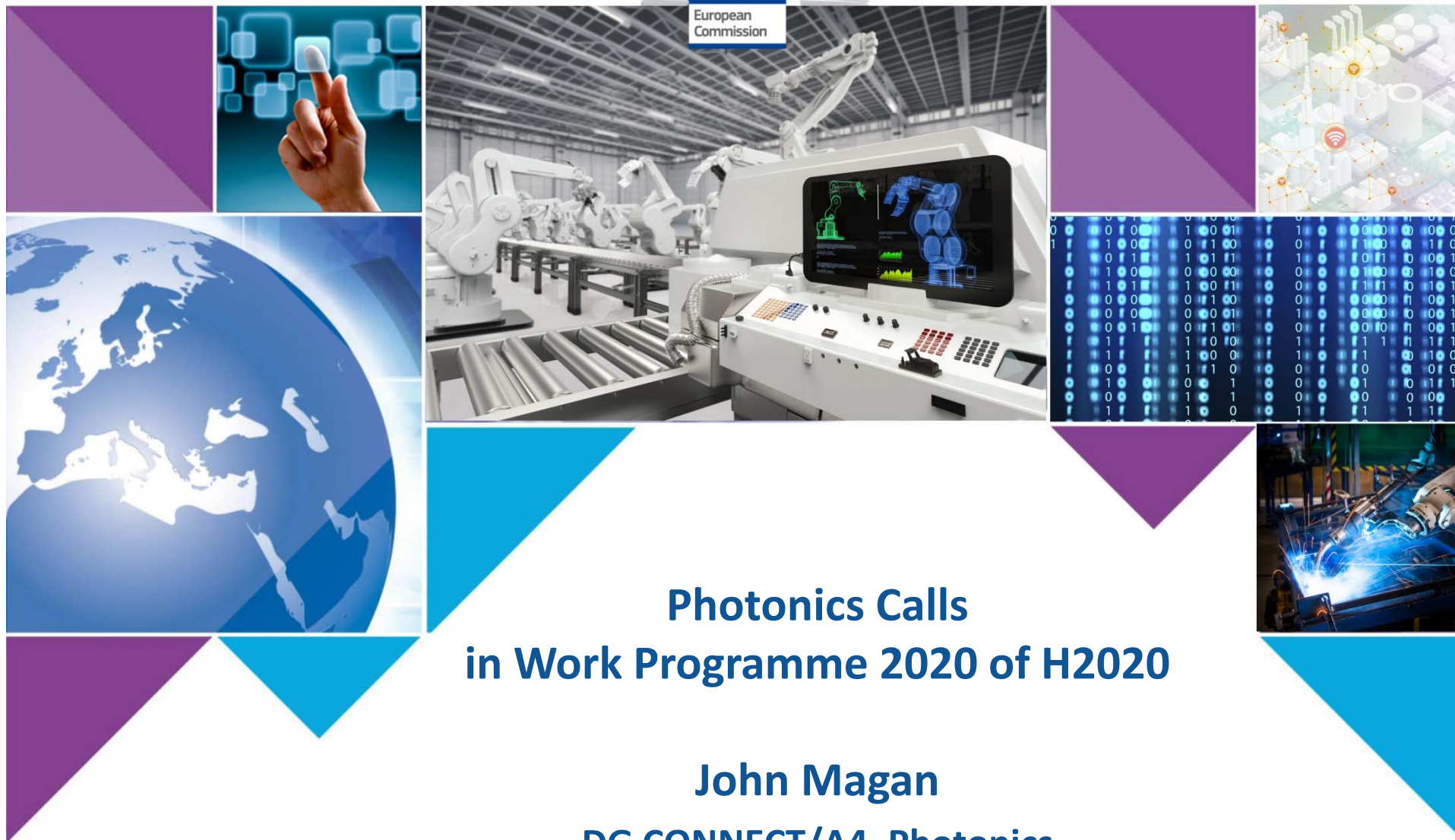# Photonics Calls
in Work Programme 2020 of H2020

John Magan

DG CONNECT/A4, Photonics

Paris, 16 July 2019

Disclaimer:

The Work programme 2020 is the sole authoritative text.

