



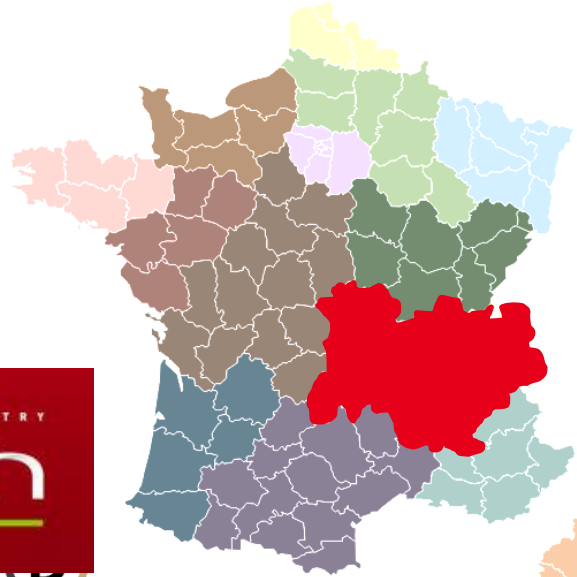
DIH – WG : ACCESS TO FINANCE FOR DIHS AND SMES

CASCADE FUNDING : AN AGILE FINANCE TOOL

WITHIN A FULL ECOSYSTEM/DIH DEDICATED TO SMES



CEA - LETI WITH ITS OWN ECOSYSTEM



CEA

- Annual operating budget of more than **€600 million**
- **4,500 researchers**
- More than **600 priority patent applications / year**



MINALOGIC

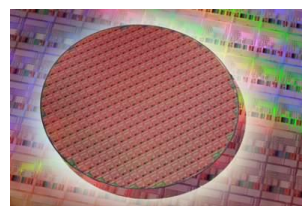
- *CLUSTER* created in 2005
- **400+ members** academic and industrial (75% of SME)
- 575 supported projects
 - **850M€ Public funding**
 - **R&D investment : 2,1B€**
- Over the 72 finalized Projects :
 - 800+ job created
 - 1,6B€ revenues (3 years after the end of the projects)
- 86 commercial products



LITEN: NEW ENERGY TECHNOLOGIES AND NANOMATERIALS



LIST : SMART DIGITAL SYSTEMS



LETI : MICRO- AND NANOTECHNOLOGIES and their integration into systems



MINALOGIC



LETI mission : Innovate and Transfer to industries

Industrial network from Startups to Large Groups

→ 350 bilateral contracts (incl. SMEs)

Startup program operated by CEA LETI : Innovation management
(market place, VC network, ...)

→ 64 startups created within the last 20 years



MINALOGIC, Global innovation cluster for digital technologies, created in 2005

- 400+ members academic and industrial (75% of SME)
- 575 supported projects
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CAP'Tronic, a national leader cluster organised to federate the complete ecosystem

- **Digitalisation** : help French SMEs & Startups improve their competitive edge by integrating embedded software and electronics in their products,
- **Network** with Large Groups,
- Incubators, Platforms,
- **Projects Funding** : 400 supported projects each year (to enable companies to quickly find realistic and cost-effective technological solutions)
- 200+ training courses and technical seminars each year
- 1000+ members (90% of SME)



- Transborder cooperation
- Early stage
- Conceptual
- Prefiguration
- Innovation management



CDE Rapid verification of new functionality features for tractors and medical devices

Challenge & Solutions
Tractors and other off-road vehicles have strongly evolved from just plough-pulling machines to complex systems allowing for a huge variety of functions. New digital technologies have enabled many innovative efficiency enhancing functions such as autonomous farming applications using GPS data or automatic transmissions driving very diverse farming machines. As for any product, the safety and reliability of new features must be tested in realistic environments before finding their way to commercial markets. They are not really reproducible due to varying real-life conditions. Software glitches occurring during field-testing are nearly impossible to fix, because there is rarely an opportunity to take the vehicle back to a garage for error analysis.

EuroCPS Support
In this experiment CEA was the DIH that helped to bring the technology provider AVL and the SME CDE together throughout the experiment live-time.

Digital Skills
CDE is an Austrian embedded hardware and software development company based in Hagenberg (Burgenland, Austria). CDE is an ISO 9001 certified company.

Company
CDE is a security and communication technology company based in Hagenberg (Burgenland, Austria). CDE is an ISO 9001 certified company.

Impact/What's next
CDE is an Austrian embedded hardware and software development company based in Hagenberg (Burgenland, Austria). CDE is an ISO 9001 certified company.

