



Centre for Sensors, Instruments and  
Systems Development

UNIVERSITAT POLITECNICA DE CATALUNYA

Shaping light to your needs

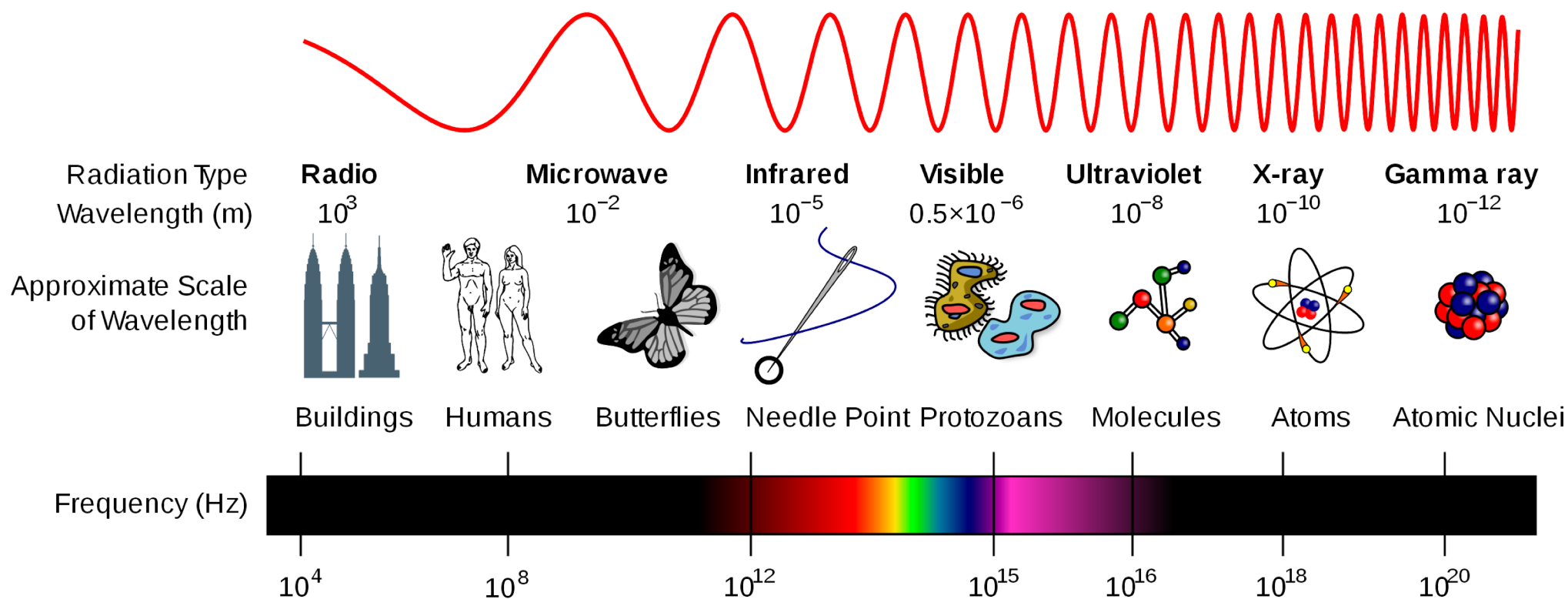
# ACTPHAST4.0

## Enabling IoT opportunities with Photonics

BARCELONATECH · 2019

# Photonics, the science of light

- Photonics is the technology of generating, controlling, and detecting light waves and photons (particles of light.)
- Taking advantage of all the electromagnetic spectrum





# Photonics enables opportunities

Photonics is a Key Enabling Technology -> Allows the development of new applications when combined with other technologies.



# Photonics in IoT

## Communications

- Optical Fiber, LiFi, lasers, optical connectors, photodiodes, ...

