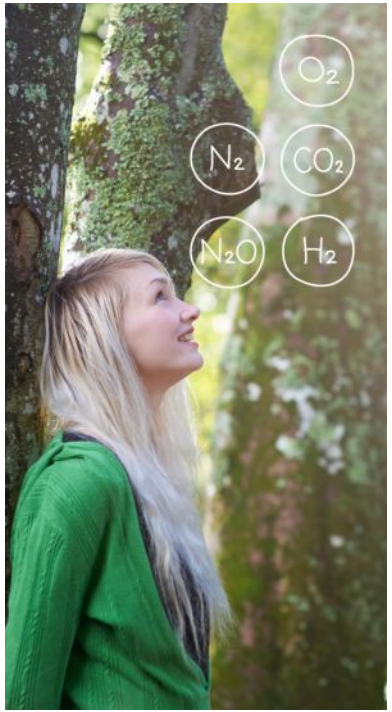
Paris Innovation Campus

Henri Chevrel, VP R&D Europe

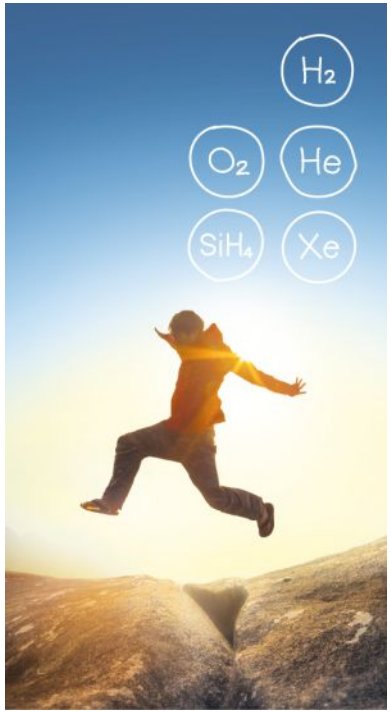
Scientific Territory of Essential Small Molecules

