EPoSS
European Technology Platform on Smart Systems Integration

Start of the Final H2020 Round: Calls of Relevance for Smart Systems (Integration)

Wolfgang Gessner, EPoSS e.V.

16.01.2019

ECS BROKERAGE
EVENT 2019

15 & 16 January
Hotel Le Plaza, Brussels

Aeneas

ARTEMIS
Industry Association

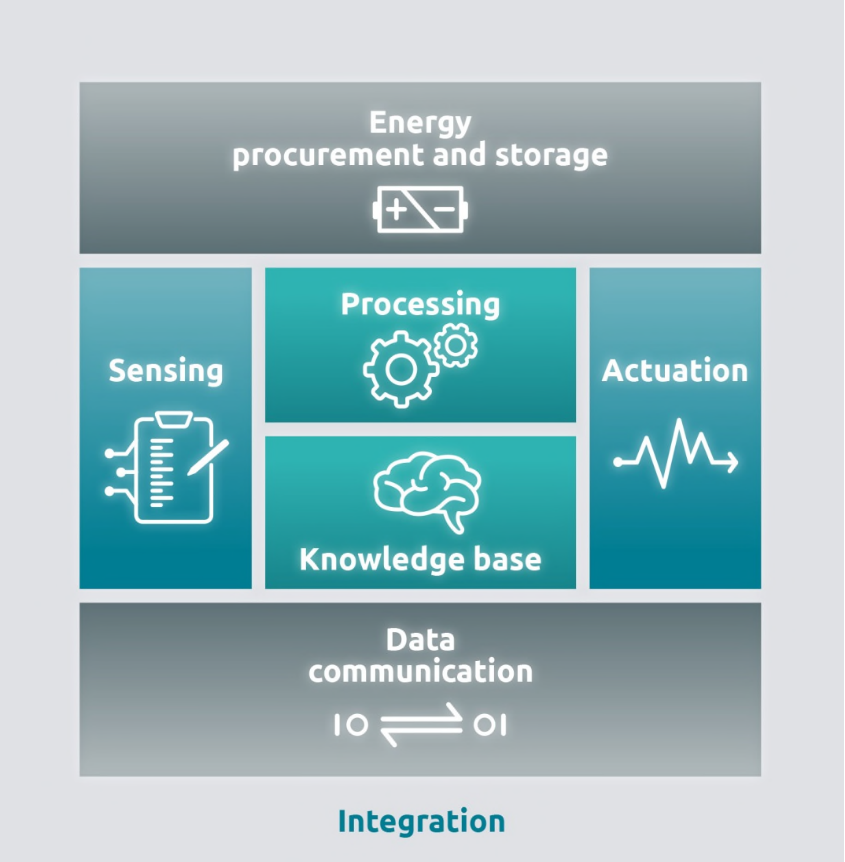
EPoSS
European Technology Platform on Smart Systems Integration

SMART SYSTEMS…

are sensor-actuator based systems …

- are able to describe a situation and diagnose it
- are predictive, able to decide or help to decide
- mutually address and identify each other
- enable the product to interact with the environment.

They are as small as possible, networked & energy autonomous



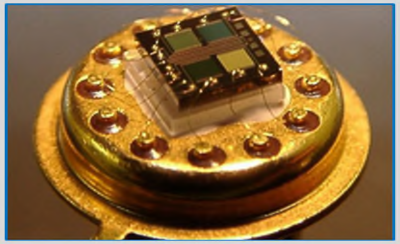
EXAMPLES

…from the major application domains

MEDICAL

Intraocular pressure measurement device (Sensimed, STM)

ENVIRONMENTAL



Recognition system for dangerous substances (FhG IPM)

INDUSTRIAL

Smart systems for robots in collaborative environments (Bosch)

