HCERES evaluation of Laboratoires de la vallée d'Orsay

CSNSM
IMNC
IPNO
LAL
LPT

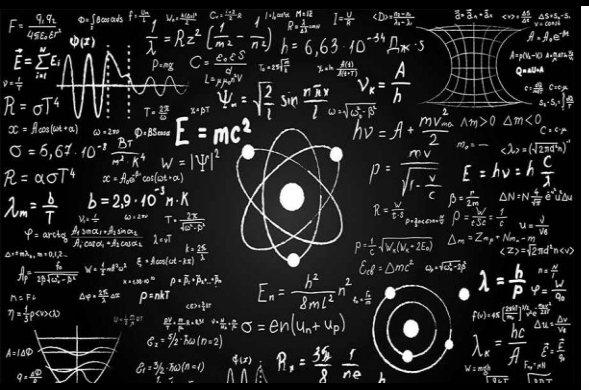


Image sources : insidesscience; oitecareesblog; iscpif.fr

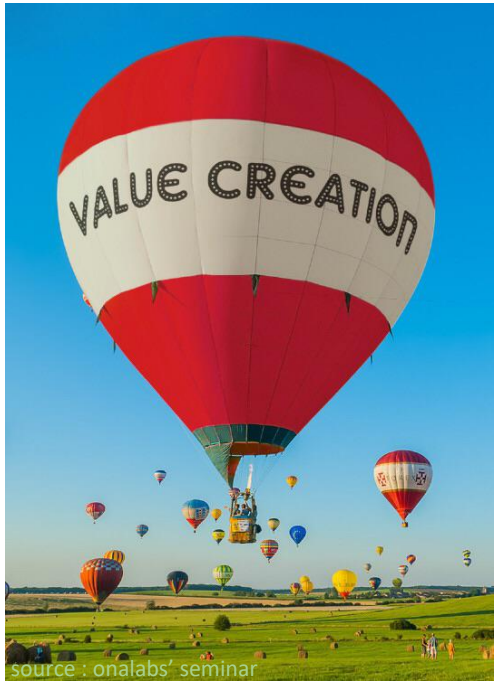
Valorization of research results

Speaker : S. KAMARA
Contributors : Laboratory Valorization Correspondants (CVLs)

14-17 january 2019

Valorization of research results : What is it?

The process of **value creation** from **knowledge**, by making it applicable and **available** for economic or **societal utilisation**, and by translating it in the form of **new business**, **products**, **services**, or **processes** *



source : onalabs' seminar

1. Research 2. Maturation 3. Product

* ICMAB – Patents and knowledge assessment

Valorization of research results : Why?

Research law, article L. 112-1

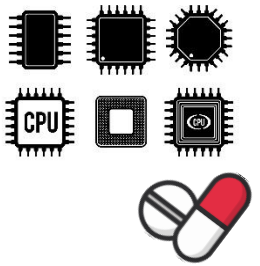
Public research aims to (**CNRS mission**):

a) The development and progress of research in all fields of knowledge;

b) **The valorization of research results at the service of society, which is based on innovation and technology transfer;**

c) The sharing and dissemination of scientific knowledge by giving priority to open access formats;

…



- ✓ Transform knowledge into **new products and services** for the society
- ✓ Stimulate **entrepreneurship** by creating companies
- ✓ Create **successful collaborations** between researchers and industries in order to advance the knowledge.
- ✓ Support the industry during its R&D stage by **licensing technology.**
- ✓ **Source of income to support further research and R&D projects, new equipments, trainings…**

Valorization of research results : How?

Technology transfer

Service offerings

Valorization

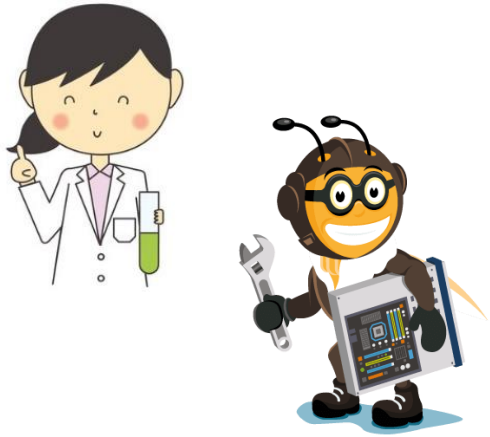
Consultancy/Training

- Industrial and R&D contracts
- Patent/Licensing
- Know-how transfer contract
- Joint laboratories (GIS, LabCom)
- Service offers contract
- Training contract

