Project Ideas from European brokerage events

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ECS Brokerage 2020, Jan 14-15 Brussels

Plenary event organized to present ECSEL 2020 calls and H2020 and support projects emergence and inception.

- 480 attendees
- 33 project ideas presented

ECS Brokerage 2020, Jan 14-15 Brussels

- All presentations given at the ECS Brokerage are accessible through the following deeplink: https://ecscollaborationtool.eu/ecs-brokerage-event-2020.html#programme
- **ECS Collaboration Tool**
  The ECS Collaboration Tool (ECT) is ready (upon registration) for posting project ideas, searching for project partners and joining consortia.

ECS Brokerage 2020, Jan 14-15 Brussels

Calls:

- H2020-ECSEL-2020-1-IA-two-stage
- H2020-ECSEL-2020-2-RIA-two-stage

PO deadline: 5 May 2020

FPP deadline: 16 September 2020

ECSEL project proposals

Project pitches

1. HOME MADE, Home health monitor for vulnerable elderly at risk for metabolic disease

Contact person: An Stevens, Maastrict University- IDEE (Netherlands)

Email: an.stevens@maastrichtuniversity.nl

Project idea:

- Create an infrastructure for continuous monitoring of vital, metabolic and environmental parameters
- Develop a preventive feedback service (for patients, caregivers and medical professionals)
- Obtain a valuable long-term insight in health/disease parameters

Target: ECSEL IA

Consortium: partners from across EU (including Italy)

Coordinator: TBD

Project pitches

2. EVISION, Embedded Vision Systems for Autonomy and Safety, (resubmission of ECSEL 2019)

Contact person: Rihards Novickis, EDI (Latvia)

Email: rihards.novick@edi.lv

Project idea:

- Develop, integrate and validate an infrastructure for vision based applications
- Sensors, algorithms, processing and communications.

Target: ECSEL RIA

Consortium: Seeking for IDM semiconductor foundry or Silicon IP companies.

Project pitches

3. SCALE, Scalable Maskless Laser Exposure Lithography

Contact person: A. Poenninger, EVG (Austria)

Email: a.poenninger@evgroup.com

Project idea:

- Development of Maskless lithography equipment for HVM
- Validation of various use cases on industrial scale

Target: ECSEL

Consortium: EVG: Equipment development and pilot operation

Partners needed:

Research Institutions

- Test wafer design and processing
- Characterization and metrology

Industrial profiles (LE, SME)

- Manufacturing and assembly of Sensors, MEMS, PCB, Microfluidics,
- Packaging

Support: Metrology and Photoresists

Project pitches

4. ENERGY ECS

Contact person: Eeva Viinikka, Spinverse (FI)

Email: eeva.viinikka@spinverse.com

Project idea:

Develop smart and secure approaches that range from electronics components and systems to security issues for future mobility.

Target: ECSEL IA, 40 partners, 40 MEUR cost,

Partners needed:

- Additional energy-related user cases: Large Enterprises and mid-caps with a need for technology solution within the topic focus (energy for mobility) and high-volume business opportunity
- Technology providers welcomed for e.g. energy technologies, energy related ECS hardware & software, IoT and security.
- The need for RTO's know-how will be defined according to industrial value chains, but information on potentially interested RTOs with top notch expertise on energy and/or smart mobility topics is naturally welcome

Project pitches

5. PRESTINE, Precision Bioelectronic Medicines

Contact person: Ronald Dekker, Philips Research (Netherlands)

Email ronald.dekker@philips.com

Project idea:

- Develop bioelectronics medicines for the treatment of chronic diseases.
- Address challenges in miniaturization, assemby, encpsulation, low power processing, wireless communication and high-volume low-cost manufacturing to enable next generation implantable neuromodulators.

