

A PUBLIC PRIVATE PARTNERSHIP ON NANO-ELECTRONIC COMPONENTS AND SYSTEMS: THE ECSEL JU

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ECSEL Joint Undertaking

Electronic Components and Systems for European Leadership

PRESENTATION OUTLINE



- **ECSEL JU past**
 - Joint Technology initiatives
 - ENIAC & ARTEMIS
 - Other Joint Undertakings
- **ECSEL JU present**
 - Structure
 - Principles
 - Some results
- **ECSEL JU future**
 - Horizon Europe
 - Digital Europe

ECSEL JU, THE PAST I/4



FP7-JTI - Specific Programme "Cooperation": Joint Technology Initiatives

7th Framework Program : 2007 – 2013

What are Joint Technology Initiatives?

- The EU's Seventh Research Framework Programme identifies Joint Technology Initiatives (JTIs) as a means to support trans-national cooperation in key areas where research and technological development can contribute to European competitiveness and quality of life.
- The Seventh Research Framework Programme foresees in particular that "in a very limited number of cases, the scope of an RTD objective and the scale of the resources involved could justify setting up long term public-private partnerships in the form of Joint Technology Initiatives".

ECSEL JU, THE PAST 2/4



WHY ARE JTIS NEEDED?

- The **rapid pace** of technological change, the **rising costs** of research, the **increasing complexity** and **interdependence** of technologies, and the potential **economies of scale** to be gained by cooperation across Europe are all strong reasons for setting up **long-term public-private partnerships**.
- JTIs are a new way of doing this, **by combining private sector investment with European public funding**, including funds from the EU's Research Framework Programme and, in some cases, also national funding.
- The Commission expects this new model of public-private partnership to stimulate **additional European research investment**, build **critical mass** by uniting currently fragmented efforts, and ensure **effective and efficient programme management**.

WHAT IS THE AIM OF THESE PUBLIC-PRIVATE PARTNERSHIPS?

- The idea is to boost European investment by providing a **clear framework for research investment**, which encourages both industry and Member States to increase their spending.

ECSEL JU, THE PAST 3/4



HOW WERE JTIS IDENTIFIED?

- **Inability of existing instruments** to achieve the objective,
- **Scale** of the impact on industrial competitiveness and growth,
- **Added value** of European-level intervention,
- Degree and clarity of definition of the **objective and deliverables** to be pursued,
- Strength of the financial and resource **commitment from industry**,
- Importance of the contribution to broader **policy objectives & benefit to society**,
- Capacity to attract additional national support and **leverage** current and future industry funding.

WHAT AREAS DO THEY COVER?

- Fuel Cells and Hydrogen (FCH)
 - Aeronautics and Air Transport (Clean Sky)
 - Innovative Medicines (IMI)
 - Nanoelectronics Technology 2020 (ENIAC)
 - Embedded Computing Systems (ARTEMIS)
- } merged into ECSEL JU