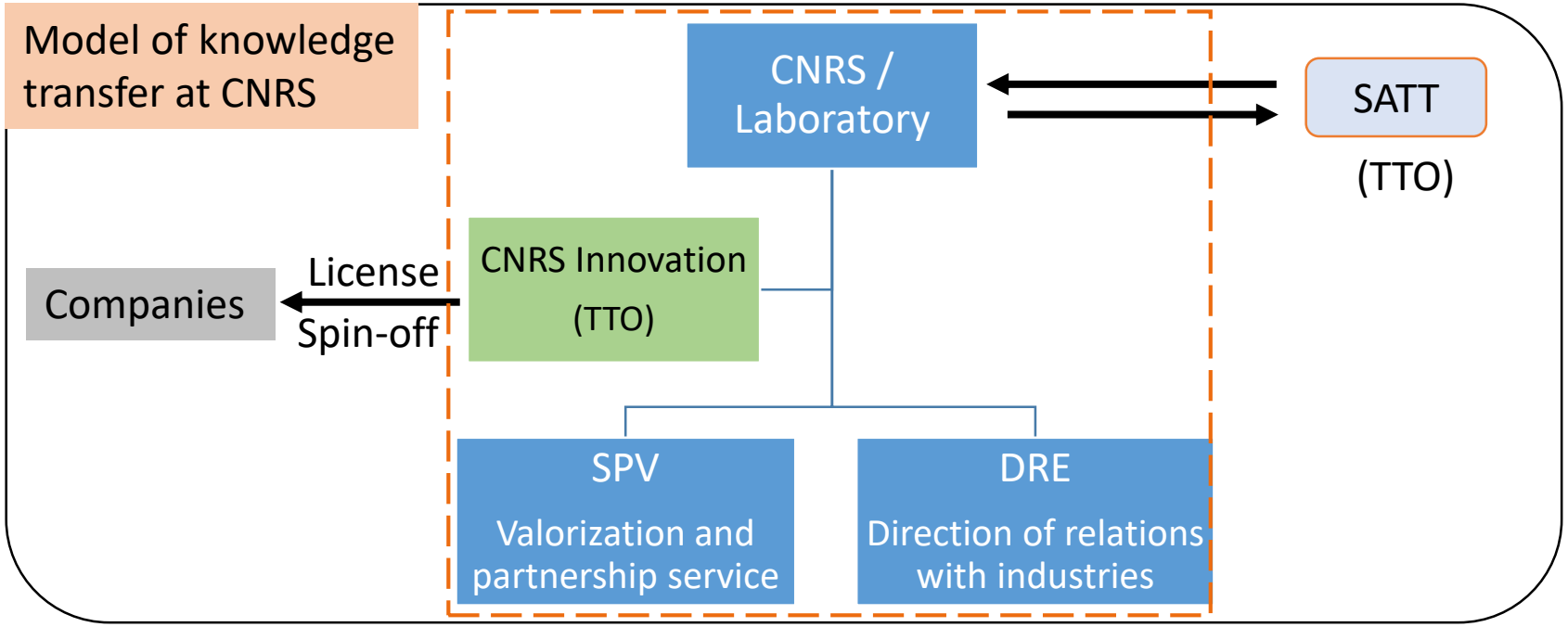
Valorization of research results : Who?

→ **All research staff**

- Researchers
- Engineers
- Technicians
- …



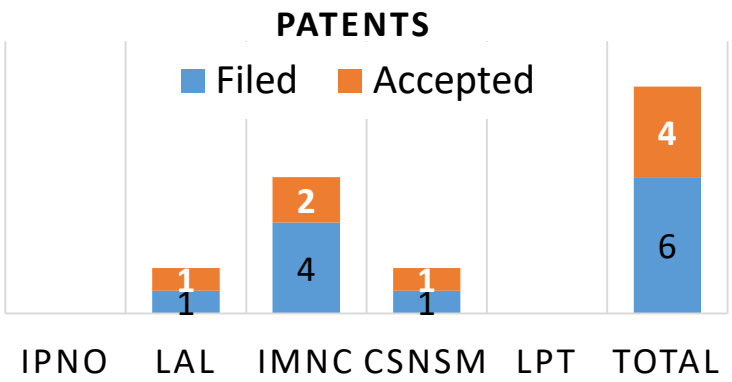
→ With support of valorization services and Technology Transfer Offices (TTOs)…

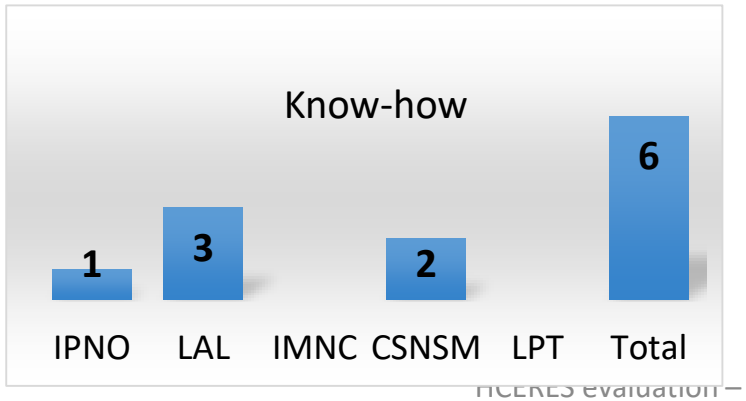


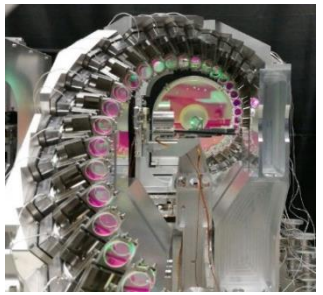
Review of valorization activities 2013-2018

Achievements / Knowledge transfer

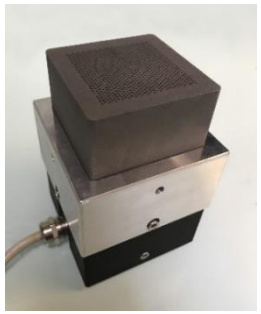
- Start-ups : **0**
- Licenced patents: **3**
- Softwares: **4**
- Consultancy : **6**
- Professional training : **7**







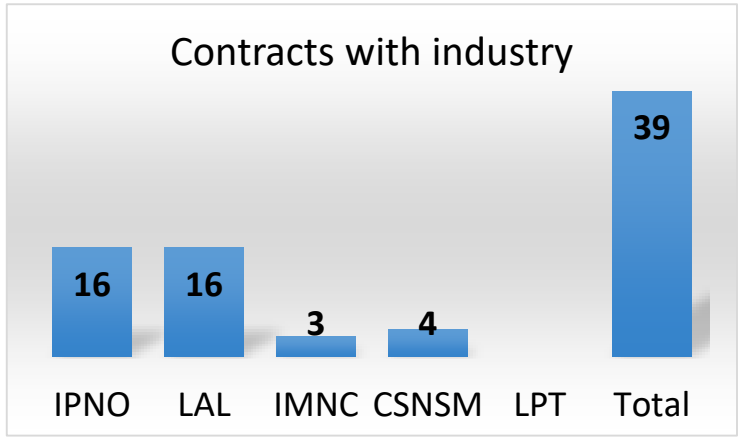
Optical recirculator for gamma rays production (LAL - Alsyom)