EuroCPS
EuroCPS is an European funded project gathering several design centers in order to initiate synergies between innovative companies, major CPS-platforms and CPS-providers.

NEUMANN Secure monitoring of medical samples throughout the lab

Challenge & Solutions
High-throughput medical-diagnostics laboratories and bio-banks face an ever-growing number of biomedical samples to be processed and stored locally. This requires reliable and secure identification of test tubes in the entire laboratory ecosystem. In just one large-scale lab, this could involve tens of thousands of sample test tubes. These facilities are under constant pressure to monitor samples during processing, transportation and storage of tubes and to shorten the time it takes to provide patient results.

EuroCPS Support
In this experiment of the EUROCPS project BME took the role of the DIH enabling an SME of their eco-system to take from newest digital technology. They integrated their leading-edge knowledge about Cyber-Physical-Systems (CPS) in platforms of technology providers INTEL and STM such that the SME Neumann Diagnostics was provided with the guidance to add important features to their existing tests for cancer prevention and related laboratory products.

Digital Skills
Neumann Diagnostics Laboratory information-management technologies, laboratory sample processing technology management.

Company
Neumann Diagnostics is a data driven biotech company based in Budapest (HUN).

Impact/What's next
Neumann expects SmartLAB to boost its revenue by up to €2.5 million in five years. It is positioned to enable highly automated work quality-controlled, sample-handling solutions for high-throughput testing, especially in the field of infectious diseases like STDs and HIV, which involve millions of patients in the EU. The reagent market for HPV screening in Europe is estimated to reach €500 million within 10 years. In addition, SmartLAB service may increase the value of the laboratory services.

EuroCPS
EuroCPS is an European funded project gathering several design centers in order to initiate synergies between innovative companies, major CPS-platforms and CPS-providers.

ENCORE LAB Sustainable Farming – Fewer Pesticides Thanks to IoT Technology

Challenge & Solutions
It is estimated that agriculture accounts for more than 70 percent of the world's water consumption and that up to 58 percent of the pesticides applied in agriculture is unnecessary. Therefore, the ability to determine whether crops in the field need water, fertilizers or pesticides – and if so, when and how much – is vital to sustainable agriculture and to fight hunger in an ever-growing world population. Decisions on crop management are at best made based on records collected at public climate monitoring stations. While this information applies to very large areas, little use for the optimization of crop growing. For example, key variables such as agro-climatic conditions vary over short distances and thus global information is of little use for the optimization of crop growing. In order to collect and analyze key parameters for optimized crop growing, the CNODE experiment within the EuroCPS project designed and built low-cost sensor nodes with just a few sensors to monitor highly variable and critical parameters: air temperature and humidity, soil moisture at three different depths, the solution is based on spectrally efficient communication link (DBPSK) and Gaussian frequency-shift keying (GFSK) and simultaneously optimizes network capacity and minimizes the maintenance and practical to use. The accurate information collected by the solution will on average enable farmers to reduce pesticide application by 35 percent and irrigation-water consumption by 50 percent.

EuroCPS Support
CEA, a research institute of CEA Tech, acted in this experiment as DIH connecting its Sigfox transceiver to the STM32L0 Microcontroller Platform and transferring the entire solution suitable for the sustainable farming application to the SME Encore that is active in that field.

Digital Skills
Encore Lab: Ultra narrowband (UNB) transceiver for Sigfox internet of things network, validation of sensor nodes.

Company
Encore Lab is a technology-based company whose main aim is the development of innovative systems dedicated to sustainable farming - based in LA Roche (FR).

Impact / What's next
The CNODE technology is being integrated in Casem, Encore Lab's flagship, sensor-based product for providing farmers with real-time information about their crops. Thanks to the extended functionality of its flagship product, the company expects to sell more than 10,000 units within the first five years after its 2017 market launch. Sales are estimated to reach €4M by 2022. In addition, the company expects to double its staff to 20 during that period, thanks to the results of the CNODE project. Dramatically optimizing water consumption in crop farming has also a huge humanitarian dimension, as persistent hunger is in particular observed in areas where water availability is limited. Increasing harvests thanks to optimized water consumption of the rare resource water will strongly contribute to the fight against hunger. Finally, the considerable reduction of pesticides has also environmental impact in using fewer chemicals that contaminate the soil.

EuroCPS
EuroCPS is an European funded project gathering several design centers in order to boost and initiate synergies between innovative companies, major CPS-platforms and CPS-providers.