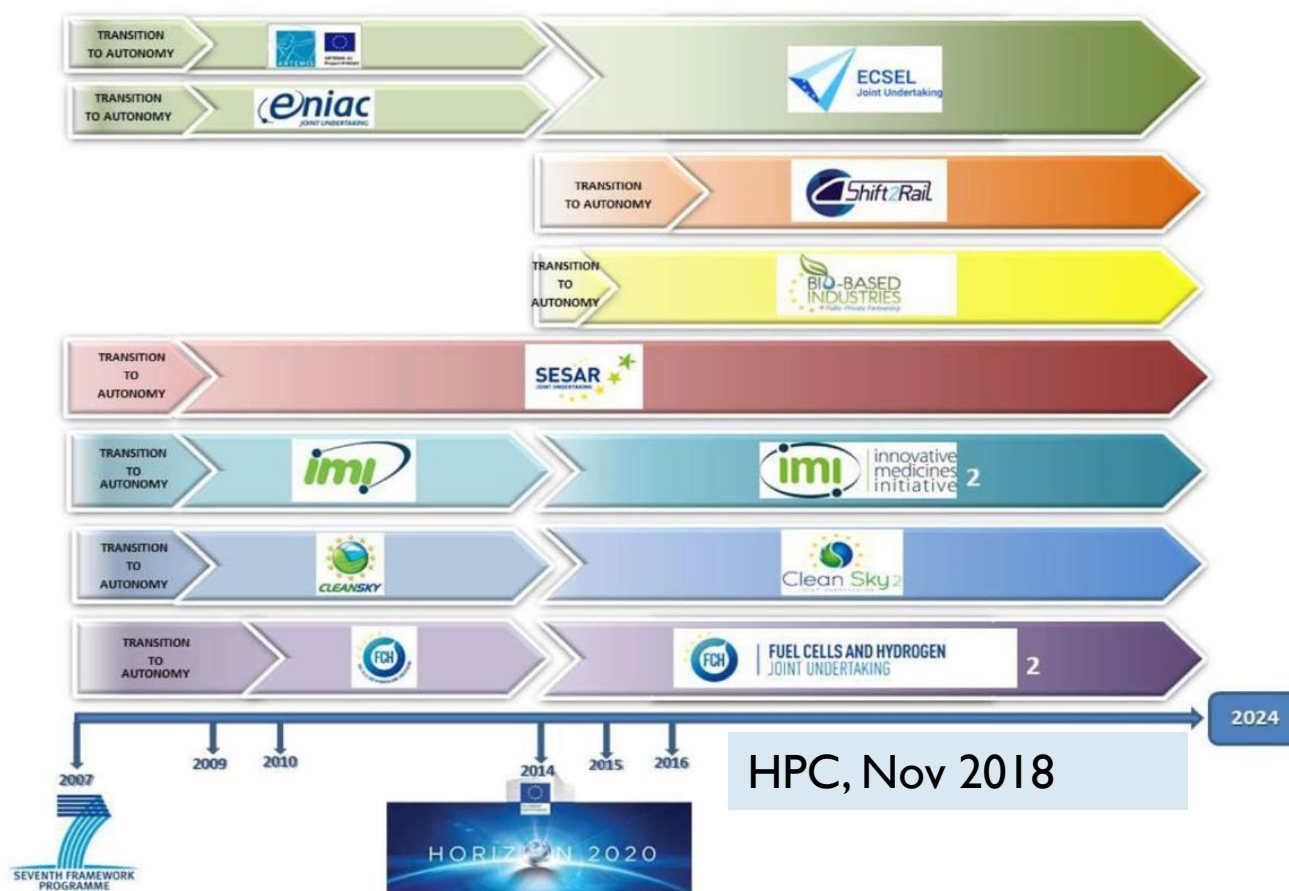
ECSEL JU, THE PAST 4/4



WHAT DOES A JTI DO?

- A JTI implements a **common Strategic Research Agenda**. This details the research and development challenges that need to be addressed. Each JTI defines a detailed Work Programme and directly manages all aspects of the implementation of the JTI programme, including organising calls for proposals and tender, proposal evaluation, project selection, negotiation and signature of research grant agreements, project follow-up and reporting, all respecting the Framework Programme's principles of transparency, competition and excellence.
- In addition, it deals with general aspects such as **research infrastructure, education, support for SMEs and international collaboration**.
- The JTI implementing legal entity = **Joint Undertaking** (EU community body)

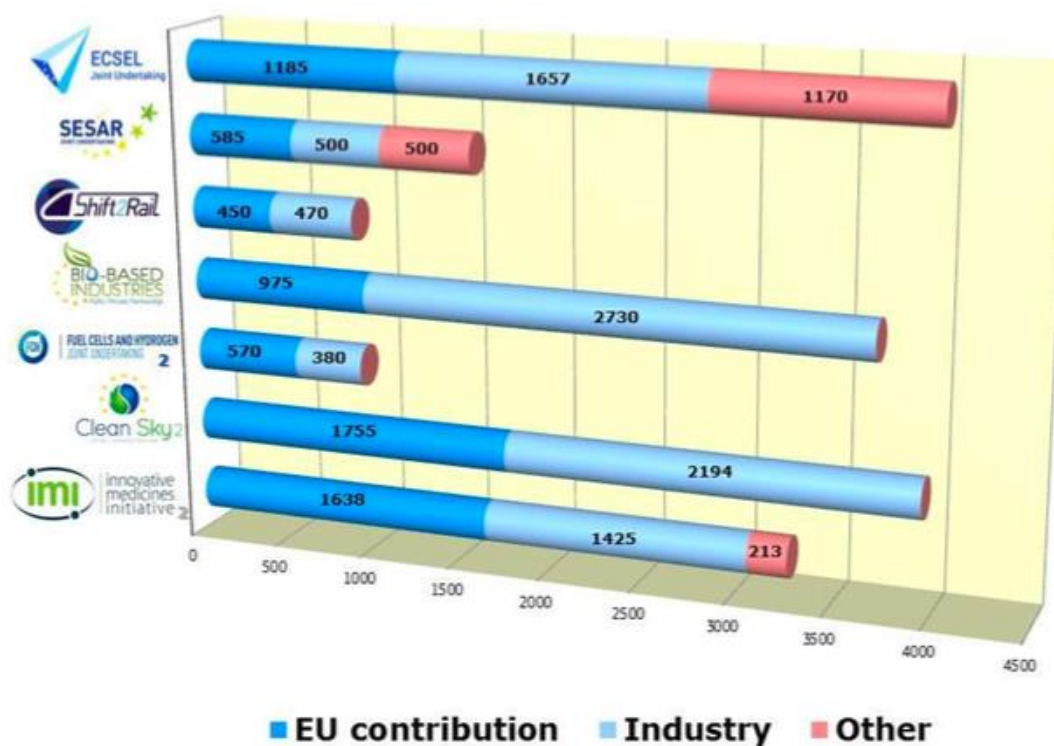
OTHER JOINT UNDERTAKINGS



OTHER JOINT UNDERTAKINGS

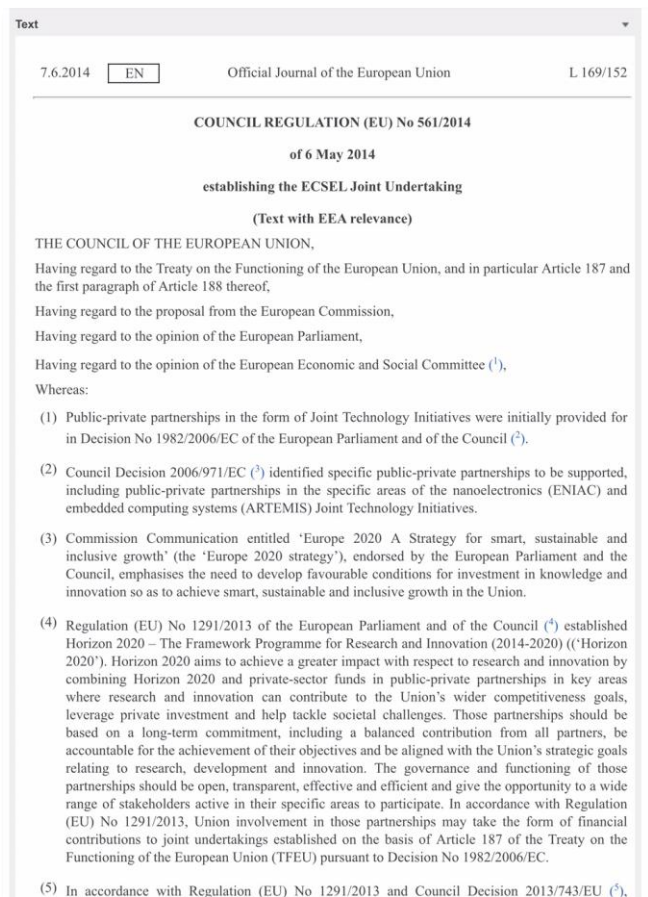


Figure 3: Financial contributions during Horizon 2020 set in the respective Council Regulations