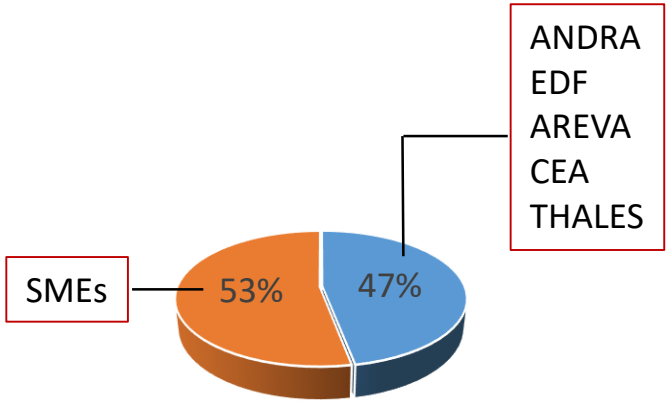


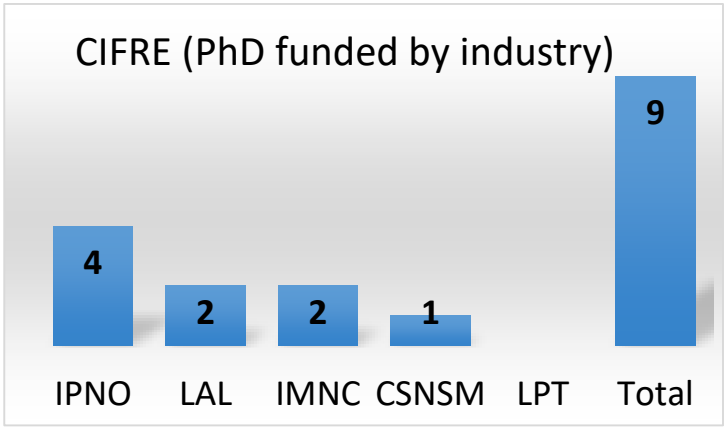
First ambulatory gamma camera (IMNC - AG Medical)

Electronic data acquisition module Digitizer (LAL - CAEN)

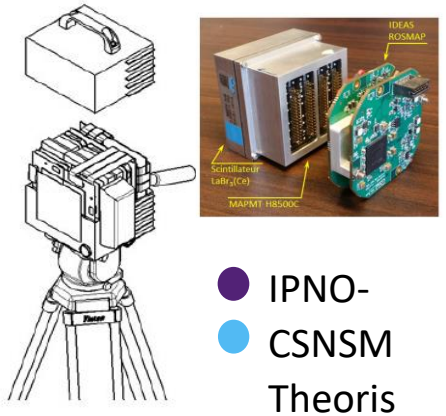
Achievements / Industrial collaboration



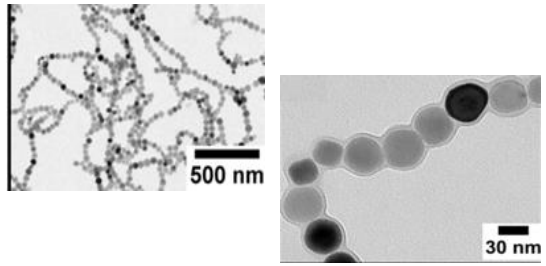




ComptonCAM - ANDRA project
- Detection of radioactive waste



- IPNO-
- CSNSM
- Theoris
- Systel elec



Magnetotactic bacteria for tumor treatment
(IMNC - NANOBACTERIA SA)

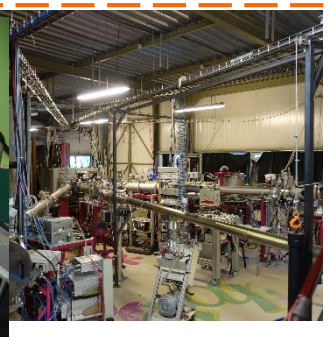
Service offerings / Platforms

❑ ALTO

- Thin films fabrication

~ 30k€/y

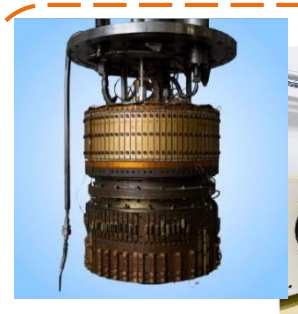
❑ SCALP



- Ion sources
- Irradiation
- Ion implantation

~ 95k€/y

❑ SUPRATECH



- Annealing of superconducting cavities
- Calibration of cryogenic thermometers
- Chemical etching – Surface treatment

~ 20k€/y

Human Resources

→ Until 2018 there was no team or service dedicated to the valorization of knowledges

→ Workforce and financial support were directly included into the projects and research teams