Target: ECSEL IA 2021

Profiles needed:

- Large industrial partners in microfabrication to co-develop technology platforms for this new domain
- SMEs with relevant technology expertise and/or willing to use the technology platforms in their bioelectronics medicine devices
- RTOs willing to focus on technology development

Project pitches

6. STORAIGE, embedded storage elements on next MCU generation ready for AI on the edge

Contact person: M. Dominique GOUBIER, ST France

Email: dominique.goubier@st.com

Project idea:

- Develop technologies for advanced MCUs applications with demonstration in the automotive market (sensors, IoT, MCU, connectivity, ...) for AI on the EDGE.
- Follow up of WAKeMeUP ECSEL project (focused on eNVM roadmap with 28 nm FDSOI ePCM development)

Target: ECSEL IA 2020

Consortium: ST-France, CEA-LETI, Fraunhofer, TU Darmstadt, UTIA, UAB, Pfeiffer Vacuum, ST-I would possibly join

Needed profiles: expertise in eMemories, MCU, AI on the edge (design HW/SW), components, systems, applications, automotive partner (OEM or end user), industrial partner (OEM or end user).

Project pitches

7. HiFIVE, Heterogenous Integration for 5G deployment and Industry 4.0 data growth Viability supported by ECS developments (resubmission of ECSEL 2019)

Contact person: Ilan Englard, IE PM&C (Israel)

Email: ilan.englard@iepmc.com

Project idea:

HiFIVE includes equipment and process development for heterogenous integration of 7nm technology node and above with integrated photonics, advance packaging, devices, modules and key application demonstration (Automotive, Media, Semiconductors and Life science)

Target call : ECSEL IA

Consortium : Mellanox (coordinator), IMEC, TNO, Thermo Fisher, …

Partners needed:

Looking mostly for End Users from the Semiconductors, Automotive, Communication, Media and Pharma industries to demonstrate big data, high bandwidth and low latency real time applications

Project pitches

8. METRONOME, Metrology Novelties and Methodologies for Emerging Technologies'

Contact person: Ilan Englard, IE PM&C (Israel)

Email: ilan.englard@iepmc.com

Project idea:

- Development of sensitive metrology tools to support nondestructive, full 3D through-layers measurements for new materials, patterning, processing and applications
- Development of equipment and modules for emerging MtM and MM technologies (CMOS and beyond CMOS metrology)
- Follow up of 3DAM project and expand MADEin4 and HiFIVE

Target: ECSEL RIA

Partners : NOVA, Thermo Fisher, IMEC, …

Needed profiles: Looking now for SMEs, Metro companies, RTO, Academia and Semiconductors End Users

Project pitches

9. HealthyHive, Decentralised Digital Twin 4 Gastronomy-originated Ecosystem of Health, Wellbeing, Food, Agriculture

Contact person: Alper Kanak, ERARGE & ERGTECH (Turkey)

Email: alper.kanak@ergtech.ch

Project idea:

- Develop technologies for online monitoring of “Farm2fork” supply chain.
- Enable accountability of food with a blockchain approach

Consortium: from France, Turkey, Belgium, Spain, Romania, Italy (CNR)

Coordinator: TBD.

Target: ECSEL RIA/IA

Needed Profiles:

- Experts in Agribusiness, blockchain, health monitoring, cyber-physical systems, smart systems;
- End users;
- Manufacturers;
- Expertise in agro-robots, medical monitoring; Digital Twin

Project pitches

10. Inno4Health&Sports, Open technology platforms for vital sign monitoring

Contact person: Ad de Beer – Alberto Bonomi, Philips Electronics Netherlands BV (NL)

Email: ad.de.beer@philips.com alberto.bonomi@philips.com

Project idea:

- Develop new open platforms for vital sign monitoring
- Stimulate innovation in fitness monitoring in sports and healthcare

Target: ECSEL IA (Budget 40-60 M€)

Consortium: Philips, PSV, Catharina Hospital, Sportbizz, Datenna, VTT, Nordic Health Group, Tazi, Actuate, Lithuanian Sports University, Fraunhofer, IMEC, TNO,

Needed Profiles:

- Wearable devices, smart texiles
- Flexible substrates for sensing
- Vital sign trackers
- Data analytics
- Sports and health companies

Project pitches

11. TELETAPPI, XR Telepresence for industry

Contact person: Jani Vallirinne, University of Oulu (Finland)

Email: jani.vallirinne@oulu.fi

Project idea:

- Use power XR abd 5G technologies so that robots can perform actions asynchronously and collaboratively.