Source: EC calculation based on the Council Regulations establishing the JUs

THE ECSEL JU, THE PRESENT



The ECSEL JU in short:

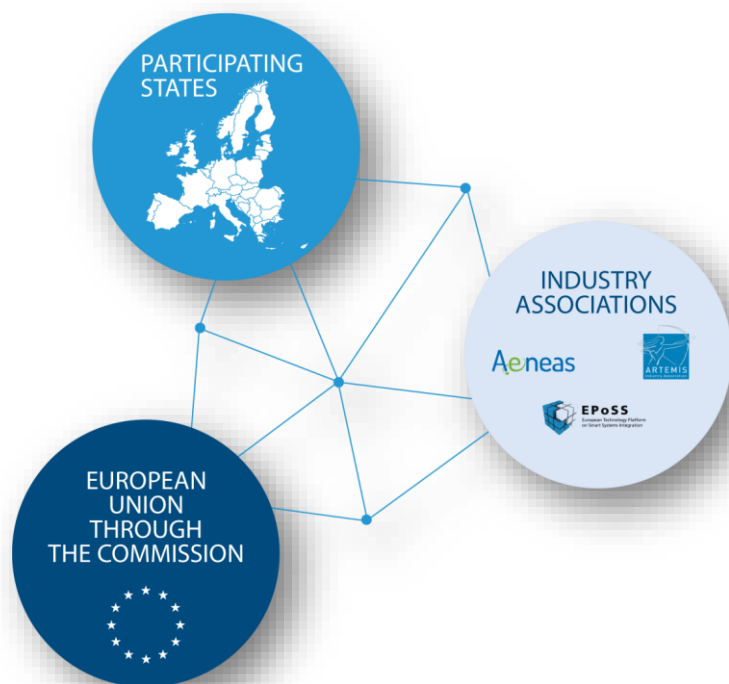
- Covers Electronic Components and Systems (ECS)
- Partnership EU, participating MS, Private Members
- Budget 1,2 B€ + 1,2 B€ + 2,4 B€
- Annual Call for proposals as Horizon 2020

Objectives:

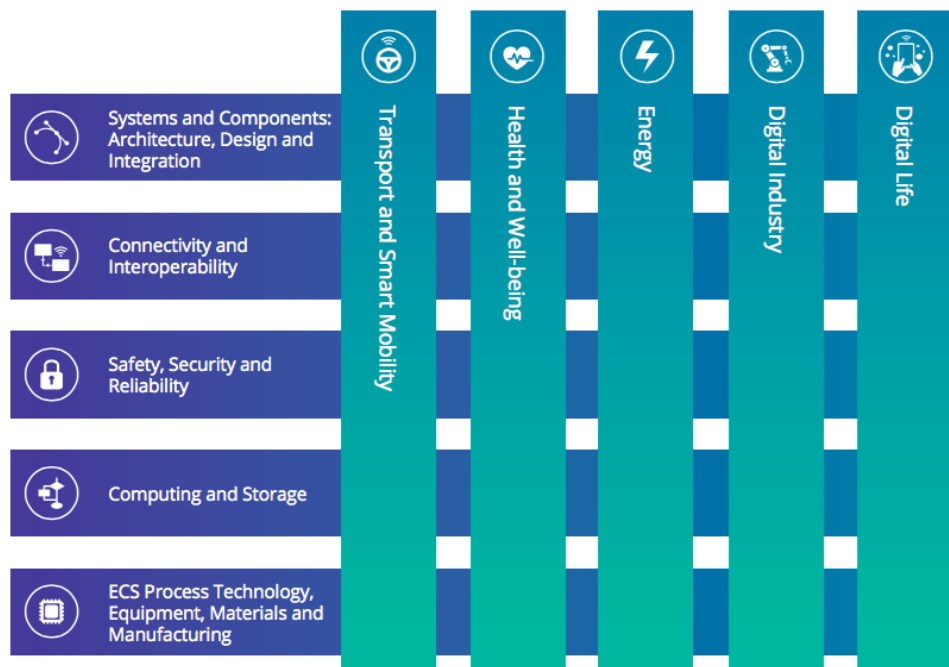
- Strong and globally competitive ESC industry in EU;
- Ensure the availability of **ECS as KET**;
- Keeping Europe at the forefront of technology;
- Bridging the gap between research and exploitation;
- Strengthening innovation capabilities and creating economic and employment growth in the Union;
- **Align strategies with Member States** to attract private investment;
- Maintain and grow semiconductor and smart system manufacturing capability in Europe;

• ...