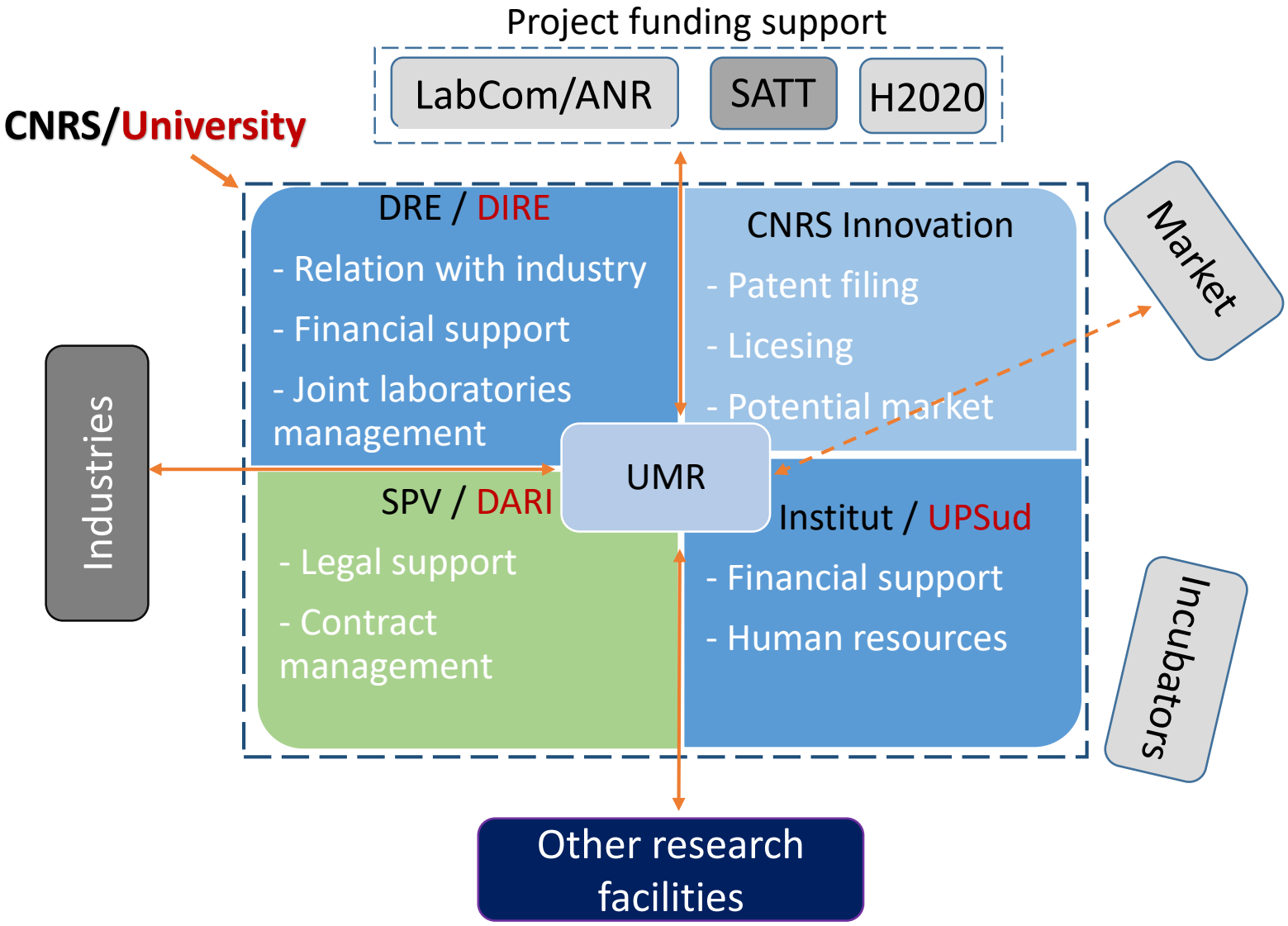
→ There were the so-called ‘‘Laboratory Valorization Correspondants (CVLs)’’ in each lab. But their activities were limited to the dissemination of informations and activity report

	2014	2015	2016	2017	2018
FTE	0.2	0.2	0.2	0.2	1,1
Budget	~ 0,5 k€	~ 0,5 k€	~ 0,5 k€	~ 0,5 k€	8 k€

Project of valorization unit (2018 – 2023 and longer term future)

Act 1: Recruitment of the head of knowledge transfer

Ecosystem of knowledge transfer

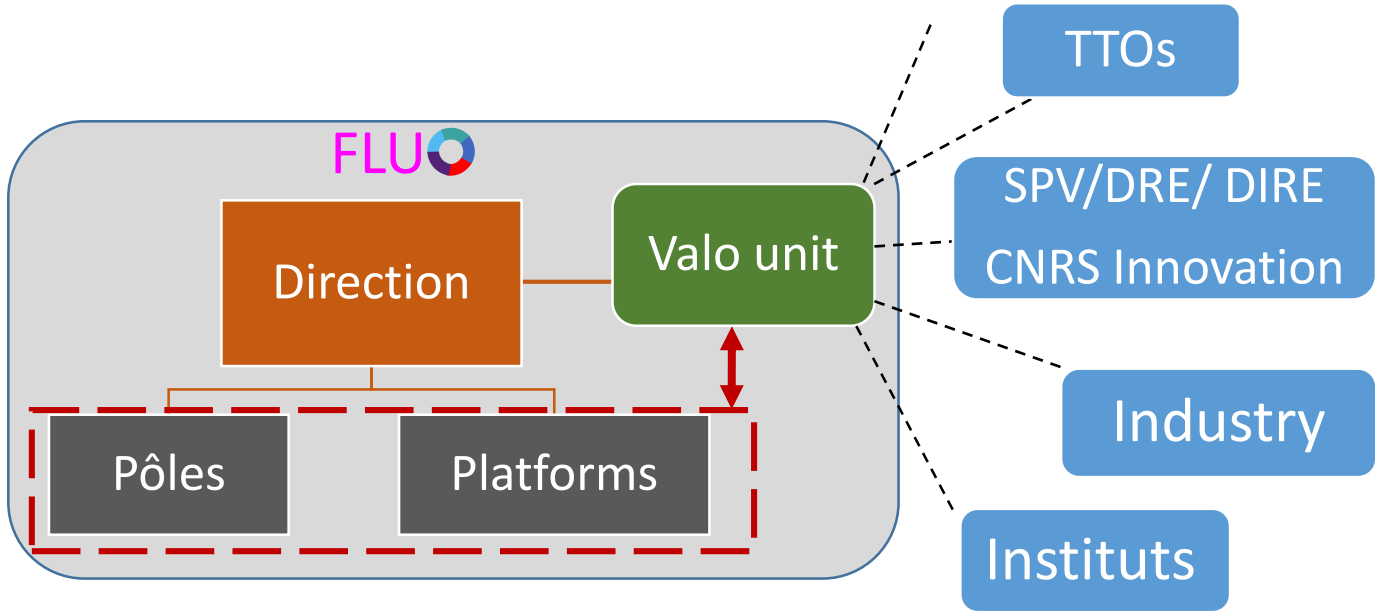


→ To benefit from the valorization services supports, it is necessary to have industrial partners and/or project upstream