Monitor the Call/topic website for updates and FAQs:

- Go to homepage: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/h2020

- Search for "photonics" and the heading of the call, e.g. "ICT-36-2020"

Please read the Call text carefully.

ICT in H2020 > LEIT-ICT

Excellent Science

Frontier Research (ERC)

Future and Emerging Technologies (FET) **ICT**

Skills and career development (Marie Skłodowska-Curie)

Research Infrastructures **ICT**

Industrial Leadership

Leadership in enabling

and industrial technologies

ICT **ICT** **ICT**

Nanotech., Materials, Manuf. & Processing

Biotechnology

Space **ICT**

Access to risk finance

Innovation in SMEs

Societal Challenges

ICT

Health, demographic change and wellbeing

Food security, sustainable agriculture, **ICT**
and the bio-based economy

Secure, clean and efficient energy **ICT**

Smart, green and integrated transport **ICT**

Climate action, resource efficiency, **ICT**
and raw materials

Inclusive, innovative and reflective societies

Secure societies **ICT** **ICT**

3

Approach to WP2018-20

What's new?

- **Focus** and **align** with high-level **political priorities**
  - Digitising and transforming European industry and Services (including AI)
  - European Data Infrastructures (HPC, Big data and Cloud)
  - 5G Action plan and Connected and Automated Mobility
  - Next Generation Internet
  - Cybersecurity

- Support **core ICT industries** through **roadmap-based cPPPs**
  - Stronger synergies between cPPPs

- **Integrate digital technologies** across all parts of H2020

- Continued focus on **innovation**

Industrial Leadership - ICT

- **Call – Information and Communication technologies**

  - **Artificial Intelligence and Technologies for Digitising European Industry and Economy**

  - **European Data Infrastructures: HPC, Big data and Cloud technologies**

  - **5G**

  - **Next Generation Internet (NGI)**

  - **Cross-cutting activities**

- **Call - Digitising and transforming European industry and services: digital innovation hubs and platforms**

- **Call - Cybersecurity**

Artificial Intelligence and Technologies for Digitising European Industry and Economy 2020

349,5M€
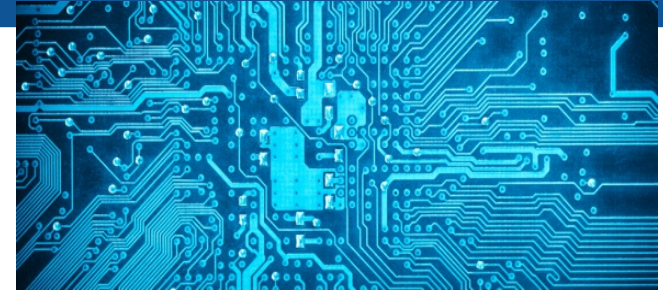
- Cover wide range of ICT technologies including micro-electronics, cyberphysical systems, photonics and robotics. Systemic integration from smart integrated components to cyber-physical systems

- Complementary to the JU for Electronic Components and Systems (ECSEL JU)

- Organised in eight topics in 2020:
  - ICT-46-2020: Robotics in Application Areas and Coordination & Support
  - ICT-47-2020: Research and Innovation boosting promising robotics applications
  - ICT-48-2020: Towards a vibrant European network of AI excellence centres
  - ICT-49-2020: Artificial Intelligence on demand platform
  - ICT-38-2020: Artificial intelligence for manufacturing
  - ICT-36-2020: Disruptive photonics technologies
  - ICT-37-2020: Advancing photonics technologies and application driven photonics components and the innovation ecosystem
  - ICT-50-2020: Software Technologies