THINKING TOGETHER



ESSENTIAL CAPABILITIES



THINKING TOGETHER THE ELECTRONICS VALUE CHAIN



THINKING TOGETHER



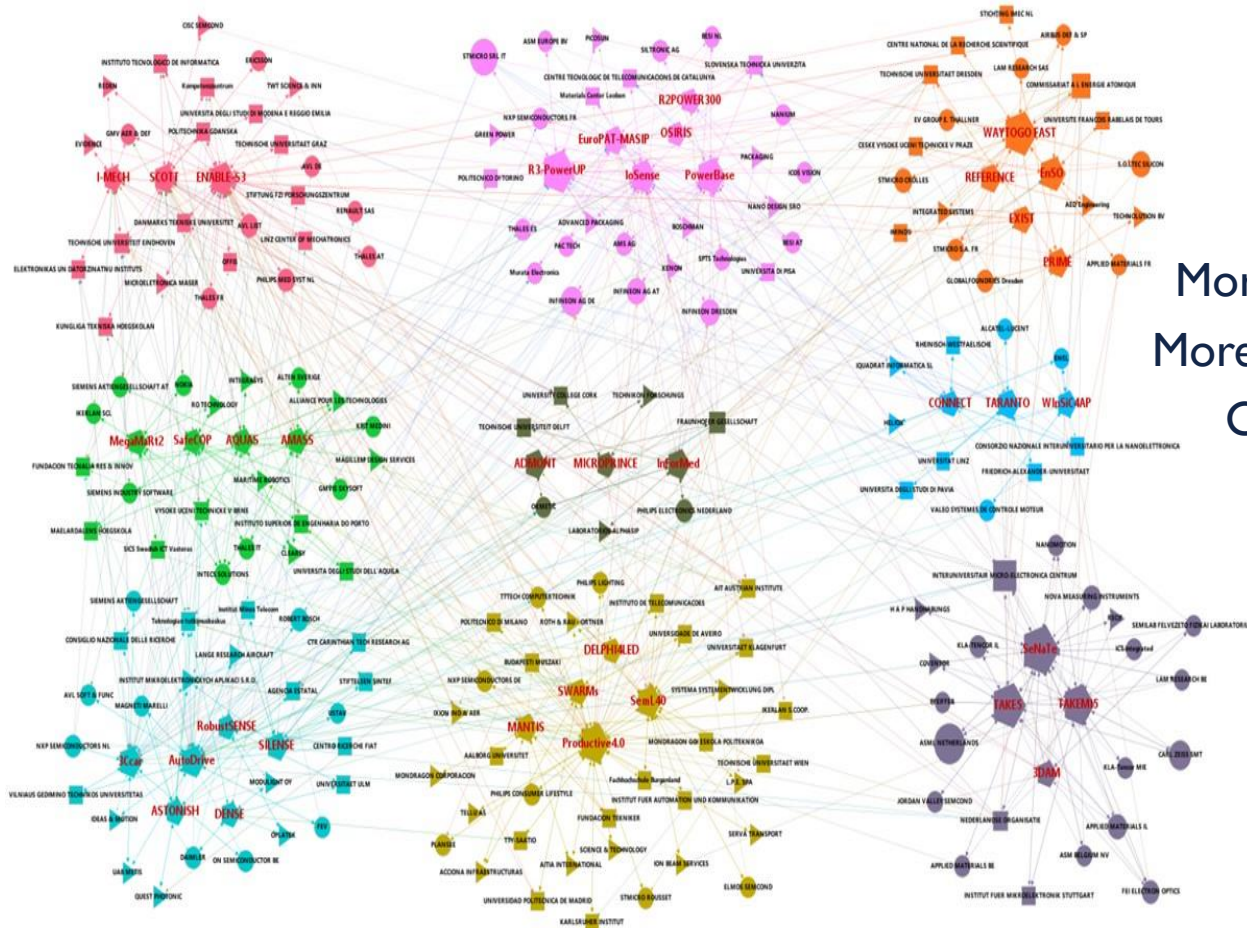
WORKING TOGETHER



3Ccar	CAMMI	DENSE	ENLIGHT	iFEST	ME3GAS	PARSIMO	RobustSENSE	SYSMODEL
3DAM	CESAR	DESERVE	EnSO	iLAND	MegaMaRt2	PLACES2BE	SafeCOP	TAKE5
ACCUS	CHARTER	DEWI	EPAMO	I-MECH	MERCURE	PLACYD	SAFESENS	TAKEMI5
ACROSS	CHESS	E2COGAN	EPPL	IMPROVE	Manufacturing	POLIS	SCALOPEs	TARANTO
ADMONT	CHIRON	E2SG	EPT300	INCITE	MICROPRINCE	POLLUX	SCOTT	THINGS2DO
AGATE	CONCERTO	E3Car	eRamp	INDEXYS	MIRANDELA	PowerBase	SE2A	TOISE
Almarvi	CONNECT	E450EDL	ERG	InForMed	MIRTIC	PRESTO	Semi40	VARIES
AMIS	COPCA45	E450MDP	E450COP	INTEGRATE	MODERN	PRIN	SeNite	eTe
AQUAS	CRAFTERY	EDIN	ESE	of	MOTORBRIN	Productie4.0	SEAMO	NDP
Arrowhead	CRYSTAL	EEM450PR	ESiP	IoSense	NANOCOM	PROMINENT	SILENSE	WAYTOGO FAST
ARTEMOS	CSI	EEMI450	eSONIA	JEMSIP_3D	NANOTEG	pSAFECER	SILVER	WInSiC4AP
ASAM	CSSL	e-GOTHAM	EuroPAT-MASIP	LAB4MEMS	nSafeCer	pSHIELD	SIMPLE	With-Me
ASTONISH	D3CoS	ELESIS	EXIST	Lab4MEMSII	nSHIELD	R2POWER300	SMARCOS	WSN-DPCM
ASTUTE	DCC+G	EMC2	GreenElec	LAST-POWER	OPERA	R3-COP	SMART	
AutoDrive	DELPHI4LED	EMMON	HEECS	LENS	OSIRIS	R3-PowerUP	SmartPM	
BASTION	DEMANES	ENABLE-S3	HIGH PROFILE	MANTIS	PANACHE	R5-COP	SMECY	
BATTMAN	DEMETER	ENCOURAGE	HoliDes	MAS	PANORAMA	RECOMP	SOFIA	
CAJAL4EU	DENECOR	END	IDEAS	MBAT	PaPP	REFERENCE	SWARMs	