→ It is therefore essential to have a proactive approach in technology brokerage, promotion of knowledges and financing requests

In-house valorisation unit

Mission: Coordination and development of technology and knowledge valorization activities of the laboratory



→ Implement the policy of the directorate in terms of valorization of research results

→ Being a close and effective support for researchers and engineers

→ Being the interface between laboratory and all actors of knowledge transfer

Activities of the Valorization unit

❑ Identify innovative results in ordrer to transfer them

→ Regular visits to the staff/monitoring progress report of project

→ Raising awareness among staff (Lab notebook, NDA, IP, quality management, Innovation ecosystem, grants, etc)

→ Contribute to research and R&D activities

❑ Driving the communication and promotion of the knowledges and technologies of the lab

→ Promotional brochures, website, workshops, technology brokerage

→ Organize Laboratory – Industry meeting days

❑ Develop service offerings activities in the platforms and technical services

→ Business plan and its implementation for the existing and future platforms

❑ Support staff on administrative linked to the valorization

→ Contracts, grants, call for proposal, declaration of invention, IP, etc.

Administrative support: Contract and IP

→ Help with drafting contracts

→ Advice and support


Source: success magazine

✓ <u>Consortium contract</u> HIBISCUS Project « Positive and Negative Reactive Ion Sources" for the analysis of nanostructured surfaces »

ORSAY PHYSICS
TESCAN ORSAY HOLDING

ICMMO

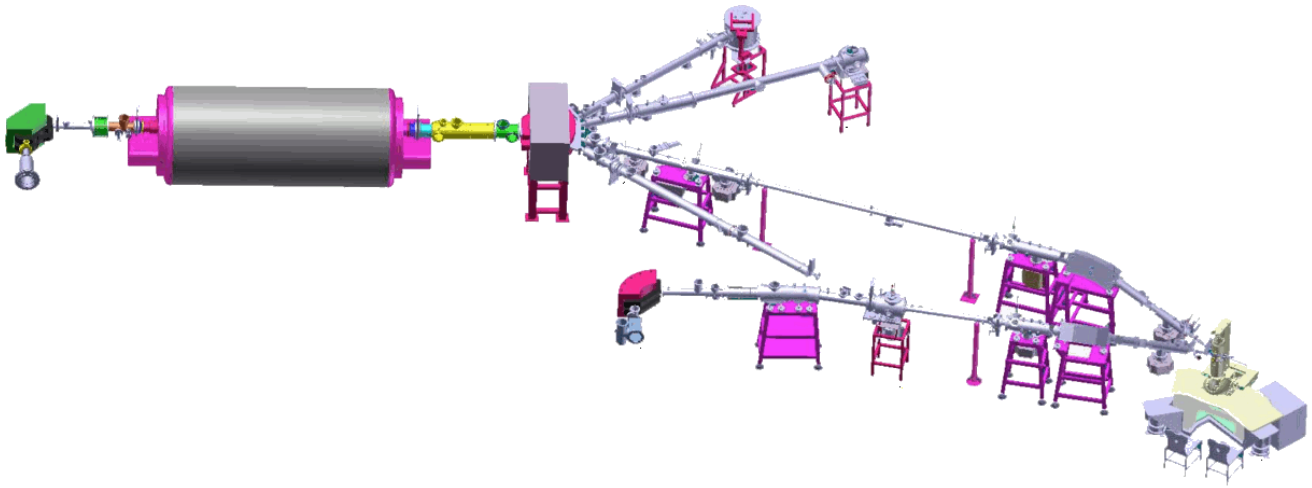
✓ <u>Non-disclosure agreement (NDA)</u> « Electronic cards development »

✓ <u>Declaration of invention</u>

- Patent on « Tomography »
- Patent on « Portable endomicroscopy»

Service offers : Open the platforms for industrials use

→The case of SCALP

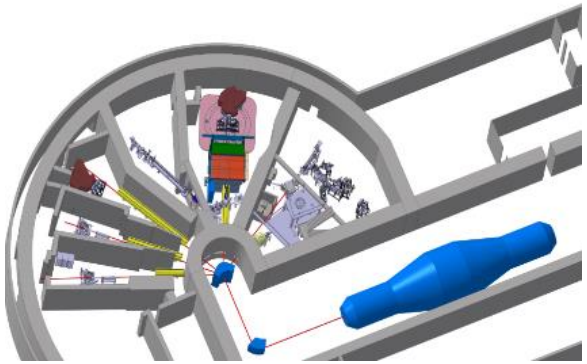


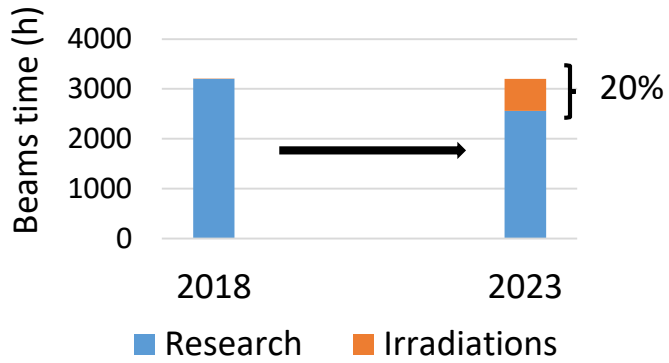
- 20 years of experience
- ~ 15% of beams time
- Irradiation, ion implantation, ion beam analysis
- **Self-financing for operation and maintenance**