Photonics calls in ICT Workprogramme 2020, part I

ICT-36-2020 Disruptive photonics technologies [budget 47.5 M€]
Research & Innovation Actions
i. 3D light field and holographic displays
ii. Packaging and module integration for photonic integrated circuits (PIC)
iii. Light to Fuel
iv. Next generation biophotonics methods and devices as research tools to understand the cellular origin of diseases

ICT-37-2020 Advancing photonics technologies and application driven photonics components and the innovation ecosystem [49 M€]
Research & Innovation Actions [30 M€]
i. Flexible Farm-to-Fork Sensing
ii. Novel Photonics Integrated Circuit (PIC) Technology building blocks

Innovation Actions [15 M€]
iii. Smart Photonic for Environmental Pollution Detection Sensing

Coordination and Support [4 M€]
iv. An industrial strategy for photonics in Europe

Photonics calls in ICT Workprogramme 2020, part II

DT-ICT-03-2020: I4MS (phase 4) - uptake of digital game changers

Innovation Actions
• Laser based equipment in advanced and additive manufacturing
[1 out of 6 topics with total budget of 72 M€]

DT-04-2020: Photonics Innovation Hubs [budget 20 M€]

Innovation Actions

ICT-36-2020 i: 3D light field and holographic displays

Objective is to develop innovative photonics components and systems which enable 3D light field or holographic displays for use in mixed-reality applications and support functionality such as sensing, connectivity, user interaction, and scene recognition etc.

Actions 3-6 M€

Requirements:
➢ Actions must include validation in application settings.

Expected Impact:
❖ enable European system manufacturers to bring to market highly competitive products
❖ build a Europe-centred value chain from of component manufacturing and software up to the system integration

ICT-36-2020 ii. Packaging and module integration for photonic integrated circuits (PIC):

Objective is to develop novel packaging, assembly, module integration technologies or testing approaches to advance scalable production of PIC-based photonic components or modules.

Actions 3-6 M€

Requirements:
➢ Actions must demonstrate the technical and industrial feasibility of the proposed technologies.

Expected Impact:
❖ enable the introduction of PIC technology in new markets.

ICT-36-2020 iii.   Light to Fuel

Objective is to develop photonics devices for the direct and efficient (>5%) conversion of solar energy into chemical fuel.

Actions 3-6 M€

Requirements:
➢ Actions should demonstrate technical and economic feasibility.

Expected Impact:
❖ demonstrate the efficient conversion of solar energy into chemical fuels, with a device efficiency of >5% and payback period of <10 years.
❖ enable Europe taking the lead in related solar energy conversion industry

ICT-36-2020 iv.   Next generation biophotonics methods and devices as research tools to understand the cellular origin of diseases

Objective is to develop photonics-based in-vivo/in-vitro imaging systems.

Actions 3-6 M€

Requirements:
➢ Actions should include medical/clinical doctors or research laboratories with relevant experience.

Expected Impact:
❖ Gain significant understanding of inter- and/or intra-cellular processes
❖ strengthen Europe's industrial position in the biophotonics-related market for microscopes.

ICT-37-2020 i. Flexible Farm-to-Fork Sensing

Objective is to develop an innovative smart photonic sensor solution in the visible to mid-infrared spectral range for monitoring food quality with respect to microbiological and chemical contamination

Actions 3-5 M€

Requirements:
➤ Actions should must be demonstrated in real settings involving relevant stakeholders along the food supply chain.

Expected Impact:
❖ Increase food yield, quality and safety, and reduce food waste.
❖ Strengthen small/medium-scale farming and local or novel ways of food production and processing.

ICT-36-2020 ii. Novel Photonics Integrated Circuit (PIC) Technology building blocks

Objective is to develop building blocks in photonic integrated circuit technology with significantly enhanced or novel functions. These should form part of comprehensive integration platforms for established or new important application fields.

Actions 3-5 M€

Requirements:
➢ Actions should include should include a validation of results with fabricated PIC prototypes.

Expected Impact:
❖ Reduce the research and development costs of advanced PICs in a wide range of application areas.