43.500 PERSON YEARS

WORKING TOGETHER



FD-SOI for IoT
More Moore Technology
CPS with mixed HW/SW
More than Moore IC-Technology
More than Moore pilot lines for ISS
CPS platform developments
Integrated Smart Systems
Digitalisation of Industry
Other Components

WORKING TOGETHER



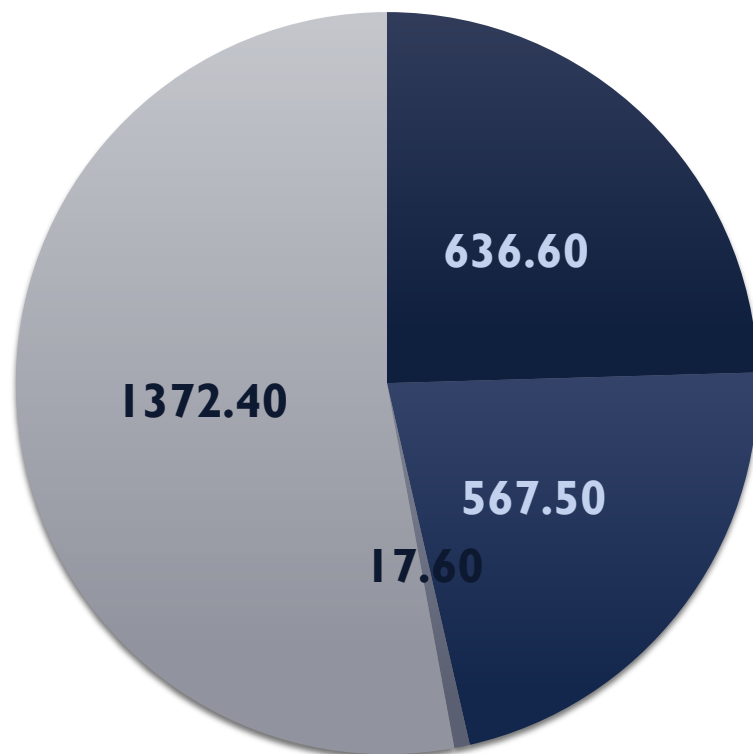
The projects contribute directly to the European Strategic Roadmap for Micro- and Nano-Electronics Systems