→ SCALP expertise will be helpful for the development of service offerings activities in the other platforms

Service offers : Open the platforms for industrials use

→The Case of ALTO : Investment and development plan





I. **Introduction**
II. **Presentation of the facility**
III. **Context and market survey**
IV. **Service offerings**
- ✓ Ion beams
- ✓ Thin films
- ✓ Training

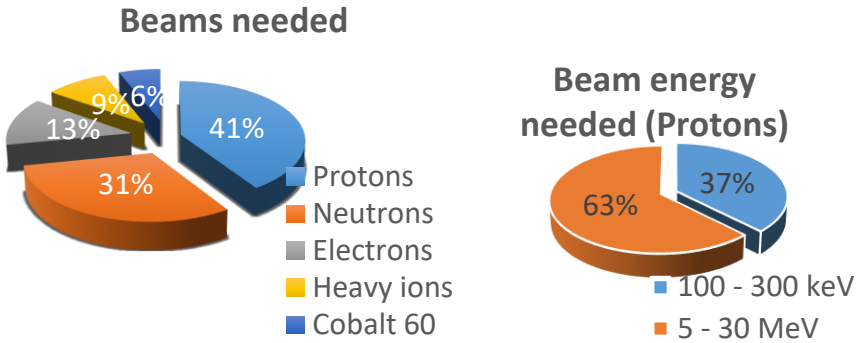
V. **Program and action plan**
- ✓ Financing requests – Call for proposal
- ✓ Distribution channels
- ✓ Communication – Prospecting
- ✓ SWOT analysis

VI. **Budget and growth perspective**

→ Same work will be done for the other platforms for in coming five years
… with the possibilty to centralize beam requests

Workshop and Industrial exhibition: RADECS* 2018

→ Result of market survey



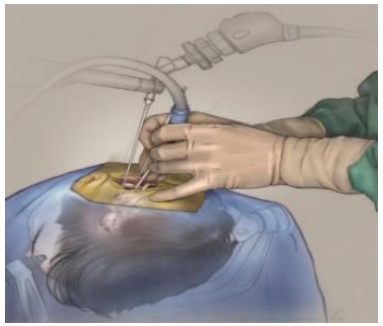
Beam parameters and dosimetry
Flux (in 4π): [n,p/s]
Fluence : [n,p/cm²]
Dose rate / Dose : [Gy/s ; rad (Si)]
Irradiation surface [cm²]
Beams engery homogeneity [size, %]
Range (i.e penetration) [µm (Si or SiO_2)]
LET (Linear Energy Transfer) [MeV/mg/cm²]

- ❑ **Contacts and discussions for beams request with**
  - ✓ TRAD (n, e), EPIC.1 (n, e), EPIC.2 (n, e, gamma)
  - ✓ Nucletudes, ITER,
- ❑ **Irradiations scheduled**
  - ✓ R-ARTE (p)

- **Objective** : 20% of beams time for irradiation
- Initial investments needed : **260k€**
- Financial benetits perspective: **300k€/year** from 2023

*RADiation Effects on Components and Systems workshop

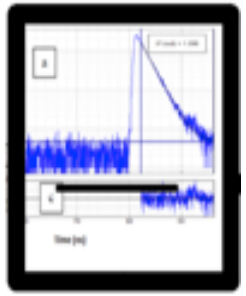
OptiPen: A technology transfer project

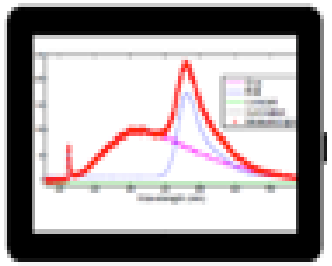


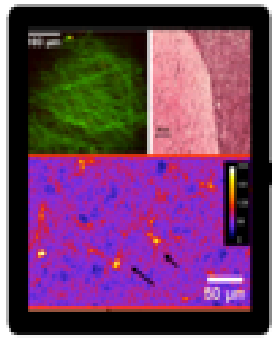
OptiPen prototype

Portable endomicroscope and data base on tumorous brain tissus

"Analysis of tumor resection margins"







Healthy

Tumorous

Research Award in Innovative Surgical Technology, 2017

The valorization unit is involved in…

- ✓ Analysis and recommendation for IP
- ✓ Preparation of administrative documents
- ✓ Form of technology transfer (Licensing, start-up,…)
- ✓ Applying for adequate funding

Joint laboratory project - CNRS/Industry

- One of the most important program in CNRS to stimulate the open innovation
- Bring together the exceptional scientific strengths and the companies that make economic development

→ Research theme : **Ion sources and surfaces analysis**

- Common interests and goal
- Common management and strategy
- A long-term collaboration