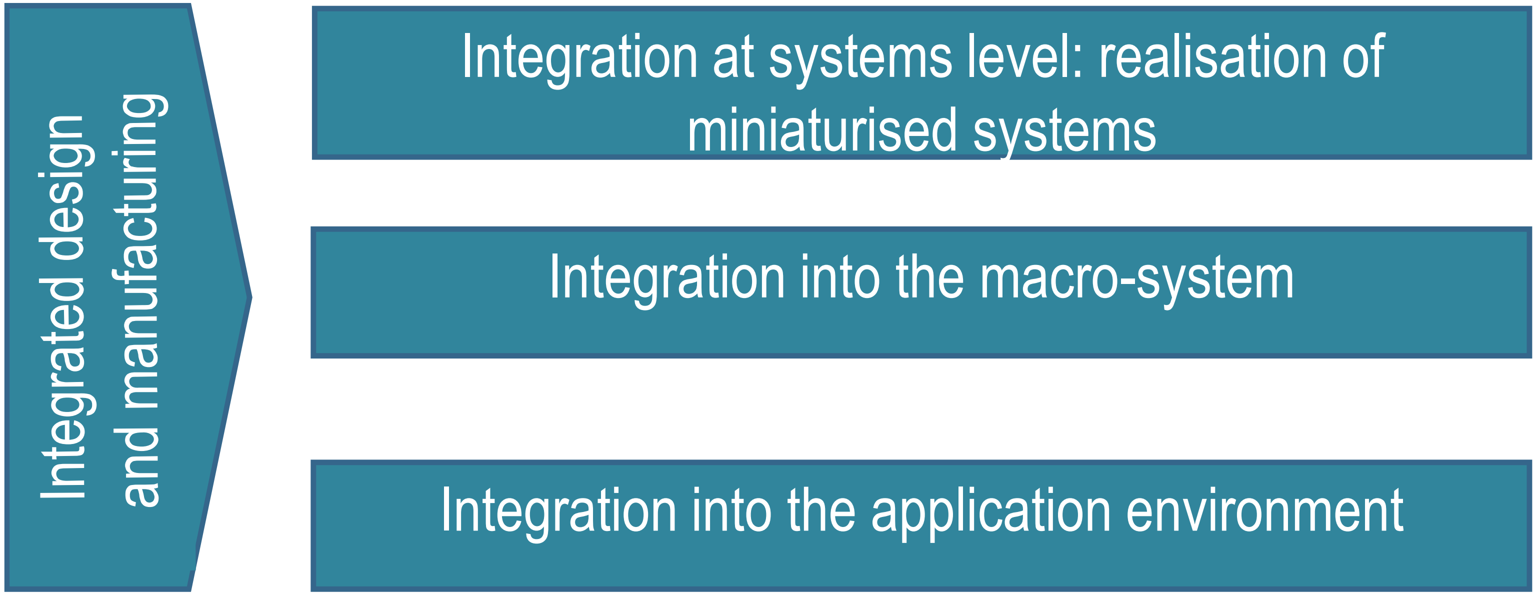
AUTOMOTIVE

Advanced driver assistance systems (Bosch)

EPoSS
European Technology Platform on Smart Systems Integration

SMART SYSTEMS INTEGRATION:

