



# Photonics in Horizon 2020

## LEIT ICT WP 2019

ICT-05-2019

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### Disclaimer:

**The published work programme is the sole authoritative text.**

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-05-2019.html>

Please read it carefully.

### The Specific Challenge

- **Health applications**: to improve or to assess the successes of therapies and to transform low TRL technologies into robust medical devices answering to clinician needs.
- **Sensor technologies**: to deploy photonic sensor technologies for the exact monitoring of process and product parameters so as to optimize those processes, saving resources whilst guaranteeing optimum product quality.
- **Photonics circuits**: to create and develop advanced techniques for intimate integration of sub-systems incorporating multiple technologies enabling application across multiple domains.

## An Overview of the Actions called: 76.5 M€

### ICT05.a Innovation Actions

- Photonics devices to support monitoring therapeutic progress
- Sensor-Based Optimization of Production Processes

30 M€

LEIT ICT Call

OP: 16 OCT 2018

### ICT05.b Research and Innovation Actions

- Photonics System on Chip/ System in Package for optical interconnect applications
- Photonics systems for advanced imaging to support diagnostics driven therapy

45 M€

### ICT05.c Coordination and Support actions

- Fostering careers in photonics

1.5 M€

LEIT ICT Call

DDL: 28 MAR 2019

### ICT 05.a Innovation Actions

### **Requirements:** actions should

- address validation and demonstration of photonic-based systems for target applications
- also include standardisation activities
- demonstrate strong industrial commitment
- be driven by user needs and concrete business cases supported by strong exploitation strategies
- cover the whole value/supply chain and the end-user

Focus is on the following two themes:

### i. Photonics devices to support monitoring therapeutic progress

**Objective:** develop reliable (high sensitivity, specificity and accuracy), safe to operate, cost-effective and fast photonics enabled devices to support assessing the effects of treatments of major diseases like cancer (**excluding skin cancer**), infectious, degenerative and cardiovascular diseases, including determining individual dispositions (eg methods to assess drug resistance) and monitoring of therapy progress.

#### **Requirements:**

**actions 3-6 M€, 70% / 100% funding**

- ✓ the proposed approach should already have been validated in clinical settings
- ✓ A medical equipment manufacturer should drive the action
- ✓ physicians/clinicians/surgeons must be closely involved
- ✓ Small scale clinical studies should be included, but clinical trials are excluded

### **Expected Impact:**

Strengthened Europe industrial competitiveness in the biophotonics related market

### ii. Sensor-Based Optimization of Production Processes:

#### Objective:

**actions 3-6 M€, 70% / 100% funding**

Actions should address prototyping, demonstration, optimization and validation in real industry settings of highly advanced smart broadband multimodal photonic sensing solutions operating in the spectral range from the ultraviolet to the far infrared, and intended for improving production process through the monitoring of relevant process and product parameters (e.g. physical, chemical, imaging, geometrical and environmental).

#### Requirements:

- ✓ cost-effective process-integrated solutions that are optimized in terms of speed, quality, and resource efficiency
- ✓ address embedded pre-processing and suitably interpreting the acquired raw data for the optimization of the processes

### **Expected Impact:**

Increased competitiveness of the European production industry and significant contribution to the digitization of European industry



### ICT 05.b      Research and Innovation Actions

actions 3-6 M€, 100 % funding

### i. Photonics System on Chip/ System in Package for optical interconnect applications

**Objective:** Actions should address advanced techniques for the intimate combination of photonic integrated circuit technology with other enabling circuits, devices and mother boards to realise major advances in the capability, performance and complexity of photonic system-on-chip and system-in-package components targeting photonic interconnect applications in the network, datacentre and consumer communication space.

#### **Requirements:**

- A holistic approach from design through to test is required
- The targeted component technologies need to have demonstrable performance advantages in terms of speed, energy efficiency, cost and reliability
- The targeted component technologies need to fit in the system and network architecture roadmaps of vendors.

#### **Expected Impact:**

A massive deployment of Photonic Integrated Circuit (PIC)-based optical transceivers in data center environments thanks to the drastically reduced cost

actions 3-6 M€, 100 % funding

### ii. Photonics systems for advanced imaging to support diagnostics driven therapy

**Objective:** Actions should research ground-breaking, reliable (high sensitivity, specificity and accuracy), safe to operate, cost-effective and fast photonics enabled imaging systems to support diagnostics during intervention and treatments of major diseases like cancer (excluding skin cancer), infectious, degenerative and cardiovascular diseases.

#### **Requirements:**

- Physicians/clinicians/surgeons and a medical equipment manufacturer must be closely involved from requirement specifications to validation in clinical settings.
- Validation should take gender specificities into account.
- Clinical trials are excluded.

#### **Expected Impact:**

Increased European competitiveness in the biophotonic areas and more effective medical interventions and treatments

### ICT 30.c Coordination and Support Actions

**Actions 1 to 1.5 M€, 100% funding**

### Fostering careers in photonics

**Objective:** to reach out to STEM graduates/PhD students and young postdocs in order to encourage more of them to pursue a career in photonics,

**Requirements:** the action(s) should

- help make students more industry ready and should provide the appropriate training, encourage innovation and entrepreneurship.
- Address gender issues

**Expected Impact:** More and better prepared professionals in the photonics sector

### "Expected Impact":

Proposals should describe how the proposed work will contribute to

**the corresponding Expected Impacts as listed (in the call)**

and should provide **metrics**, the **baseline** and **concrete targets**.