



Technology Infrastructures for industrial leadership and sustainable future

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French Alternative Energies and Atomic Energy Commission
www.cea.fr

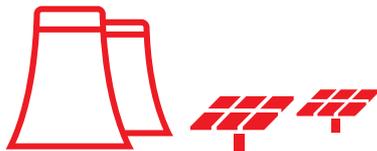
- Investment in technology and innovation are key condition for European industry competitiveness
- « Re-finding industry – Defining innovation » report last year, with participation of EARTO members clearly stated the challenges
 - ▶ Improve diffusion of already developed and emerging technologies into the industry
 - ▶ Develop new technologies to face increasing global competition to attract investment and to create jobs in Europe
 - ▶ Importance of « Key Enabling Technologies – KETs » confirmed and extended to digital technologies
- Transfer from knowledge to marketable products and services is a specific shortcoming in Europe
 - ▶ Technology infrastructures are a key element of the solution



A RESEARCH ORGANISATION



Defence and security



Nuclear and renewable energy



Technology research for industry



Fundamental research



16,979

Employees
(31 dec 2017)



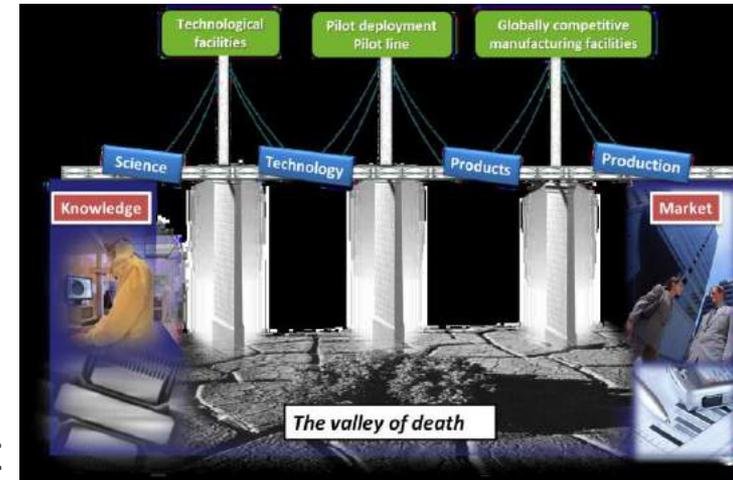
1,343

Doct students and post-docs
(31 dec 2017)

1. Technology infrastructures to bridge the « valley of death »

A three step process

- Mass production manufacturing facilities
 - ▶ Mainly an industry responsibility and investment
 - ▶ Support through State aid policy, IPCEI, investment plan
- Pilot line for first stage deployment of new commercial products
 - ▶ Limited scale manufacturing of proven concepts
 - ▶ Support through Pilot lines and test beds calls
- **Technology infrastructure** for new product development
 - ▶ Development of new technologies and processes, adapted to industry needs
 - ▶ No specific existing support at EU level. Only research infrastructures



EXAMPLE OF CEA TECHNOLOGY INFRASTRUCTURE

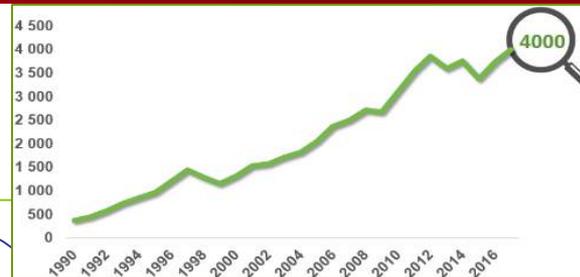
High contribution to a strong European Semi-conductor Industry