ENCORELAB

Encore Lab is a technology-based company whose main is the development of innovative solutions in three technical areas:

- development of **electronic devices**,
- development of **advanced software**
- data analysis via **data mining**.

- Application Domains
 - Agriculture
 - Smart City



Company

Encore Lab is a technology-based company whose main aim is the development of innovative systems dedicated to sustainable farming

11 employees



Partners:

CEA LETI
ST Microelectronic



Since 2014

Based in Spain



Sustainable Farming

Fewer Pesticides Thanks to IoT Technology

Challenge :

- agriculture accounts for more than 70 percent of the world's water consumption - up to 58 percent of the pesticides applied in agriculture is unnecessary

Solution :

- a built **low-cost sensor nodes** : air temperature and humidity, and soil moisture at three different depths
- The nodes require minimal maintenance
- **reduce pesticide** application by 35 percent and **irrigation-water consumption** by 50 percent.

Impact :

- expects to sell more than 10,000 units (2017 + 5 years)
- **expects to double its staff to 20**

Encore Lab: Agro-climatic sensor nodes to monitor crops and environmental variables.

CEA-Leti : Ultra narrowband (UNB) transceiver for Sigfox Internet of Things network, validation of sensor nodes

ST Microelectronics : STM32L0 Microcontroller Platform



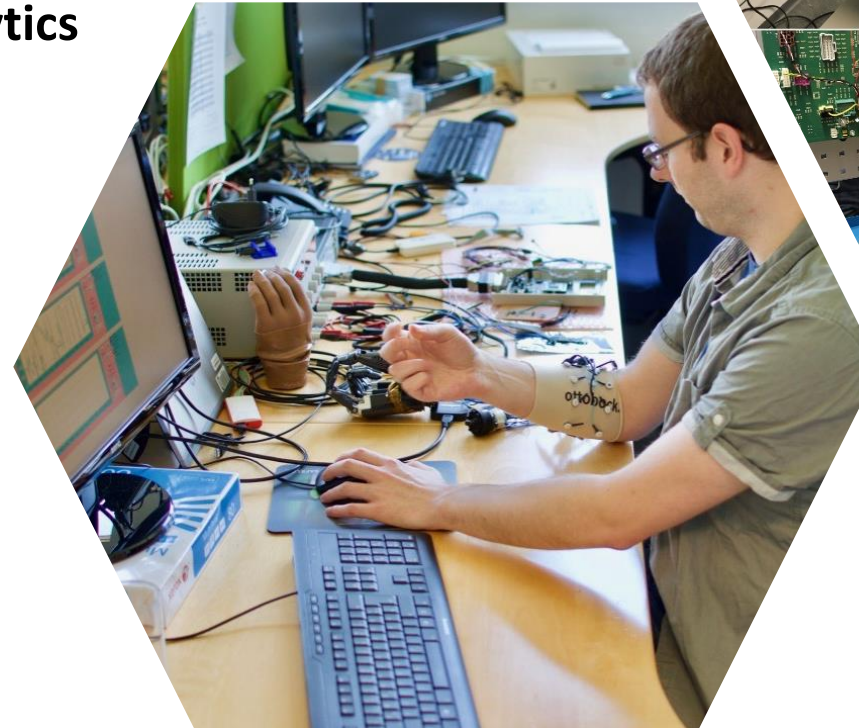


CDE Communication Data engineering

CDE : We support our customers in the conception and development of their products

Core competences:

- **Embedded Software & Hardware**
- **Apps & Web**
- **Data Mining & Predictive Analytics**
- Application Domains
 - **Health / Safety / Mobility / Energy**



Company

CDE is a technology-based company whose main aim is the development of innovative systems

22 employees

Partners:
AVL

Since 2001
Based in Austria



Rapid verification of new functionality features

Challenge :

- Safety and reliability of new features must be **tested** in realistic environments before finding their way to commercial markets
- Tractors & Smart Medical Devices

Solution : an Automatic Test and Verification System platform has been developed to **shorten testing time and to improve testing quality**

The system reduces both the effort and **testing time by 30-50%** depending on the application.

Impact :

- New business models
- expected that the revenue will increase by 30 percent by 2020.

CDE : CDE is an Austrian embedded hardware and software company / 22 employees / Created in 2001

AVL : AVL Graz (technology provider + design center): Integrated and Open Development Platform (IODP) for integrating simulation models, test beds, data and devices.