The valorization unit will be involved in…

✓ Preparation of administrative documents

✓ Efficient targeting of funding

✓ Monitoring progress of project

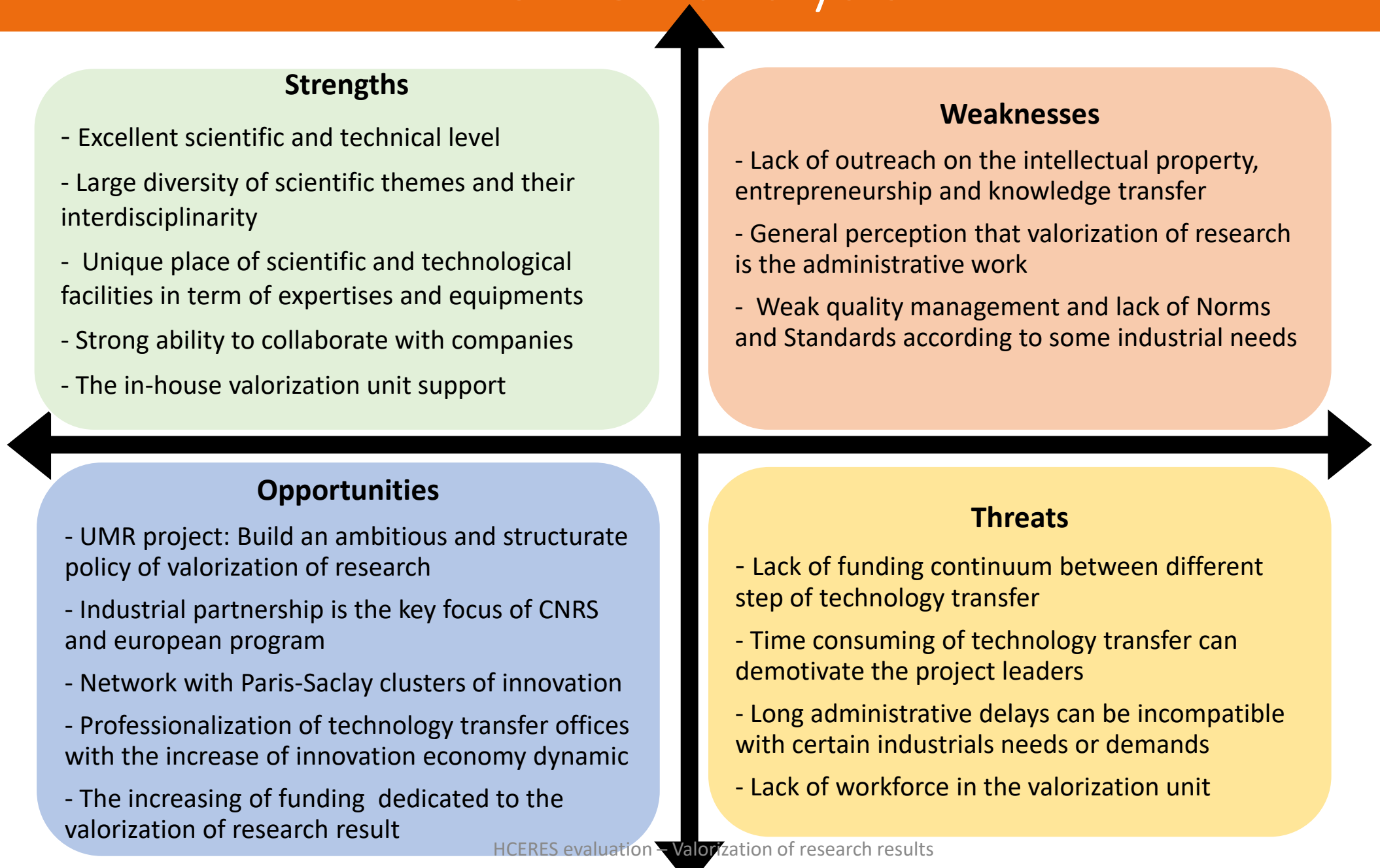
Previous or present interactions and collaborations between different entities

Expectation on HR evolution and financial support

	2018	2023
FTE	1,1	3*
Budget	8 k€	40k€/y

* Including communication and quality services support

SWOT analysis



Backup

Other workshops and industrial exhibition (2018)

→ Technology brokerage at the 1st international R&D and innovation workshop in Paris-Saclay

- Bulding network with heads of communication and valorization of Paris-Saclay University

→ Awareness about valorization and presentation of technology transfer office and its tools

- Procedures on good practices for valorization results
- Funding for valorization projects
- Apply for market survey

→ Participation to the workshop and innovation events

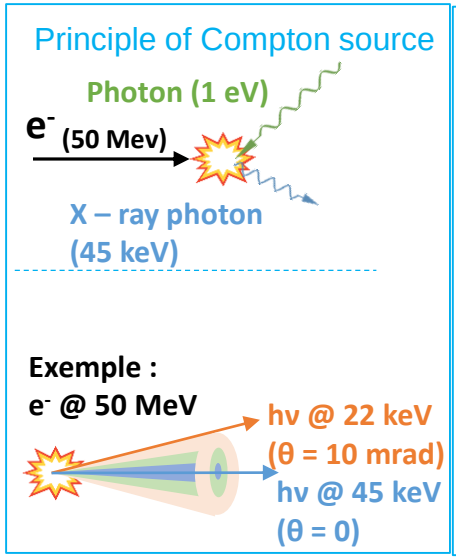
- Collect informations about valorization policy, IP, funding, grants
- Build a valorization officers network
- Redaction and diffusion of meeting minute to the laboratory staff

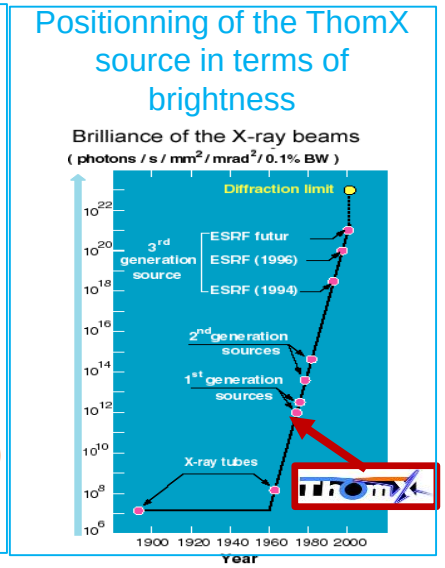
- **Awareness on business creation**
- **Seminar on pre-maturation program**

