Electronic Smart Systems and Flexible & Wearable Electronics

Thursday 9 November 2017, 16:00 – 17:30

Henri Rajbenbach, Francisco J. Ibañez

DIGITISING EUROPEAN INDUSTRY

Outline

ICT Workprogramme 2018-2020 – Funding opportunities

ICT-02 - Flexible and wearable electronics

Project portfolio

Challenge, Scope, Expected impact and funding instrument

Other opportunities:

DT-NMBP 18-2019:

Materials, manufacturing processes and devices for organic and large area electronics

DT-ICT-01-2019: Smart Anything Everywhere

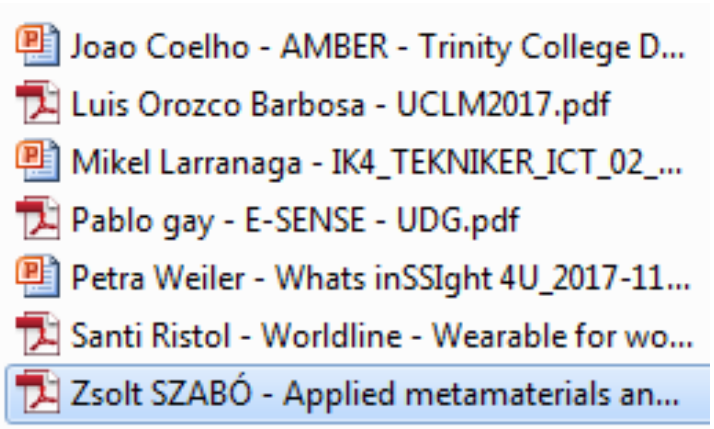
ICT-07 - Electronic Smart Systems

Project portfolio

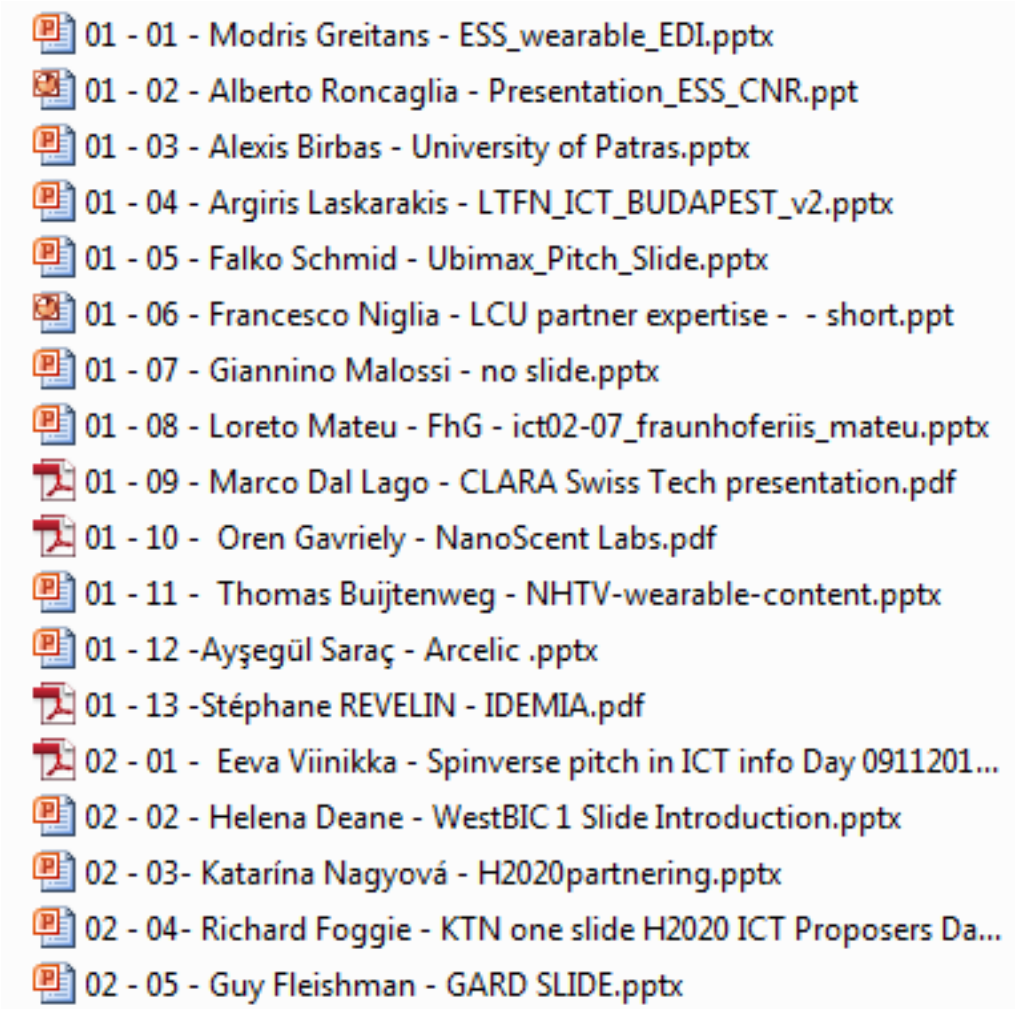
Challenge, scope, expected impact and funding instruments