Target: ECSEL IA

Consortium: Nokia, Probot, University of Oulu, University of Tampere, STILL GmbH, Leonardo, University of L?Aquila, AIJU Instituto Tecnologico, Acciona, Universidad Politécnica de Madrid, CSEM CA, Marmara University, IIT – Istituto Italiano di Tecnologia

Needed Profiles:

- Industry use cases in France
- Suggestions accepted

Project pitches

12. IMOCO4.E, Intelligent Motion Control under Industry4.E

Contact person: Martin Cech, University of West Bohemia (Czech Republic)

Email: mcech@kky.zcu.cz

Project idea:

- Develop precise motion control systems
- Move from “sense -> analyse -> act” to “perceive -> understand -> solve”

Target: ECSEL RIA/IA

Consortium: Netherlands (Sioux, Philips, Nexperia, TNO, TU/e, REDEN, …), Czech Republic (UWB, BUT, …), Italy (Gefran, unimore, unibs,Evidence, …), Spain (GMV, Tekniker, Ikerlan, Fagor), France (Siemens), Belgium (Open Engineering), Latvia (EDI), Ireland (Tyndall), Greece (ITML), Portugal (INL, Edilasio), Germany (Fraunhofer, Hahn-Schickard)

Needed Profiles:

- AI experts (ML/DL), Predictive maintenance, Novel principal sensors/actuators, Application providers/end users

Project pitches with unknown calls

Project pitches

13. InSiGHTNeSs, Innovative SiGe HBT for Telecom, Network and Sensors

Contact person: Pierre-Jerome Goirand, ST-France

Email: pierre-Jerome.goirand@st.com

Project idea:

- Industrialize BiCMOS technology platforms based on HBT transistors offering maximum oscillation frequency (f_{max}=600 GHz) with very high density CMOS (90nm to 55 nm)
- Demonstrate new transistors achieving f_{max}=700 GHz
- Demonstrate complete RF/mmWave systems for Telecommunications, Automotive and Sensor applications based on industrialized 600 GHz process and on improved 700 GHz HBT targeting either lower noise or higher gain in considered applications

Target: TBD.

Consortium: ST France and Italy, Infineon, SIAEMic, IMEC, IHP

Needed profiles:

- Large company in telecommunication systems, automotive
- SMEs

Project pitches

14. MOTAMO-SIP, More-than-Moore-systems in a package

Contact person: Andreas Vogl, SINTEF Digital (Norway)

Email: andreas.vogl@sintef.no

Project idea:

- Develop innovative, highly miniaturized sensing and actuation devices
- Develop system in a package technologies for highly integrated functional modules including MEMS, electronics and connections
- Demonstrate these technologies in several applications areas and use cases

Target: TBD.

Consortium: SINTEF

Needed profiles:

- Packaging technology providers
- Electronic companies/high volume manufacturers
- End users (especially SMEs)
- Technology providers/equipment manufacturers

Project pitches

15. TimiNG, Time Sensitive Networking over 5G

Contact person: Georg Menges, NXP (Germany)

Email: georg.menges@nxp.com

Project idea:

- Establish local (ad-hoc) private 5G Network for Industrial Automation on Edge Nodes
- Create an Adaptive Network Architecture with Machine Learning capabilities

Target: TBD.

Consortium: from Portugal, Sweden and the Netherlands

Needed profiles:

- Use case and applications
- Hardware partners
- Communication stack partner
- Software partner for network configurations

Project pitches

16. NEWLIFE, Ensuring the health of mothers and babies before and after birth

Contact person: Tuomas Philip Valtonen, University of Turku (FI)

Email: tuomas.valtonen@utu.fi

Project idea:

- Develop artificial intelligence based internet-of-things solutions that non-invasively monitors vital signs of pregnant women and of the fetus
- Develop an ubiquitous at-home sleep monitoring solution for newborn babies indicating
- Testing and validation the solutions in clinical trials.