INVESTING TOGETHER



Total ECSEL JU Project Portfolio : 2 594,10 M€



■ EC/ECSEL JU

■ EPS

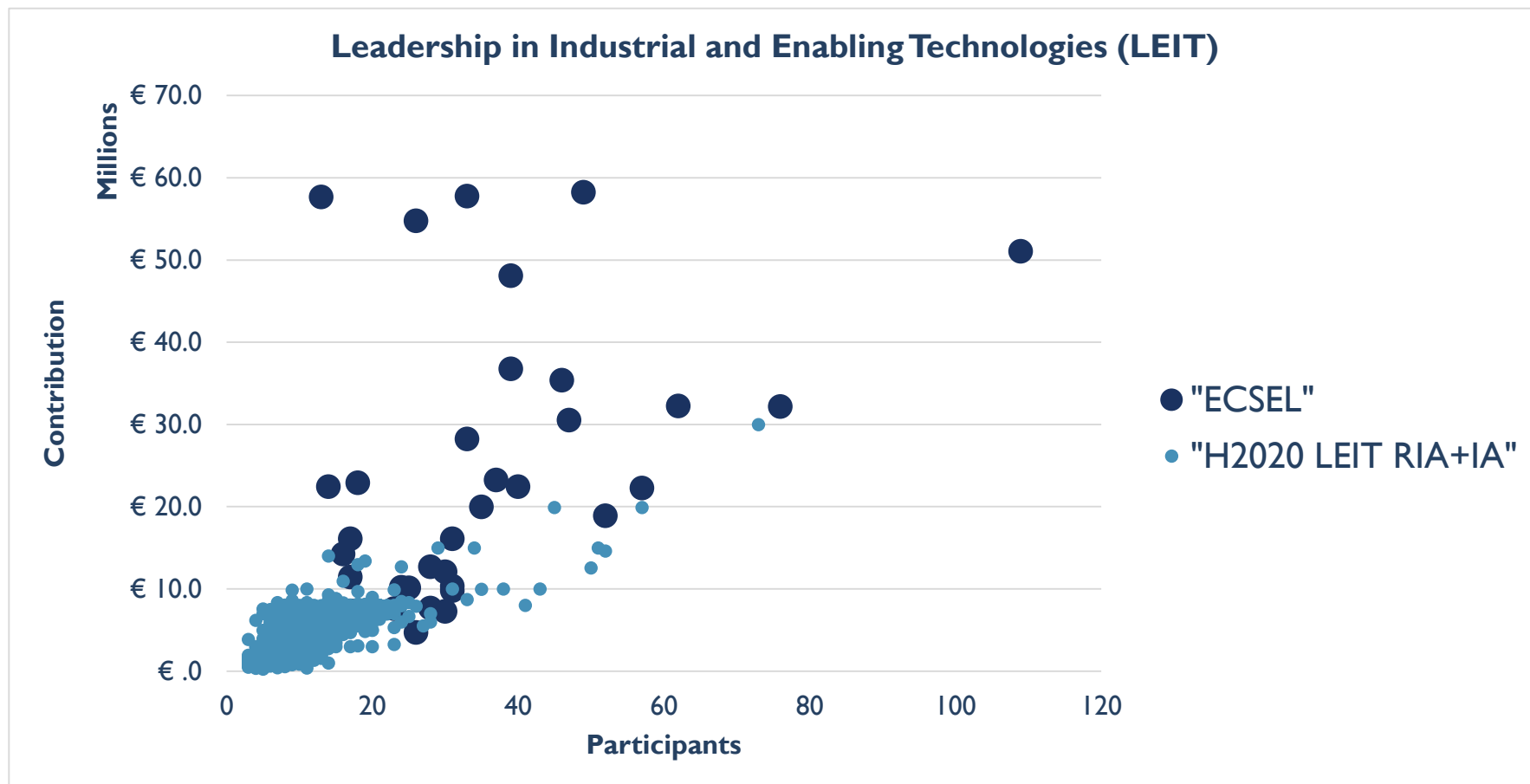
■ ESIF

■ PM Contribution

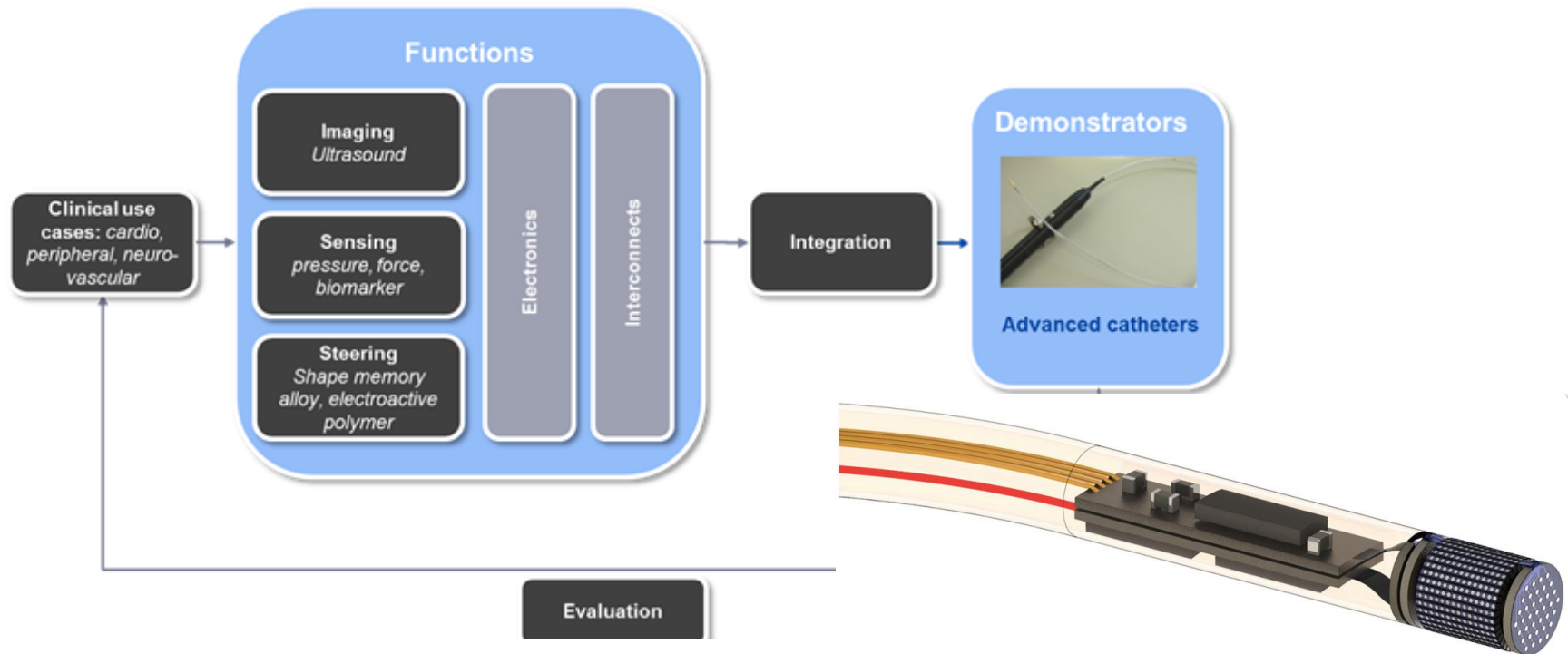
Remarks :

- $EPS/EU=0,89$; target >1
- PM trend : 2 400 M€ in 2020
- ESIF trend increasing

INVESTING TOGETHER

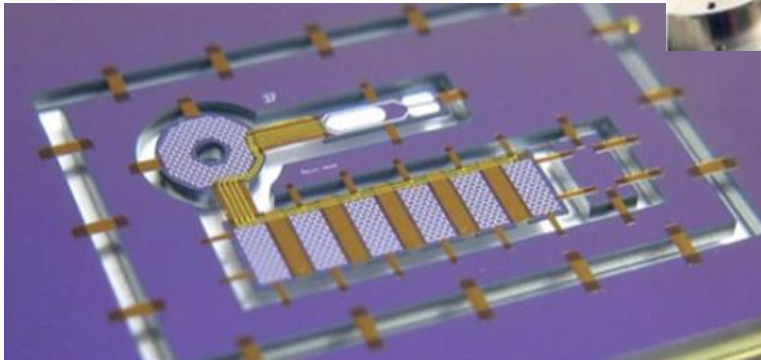
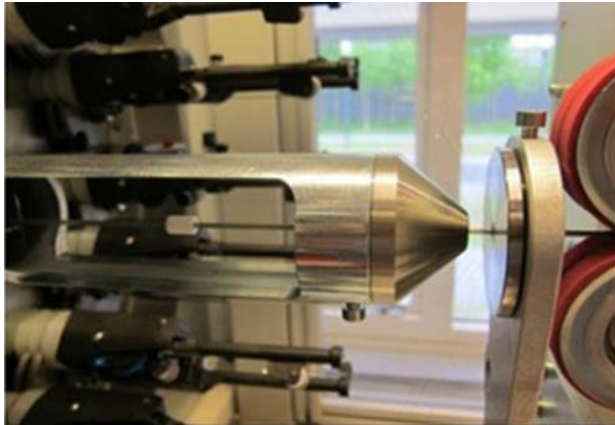