Alitec : Reflects on the present, Imagines the future

Core competences:

- Renewable energy and energy saving
- Sensors and control
- Process analysis
- Health management

• Application Domains

- Energy
- Environment



Company

Alitec is a research and development company in the fields of mechanics, electronics, photonics, optics and software

10 employees



Partners:
Fine power

fine power

Since 2004

Based in Italy





Teaching Building Heating Systems to Respond to the Weather

Challenge : Buildings account for 40 percent of energy consumption in the EU and generate 36 percent of Europe's greenhouse gases. power needed to adjust the temperature is greater than maintaining the target temperature.

Solution : The SolarSensNet (SSN) system developed in this project cuts building energy consumption for heating and cooling by up to 8 percent.

Impact :

- Sales are projected to exceed **1M€ by 2020**,
- Alitec has more than doubled its staff to support product development and market launch, and expects to grow headcount by 30 percent in the first three years following launch.

CDE : [Alitec](#) is an R&D company located in Pisa, Tuscany, devoted to the development of environmental technologies and solutions for the renewable-energy sector / 10 employees / Created in 2006

Fine power : Design Center - Experience and expertise with the XMC platform.





Business Coaching event - EuroCPS

EuroCPS project has worked with SMEs to accelerate CPS technologies

Follow up : Business Coaching event – London – January 19th 2018

SME Bootcamp is to deliver a **tailored coaching event** to assist in developing the skills that will help SMEs to scale their businesses moving forward.

- **Pitching ideas and concepts**
- **Value Proposition development**
- Growing teams / attracting CPS technology expertise
- Go-to-market strategy development
- Best practice in exporting within the EU
- Effectively marketing products/services
- Accessing finance and capital

The Bootcamp event will also provide time for SMEs to develop their own business or CPS product/service pitch (e.g., to customers or investors)



Europe - DIH

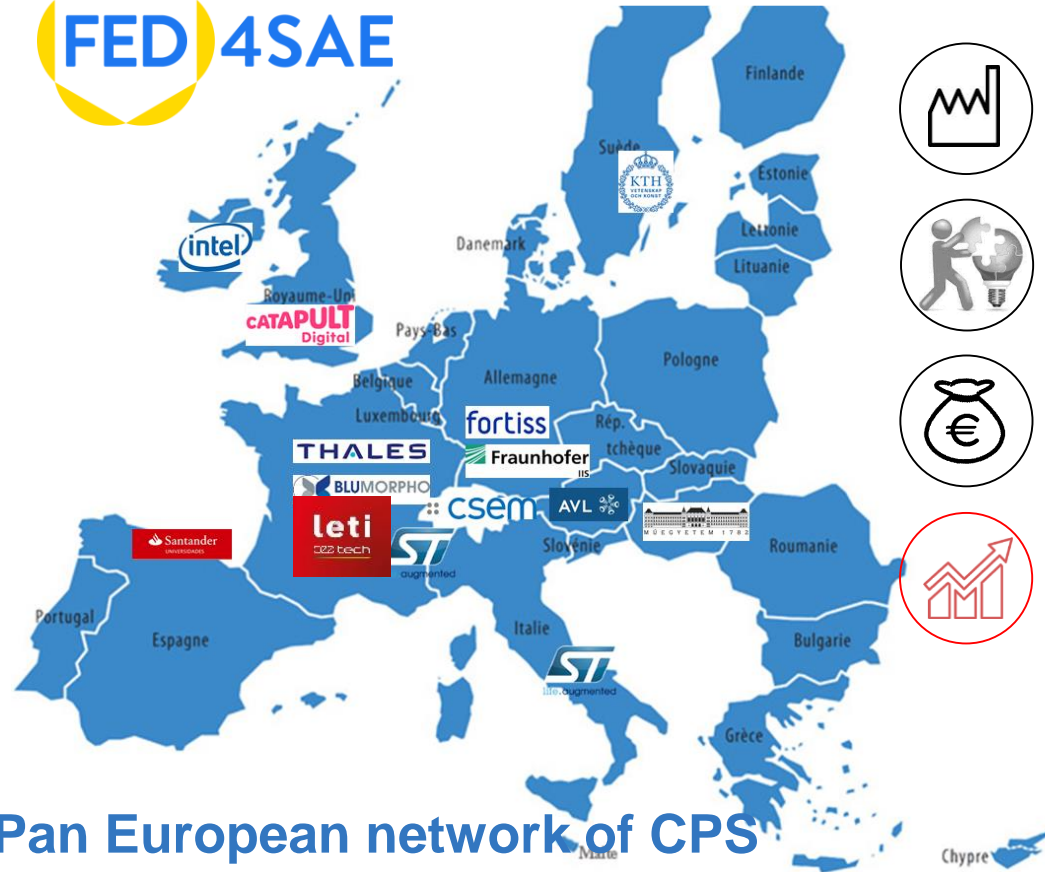
- Transborder coopération
- Early stage
- Conceptual
- Prefiguration
- Innovation managment