Target: TBD.

Consortium: FI (University of Turku, Turku University Hospital, PerkinElmer Finland Oy, Vivago Oy, Precordior Oy)

Needed profiles: IC, packaging, embedded HW, wireless communications;

Pregnancy, fetal and infant monitoring technologies

Wellbeing monitoring technologies

Preferably full consortium per country with IND, SME and UNI.

Project pitches

17. TrovaTech4IC, Trojan Detection & Vaccination Technology for Integrated Circuits

Contact person: Grzegorz Janczyk, Institute of Electron Technology (PL)

Email: janczyk@ite.waw.pl

Project idea:

- Hardware Trojans can be introduced during any stage of the IC development process and are extremely resistant to detection
- Goal: classification of various kinds of Trojan insertion scenarios into attack models to understand the origin of the Device Security Risk

Target: TBD.

Consortium: seeking for IC design knowledge, IC fabrication, wafer processing (wafer thinning down to 2 um)

Project pitches

18. GREENCITY, Increasing City Resilience to Climate Change

Contact person: Elena Vildjiounaite, VTT Technical Research Centre of Finland Ltd. (FI)

Email: elena.vildjiounaite@vtt.fi

Project idea:

- develop IoT-based technical solutions to facilitate urban design and indoor design
- develop IoT-based technical solutions to measure effects of greenery on human wellbeing, energy and water efficiency, air quality and city resilience
- develop technical solutions to reduce the need in human effort for deployment and maintaining green areas and thus to reduce their costs

Target: TBD.

Consortium:

SITOWISE (FI), VTT (FI)

Needed profiles:

Open for other use cases; look for various partners with relevant expertise

Project pitches

19. BRITE, Microbolometer focal plane arrays with short time constant pixels for fast thermal infrared imaging

Contact person: Patrick Abraham, LYNRED (FR)

Email: patrick.abraham@lynred.com

Project idea:

- Provide affordable IR components able to perform fast thermal imaging (up to 500 Hz).
- Engineer fast detectors (t_{th} < 2.5 ms) with state of the art sensitivity by the use of innovative pixel design

Target: TBD.

Project pitches

20. SPROUT: surface profiling of unknown materials

Contact person: Bernd Srocka, Sentronics Metrology (DE)

Email: b.strocka@sentronics-metrology.de

Project idea:

- Material profiling for semiconductor industry is an important task. Optical techniques have limitations.
- Goal: provide an optical profiling technique suitable for topography on any material stack using interferometry + ellipsometry (patent pending)
- Target: TBD.

Consortium:

Delta Optical Thin Film A/S – Filters, Nedinsco B.V. – Optics & Opto-mechanics, Sentech – Ellipsometry experts, Sentronics Metrology – Metrology System provider, TU Dresden & Fraunhofer IZM – Test samples & Evaluation

Needed profiles:

Seeking for more sensor partners: Provide additional sensor ideas to complement SPROUT

Project pitches

21. HiEFFICIENT , Highly Efficient and reliable electric drivetrains based on Modular, Intelligent and highly integrated Wide Band Gap Power Electronics Modules

Contact person: Horst Pflügl, AVL List (AT)

Email: horst.pflugl@avl.com

Project idea:

- Develop highly efficient and reliable electric drivetrains based on modular and highly integrated wide-bandgap power electronics modules for electric vehicles
- Face challenges in high integration, SiC and GaN, smart packaging, power modules, thermal degradation, EMC, and so forth
- Develop smart AI to apply predictive maintenance of power modules

Target: TBD.

