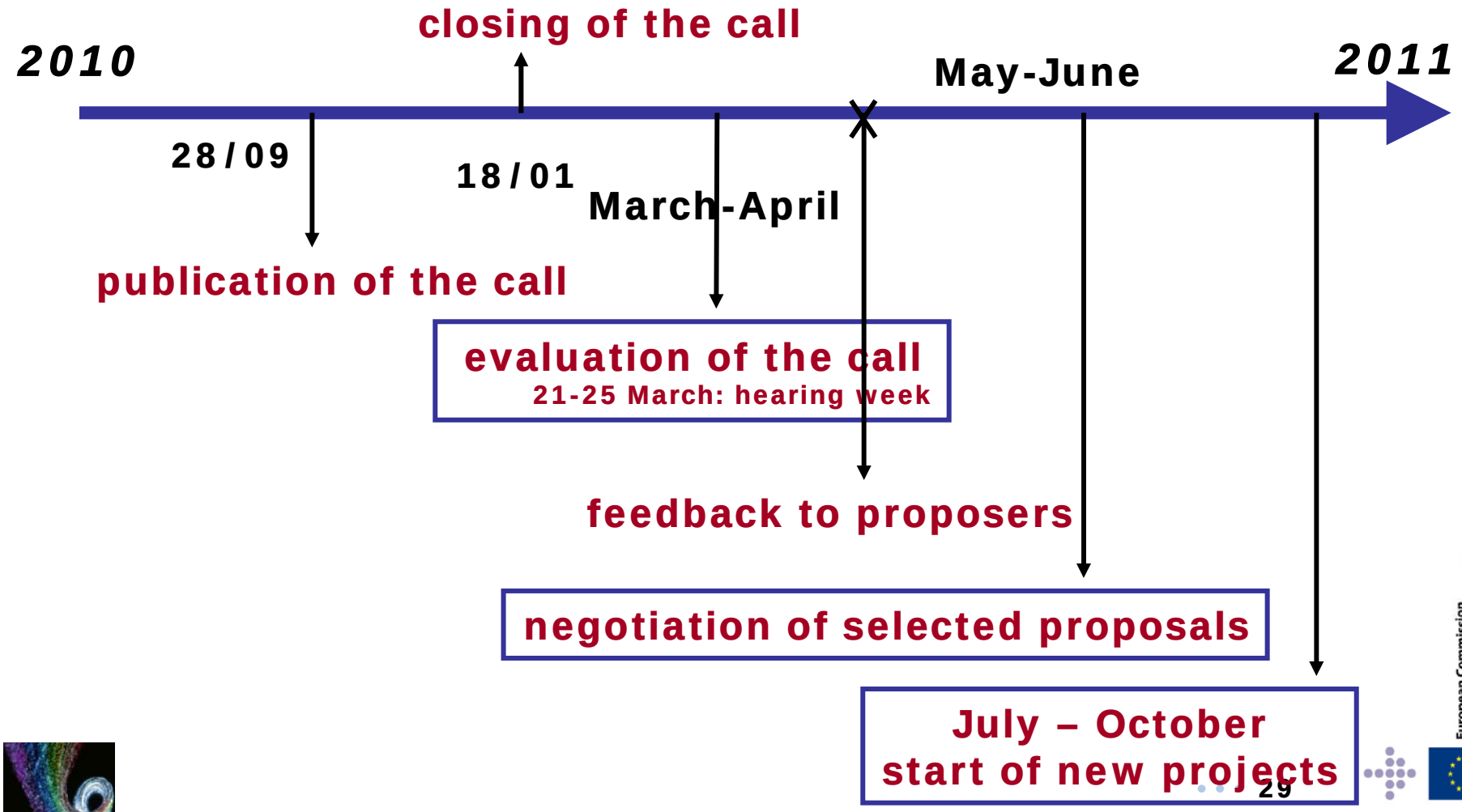
ICT WP 2011-12
Timing of the calls

	ICT Call 7 Open: 28 Sep 2010 End: 18 Jan 2011	PPP FoF* Open: 30 July 2011 End: 2 Dec 2011	ICT Call 8 Open: 26 July 2011 End: 17 Jan 2012
Objective 3.5: Photonic technologies	b) Disruptive photonics e) CSA		a) Core photonics c) ERANET-Plus d) PCP
Objective 3.6: OLAE	X		
PPP Factories of the Future		Obj. 7.1.d) lasers Obj. 7.2: OLAE manufacturing	

*These call dates are tentative!

Detailed timing of forthcoming call 7



Contact persons and pre-proposal check procedure for CALL 7

- Objective 3.5: Photonics
  - *Michael Hohenbichler*
- Objective 3.6: OLAE
  - *Markus Korn*
- Send your questions to: infso-photonics@ec.europa.eu

Pre-proposal check procedure:

- You can send a standard form ('Annex 6 of the Guide for Applicants') to infso-photonics@ec.europa.eu
- Until three weeks before closing of the call
- The advice/feedback from the EC is informal and non-binding

ICT Proposers' Day 2011
19 - 20 May, Budapest
Networking for European ICT R&D

- Aim of the event:
  to prepare for Calls 8 and 9 (together >1 billion €)
  - by networking and partnerships building
  - by first-hand information from >100 EC officials
- Structure:
  - thematic sessions with presentations of proposal ideas
  - information stands & meeting points
- Registration:
  free of charge, open from January 2011

http://ec.europa.eu/ictproposersday

European Commission
Information Society and Media

More information

- General information about the calls:
  - **On Cordis FP7 homepage:** http://cordis.europa.eu/fp7/home_en.html
- Specific information and session presentations:
  - The ICT2010 website/this session page
  - **On Cordis Photonics homepage/calls:** http://cordis.europa.eu/fp7/ict/photonics/calls_en.html
- Presentation on:
  - «How to submit a proposal»: see other conference session
  - «How to write a good proposal»: See Cordis Photonics homepage/calls

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