



Photonics in Horizon 2020

LEIT ICT WP 2016-17

Photonics Unit
DG CONNECT - European Commission

October 2015

Horizon 2020, Industrial Leadership (LEIT) Priority

An Overview of Calls related to the Photonics PPP

LEIT FoF 13

2016

Laser-based
manufacturing

30M€

Call Deadline
21 Jan 16

LEIT ICT 29

2016

Photonics
KET

66 M€

Call Deadline
12 Apr 16

LEIT ICT

7 & 8

2016
5G PPP

- M€

Call Deadline
8 Nov 16

LEIT ICT 30

2017

Photonics
KET

44 M€

Call Deadline
25 Apr 2017

LEIT ICT 34

2015

ICT contribution
to pilot for co-
investments by
business angels
in innovative ICT
firms (incl.
photonics)

15 M€

Exp O Int
9/10/2015 →

H2020 Horizontal Action for 2016
FTIPilot-01-2016: Fast Track to Innovation
Pilot

Action targeting Industry; 100M€
deadlines – 15 March, 1 June, 25 Oct
2016

SMEInst-01 2016 – 17

Open Disruption Innovation Scheme
(implemented through the SME instrument)

Action targeting Innovative SMEs
No deadline – Always open calls – 60M€ for 2016
& 66M€ for 2017

The Specific Challenge

Photonics: R&D&I investments to sustain competitiveness & leadership in market sectors where Europe is strong (communications, medical photonics, sensing) and seize new opportunities

- Strengthen the manufacturing base, exploit the potential of innovation and value creation and job creation
- Exploit the large enabling potential of photonics in many industrial sectors & in major societal challenges (such as health and well-being, energy efficiency or safety)
- Exploit the innovation capacity of SMEs
- Exploit the innovation leverage of clusters & national platform

ICT 30 – 2017: Photonics KET Overview



An Overview of the Actions called: 87 M€

ICT30.a Research and Innovation Actions

41 M€

- Application driven core photonic technology developments for agile Petabit/s Optical Core and Metro Networks
- Photonic integrated circuit (PIC) technology
- Disruptive approaches to optical manufacturing by 2 and 3 D opto-structuring

ICT30.b Innovation Actions

43 M€

- Innovation Incubator for SMEs
- Application driven core photonic devices integrated in systems

Focus is on:

- Biophotonics: imaging systems for in-depth disease diagnosis
- Sensing for process and product monitoring and analysis

ICT30.c Coordination and Support actions

3 M€

- Supporting the industrial strategy for photonics in Europe

LEIT ICT Call

DDL: 25 APR 2017

ICT 30 – 2017: Photonics KET (1)



actions 6-8 M€, 100% funding

41 M€

ICT 30.a Research and Innovation Actions (1/4)

Application driven core photonic technology developments for a new generation of photonic devices (= components, modules and sub-systems) for agile Petabit/s Optical Core and Metro Networks

- ✓ allowing capacities of Pb/s per node, and Tb/s per channel and 100 Tb/s per link over increased transport distances
- ✓ supporting network programmability features and fitting network operator requirements and roadmaps.
- ✓ should include all new device developments for the envisaged network architecture
- ✓ an energy consumption and equipment footprint reduction by more than 10 and a significant reduction in network cost
- ✓ may include system, network, control and security level aspects

Expected Impacts:

- next generation agile, high-capacity and energy efficient core and metro networks to support the highly connected and communicating society
- secured industrial leadership in optical communications systems for core and metro networks and reinforcing the full value chain in Europe

ICT 30 – 2017: Photonics KET (2)



actions 3-4 M€, 100% funding

41 M€

ICT 30.a Research and Innovation Actions (2/4)

Photonic integrated circuit (PIC) technology:

- ✓ major advances in chip integration technology enabling a cost effective volume manufacturing of PICs
- ✓ PICs with significantly enhanced performances (e.g. integration complexity, footprint, energy efficiency, speed, ...) or new functions
- ✓ Major advances e.g. in selective area growth for multi-function integration, wider band-gap engineering, heterogeneous integration, wafer-scale electronic-photonic integration, the use of new materials, and in new approaches to small and efficient laser sources.
- ✓ may address the related design methodology; tools; the optimisation of materials
- ✓ should include validation of results with fabricated PIC prototypes

Expected Impacts:

- Industrial volume manufacturing in Europe of PICs with significant competitive advantages in cost/performance and with reduced development costs
- New or significantly enhanced integration technology platforms for a more competitive European photonic industry

ICT 30 – 2017: Photonics KET (3)



actions 3-4 M€, 100% funding

41 M€

ICT 30.a Research and Innovation Actions (3/4)

Disruptive approaches to optical manufacturing by 2 and 3 D opto-structuring:

- ✓ new optical manufacturing approaches for photonic components
 - ✓ with unprecedented resolution (down to the submicron and nano-scale)
 - ✓ or for functionalization of the surface of the materials
- ✓ component's characteristics tailored or optimised for a specific application
- ✓ may also address the related material
- ✓ Novelty may be related for example to the laser source, to the optical system for light manipulation, to light-matter interaction or to the exploitation of quantum effects
- ✓ should include the validation of the manufacturing approach through a functional prototype of an application relevant device that goes clearly beyond the state of the art