BRIDGING THE GAP FROM THE COMPONENT TO THE PRODUCT



Integrated design and manufacturing

Integration at systems level: realisation of miniaturised systems

Integration into the macro-system

Integration into the application environment

EPoSS

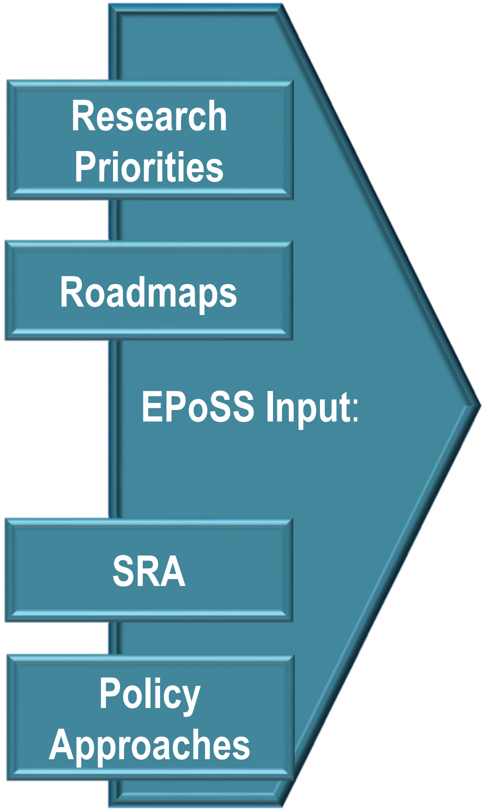
- 2005 First steps
- 2006 Vision paper and first SRA
- 06.07.2006 EPoSS Launch, Brussels

- 18.09.2013 Transformation into an Association with legal status

OBJECTIVES

- Give a voice to the European Microsystems and Smart Systems Community
- Promote Smart Systems R&D
- Contribute to European R&D&I Policy
- Realise advantages for the members

EPOSS IN THE EUROPEAN CONTEXT



EPoSS Input:

- Research Priorities
- Roadmaps
- SRA
- Policy Approaches

ECSEL JU

EGVI
European Green Vehicles Initiative

HORIZON 2020

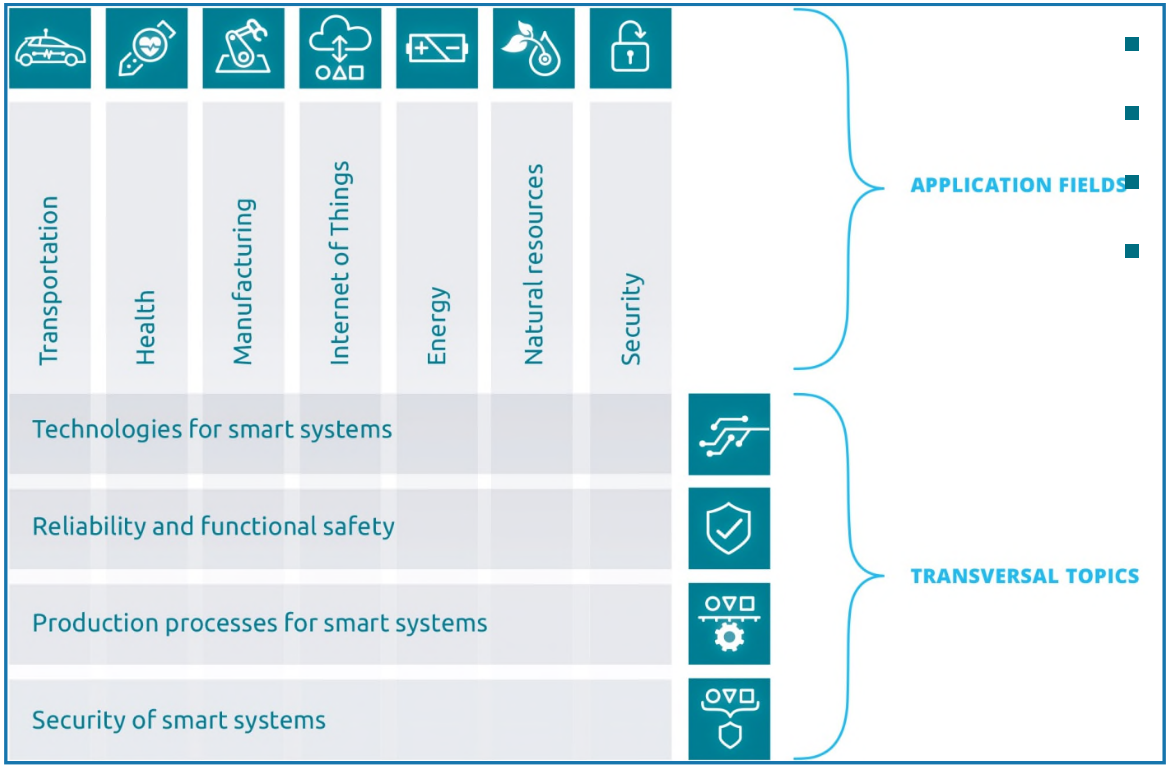
ΣURIPIDES²
Smart Electronic Systems

Interactions and alliances, incl. common roadmaps, MoUs, aligned strategies events, with other initiatives and networks

...