to Life

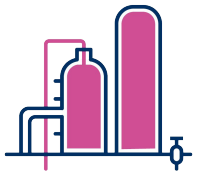


to Matter

to Energy



8 scientific & technological expertises



Process Engineering

Combustion

Materials Science

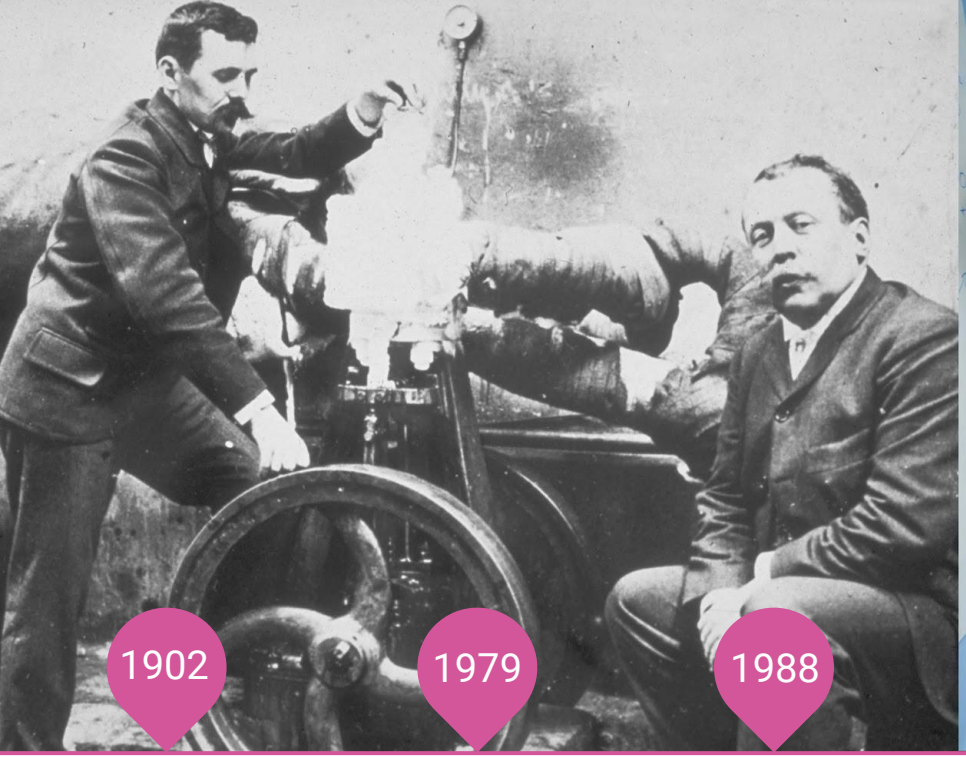
Design and manufacturing

Computational & Data Science

Analytical Science

Fine Chemistry

Life Science



1902 — invention of the air liquefaction process and production of oxygen

1979 — cryogenic tanks designed and developed for the launch of Ariane 1

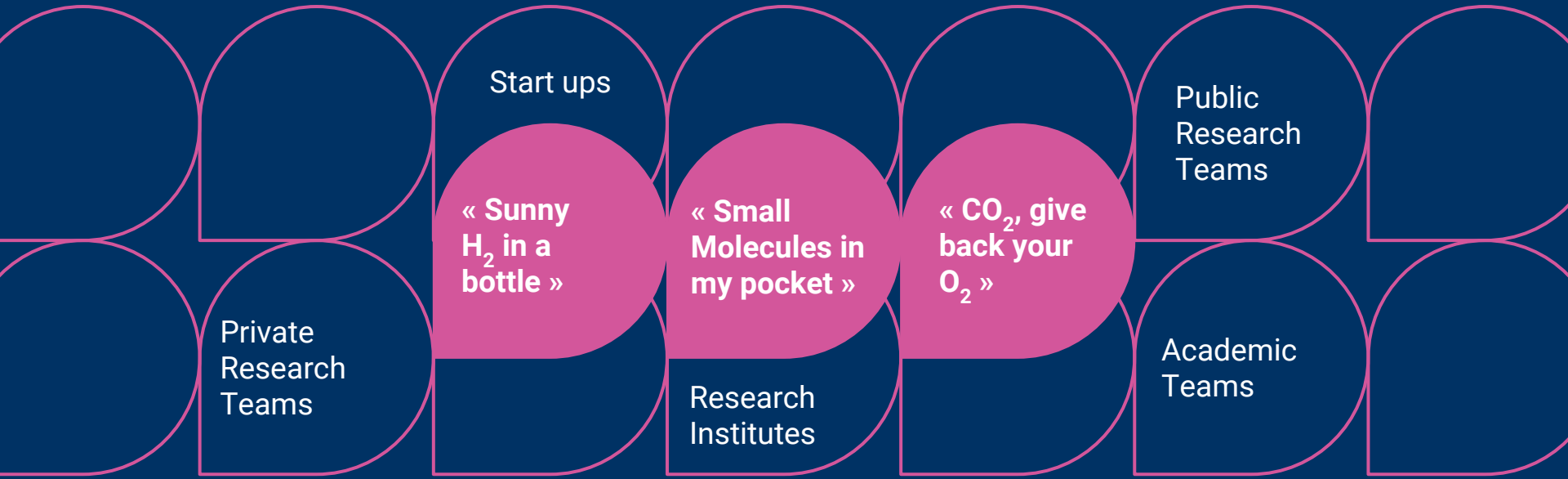
1988 — first industry reference in the field of air separation

1990's — hydrogen becomes an energy supply

2003 — new molecules: ALOHA for electronic and photovoltaic devices

2017 — +150,000 patients suffering from sleep apnea benefit from remote monitoring equipment

