Electronic Smart Systems and Flexible & Wearable Electronics

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

Henri Rajbenbach, Francisco J. Ibañez

DIGITISING EUROPEAN INDUSTRY
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
Proposal ideas

Joao Coelho - AMBER - Trinity College D...
Luis Orozco Barbosa - UCLM2017.pdf
Mikel Larrañaga - IK4_TEKNIKER_ICT_02_...
Pablo Gay - E-SENSE - UDG.pdf
Petra Weiler - Whats inSSight 4U_2017-11...
Santi Ristol - Worldline - Wearable for wo...
Zsolt SZABÓ - Applied metamaterials an...

Expertise

01 - 01 - Modris Greitans - ESS_wearableEDI.pptx
01 - 02 - Alberto Roncaglia - Presentation_ESS_CNR.pdf
01 - 03 - Alexis Birbas - University of Patras.pptx
01 - 04 - Argiris Laskarakis - LTFN_ICT_BUDAPEST_v2.pptx
01 - 05 - Falko Schmid - Ubimax_Pitch_Slide.pptx
01 - 06 - Francesco Niglia - LCU partner expertise - short.ppt
01 - 07 - Giannino Malossi - no slide.pptx
01 - 08 - Loreto Mateu - FHG - ict02-07_fraunhoferiis_mateu.pptx
01 - 09 - Marco Dal Lago - CLARA Swiss Tech presentation.pdf
01 - 10 - Oren Gavriely - NanoScent Labs.pdf
01 - 11 - Thomas Buijtenweg - NHTV-wearable-content.pptx
01 - 12 - Ayşegül Saraç - Arcelic .pptx
01 - 13 - Stéphane REVELIN - IDEMIA.pdf
02 - 01 - Eeva Viinikka - Spinverse pitch in ICT info Day 0911201...
02 - 02 - Helena Deane - WestBIC 1 Slide Introduction.pptx
02 - 03 - Katarína Nagyová - H2020partnering.pptx
02 - 04 - Richard Foggie - KTN one slide H2020 ICT Proposers Da...
02 - 05 - Guy Fleishman - GARD SLIDE.pptx
Electronic components and systems in WP2018-20

Reinforcing the Electronics sector in Europe

Unconventional Nanoelectronics

Electronic Smart Systems

Flexible and wearable electronics

30 M€

48 M€

30+20+8 M€

2018

2018 + 2019

2019

ICT Proposers days, Budapest, 9-Nov-17
ICT-02
, and other Large Area Electronics initiatives
Large Area Electronics
- Long-standing EC support -

M€

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ICT Proposers days, Budapest, 9-Nov-17
Large Area Electronics in H2020
– Application sectors –

**Displays**
- **Optintegral** - LED displays for advertisement
  - In-mould hybrid integration

**Lighting**
- **OMID** - flexible OLED-CMOS large microdisplays
  - Wafer thinning – 200 mm wafers

**Sensors**
- **HAPINESS** - Haptic interface for automotive dashboards – with EAP – Electro Active Polymers - Printed

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

**Medical**
- **PING** - Flexible NFC techno embedded in paper
  - Game cards and Packaging

**Entertainment**
- **TransFlexTeg** - large area distributed sensors
  - Transparent thin film thermoelectric devices and sensors
  - Smart windows

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

**Manufacturing**
- **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

**66 M€**
- **LUMENTILE** - Lighting and sensing tiles

**18,3 M€**
- **SOLEDLIGHT** - Solution processed OLEDs for lighting

**FLEXOLIGHTING** - Flexible OLEDs for lighting

**7.7 M€**
- **ALABO** - Laser scribing OPV

**ROLL-OUT** - Roll-to-Roll – automotive, packaging, textile
The Challenge

- Large area processes → lightweight, flexible, printed multi-functional electronic products
- Pushing technology barriers
- Open new opportunities in existing and emerging markets
- Enhancing manufacturability

Combine Organic/printed electronics and large area deposition technologies

- Multi-functional components
- Equipment and processes for:
  Large scale fabrication, Mass-customisation, Characterisation

- Integration technologies

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/stretchable 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
**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
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**

**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**

- **20 M€** - 70% funding

**Innovation Actions (IA)**

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

*Co-funded by ICT and NMBP programmes*
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 suppliers 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 Digital 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
Your travelling agenda

22-24-Nov-2017, Graz

5-7-Dec-2017, Brussels

12-13-Dec-2017, Amsterdam


17 April 2018, Brussels

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

https://efecs.eu/

http://www.micronanoconference.org/
ICT-07

Electronic Smart Systems
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
The Scope (RIA)

- Research and Innovation Actions (RIA)
  - **Technological breakthroughs:**
    - miniaturisation
    - functionalities
    - power consumption, autonomy
    - reliability
    - secure operation
  - **Bio-electronics Smart Systems:**
    - Cost effective miniaturisation, manufacturing and demonstration:
      - specificity/sensitivity
      - time to results
      - reliability
      - manufacturability

**TRL 4**
Industrial exploitation
Application perspectives

**TRL 5**
User needs
Market/business case

Submission: 17 April 2018

39 M€ - 100% funding
The Scope (IA and CSA)

- Innovation Actions (IA)
  - Access to Nanoelectronics and Electronic Smart Systems
    - Access to advanced 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
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

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- 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
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