STRATEGIC RESEARCH AGENDA

7 SECTORS – 4 TRANSVERSAL TOPICS



Transportation

Health

Manufacturing

Internet of Things

Energy

Natural resources

Security

APPLICATION FIELDS

Technologies for smart systems

Reliability and functional safety

Production processes for smart systems

Security of smart systems

TRANSVERSAL TOPICS

Focus on

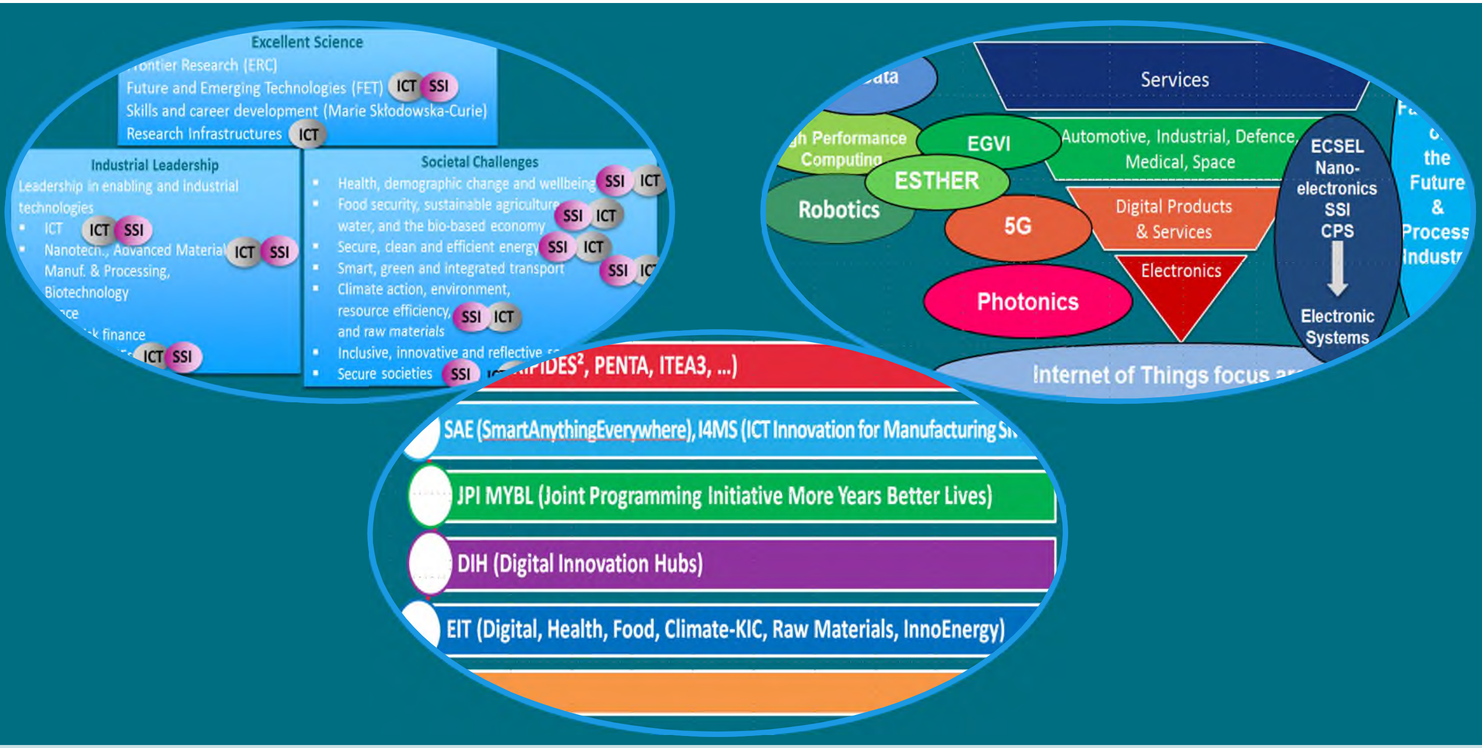
- Objectives
- Strategy
- Impact
- Roadmap