European Commission

Proposal ideas

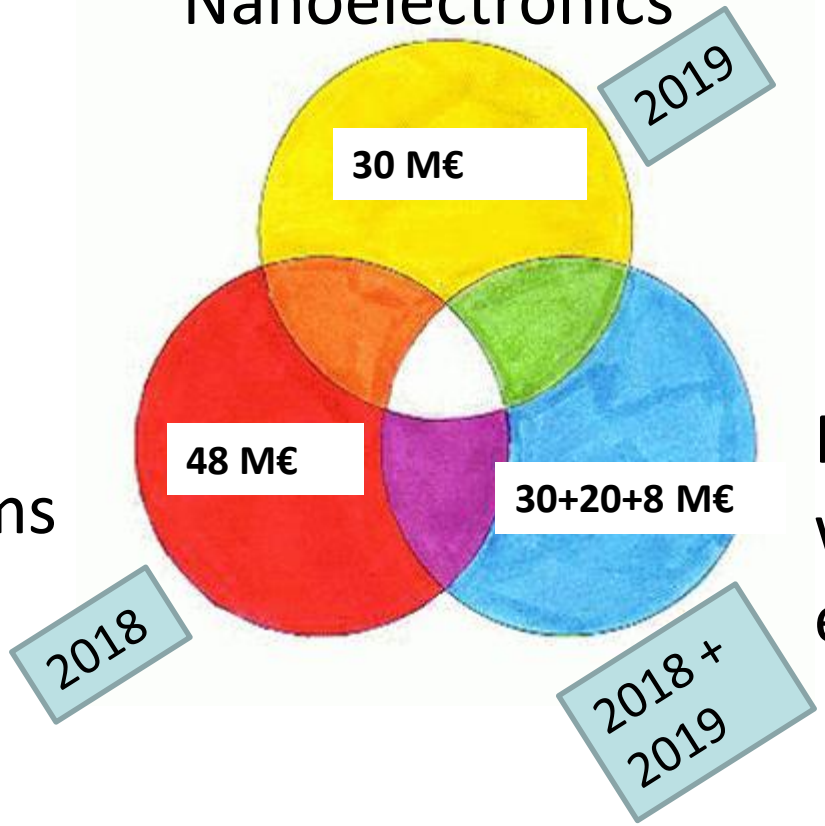


Expertise



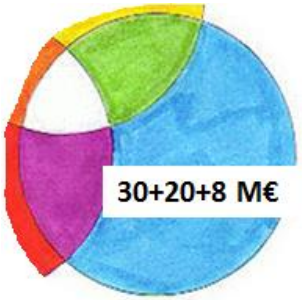
Reinforcing the Electronics sector in Europe