## Industry

- Industry 4.0

## Automotive

- Advanced Driver Assistance Systems (ADAS)
- Connected Vehicle (V2V, V2I, V2D)

## Environmental Monitoring

- Monitoring of air, water, soil, forests, snowfall levels, temperature, humidity, pollutants detection, ...
- Natural disaster early alarms, fisheries, smart cities, ...

## Smart homes, offices, and gadgets

- Wearables, smart illumination systems (sales), ...



# CD6: Shaping light to your needs

- Staff: 37 people
  - 10 researchers
  - 15 R+D Engineers
  - 8 PhD Students
  - 4 Management
- Multidisciplinary:
  - Photonics & Optics
  - Mechanics
  - Electronics
  - Software
- Site:
  - 1800 m<sup>2</sup>
  - Research labs
  - Mechanic & Electronic Workshops



**Development of prototypes and turn-key instruments**

# ACTPHAST4.0

- A one-stop-shop photonics innovation incubator
- Integrating more than 200 top-experts from 25 institutes
- Objective: Accelerate the business of European SMEs to industry



## • ACTPHAST 4.0 partners

1. VUB - coordinator
- 2 a. CNRS-UJM
- 2 b. CNRS-IOTA
- 2 c. CNRS-UFC
- 2 d. CNRS-CAEN
- 2 e. CNRS-Fresnel
3. KIT
4. WUT
5. ICCS
6. UCC
7. TU/e
8. IMEC
9. TNO
10. VTT
11. LIO
- 12 a. Fraunhofer -HHI
- 12 b. Fraunhofer -FEP
13. ICFO
14. ORC
15. EUF
16. CNIT
17. UMCS
18. ITME
19. FORTH
20. IPHT
21. CNR
22. JR
23. UPC
24. SPH
25. EUN







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# ACTPHAST4.0

ACT  
PHAST4.0

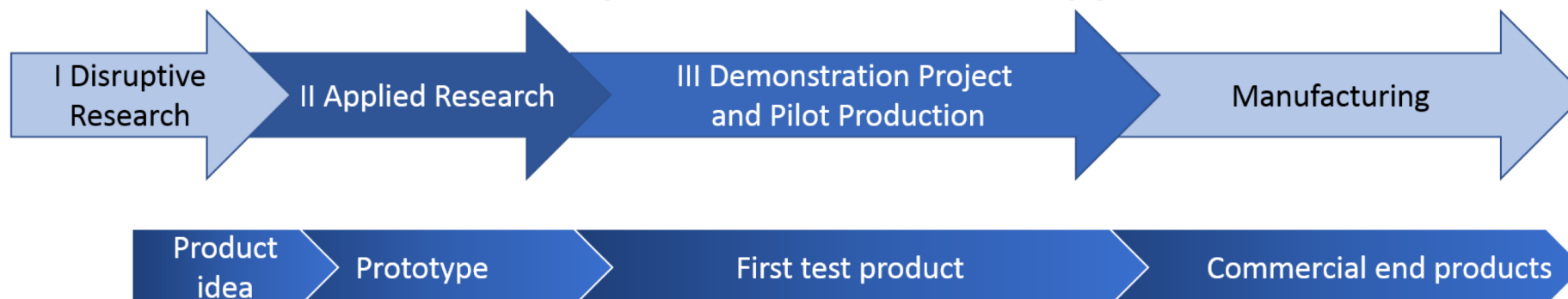
Photonics  
Innovation  
Incubator

TRL1: Basic principles observed	TRL2: Technology concept formulated	TRL3: Experi- mental proof of concept	TRL4: Techno- logy vali- dation in lab	TRL5: Tech. vali- dation in relevant en- vironment	TRL6: Demonstra- tion in rele- vant en- vironment	TRL7: Demonstra- tion in ope- rational en- vironment	TRL8: System complete and qualified	TRL9: Success- ful missions operation
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## ACTPHAST

### Pre-competitive innovation support



# How does ACTPHAST4.0 work?



## 1 - Registration of interest

A company must make a formal initial request for support using the online registration form on the ACTPHAST 4.0 website.