INCITE



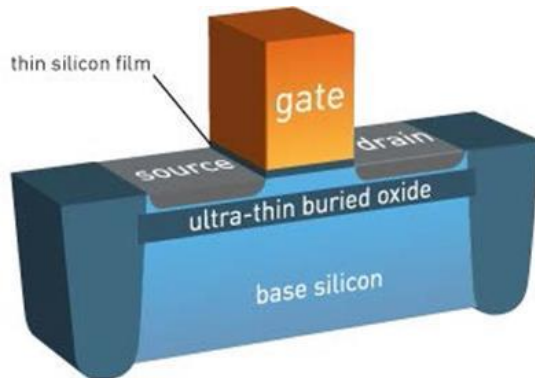
INCITE (Intelligent Catheters in Advanced Systems for Interventions) is a research project focusing on the development of a technology platform that will enable advanced imaging, sensing (pressure, force, biomarker) and steering functions to be integrated into (sub) millimeter size in-body catheters and surgical instruments for emerging complex minimally invasive cardio-, neuro-, and peripheral vascular interventions.

INFORMED



The InForMed project will establish an integrated pilot line for medical devices, covering the complete innovation chain from technology concept to system qualification, including micro-fabrication, assembly and even the fabrication of smart catheters.

FD-SOI TECHNOLOGY



Fully Depleted Silicon on Insulator: EU changing the rules of the game for edge computing, IoT, always-on applications, radars, ... **made in Europe !**



& REFERENCE ThingsToDo PRIME



PILOT LINES FOR POWER ELECTRONICS



Power Semiconductor and Electronics Manufacturing 4.0 smart, security, variation, simulation



Staatspreis
Innovation 2013

des Bundesministeriums
für Wirtschaft, Familie
und Jugend



excellence in speed and reliability for **More than Moore** technologies : **high volume** production and quick introduction.

“Enhanced Power Pilot Line”: **2nd generation** power semiconductor devices on 300mm wafer



“Enabling Power technologies on 300mm Wafers” project was based on the concept of a **1:1 transfer approach** from 200 mm to 300 mm diameter silicon wafers.

PILOT LINES FOR POWER ELECTRONICS



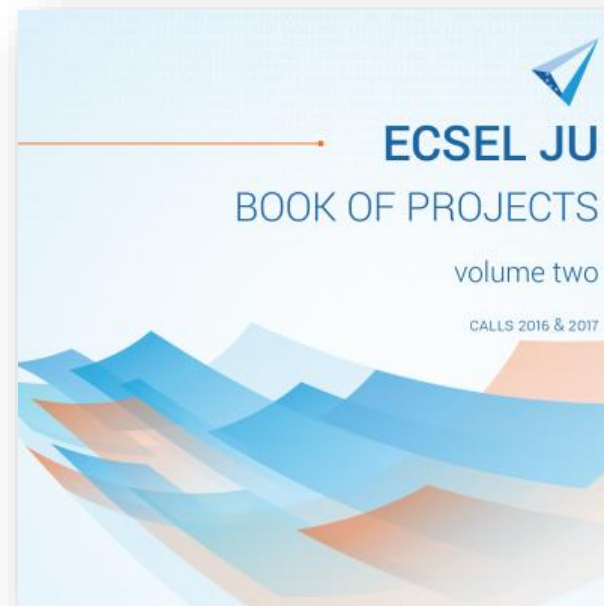
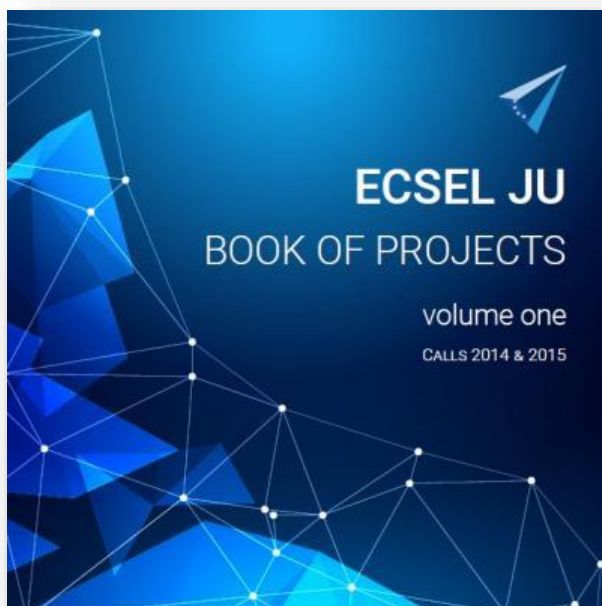
Staatspreis
Innovation 2013

des Bundesministeriums
für Wirtschaft, Familie
und Jugend



Infineon Austria invests 1,6 B € over 6 years on a new 300 mm fab for power semiconductors: 400 employees and 1,8 B€ additional sales. (May 2018)