Unconventional Nanoelectronics



Electronic Smart Systems

Flexible and wearable electronics



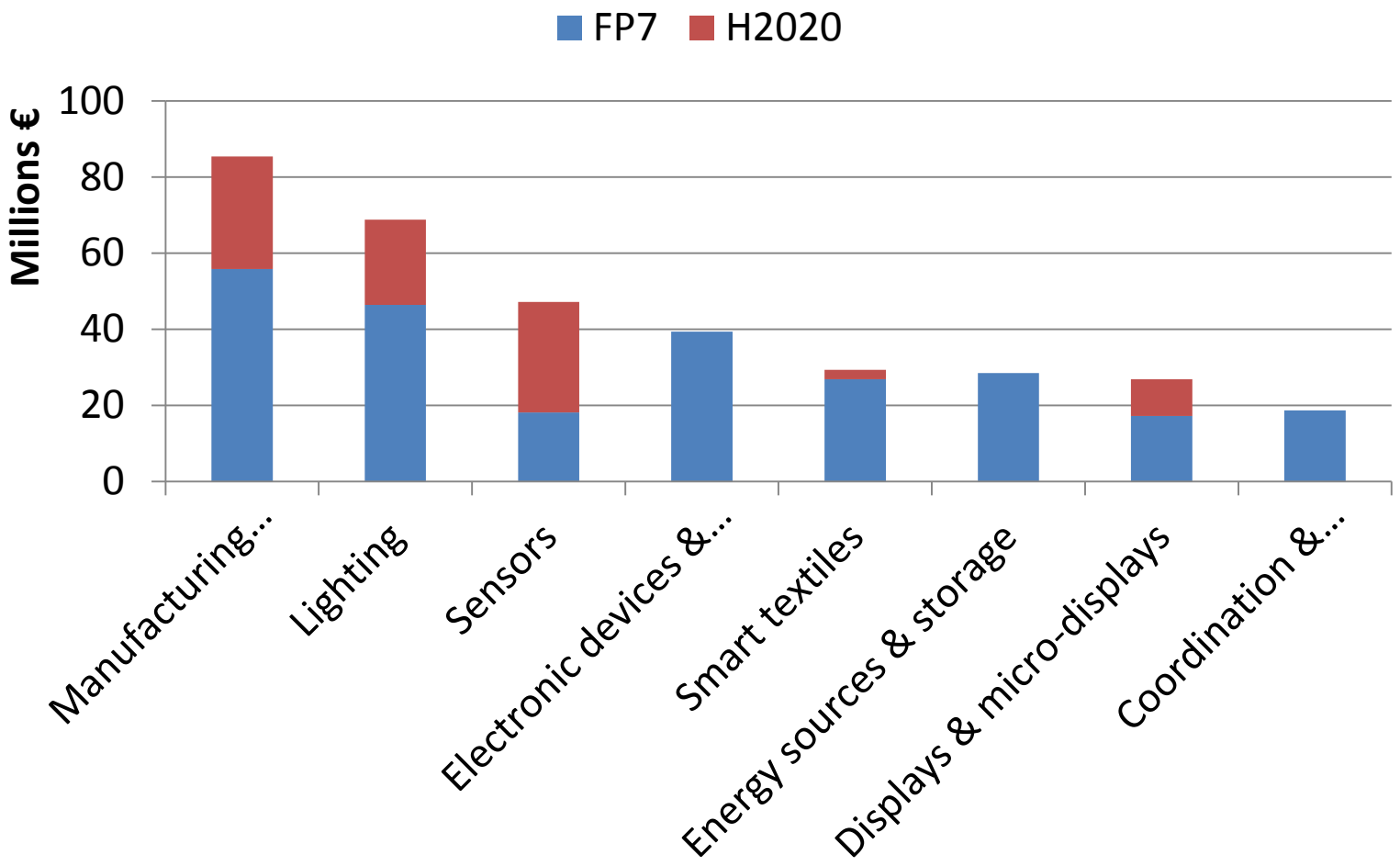
ICT-02

, and other Large Area Electronics initiatives

Large Area Electronics

- Long-standing EC support -

M€

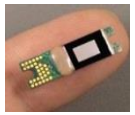


Large Area Electronics in H2020

– Application sectors -

30+20+8 M€

Displays | Lighting | Sensors → Automotive | Medical | Entertainment | Smart home | manufacturing



LOMID - flexible OLED-CMOS large microdisplays
Wafer thinning – 200 mm wafers

Optintegral - LED displays for advertisement
In-mould hybrid integration

10 M€

PHEBE
Efficient blue emitters for white OLEDs

LEO
Low cost energy efficient OLEDs for lighting

LUMENTILE
Lighting and sensing tiles

66 M€

SOLEDLIGHT
Solution processed OLEDs for lighting

FLEXOLIGHTING
Flexible OLEDs for lighting

HAPPINESS
Haptic interface for automotive dashboards – with EAP – Electo Active Polymers - Printed

LORIX
Large area organic X-Ray Flat-Panel detectors
Printed Organic Photo Diode (OPD) + Thin Film Transistors active matrices (TFT),

PING
Flexible NFC techno embedded in paper
Game cards and Packaging

18,3 M€

TransFlexTeg
large area distributed sensors
transparent thin film thermoelectric devices and sensors
Smart windows

ALABO - Laser scribing OPV

7.7 M€

ROLL-OUT - Roll-to-Roll – automotive, packaging, textile

RIA
IA

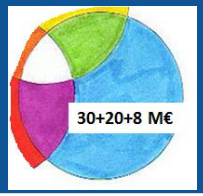
The Challenge

Challenge

- **Large area processes →**

  lightweight, flexible, printed multi-functional electronic products

- **Pushing technology barriers**
- **Open new opportunities in existing and emerging markets**



ICT-02-2018 (Flexible and Wearable Electronics)