## 2 - Central Contact Point & Business Coach

All registrations of interest come through to the ACTPHAST 4.0 Central Contact Point (CCP) and are assigned to a Central Business Coach for rapid follow-up driven by the company's business need.



## 3 - Technical Coordination Team

Once qualified as a "potential" innovation project, the details of the request are passed to the ACTPHAST 4.0 Technical Coordination Team (TCT) in order to identify and appoint the most suitable technical expert from the pool of up to 200 top photonics experts amongst the ACTPHAST 4.0 Partners, who offers the best match with the requirements of the company.



## 4 - Scouting Engagement

Once a suitable expert is appointed to a project, the next step is for that person plus the Business Coach to arrange for an in-depth discussion with the company about the potential project under NDA and to jointly submit a scouting report.



## 5 - Innovation Project Proposal

If the scouting report provides a positive recommendation to proceed with a full project proposal, and this recommendation is accepted by the TCT, then a suitable person from the ACTPHAST 4.0 Partners is selected and appointed to act as Project Leader to write the detailed proposal together with the Business Coach and the company.



## 6 - Evaluation Meeting

The ACTPHAST 4.0 TCT members meet once every two months to evaluate submitted Innovation Project Proposals and decide which proposals should be approved for support.



## 7 - Contract

Where an innovation project is approved for support, the next step is the process of preparing and signing the contract document between all of the relevant parties to the project.



## 8 - Project Execution & Follow-Up

Once the contract is signed, the project commences with a formal kick-off meeting between all of the parties and project team members. The Business Coach stays in continuous contact for post-project follow-up on impact and to make connections with the Photonics Pilot Lines and Venture Forum where appropriate for full commercial exploitation of the innovation.



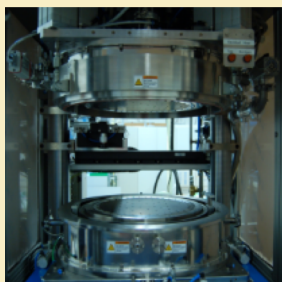
## Eligibility criteria & Support

- Any European company may be supported (significant R&D and production presence within the EU).
- Focused on SMEs (Large companies are welcome).
- An IPR agreement between the Company and the R+D is mandatory.
- ACTPHAST4.0 funds the costs of the tasks developed by the R+D partner:
  - SME's: 100% subsidy for the first 30K€ and 75% subsidy for costs above 30K€
  - Large Companies: 50% subsidy

**LAMBDA-X**  
ADVANCED VISION & METROLOGY



**Head-up displays  
for avionics**



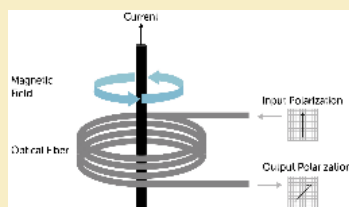
**hot embossing  
of free-form optics**

**VUB  
KIT**

**salunda**



**fluid monitoring in  
harsh environments**



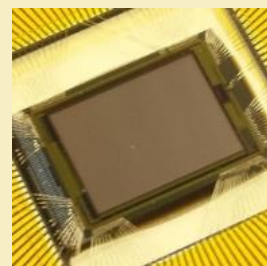
**optical magnetic  
field sensor**

**ORC**

**insightness**



**augmented reality**



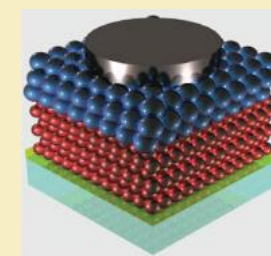
**smart-pixel  
vision sensor**

**VTT**

**sensichips**



**multicriteria  
fire detection**



**colloidal UV/SWIR  
quantum detectors  
for sensing**

**CNIT**





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## Further information:



<https://actphast.eu/>

<https://www.cd6.upc.edu/partnership-actphast40.php>



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I TECNOLOGIA

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