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ICT-36-2020 iii. Smart Photonic for Environmental Pollution Detection Sensing

Objective is to develop an innovative, cost-effective, portable, smart hyperspectral sensing system operating in the visible to mid-infrared spectral range, for pollution detection in environmental sensing applications.

Actions 4-7 M€

Requirements:
➢ Actions should must be demonstrated and validated in real settings involving relevant stakeholders.

Expected Impact:
❖ Enable adoption of cloud-connected photonic sensing systems for Community-based environmental pollution monitoring and real-time citizen alert on local pollution levels and related health risks.

ICT-36-2020 iv.   An industrial strategy for photonics in Europe

Objective is to support the development and implementation of a comprehensive industrial strategy for photonics in Europe which strengthens the links to the end user industries.
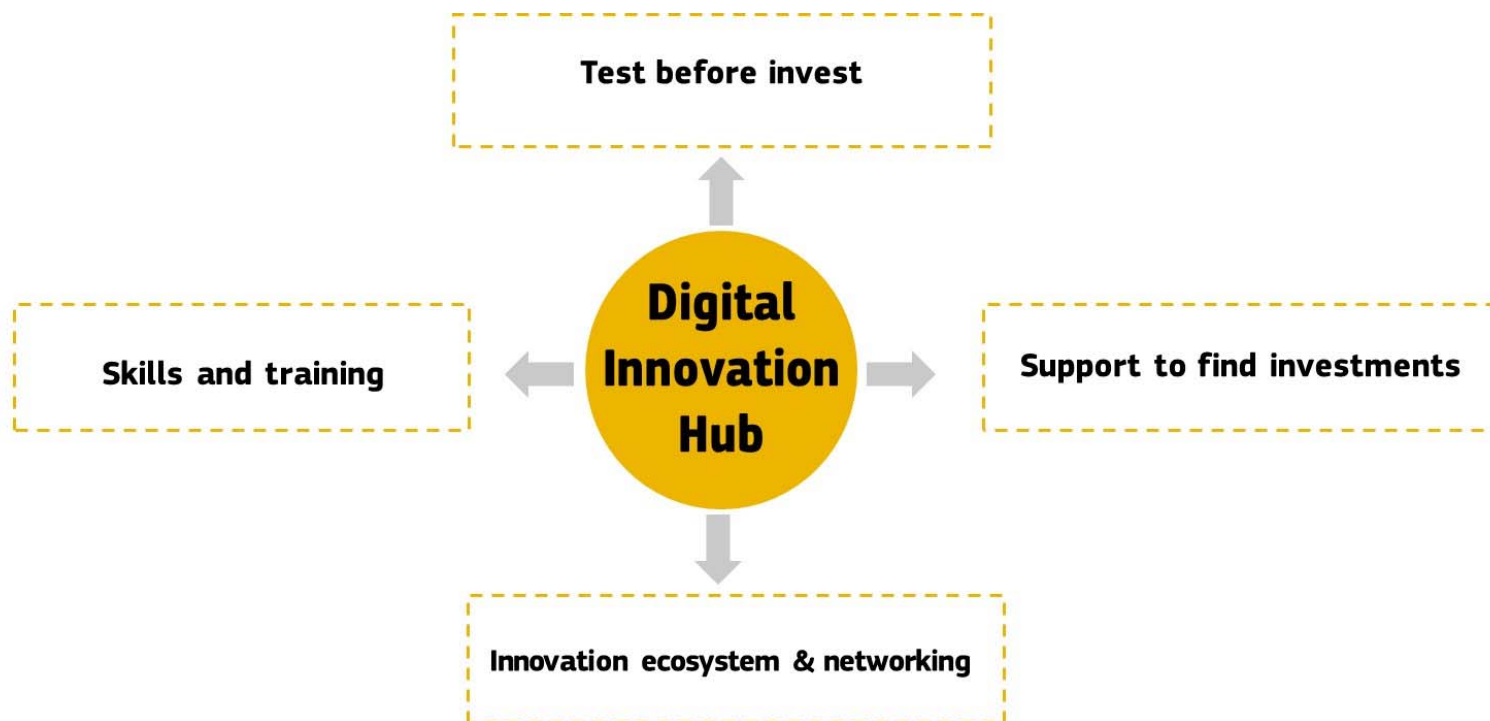
Actions up to 4 M€

Requirements:
➢ Actions should develop strategic technology road-maps.
➢ It should achieve strong stakeholder engagement and coordinate regional, national and European strategies.