Strategic Research Agenda

Download:

www.smart-systems-integration.org/sra-2017

FUNDING LANDSCAPE FOR SMART SYSTEMS INTEGRATION PROJECTS



H2020 2014-2020: 80 B€ BUDGET

EPoSS
European Technology Platform on Smart Systems Integration

European Commission

Excellent Science

- Frontier Research (ERC)
- Future and Emerging Technologies (FET) ICT SSI
- Skills and career development (Marie Skłodowska-Curie)
- Research Infrastructures ICT

Industrial Leadership

Leadership in enabling and industrial technologies

- ICT ICT SSI
- Nanotech., Advanced Materials, ICT SSI
  Manuf. & Processing,
  Biotechnology
- Space

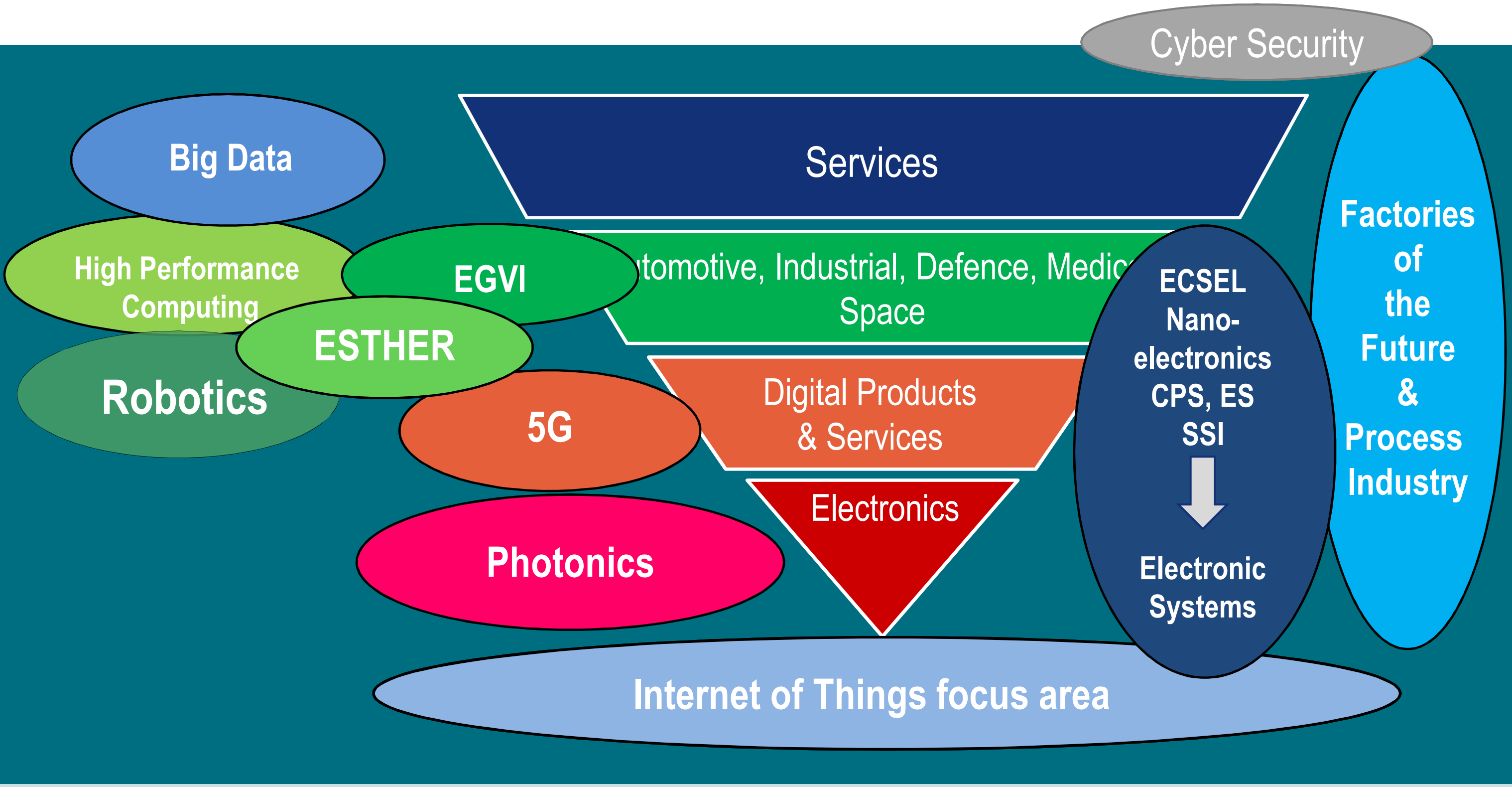
Access to risk finance

Innovation in SMEs ICT SSI

Societal Challenges

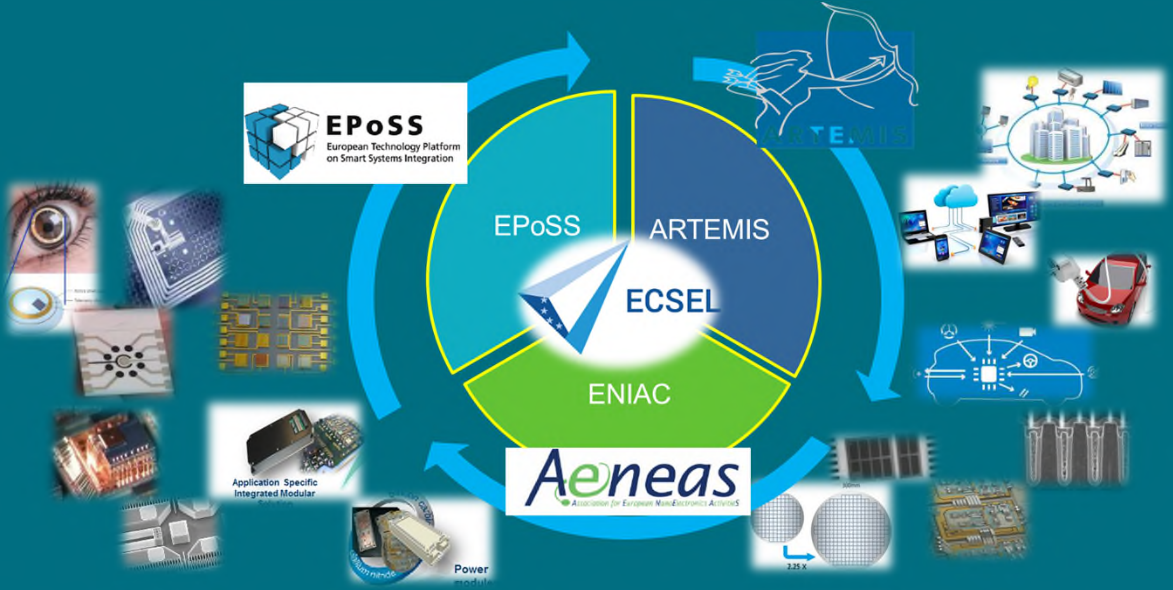
- Health, demographic change and wellbeing SSI ICT
- Food security, sustainable agriculture, SSI ICT
  water, and the bio-based economy SSI ICT
- Secure, clean and efficient energy
- Smart, green and integrated transport SSI ICT
- Climate action, environment, resource efficiency,
  and raw materials SSI ICT
- Inclusive, innovative and reflective societies ICT
- Secure societies SSI ICT