- Consortium: AVL List GmbH, Infineon AT / AG, Virtual Vehicle Competence Center, Vrije Universiteit Brussel

Needed profiles: OEMS, Universities & RTOs & SMEs, Power electronics subsystem companies, Passive component manufactures, SW companies

Project pitches

22. EDGE CS

Contact person: Davide Taibi, Tampere University (FI)

Email: davide.taibi@tuni.fi

Project idea:

- Enable new types of applications and services by defining and demonstrating new different ways to utilize edge computing
- Explore optimal use cases for edge computing
- Develop architectures that support executions in both cloud and edge (location-agnostic software)
- Target use cases: self driving cars, fleet management, industry automation, agriculture

Target: TBD

Consortium: ALSO, Valmet, Tampere University

Needed profiles: EDGE/Cloud providers, data centers providers, EDGE/IoT solution producers, AI companies, SMEs, Universities and Research Institutea, Users: Entairtainment, Media, Mobility, Costruction, Smart Living/Building, AR/VR, Drones, Healthcare, City development companies,…

Project pitches

23. Gulo Gulo, Vision-based navigation for autonomous vehicles

Contact person: Mohamed Elhabiby, Micro Engineering Tech Inc,

Email: elhabiby@meng-tech.com

Project idea:

- Replace expensive real-time LiDAR with real-time visual streams
- Create, store and use a high-definition maps database of the environment
- Develop high-accuracy navigation algoritms using low-cost sensors integrated with vision sensors

Target: TBD.

Consortium: NVIDIA (USA), Queens University (Canada), MEEG (Egypt), Gexcel (Italy)

Needed profiles:

- End users (OEM)
- Automotive manufacturers
- R&D industrial institutes (navigation)
- HD mapping users

Project pitches

24. AQUAS 2, Aggregated Quality Assurance for Systems

Contact person: Charles Robinson, Thales (FR)

Email: charles.robinson@thalesgroup.com

Idea about an emerging coordinated topic for projects (it is not about a specific project)

- Follow up of project AQUAS (ECSEL JU MASRIA 2016)
- Provide solutions for a holistic approach to Safety/Security/Performance Co-Engineering (CE) through a domain-flexible framework, supporting the entire Product Life-cycle (PLC)
- Strong contribution to Standards Evolution (SE)

H2020 calls

Project pitches

25. HADRIAN, Hetereogenous Agents Defending and Recovering Information Assets through Negotiation

Contact person: Fethulah Smailbegovic, TU Delft (NL)

Email: f.smailbegovic@tudelft.nl

Project idea:

- Demonstrate in HW a new architecture for integrated circuits based on the concept of cooperation found in nature
- Achieve trust and identity protection on the cloud.

Target: H2020, deadline 27/08/2020

Consortium freeze: 31/03/2020

Technology Developers: TU Delft (NL), CognitiveIC (NL), Università della Svizzera Italiana (CH), Modis (Italy)

- Engineering and Use Case providers:
  - Modis (Engineering)
  - Use Case Provider1 (vacant)
  - Use Case Provider2 (vacant)

PENTA/EURIPIDES project proposals

Project pitches

26. SUSTRONICS, SUSTANABLE PHOTONICS FOR CIRCULAR ECONOMY, VTT (FI) liisa.hakola@vtt.fi

- The global consumption of material is growing. Electronics waste is increasing.
  - Recycle and reuse of electronics material. End of life treatment.
  - Smart Packaging
  - Target: EUREKA

Consortium: vtt, csem, TNO, …

27. WEDGE networks, security for the cloud, WEDGE (Canada). hongwen.zhang@wedgenetworks.com

  - Cyber security for cloud services.
  - Establish a RT security solution
  - AI and ML.
  - Demonstration use cases.

- Consortium: CA,

Project pitches

28. NGS EDA, CEMWorks (CA) aronsson@cemworks.com

- Next generation design flow to increase performance of electronics
- The challenge is to possibly integrate with existing design flows…
- Seeking for IDM, packaging, EDA providers, …

29. GaN MOS RF, Transeon (CA) vallen@transeon.ca

- GaN mosfet devices for RF
- Improve GaN technology to bring freq bands to sub-THz
- This would enable next generation communications and ultra high-resolution radar

- Goal: high performance GaN MOSFET IC platform (< 20nm). This will allow higher power output and cutoff freq. than Si based mosfet.