The Scope

Scope

- Enhancing manufacturability

TRL 4

Combine Organic/printed electronics and large area deposition technologies

→Multi-functional components

→ Equipment and processes for:

Large scale fabrication, Mass-customisation, Characterisation

- Integration technologies

TRL 4-5

New concepts for the Integration of: Transducers, Energy storage, Data storage, Logic, Displays, Light sources, Interconnect

- Device demonstration

Prototype validation in specific applications

- Integration of electronic devices in wearables /portable setting (Textiles, flexible/streatchable substrates
- Compatibility with low-cost manufacturing, Efficient energy scavenging and storage
- Functional performance, Durability and reliability
- Privacy, Security, Liability and free flow of data, Recyclability, waste management

TRL 4-5

Expected Impact & Instrument

Expected Impact

Tech-R&D

- Technology leaps in performance:
  - Functionalities, autonomy, reliability, manufacturability, cost
    - → European leadership in Large Area, flexible and wearable electronics
- Increased R&D cooperation in technology device development and related manufacturing process

New Opportunities (products-sectors)

- Emergence of new products (combining printed and large area processed electronics)
- New opportunities in new sectors, for new actors (eg designers, artists..)

Economy-Finances

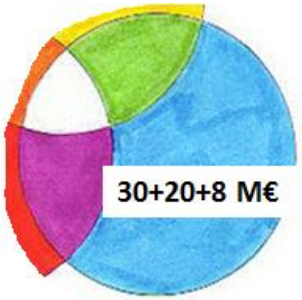
- More manufacturing capabilities in Europe
- More industrial investments in flexible and wearable electronics

Instrument

Research and Innovation Actions (RIA)

30 M€ - 100% funding

Submission deadline: 17-April-2018



Additional opportunities in Large area electronics

DT-NMBP 18-2019 :

Materials, manufacturing processes and devices for organic and large area electronics

30+20+8 M€

Challenge

Advance the technology readiness level of Organic / Large area Electronics

→ to advance its manufacturability

Via: Demonstration of OLAE-enables prototypes in selected applications

Work to cover:

materials, manufacturing processes and devices

Scope

- Material : Electrical performance, Processibility and seamless integration
  Stability, lifetime in operation
- Processes: Seamless integration into traditional/new products
  High speed integration processes on flexible substrates
- Prototyping of advanced products

Start TRL 3
Achieve TRL 5

Expected Impact

- New products in flexible and wearable electronics.
- Improvement in cost competitiveness
- Improved stability, mobility, lifetime, processibility
- Improved business opportunities and value creation in Europe
- Development of manufacturing capabilities in Europe

The Instrument

Innovation Actions (IA)

20 M€* - 70% funding

** Co-funded by ICT and NMBP programmes*

Deadline for submission (2-step procedure): 22-jan-2019 and 5-Sept-2019

DT-ICT-01-2019: Smart Anything Everywhere

30+20+8 M€

Challenge

Accelerate design, development and uptake of Digital technologies in products
Components, software and systems
Address sectors where digital technologies are underexploited

Special emphasis on SMEs and Mid-caps

Scope

Area 3: Flexible an Wearable Electronics

Help businesses in further maturing, innovating and validating products

Focus: **Access to design, technology and prototyping which are ready to use**
application experiments driven by concrete user requirements and business cases

Expected Impact

(all to be addressed)

- **Attract a significant number of new users and more innovative technology supr**
  in particular SMEs and mid-caps.
- **Creation of a sustainable network of Digital Innovation Hubs**
  - **added value to investments done at national and regional level in**
    Innovation Hubs.
- **Availability of Digital Innovation Hub services across Europe**

Instrument

Up to 8M€ (part of 48 € for 4 areas)

Innovation Actions (IA)

Submission deadline: 2-April-2018

www.smartanythingeverywhere.eu

Your travelling agenda

22-24-Nov-2017, Graz

5-7-Dec-2017, Brussels

https://efecs.eu/

12-13 -Dec-2017, Amsterdam

http://www.micronanoconference.org/

13-15-March-2018, München

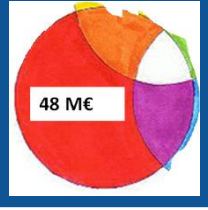
17 April 2018, Brussels

call submission deadline (ICT-02 and ICT-07)

ICT-07

Electronic Smart Systems

Electronic Smart Systems (ESS)
ICT-07-2018



The Challenge

- **Develop a new generation of multi-functional ESS technologies**

  Hardware integration of Sensing, actuating, processing, wireless transmission

- **Validation of ESS technologies, via application demonstrators**

The Instruments and €

- Research and Innovation Actions (RIA)	**39 M€ - 100% funding**
- Innovation Actions (IA)	**8 M€ - 70% funding**
- Coordination and Support Actions (CSA)	**1 M€ - 100% funding**

