EUROPEAN PARTNERSHIPS STRATEGIC DIRECTIONS AND RESEARCH PRIORITIES IN A GLOBAL CONTEXT.

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HEAD OF PROGRAMMES
ECSEL JU
ECSEL

A UNIQUE MODEL TO PROMOTE EUROPEAN INNOVATION

European Commission

63 projects
2120 beneficiaries
3 370 million Euro cost
1 155 million Euros in funding

3 Associations:
AENEAS EPOSS ARTEMISIA

27 Participating States

Promote synergies between commercial strategies and societal needs
Re-inforce/Align National strategies and European priorities

Pilot to business?
1 Strategic Research Agenda
3 Associations
For different funding programmes
ECSEL: Networks of Partners and Projects

- Evolution and continuity in projects
- More Moore Technology
- Silicon on Insulator Technology
- Other Components
- MtM IC-Technology
- MtM pilot lines for ISS
- Integrated Smart Systems
- Platforms for Cyber-Physical Systems
- CPS with mixed HW/SW developments
- Digitalisation of Industry

Evolution also visible in the interactions between clusters
Examples of projects: Call 2018 selected projects

All selected projects reach out to programmes outside of ECSEL: value chain stakeholders, other associations or programmes, etc by:

• Developing standards
• Using roadmaps and priorities of other organisations
• Integrating communities outside ECSEL in the ECSEL value chains
• Developing key enabling technologies enabling technologies of other programmes/associations/communities

Cost 780Mio€; Funding 380Mio€; 11 projects; 465 beneficiaries
Comp4Drones, NewControl

Framework of key enabling technologies for safe and autonomous drones’ applications

COMP4DROONES project complements SESAR JU efforts with a particular focus on safe software and hardware drone architectures.

COMP4DROONES will also build an open, sustainable ecosystem around public, royalty-free and goal-driven software platform standards.

Integrated, Fail-Operational, Cognitive Perception, Planning and Control Systems for Highly Automated Vehicles

Participation to standardization activities (described in detail in T7.3) targeting the transfer of the main NewControl outcomes in the relevant future standards.

It is important for Europe to overcome silos to be a competitive player on automated and connected vehicles. ECSEL itself is already supporting and taking into account several activities of the European Green Vehicles Initiative PPP and specific parts of of H2020, e.g. Mobility for Growth, Green Vehicle, Automated Road Transport, Smart Cities and Communities by advances in electronic components and systems for smart mobility.

NewControl contributions to priority areas from European Roadmaps: GEAR 2030, EPoSS European Roadmap Smart Systems for Automated Driving, ERTRAC Automated Driving Roadmap.
HELIAUS, VIZTA

Integrating one value chain in one project:
chip manufacturing, embedded software, smart system integration technology

tHERmaL vIson Augmented awarenesS
• development of a novel chip architecture together with on-chip integrated functions to make the IR sensor as easy to use as visible sensor,
• design and manufacturing of innovative IR optic systems utilizing cutting edge component manufacturing technologies,
• as well as cost efficient and ultraprecise packaging and assembly technologies in order to provide a thermal infrared module,
• development of specific embedded systems for computer vision developments.
• Innovative neural network based algorithms

Vision, Identification, with Z-sensing Technologies and key Applications
Development of a high resolution Time-of-Flight ranging sensor module with integrated VCSEL, drivers, filters and optics and of a very high resolution depth camera sensor with integrated filters and optics. Demonstrators/use cases (bringing in various expertise eg in AI and neural networks, citizen services, robotics, etc.):
• automotive in-cabin
• smart building
• Security
• automotive medium-range LiDAR,
• automotive long-range LiDAR
• industry 4.0
• mobile robotics for smart cities
UltimateGaN, APPLAUSE

Integrating existing vertical supply chains with stakeholders from different horizons: health, mobility, communication, sensors,...