PUBLIC PRIVATE PARTNERSHIPS
> 23 B€ OF INVESTMENT



“To keep Europe at the forefront of electronic components and systems”
[10/07/2013 COM(2013) 494 final]

EPoSS, AENEAS and ARTEMIS-IA are private partners in the ECSEL JTI: Electronic Components and Systems for European Leadership Joint Technology Initiative



ECSEL Joint Undertaking

Electronic Components and Systems for European Leadership

Call 2019 launch: 06 February 2019

PO: 07 May 2019

FPP: 18 September 2019

ECSEL So Far

10	53	More than 1600	2.6 bn€	1.2 bn€	1.4 bn€
Calls	Projects	participations	RDI cost	EU and National funding	industries own financing

OTHER OPPORTUNITIES

- Eureka (EURIPIDES^2, PENTA, ITEA3, …)
- SAE (SmartAnythingEverywhere), I4MS (ICT Innovation for Manufacturing SMEs)
- JPI MYBL (Joint Programming Initiative More Years Better Lives)
- DIH (Digital Innovation Hubs)
- EIT (Digital, Health, Food, Climate-KIC, Raw Materials, InnoEnergy)
- . . .

Call – Information and Communication Technologies (H2020-ICT-2018-2020)

- **ICT-03-2018-2019: Photonics Manufacturing Pilot Lines for Photonic Components and Devices**

  Deadline: 28 March 2019, IA: 30 M€
- **ICT-05-2019: Application driven Photonics components**

  Deadline: 28 March 2019, IA: 30 M€, RIA: 45 M€, CSA: 1,5 M€
- **ICT-06-2019: Unconventional Nanoelectronics**

  Deadline: 28 March 2019, RIA: 30 M€
- **ICT-09-2019-2020: Robotics in Application Areas**

  Deadline: 28 March 2019, IA: 28 M€, RIA: 20 M€, CSA: 2 M€

ICT-06-2019: Unconventional Nanoelectronics

Challenge

- **Europe at the forefront of advanced nanoelectronics**
  → Strategic design and manufacturing in Europe (avoiding critical dependencies)
- **Develop innovative solutions to industrial and societal challenges**

Scope

- Beyond-CMOS devices, e.g. quantum, spintronic, single electron devices
- Energy efficient architectures, e.g. neuromorphic and other hardware implementation
- Specific technological developments, e.g.
  - 3-D stacks (sequential / monolithic) → compactness, heat dissipation…
  - Cryogenic electronics for advance computing (supercomputing, quantum computing…
- Design for advanced nanoelectronics

Instrument

- **RIA, TRL 4, 30 M€ (2-4 M€ per project), Deadline 28 March 2019**

Call – Industrial Sustainability (H2020-NMBP-ST-IND-2018-2020)

- **LC-NMBP-32-2019: Smart materials, systems and structures for energy harvesting**

  Deadline (two-stage): 22 January 2019 / 03 September 2019,
  RIA: 41.1 M€

Main focus on materials, but explicitly mentioning

- Integrate sensor technologies (e.g. MEMS based sensor concepts) and the potential linkage with the Internet of Things (IoT)
- … enable the development of wireless sensor networks, or, deployment of energy harvesting powered sensor nodes …

Call – Sustainable food security (H2020-SFS-2018-2020)

EPoSS
European Technology Platform on Smart Systems Integration

- **SFS-37-2019: Integrated approaches to food safety controls across the food chain**