Expected Impact:
❖ Reinforce value chains and deployment of photonics technologies by stronger cooperation of photonics stakeholders.
❖ Increase competitiveness of the European photonics sector and improve access to risk finance.

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Digital Innovation Hubs

Digital Innovation Hubs support companies – in particular SMEs – and public organisations in their digital transformation

Test before invest

Skills and training ← **Digital Innovation Hub** → Support to find investments

Innovation ecosystem & networking

Calls on Digital Innovation Hubs: Special requirements

Requirements relating to DT-ICT-03-2020 and DT-04-2020:

➢ Actions should demonstrate that participants are deeply rooted in innovation ecosystems that offer digital transformation services to companies in their proximity.

➢ Actions should support a critical mass of dedicated cross border experiments bringing together technology suppliers and users.

➢ Actions should aim at long-term sustainability and include a business plan for the digital innovation hubs.

➢ Actions should collaborate on building a network of Digital Innovation Hubs, covering most regions in Europe.

DT-ICT-03-2020: I4MS (phase 4) - uptake of digital game changers

Specific Challenge is to accelerate the design, development and uptake of advanced digital technologies by European industry in sectors where digital technologies are underexploited.

Objective is to assess technologies, systems, and processes for <u>laser based equipment in advanced and additive manufacturing</u> and to grasp digitisation opportunities for European SMEs and mid-caps.

Actions up to 8M€

Requirements:
➢ Actions should minimise the entry barriers and demonstrate the clear added value of technologies.

Expected Impact:
❖ Attract a significant number of new users of advanced ICT in the manufacturing sector.

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DT-04-2020: Photonics Innovation Hubs

Specific Challenge is to provide a sustainable ecosystem of research and innovation support for the benefit of SMEs facilitating a broad uptake and integration of photonics technologies.

Objective is to provide a One-stop-shop access to services and capabilities such as expertise, training, prototyping, design, engineering, business support and pilot manufacturing for first users and early adopters.

Actions up to 20 M€

Requirements:
➢ Actions must build on relevant previous European initiatives and existing infrastructure at European and regional level.

Expected Impact:
❖ Improve uptake of photonics technology by end-user industry, in particular SMEs.

Network of Digital Innovation Hubs:

https://ec.europa.eu/digital-single-market/en/digital-innovation-hubs

Catalogue of Digital Innovation Hubs

https://ec.europa.eu/futurium/en/content/digital-innovation-hubs-catalogue-project-0

http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-catalogue

Photonics example projects towards DIH:
APOLLO, LASHARE, ACTPHAST,..

Artificial Intelligence and Technologies for Digitising European Industry and economy			
ICT-46-2020	19/11/19-22/04/20	Robotics in Application Areas and Coordination & Support	
ICT-47-2020	19/11/19-22/04/20	Research and Innovation boosting promising robotics applications	
ICT-48-2020	09/07/19-13/11/19	Towards a vibrant European network of AI excellence centres	
ICT-49-2020	19/11/19-22/04/20	Artificial Intelligence on demand platform	
ICT-38-2020	09/07/19-16/01/20	Artificial intelligence for manufacturing	
ICT-36-2020	19/11/19-22/04/20	Disruptive photonics technologies	
ICT-37-2020	19/11/19-22/04/20	Advancing photonics technologies and application driven photonics components and the innovation ecosystem	
ICT-50-2020	09/07/19-16/01/20	Software Technologies	