leti



1000
persons

> 65 start-ups



5000 persons

Local ecosystem
in micro &
nanotechnologies

Open, Shared & Accessible

15 000 direct jobs
30 000 indirect jobs



The Liten Hydrogen production and storage infrastructure

Development, Integration,
and Demonstration of
electrolyser & storage systems



40 Engineers &
technicians



8 M€ Investment
so far



800 m²
Facility

Open, Shared & Accessible

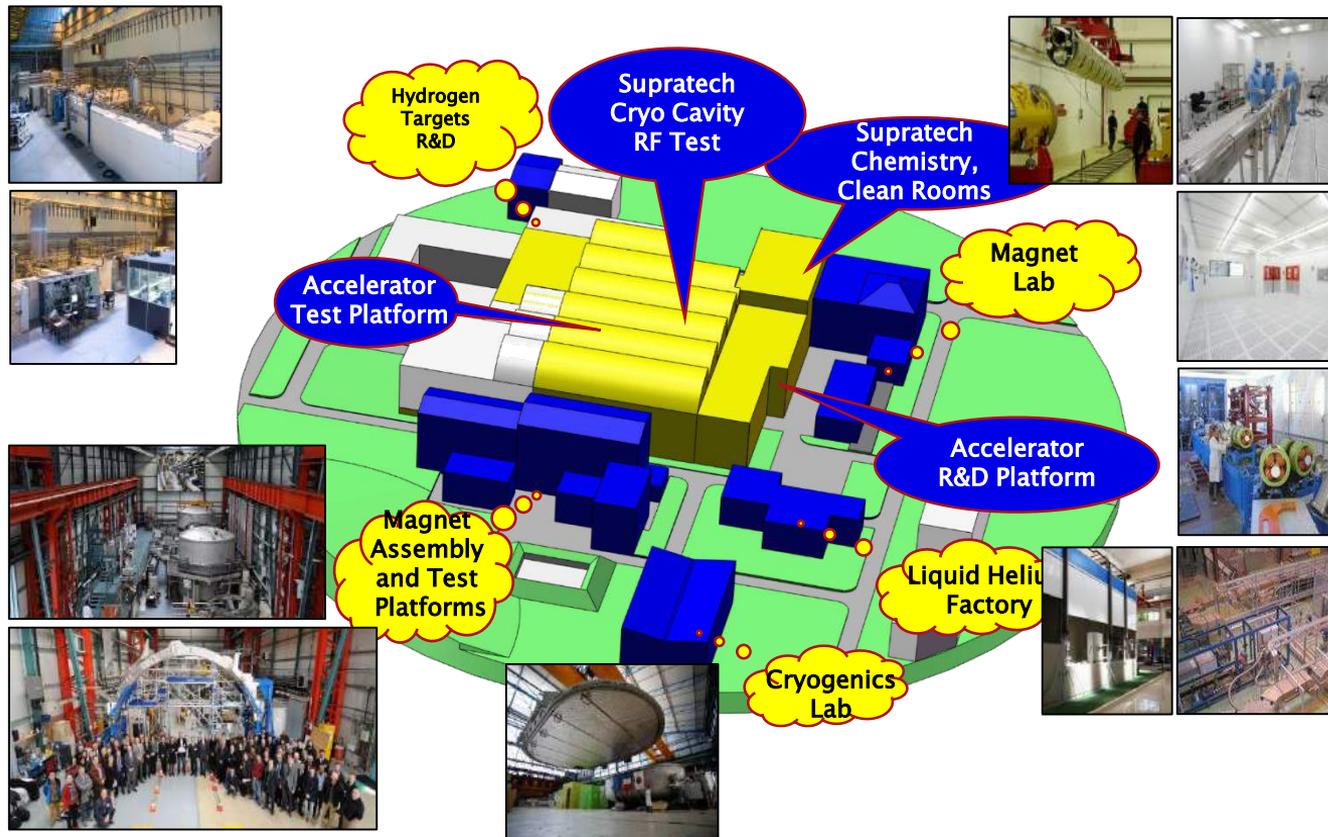
2. Technology infrastructures for European leadership in design and construction of large research facilities

- Societal challenges (Energy, Climate, health, security...) require R&D based on increasingly large and complex research infrastructures
 - ▶ Accelerators
 - ▶ Magnets
 - ▶ High Performance Computers...

- Significant market for high tech specialized companies in the manufacturing of these facilities

- **Technology infrastructure** as platforms to :
 - ▶ Concentrate competences
 - ▶ Promote cooperation between science organizations and industry
 - ▶ Support the development of products for the global research market and for societal applications

EXAMPLE OF CEA TECHNOLOGY INFRASTRUCTURE



Synergium complex

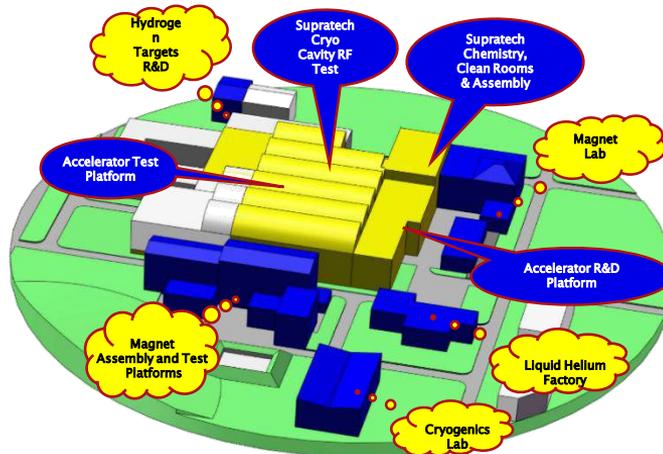
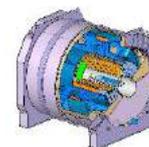
- ✓ 25 000 m²
- ✓ 100 M€ technical platform
- ✓ 200 FTE
- ✓ 40 M€ / year turnover