Expected Impacts:

- Technology leadership in optical manufacturing of 2 and 3 D opto-structuring
- Emergence of innovative optical components or material for specific applications

ICT 30.a Research and Innovation Actions (4/4)

Additional Issues:

- Address manufacturability;
- Address standardisation as appropriate
- Strong **industrial commitment**, driven by user needs and concrete business cases supported by strong exploitation strategies
- Cover the **value/supply chain** as appropriate

actions 8-10 M€, 70 % funding

43 M€

ICT 30.b Innovation Actions (1/4)

- **Innovation Incubator for SMEs** (synergies and co-financing possible!)
 - to reinforce the competitiveness of photonics and end-user industries (i.p. SMEs)
 - one-stop-shop access, supported through competence centres, to services and capabilities such as expertise, training, prototyping, design, engineering or pilot manufacturing services for first users and early adopters enabling the wider adoption and deployment of photonic technologies in innovative products
 - driven by the SME's business needs
 - Flexible and fast implementation in line with the speed of innovation in ICT and the SME requirements
 - may involve financial support to third parties (see Part K of the General Annexes) (typically in the order of EUR 30.000 – 100.000 per party) for a maximum of 50%

Expected Impacts:

- Broader and faster take-up of photonics in innovative products, in particular by SMEs

actions 6-8 M€, 70 % funding

43 M€

ICT 30.b Innovation Actions (2/4)

■ Biophotonics: Core photonic devices integrated in imaging systems for in-depth disease diagnosis

- innovative, easy to operate, compact, and non- or minimally invasive imaging systems to support diagnosis of age and life-style related diseases
- either label-free or based on already/rapidly safety-approved labels
- The feasibility and validity of the diagnostics approach already demonstrated and a significant advantage with respect to current diagnostic approaches
- further develop, improve and assess the imaging system under a sufficient range of realistic conditions and disease profiles
- evaluation and validation in clinical settings, but no clinical trials
- driven by medical equipment manufacturers
- include teams of physicians/clinicians

Expected Impacts:

- Substantially improved and wider deployed in-depth diagnosis, and more effective treatment of age and life-style related diseases
- increased market presence in the Diagnostic and Analysis Imaging Systems and increased European competitiveness of the medical equipment industry

actions 6-8 M€, 70 % funding

43 M€

ICT 30.b Innovation Actions (3/4)

■ Core photonic devices integrated in systems for sensing for process and product monitoring and analysis

- prototyping and testing of new process analytical instrumentation for on-line/in-line control, targeting the food and pharmaceutical industry
- based on compact and miniaturized photonics sensors that include novel key photonics components and modules
- significant improvements beyond the state of the art in sensitivity, specificity, long term stability (including calibration stability), high measurement rate, and reliability.

– **Expected Impacts:**

- Increased process monitoring efficiency in the food and pharmaceutical industries and reduction of waste along the logistic food and drugs chain
- ☐ Increased competitiveness of the European process and product monitoring equipment industry

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ICT 30.b Innovation Actions (4/4)

Core photonic devices integrated in systems

Additional Issues:

- validation and demonstration of photonic based systems for the target applications
- Include standardisation
- Strong **industrial commitment**, driven by user needs and concrete business cases supported by strong exploitation strategies
- cover the whole value/supply chain and the end-user

ICT 30 – 2017: Photonics KET (9)



One action up to 3 M€, 100% funding

3 M€

ICT 30.c Coordination and Support Actions

– Supporting the industrial strategy for photonics in Europe

- to support the development and implementation of a comprehensive industrial strategy for photonics in Europe
- the development of strategic technology road-maps, strong stakeholder engagement (in particular Photonics21 stakeholders, National Technology Platforms, regional Clusters, end-user industries)
- coordination of regional, national and European strategies and priorities
- development of financial models and financial engineering to facilitate access to different sources of financing

Expected Impacts:

- Reinforced value chains and deployment of photonics technologies by stronger cooperation of photonics stakeholders, clusters and end-users
- Increased competitiveness of the European photonics sector and improved access to risk finance for the photonics sector in Europe

For more information



Contacting the Photonics Unit: CNECT-PHOTONICS@ec.europa.eu

Photonics Unit web site:

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

Photonics 21

<http://www.photonics21.org>




PHOTONICS²¹

PHOTONICS PUBLIC PRIVATE PARTNERSHIP

The Photonics PPP on twitter:

@Photonics21 and @PhotonicsEU

H2020 Participants Portal:

<http://ec.europa.eu/research/participants/portal>

We are looking for experts



We are urgently looking for experts

for the evaluation of proposals and project reviews

- for **all fields** of photonics
- for **FoF / laser-based manufacturing**

Also industrialists and
women welcome !

Interested? Please:

- **Register** in the Commission's experts database:
<http://ec.europa.eu/research/participants/portal/desktop/en/experts/index.html>
- **Send your CV to:** CNECT-PHOTONICS@ec.europa.eu
- **Tell us your registration number**

+ If you know of other experts please inform them of the above.