European Data Infrastructure: Big Data and Cloud technologies		
ICT-51-2020	09/07/19-16/01/20	Big Data technologies and extreme-scale analytics
ICT-40-2020	19/11/19-22/04/20	Cloud Computing: towards a smart cloud computing continuum
5G		
ICT-52-2020	19/11/19-22/04/20	5G PPP – Smart Connectivity beyond 5G
ICT-41-2020	19/11/19-22/04/20	5G PPP – 5G innovations for verticals with third party services
ICT-42-2020	09/07/19-16/01/20	5G PPP – 5G core technologies innovation
ICT-53-2020	09/07/19-13/11/19	5G PPP – 5G for Connected and Automated Mobility (CAM)
Next Generation Internet (NGI)		
ICT-54-2020	09/07/19-16/01/20	Blockchain for the Next Generation Internet
ICT-55-2020	09/07/19-13/11/19	Interactive Technologies
ICT-56-2020	09/07/19-16/01/20	Next Generation Internet of Things
ICT-57-2020	19/11/19-22/04/20	An empowering, inclusive Next Generation Internet
ICT-44-2020	09/07/19-16/01/20	Next Generation Media

Cross-cutting activities		
ICT-45-2020	09/07/19-13/11/19	Reinforcing European presence in international ICT standardisation: Standardisation Observatory and Support Facility
International cooperation activities		
ICT-58-2020	19/11/19-22/04/20	International partnership building between European and African innovation hubs
Digitising and transforming European industry and services: digital innovation hubs and platforms		
DT-ICT-03-2020	09/07/19-13/11/19	I4MS (phase 4) - uptake of digital game changers
DT-ICT-04-2020	19/11/19-22/04/20	Photonics Innovation Hubs
DT-ICT-05-2020	09/07/19-13/11/19	Big Data Innovation Hubs
DT-ICT-09-2020	19/11/19-22/04/20	Boost rural economies through cross-sector digital service platforms
DT-ICT-12-2020	19/11/19-22/04/20	AI for the smart hospital of the future

Lessons learned; tips and suggestions

- *Respect the page limitations in your proposal – RIA/IA 70 pages – CSA 50 pages.*

- *Make sure you address and submit under the correct topic*

- *Read carefully the work programme/call texts <u>including</u> introduction text and address all the requirements*

- *Read carefully the proposal template and its instructions and guidance – and implement them properly, be aware of the evaluation criteria*

- *Check SME status, SME budget is potentially a ranking criterion (in case of ties)*

- *Re-submission: high risk of failure if not truly addressing the new call*

- *Get somebody who was not involved to read your proposal "it was so obvious to the proposers what they were planning that they forgot to mention it"*

- *Check the PDF conversion of your proposal*

- *Do not wait until the last minute (= last day) to submit*

Addressing (… and assessing) IPR Issues

➢ *Do not postpone IPR issues to the consortium agreement but outline in the proposal your strategy for management of IPRs and their protection*

For example:

- *Check existing patents – state whether they can be a barrier to exploitation and how you intend to overcome it → Freedom to Operate*

- *Clearly outline the expected IPRs from your project (capable of commercial/industrial exploitation)*

- *Outline how you will handle / share background information and expected project results and how do you envisage to protect your results*

European Commission

Impact

- *Provide the baseline, targets and metrics to measure the impact*

Gender

- *Do not confuse "gender dimension" (i.e. integrating sex and gender analysis into the content of the action) with "gender balance" of the research teams (especially in case of the biophotonic themes and CSA in ICT-05)*

Other

- *Monitor your mailbox and react immediately if contacted*
- *Monitor the call/topic website for updates and Q&As/FAQs*
  - *Home: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home*
  - *Search for e.g. "ICT-03" or "ICT-05"*

Venue:

Messukeskus Expo and Convention Centre, Helsinki
https://messukeskus.com/

Website and registration:
https://ec.europa.eu/digital-single-market/en/news/digital-excellence-forum-ict-proposers-day-2019

Thank you !

#DigitalEurope

http://ec.europa.eu/digital-europe

European Commission