Member of the

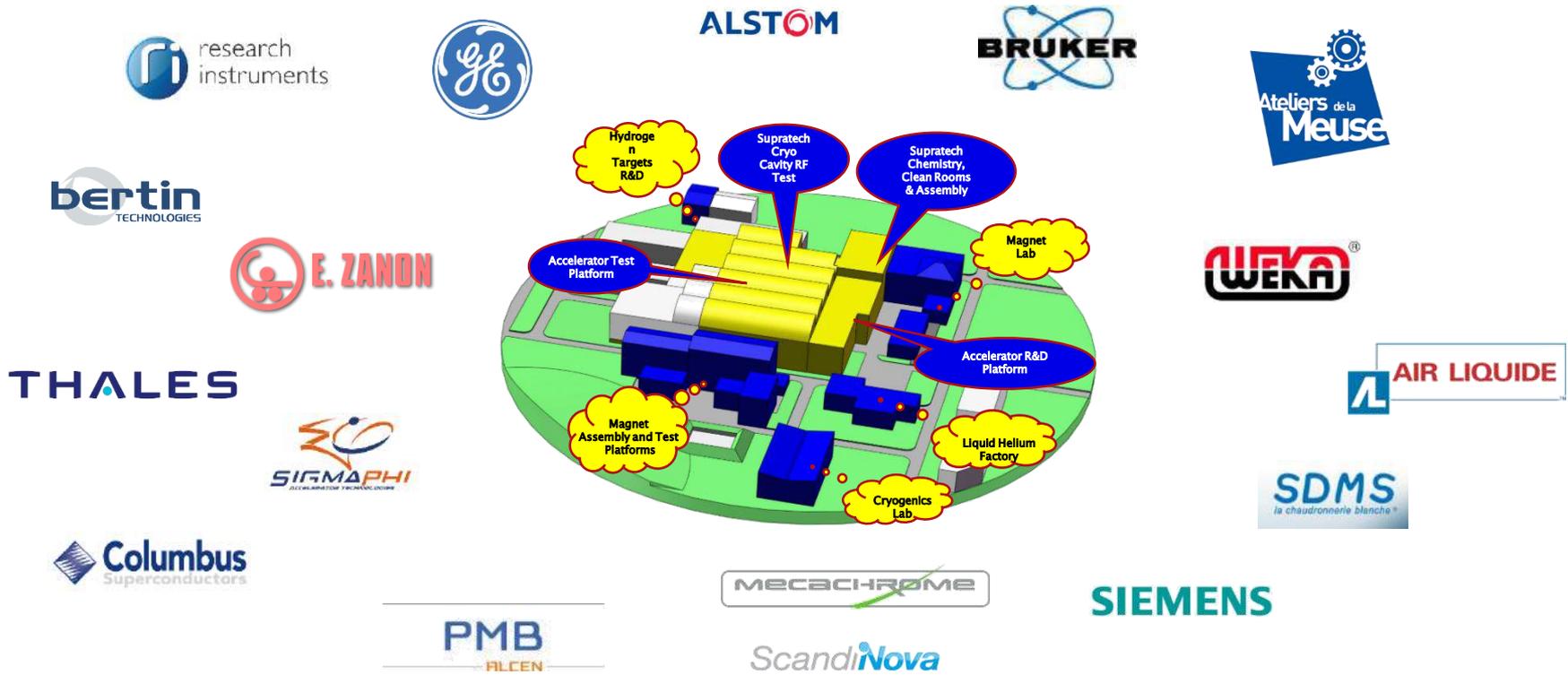


European project

EXAMPLE OF CEA TECHNOLOGY INFRASTRUCTURE



EXAMPLE OF CEA TECHNOLOGY INFRASTRUCTURE



Technology infrastructure – Main generic characteristics :

- ▶ **Early stage of industry development**, where partnership with research organisation is needed
- ▶ **Open environment** to bring together RTOs, large companies and SMEs
- ▶ Innovative manufacturing processes and **accelerate time to market**
- ▶ **Flexibility** to adapt to specific needs of companies
- ▶ **IPR associated services** and competences

RTO AT THE CORE OF INNOVATION ECOSYSTEMS

- RTO are key organisations to operate such technology infrastructures
 - ▶ Their mission covers both
 - **science and technology solution for public policies and societal issues** and
 - **Technology transfer to the industry** (large firms and SMEs)
 - ▶ They contribute to global competitiveness, economic growth and job creation
 - ▶ They act as **KETs integrators** to organise the combination of various technologies so that new products and processes can emerge
- Main issues at stake :
 - ▶ For mature sectors like electronics, the **cost to maintain world class R&D in critical components and systems continues to escalate** : necessity to **upgrade** infrastructures with each new generation of technology ; **prepare the future** (i.e. new generations of computing & cyber physical systems)
 - ▶ For new sectors and response to societal challenges, like production of green hydrogen, European industry requires technologies at TRL 7 to engage and this **relies on new technology infrastructures for research and innovation**
 - ▶ Technology infrastructure are central **in regional economic development but enhanced networks would help create European ecosystems**

A European approach is needed to increase efficiency and complementarity of efforts

- **Promoting pan-European access** to these infrastructures for industry, in particular SMEs for which the cost is often very high
- Support **networking and strategic partnership** between RTOs on a global offer at EU level
- Support **prospective actions** to understand industry sector needs that could deserve investments in new technology infrastructures
- Set up **dedicated funds in Horizon Europe** for these activities

FROM RESEARCH TO INDUSTRY



Thank you
for your attention

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