Electronic Smart Systems (ESS)
ICT-07-2018

48 M€

The Scope (RIA)

- Research and Innovation Actions (RIA)

TRL 4

a - **Technological breakthroughs:**

miniaturisation
functionalities
power consumption, autonomy
reliability
secure operation

Industrial exploitation
Application perspectives

TRL 5

b – **Bio-electronics Smart Systems:**

Cost effective miniaturisation, manufacturing and demonstration:

specificity/sensitivity
time to results
reliability
manufacturability

User needs
Market/business case

submission: 17 April 2018

39 M€ - 100% funding

Electronic Smart Systems (ESS)
ICT-07-2018

48 M€

The Scope (IA and CSA)

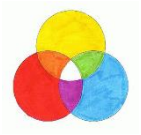
- **Innovation Actions (IA)**

  Access to Nanoelectronics and Electronic Smart Systems

  - Access to advance design and manufacturing (academia, research institutes, SMEs)
  - Rapid prototyping production for SMEs and market deployment
  - Technical support and training

  8 M€ - 70% funding

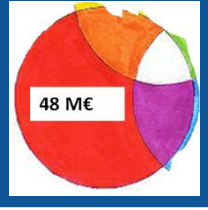
- **Coordination and Support Actions (CSA)**



  - Collaboration between projects/experts in
    Nanoelectronics+ Electronic Smart Systems+ Flexible /wearable electronics
  - Increase outreach
  - International cooperation
  - Technology/development monitoring
  - Roadmapping

  1 M€ - 100% funding

submission: 17 April 2018



Electronic Smart Systems (ESS) ICT-07-2018

The Expected impact

Technology / R&D

- **Build a European Leadership for system performances**
- **Improved ESS manufacturing capabilities in Europe**
- **Increase cooperation – Promote multi-disciplinary initiatives**

New opportunities (sector, product)

- **New opportunities for digitising in traditional sectors**
- **New users in industry (SMEs, mid-caps) and academia**

Economy/Finances

- **More industrial investments**
- **Increased market penetration for ESS and bio-electronics systems**
- **Increased long-term industrial involvement in R&I**

Proposal ideas

- Joao Coelho - AMBER - Trinity College Dublin.pdf
- Luis Orozco Barbosa - UCLM.pdf
- Mikel Larranaga - IK4 TEKNIKER.pdf
- Pablo gay - E-SENSE - UDG.pdf
- Petra Weiler - Whats inSSIght 4U_2017-11-09.pdf
- Santi Ristol - Worldline.pdf
- Zsolt SZABÓ - BUTE.pdf

Expertise

- 01 - 01 - Modris Greitans - EDI.pdf
- 01 - 02 - Alberto Roncaglia - CNR.pdf
- 01 - 03 - Alexis Birbas - University of Patras.pdf
- 01 - 04 - Argiris Laskarakis - LTFN.pdf
- 01 - 05 - Falko Schmid - Ubimax.pdf
- 01 - 06 - Francesco Niglia - LCU.pdf
- 01 - 07 - Giannino Malossi - WEARsustain - Blumine .pdf
- 01 - 08 - Loreto Mateu - FhG-IIS.pdf
- 01 - 09 - Marco Dal Lago - CLARA Swiss Tech.pdf
- 01 - 10 - Oren Gavriely - NanoScent Labs.pdf
- 01 - 11 - Thomas Buijtenweg - NHTV.pdf
- 01 - 12 -Ayşegül Saraç - Arcelik .pdf
- 01 - 13 -Stéphane REVELIN - IDEMIA.pdf
- 01 - 14 - Peter Hopton - ICEOTOPE.pdf
- 01 - 15 - Janos Mizsei - BME.pdf
- 01 - 16 - Matthew Aylett - CereProc Ltd.pdf
- 02 - 01 - Eeva Viinikka - Spinverse.pdf
- 02 - 02 - Helena Deane - WestBIC.pdf
- 02 - 03- Katarína Nagyová - LC innoconsult.pdf
- 02 - 04- Richard Foggie - KTN-UK.pdf
- 02 - 05 - Guy Fleishman - GARD.pdf

Contacts:

Henri.Rajbenbach@ec.europa.eu

Andreas.Lymberis@ec.europa.eu

Francisco.Ibanez@ec.europa.eu

http://ec.europa.eu/digital-agenda/en/about-components-systems