SMART ANYTHING ANYWHERE (ICT-04)



2015 - 2018



Industrial PF



Advanced PF



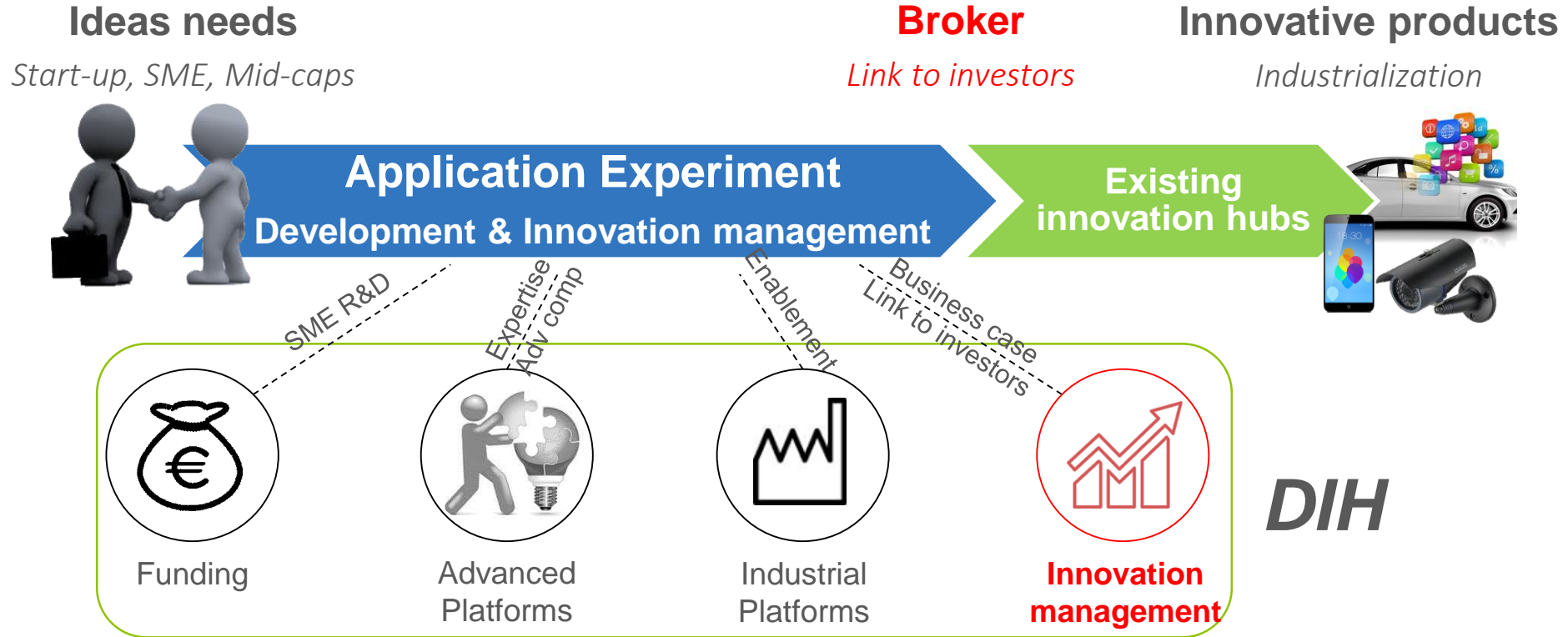
Funding



Innovation Mgt

Pan European network of CPS
Digital Innovation Hubs

DIGITAL INNOVATION HUB SUPPORT



RTO as DIH operator

- Technology diffusion at European Level in its DNA / digitizing EU industry
- Leadership and strong financial structure
- Issue: admin overload / subcontracting to be put in place?
- RTOS well adapted to LEIT projects / medium (3 to 5) TRL investigation with RTO leadership
- Need for European technology champions (RTO) support – TRL 3 to 5 programs for tomorrow technologies

THANKS FOR YOUR ATTENTION

pierre-damien.berger@cea.fr

+33 6 84 20 86 67