Research for GaN technologies, devices and applications to address the challenges of the future GaN roadmap
• project proposal with strong involvement of the vertical supply chain
• spans expertise and partners from raw material research, process innovation and assembly innovation.
• envisioned Use Cases will be validated and exploited in compact power application domains representing enhanced smart systems.

Bringing GaN on Silicon radio frequency (RF) performance close to GaN on Silicon Carbide thus enabling an affordable 5G rollout

Advanced packaging for photonics, optics and electronics for low cost manufacturing in Europe
• use cases: cardiac implants, cardiac monitoring patches, ambient light sensor for mobile wearable applications, thermal IR sensor for automotive, datacom transceiver, optical humidity measurement module.
Power2Power, PIN3S

The next-generation silicon-based power solutions in mobility, industry and grid for sustainable decarbonisation in the next decade

The consortium is composed of a good mix among research institutions, automotive electronics innovation expertise, small and large industry representatives, non-profit organizations, and smart system application companies.

Power2Power will enable innovations and create opportunities from possible disruptions by providing cost effective high power electronics components. The work within the project is structured in work packages along the value chain.

Pilot Integration 3nm Semiconductor technology

Development of new advanced alignment models: alignment and focus sensors scan every wafer creating an advanced model that intelligently combines the data from these sensor and generate a hybrid, high density wafer map which is used as input to the many actuators in the lithography system thereby further improve the performances

Focus on key enabling technologies, involvement of others through roadmapping
Other

TEMPO
Technology & hardware for nEuromorphic computing
Supporting adoption of advanced technologies by the European industry

Arrowhead Tools
Arrowhead Tools for Engineering of Digitalisation Solutions
System of Cyber Physical Systems

MADEIN4
Metrology Advances for Digitized ECS industry 4.0
Technologies for Manufacturing, integrating big data use from metrology tools in manufacturing
But is that enough? Why work together?

As a programme can we achieve more impact?

(DISSEMINATION)
✓ EXPLOITATION OF THE INNOVATION
MORE IMPACT?
✓ CREATE SYNERGIES BETWEEN COMMUNITIES

PROJECT LEVEL

META PROJECT LEVEL LIGHTHOUSE INITIATIVES
A “Lighthouse Initiative” will:

➢ Build on well identified market-pull demands related to societal needs.
➢ Offer visionary solutions for those demands creating/expanding/improving ecosystems along the relevant value and supply chains.
➢ Have a strong pan-European dimension in each of the steps: demands, solutions, ecosystems, technologies, demonstrators.
➢ Whenever appropriate, work towards clustering of projects in the identified areas and therefore organize the attraction of other contributing projects.
➢ Accelerating the social impact and uptake of projects’ results.
➢ Establish a standardization strategy when relevant and drive it.
➢ Address the relevant non-technical aspects (such as legislative, regulatory, social, etc) and where possible develop concepts and take concrete steps for resolving issues linked to those aspects.
**Lighthouse Initiatives**

**MOBILITY.E**
**INDUSTRY4.E**
**HEALTH.E**

A container of coordinated activities coming from different programmes using their synergy to achieve overarching common goals.

*Lighthouse initiatives ≠ Lighthouse projects!!!*
ECSEL projects active in Mobility.E

- Total cost: 700M€
- Total funding: 330M€
- Number of participants: 356
- Distributed over 26 countries
Mobility.E LIASE

Clean Connected Autonomous Mobility

LIASE Support

Associations

Industry

LIASE=Lighthouse Initiative Advisory Service
Mobility.E builds bridges between the roadmaps and search for gaps on the path to 2030
Six Urgent priorities, One vision

2. Decarbonization (clean, sustainable, affordable propulsion)

5. Sensors and sensor fusion

3. Intelligence on board (Car brain)

Implementation in ECSEL through Special topics

Customer 2030

6. Infrastructure and services for smart personal mobility and logistics

4. Connectivity

1. Data availability and sharing (Design and Test)
Call 2019

Special topics on advice of Mobility.E LIASE but also in edge computing on proposal of the public authorities (in particular the EC)