Scientific challenge

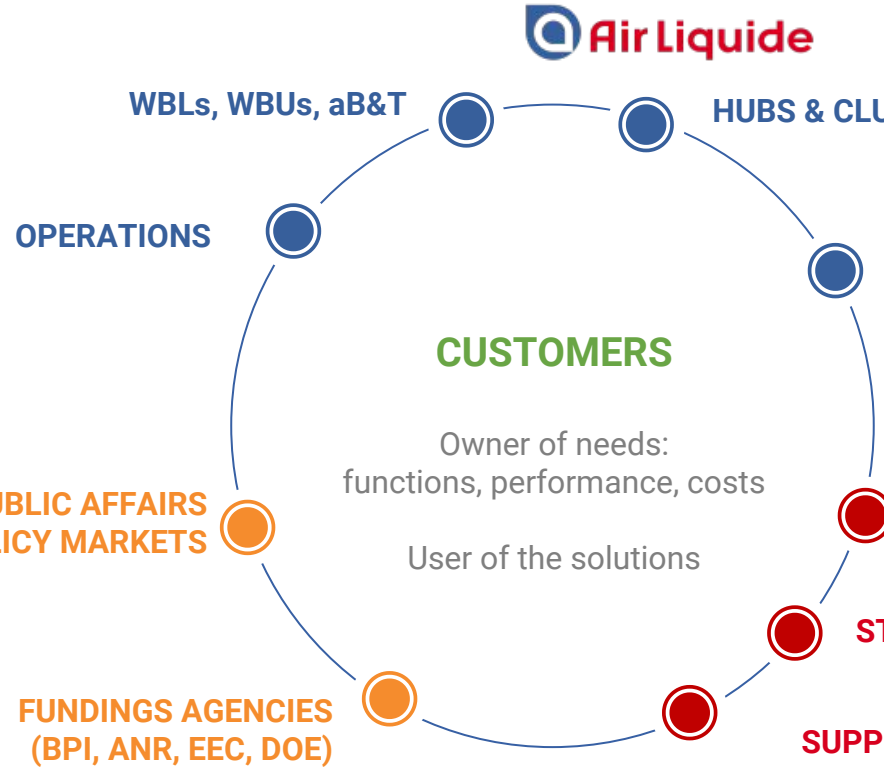


130 proposals
25 countries

Prize:
50 000 €

Commitment :
1,5 M€

Collaborative Innovation



Market and customer facing entities

States the problem + sell the solution

GROUP R&D

Develop the solution for today and tomorrow customer's needs

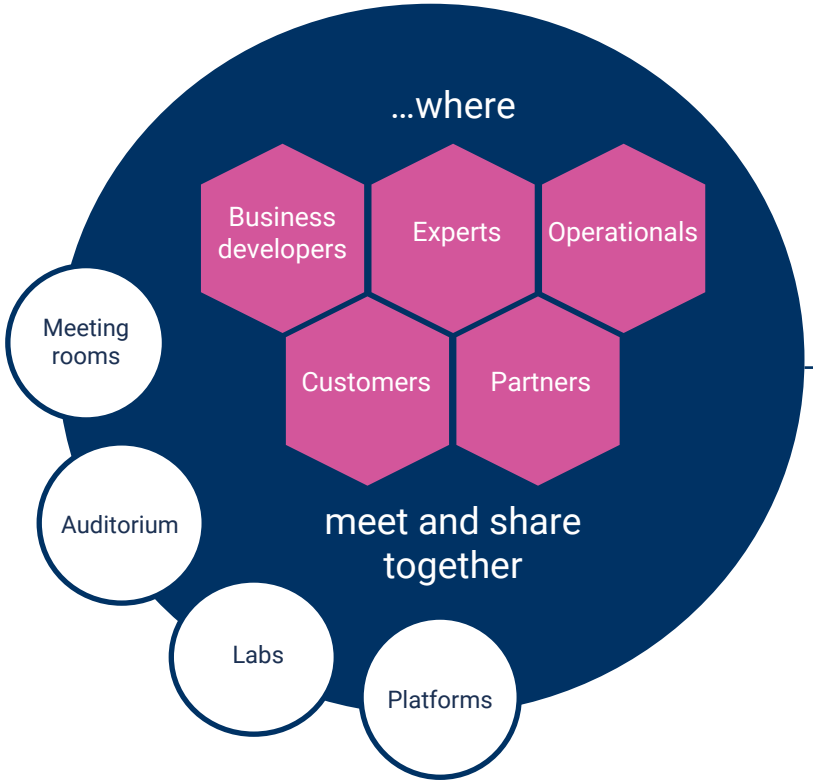
Public Bodies/ Administrations

Set legal frameworks and constraints
Financially support solutions finding

External partners

Provide building blocks for the solution

5 Innovation Campuses



to

INSPIRING PLACE

Gather and identify innovation challenges

WORKING PLACE

Develop projects

PRACTICAL PLACE

Run experimental sets up and tests platform

Key figures

Open in 1970 / A whole new building since June 2018
Part of the Paris Saclay ecosystem

450 people from 25 countries,
34% women in R&D workforce
>250 Patents filed per year

9 Technical platforms:

1 Safety,
2 Process Engineering,
3 Computational and Data Science,
4 Material Qualification,
5 Combustion,
6 Life Science,
7 Additive Manufacturing,
8 Industry 4.0,
9 Analysis

PARIS-SACLAY

Paris Innovation Campus
Areas of Excellence - Themes and Molecules

N_2 / O_2/ H_2	*Production : Cryogenic Processes, Distillation, Adsorption, Absorption, Electrolysis, purification, usage,*
H2 ENERGY	*Storage, Dispensing, Safety,*
CO_2 CAPTURE / MITIGATION	*Capture, purification*
SAFETY	*Dispersion, Oxygen, Hydrogen*
ENERGY MANAGEMENT	*Combustion, integration between different energy intensive processes*
CRYOGENIC	*Cold Chain, HX, Distillation, Food,...*
ADDITIVE MANUFACTURING	*Laser, HX, Gas Surface Interactions,*
DATA SCIENCE	*Operational Research, Machine learning, Deep learning, CFD*

BACK-UP

Paris Innovation Campus

Paris	Since 1970 New center since June 2018	420 people 80% R&D Capacity of 500
Hosting	R&D + 26 IM WBL + 45 Healthcare, …	
Key thematics	○ CCUS, Hydrogen & Biogas ○ Additive manufacturing, IoT for Industry 4.0 ○ Data Science for Operational excellence (assets, customers, ecosystems) ○ Energy transition analytics (LI, IM, GM&T) ○ Customer Experience (Healthcare, IM)	
9 Platforms	Safety, Process Engineering, Computational and Data Science, Material Qualification, Combustion, Life Science, Additive Manufacturing, Industry 4.0, Analytical	
Top 3 partners	Scientific partners: CEA, CNRS, Mines ParisTech	

Scientific Competencies

- ✓ **Analytical & Fine Chemicals**
- ✓ **Computational & Data Science**
- ✓ **Process Engineering. & Combustion**
- ✓ **Material, Design & Manufacturing**
- ✓ **Life Sciences**
- ✓ **Healthcare**