BOOK OF PROJECTS



THE FUTURE : BOOSTING ELECTRONIC VALUE CHAINS IN EUROPE



A report from Industry to Commissioner Gabriel :

1. Extend Europe's partnership success model (ECSEL JU): fast track access, synergies & new applications, AI market readiness & lower TRL)
2. Continue investment towards a strong microelectronics manufacturing industry (extend IPCEI & EU co-funding)
3. Create a strategic component sovereignty programme (with EDA, ESA & CS)
4. Create a smooth innovation path from IP to Products (facilitate SME & midcap)
5. Pursue strategic design initiatives (OEM – system house – ECS sector)
6. Create design tools for electronics value chains (IP & technology blocs)
7. Create a Task Force for electronics education and skills
8. Create a pan-European research infrastructure for advanced computing technologies (RTO led)

HORIZON EUROPE



is the Commission proposal for a **€ 100 billion** research and innovation funding programme for seven years (2021-2027)



to strengthen the EU's scientific and technological bases

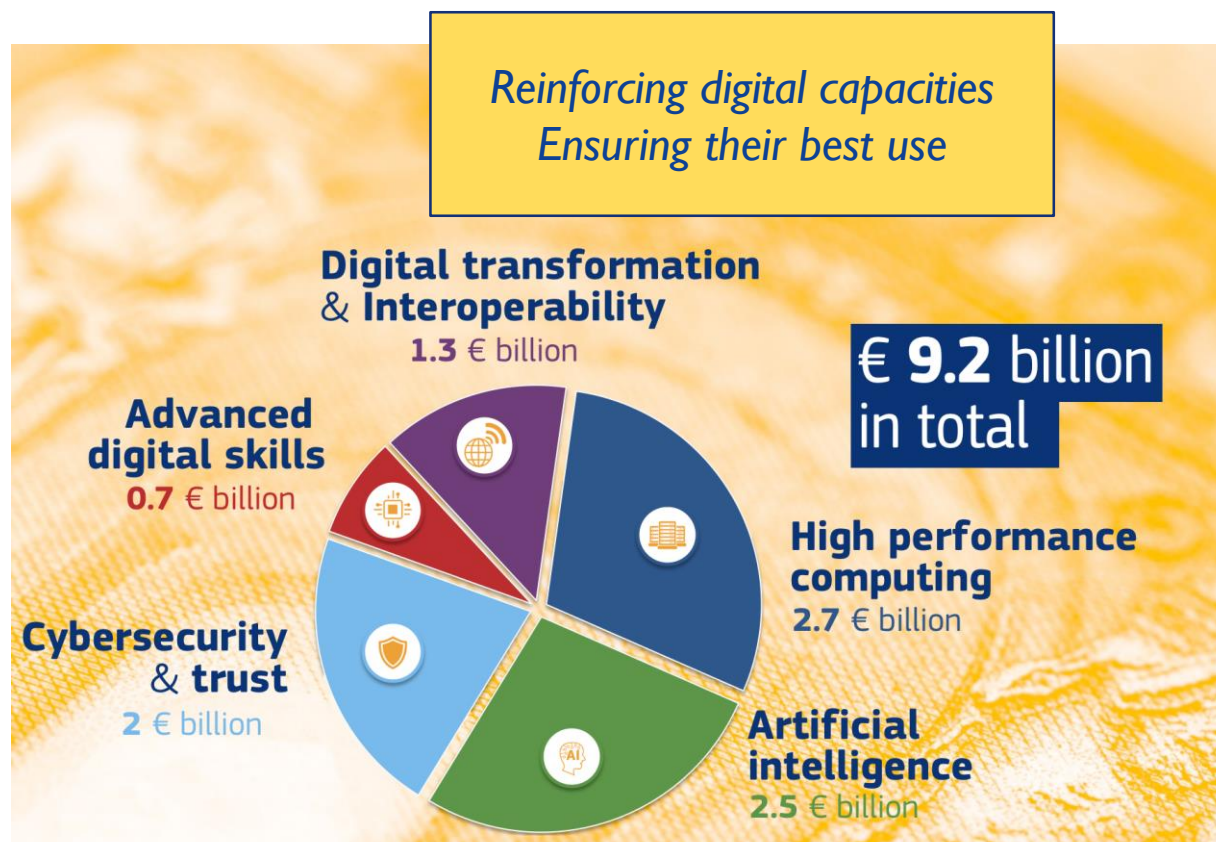


to boost Europe's innovation capacity, competitiveness and jobs



to deliver on citizens' priorities and sustain our socio-economic model and values

DIGITAL EUROPE



#EUBudget
#DigitalEurope

EFECS 2019



EFECS Where innovators
meet & shape
**OUR DIGITAL
FUTURE**

2019

European Forum
for Electronic
Components and
Systems

19-21 November
Helsinki

QUESTIONS ASKED :



We would appreciate if you could share with us, among others, your experiences at ECSEL concerning:

- Why & how could government and industry work together to build a common R&D vision and strategy, and invest together to support the companies / consortia to pursue innovation?
- What rationale and mechanism are in the background to facilitate the networking and processes, which enable competing companies working together to pursue a common goal, while they could still retain their competitive advantage respectively?
- What are the key elements and/or Key Success Factors that enable ECSEL JU to continuously perform its functions?
- ...

CONCLUSION



THE ECSEL JOINT UNDERTAKING makes us

- THINKING TOGETHER
- WORKING TOGETHER
- INVESTING TOGETHER

Future is now : HORIZON EUROPE & DIGITAL EUROPE

Industry ambitions “BOOST ELECTRONIC VALUE CHAINS IN EUROPE”

REFERENCES AND READINGS



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