Project pitches

30. HAptyControl, IFAK, DE sebastian.woeckel@ifak.eu

- Additional Haptic interaction features through standard touch screen displays.
- Turn flat touch screen into a virtual 3D corrugated SURFACE.
- High quality localized tactile feedback, retro-fittable.
- Mobile, Automotive HMI, …
- Consortium: only DE today.

31. CESAMI, additive manufacturing, University of Pretoria (SA)
tinus.stander@up.ac.za

- Application: Drone based fire monitoring
- Comprehensive sensor suite made by additive manufacturing
- The project will explore additive for a large set of sensors.

- Consortium: South Africa, Uppsala University, Fraunhofer

Project pitches

32. AutoChargeEV, autonomous charging public transport vehicles, IFAK, DE maxim.nesterov@ifak.eu

- Goal: **enable a fully autonomous operation** for fleets of electric vehicles in logistics and public transport sectors by merging inductive charging and autonomous driving.
- Develop efficient autonomous charging solution with **optimized power electronics** and precise positioning.
- Target: EUREKA
- Consortium: from Germany (Deutche Bahn,…), France (EasyMile), Austria, Nederlands, Turkey
- Partners needed:
  - **Use case & application provider**
    autonomous transport, logistics, etc
  - **Technology provider**
    autonomous driving solution (SW+HW) with a platform, large industrial players in ECS community, power electronics & components, precise vehicle positioning: sensors+software

Project pitches

33. ASIXS-PackCAD, design methods for flexible HW, Manfred Dietrich, Dikuli, manfred.dietrich@dikuli.de

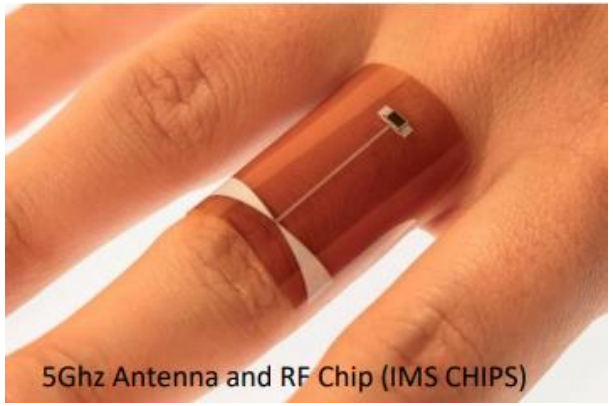
- Flex Packaging Solutions “Made in Europe” with
- Design and simulation tools optimized for the flex system
- Efficient transfer from pilot production to large scale manufacture
- Best practice demonstrators of flex use cases

GOAL: develop a manufacture platform for Flexible Hybrid Electronics in Europe

Target: PENTA

Consortium: From Germany, Finland, The Netherlands, Portugal, Spain, Belgium

Needed: Additional use cases, industry and SME



Project pitches

34. PAvIS, Environment and Patient-aware Adaptive Intelligent Sensor system

Contact person: Mark van Helvoort, Philips Healthcare (NL)

Email: mark.van.helvoort@Philips.com

Project idea:

- Develop sensor systems personalized and optimized for each individual patient.
- Develop adaptive intelligent sensor modules.

Target: PENTA

Consortium: Philips Healthcare (NL), Philips Research (NL), Cochlear (B), iThera Medical (G), Philips DPC (G)

Needed: Additional applications, low-power microcontrollers Ultra low-power RF GaN switch, Packaging, Embedded optimization algorithms, AI/ML on edge/cloud for optimizing the overall sensor system.

Project pitches

35. SMART -W2T, FhG, DE Christian.hedayat@enas-pb.fraunhofer.de

- Smart waste water treatment, especially in rural areas
- Need to be economic, sustainable, reliable, low energy, 24/7 autonomous operation
- Needed sensor to monitor dissolved oxygen, pH, flow, sludge level, NH4-N, TN, P
- Self learning and self regulating. AI and ML apply here.
- 36 months, 4 MEUR budget?
- Consortium: DE, Canada,