Paris - Siège du CNRS

Technology transfer project

A low cost, compact and versatile X-ray source





- **Development of industrial** Compton X-ray source
- **<u>Potential applications</u>**: Radiotherapy, medical imaging, structural analysis, material science

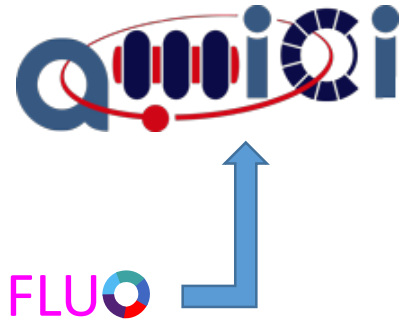
→ **Market survey** conducted by SATT
→ **Valorization unit** : Support for the next 5 years
- Strategy of IP
- Search of industrial partner
- Business model

European projects for the valorization of scientific and technological facilities – Networking - Cooperation - Innovation

→ Contribution

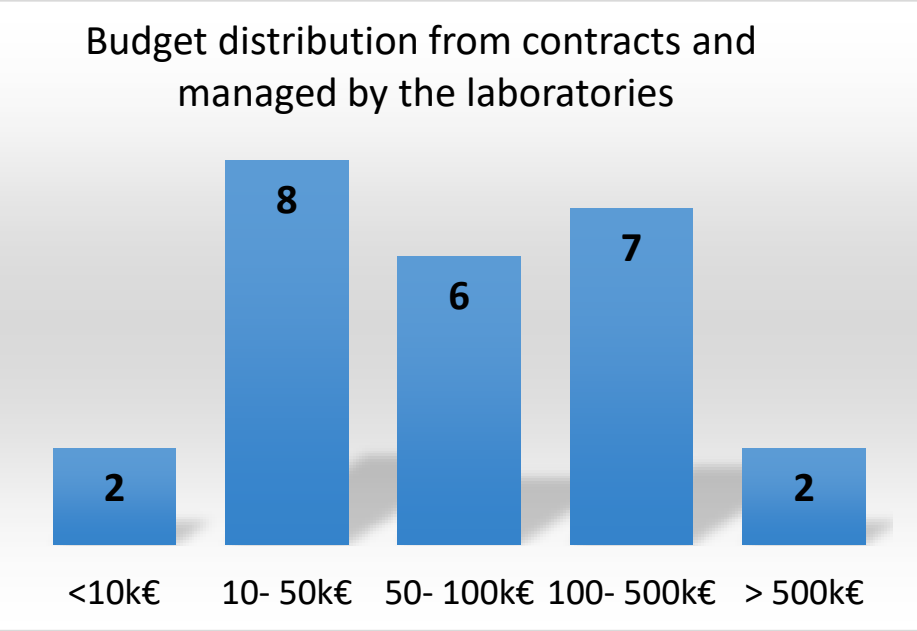
- **Nuclear Physics Innovation (NuPIA)** is the transversal network activity meant to reinforce the **partnership** of Nuclear Infrastructures and Institutions with **Industry** and to promote the **use of Nuclear Physics Infrastructures by industrial** researchers. NuPIA is a link between **innovation officers** of the institutions, **research groups** in various ENSAR2 WPs and **industry**.
- The goal is to create a **strong** European network of **SMEs** and industrial partners in close relation with all the ENSAR2 facilities and partners.

- **Accelerator and magnet infrastructure for cooperation and innovation (AMICI)**, the European technology infrastructure.
- Build the conditions for consolidating and exploiting the collaboration between European Technological Facilities and Industry to strengthen the capabilities of European companies to compete on the global market in the development of innovative applications in advanced sectors such as healthcare and space.

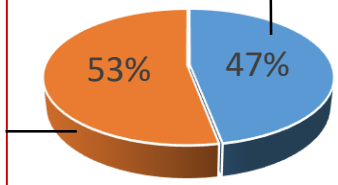


Collaboration contracts

- Collaboration with industry : 39
- CIFRE (Ph.D funde by industry) : 9



AG medical
Amplitude sys
PMB-Alcen
M2J
ARDOP
Lfoundry Gmbh
Alsyom
Systel elec
Theoris
Nanobaterie SA
Caylar
Orsayphysics
ITRON
Sigmaph
CAEN



ANDRA
EDF
AREVA
CEA
THALES

Patents and know-how transfer

Lab	Accepted Patents	Licenced patents / know-how transfer
IPNO		• Software « SMURE » for reactor physics
LAL	- Circuit performing a power inductor having an average inductance value is dynamically variable, voltage regulation system and inductive generator, FR2984539B1	• Software "WaveCatcher" for X743 family • Digitizers X743 (cards and modules based on SAMLONG CNRS/CEA chips) • Development of circuits et modules "SAMPET" (based on SAMPIC CNRS/CEA chips)
IMNC	- Peroperative sensing head adapted to be coupled to an ablation tool, US patent n° 9775573 - Device for detecting the disintegration of radioisotope in biological tissue, EP2201405	
CSNSM	- Method for manufacturing an electronic junction device and associated device, FR3040822B1	• Ion sources
LPT		

Valorization of research results : A story of CNRS

1939 Creation du CNRS, researchers start to filed patent and work with the companies

1940 SPENDEN, the first spin-off of CNRS

1967 Creation of the 1st institut in CNRS : ANVAR – National Agency for the VAlorization of Research

1982 Research Law for public research center → New mission of CNRS: Valorization of research results

1992 Creation of FIST SA the national subsidiary of CNRS for technology transfer

1999 Innovation and research law «Allègre law» → Gives the rigth to the researchers and engineers to create their own company

2011 Creation of Innovation Awards

2015 Creation of the General Delegate to the Valorization

2018 Creation of the Directorate-General for Innovation