  Deadline (two-stage): 23 January 2019 / 04 September 2019,
  RIA: 8 M€

Should address:…efficient food safety control systems, supported by reliable authentication and traceability approaches, being implemented across the entire food chain, focusing on the combination of hazard monitoring and control options in the specific stages of the food chain

Call – Digital transformation in health and care (H2020-SC1-DTH-2018-2020)

- **SC1-DTH-01-2019: Big data and Artificial Intelligence for monitoring health status and quality of life after the cancer treatment**

  Deadline: 24 April 2019, RIA: 35 M€
- **SC1-DTH-11-2019: Large scale pilots of personalised & outcome based integrated care**

  Deadline: 24 April 2019, IA: 20 M€
- **SC1-DTH-12-2020: Smart hospital of the future – coming soon**

Call – Digitising and transforming European industry and services: automated road transport (H2020-DT-ART-2018-2019-2020)

- **DT-ART-03-2019: Human centred design for the new driver role in highly automated vehicles**

  Deadline: 25 April 2019, RIA: 8 M€

- **DT-ART-04-2019: Developing and testing shared, connected and cooperative automated vehicle fleets in urban areas for the mobility of all**

  Deadline: 25 April 2019, IA: 30 M€

Call – Building a low-carbon, climate-resilient future: green vehicles (H2020-LC-GV-2018-2019-2020)

- **LC-GV-03-2019: User centric charging infrastructure**

  Deadline: 25 April 2019, IA: 35 M€

- **LC-GV-04-2019: Low-emissions propulsion for long-distance trucks and coaches**

  Deadline: 25 April 2019, IA: 25 M€

- **LC-GV-05-2019: InCo flagship on “Urban mobility and sustainable electrification in large urban areas in developing and emerging economies”**

  Deadline: 25 April 2019, IA: 18 M€

Call – Digitising and transforming European industry and services: digital innovation hubs and platforms (H2020-DT-2018-2020)

- **DT-ICT-01-2019: Smart Anything Everywhere**

  Deadline: 02 April 2019, IA: 48 M€ (8 M€ per project), CSA: 1M€
  - Area 1: Cyber-physical and embedded systems
  - Area 2: Low energy computing, powering CPS and IoT
  - **Area 3: Flexible an Wearable Electronics**
  - Area 4: Digital Innovation hubs in underrepresented regions
- **DT-NMBP-18-2019: Materials, manufacturing processes and devices for organic and large area electronics**

  Deadline (two-stage): 22 January 2019 / 03 September 2019, IA: 20 M€

DT-ICT-01-2019: Smart Anything Everywhere

Challenge

- **Accelerate design, development and uptake of digital technologies by European industry - especially SMEs and mid-caps - in products that include innovative electronic components, software and systems, and especially in sectors where digital technologies are underexploited**

Scope

Of Area 3: Flexible and Wearable Electronics

- Help businesses in further maturing, innovating and validating their products with thin, organic and large area electronics technologies, including wearable, portable and embedded objects
- Focus:
  - Access to design, technology and prototyping which are ready to use
  - Application experiments driven by concrete user requirements and business cases

Instrument

- **IA, up to 8 M€ (part of 48 M€ for 4 areas), Deadline: 2 April 2019**

DT-NMBP-18-2019: Materials, manufacturing processes and devices for organic and large area electronics

Challenge

- **Advance the technology readiness level of Organic / Large area Electronics**
  → to advance its manufacturability
  → via demonstration of OLAE-enabled prototypes in selected applications

Scope

- Materials: Electrical performance, processability, stability, lifetime in operation
- Processes: Seamless integration into traditional/new products, high speed integration processes on flexible substrates
- Prototyping of advanced products

Instrument

- **IA, TRL 3-5, 20 M€ (4-5 M€ per project), co-funded by ICT and NMBP programmes, Deadline (2-step): 22 January 2019 and 5 September 2019**

THANK YOU!

Contact:

Wolfgang Gessner
EPoSS e.V.
Steinplatz 1
10623 Berlin
contact@smart-systems-integration.org