

IDEAAL Work Package 4

Innovation and Industries

WP4 objectives

- The Innovation and Industries workpackage focuses on actions towards industrial users and on actions for industrial valorisation and innovation
- It will provide
 - access dedicated for new applications to the existing GANIL accelerators and to the new SPIRAL2 facility
 - **general support for industrial applications and technology transfer**
 - increase of innovation potential for GANIL

Coordination for WP4

- Workpackage leader: **Marie-Hélène MOSCATELLO GANIL**
- Workpackage deputy leader: **Elise DUVAL NUCLEOPOLIS**
- **Task 1** : Access provision to research teams from industries and involvement of industrial users: **Marie-Hélène MOSCATELLO-X.LEDOUX GANIL**
- **Task 2** : Industrial Applications and Technology Transfer: **Nadine RENARD NUCLEOPOLIS**
- **Task 3** : Increase of innovation potential : **Arnaud LESERVOT CEA/DRF**

Status of Task1

Access provision for research teams from industries and involvement of industrial users (GANIL)

- The Task 1 will finance 240 hours of beam time (and travel expenses) for some new industrial experiments that would like to test the capabilities of the GANIL facility in order to confirm industrial's interest in the available beams.
- The task will include the Creation of an international selection panel to assess the proposed experiments

Status:

- Informal contacts taken for international selection panel – Invitation letter to be prepared in November – Creation of the panel in December
- Communication on the IDEAAL offer 240 beam hours and associated travel expenses – Already presented at the RADECS 2017-> much success

-> For both actions: beam time periods in 2017 to be decided with GANIL Direction

Status of Task 2

Applications and Technology Transfer (NUCLEOPOLIS)

Sub-Task 2.1 – Provide industrial applications tools to GANIL

- Mappings of existing potential at GANIL (technologies – Know-How) and identify industrial candidates for technology transfer (see slide 6)
- Identify new areas for industrial applications (market research) and potential customers for existing facilities GANIL and SPIRAL2
- Build the implementation arrangements for transfers (financial and legal aspects)
- Build tools to promote this activity in connection with the communication service

Status :

- Mapping of existing potential : 1 hour meetings and interviews with most of the groups at GANIL (very good cooperation despite the low availability of the people) – to be completed for mid-november – Presentation of a cartography (non-exhaustive) and selection of transferable or valorisable subjects for the end of the year

-> Restitution meeting to be organised with sector and group leaders, and selection of subjects together with GANIL Direction (to be scheduled for the end of 2017))

-> Market research to be started in the coming weeks

GANIL Sectors	Groupes
Secteur des accélérateurs	Alimentation et charges
	Opération et dynamique faisceau
	Gestion des installations
	Hautes fréquences
	Electronique machine
	Production d'ions
	Vide et cryogénie*
Secteur des techniques de la physique	Instrumentation pour la physique
	Bureau d'études*
	Fabrication mécanique*
	Acquisition pour la physique
	Détection pour la physique
	Informatique et infrastructure
Groupe physique	A. CHBIHI / G. FREMONT / C. SPITAELS
Secteur SPIRAL2	P.Anger, N.Lecesne MH Stodel and H.Franberg to be interviewed
Service de Radioprotection	To be scheduled

Groups participating to the interviews

*:second meeting to be scheduled

Status of Task 2

Applications and Technology Transfer (NUCLEOPOLIS)

Sub-Task 2.2 – Operational implementation (*General Case*)

To allow the "matching" between industrial application opportunities and the companies

- B2B meetings
- GANIL-SPIRAL2 Week conference and GANIL conferences
- Set up a virtual trading place on the website
- Participation in exhibitions (WNE / EANM...etc.)

Status :

- Exchange of good practice with GSI laboratory : meeting in GSI on November 30th
- Participation to WNE 2018 (June 26th to 28th Paris Nord Villepinte)

Sub Task 2.3 – Operational implementation : Support for the technology transfer of the beam profile monitors

Technology and pre-existing know-how transfer (legal, economical and marketing aspects) and research agreements – started in June 2016 because of urgent need

-> Milestone in June 2017: not completed, the contract is in the signature circuit (CEA/DRF presently)

Status of Task 2

Applications and Technology Transfer (NUCLEOPOLIS)

Sub-Task 2.4 – Operational implementation: Innovative radioisotope production

Innovative medical radioisotope production methods are a new research topic at GANIL

Since 2014 : collaborative project aimed at studying the production of an innovative radioisotope: astatine-211 with ARRONAX

- ⇒ Develop R&D programs for innovative radioisotope production
- ⇒ Identify possibilities and methods of transfer

Status:

- Collaboration contract with Arronax: updating of the contract, taking into account the updated scientific program, intellectual property considerations. Internal work at GANIL, with the M2 trainee (GANIL/NUCLEOPOLIS)
- Study and proposals of possible methods for transfer with the M2 trainee (GANIL/Nucleopolis)

-> the work on Collaboration contrat with Arronax must be continued with Arronax

-> Time schedule program on radioisotope topics to be defined with GANIL Direction (meeting with GANIL TTO on November 16th)

Status of Task 3

Increase of innovation potential (CEA/DRF)

Study the possibilities of increasing the innovation potential of the GANIL laboratory:

- Identify new applications to heavy and light ions beams, in order to replace the reactor technology with the accelerator technology, for as many applications as possible.
- Identify new R&D subjects that might lead to innovative technologies and application
- Identify the necessary technical developments to adapt the facility to these future and new applications

Status :

- Bibliography and brainstorming (discussions with nuclear physicists, to be organised with CIMAP physicists) – cf. slide 10

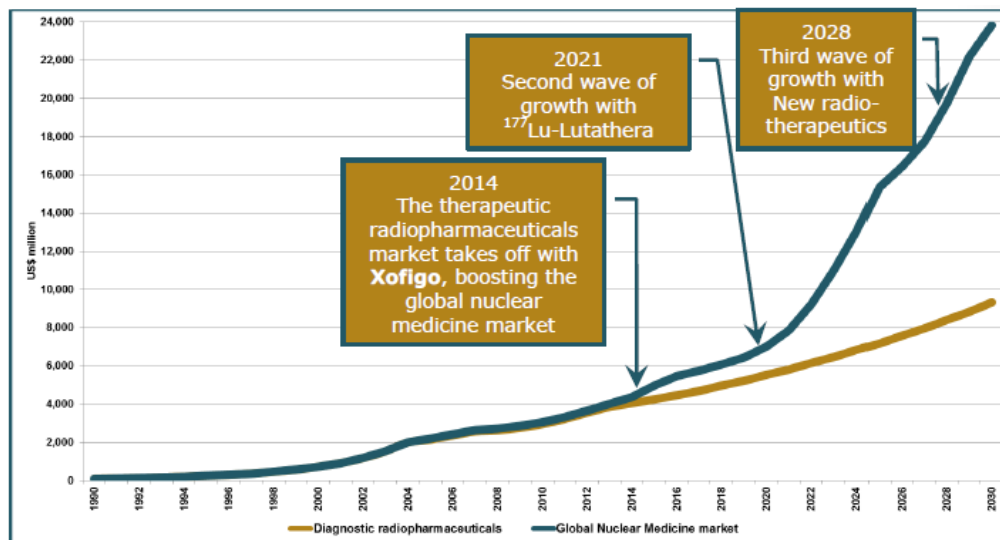
-> Intermediate internal milestones have been defined

- **Year 1:** Identification of possible applications / markets (not studied by Task 2)
Brain storming on potential applications linked to Ganil science
- **Year 2:** Quantify markets of some selected foreseen applications
Qualify some application issued of « science to application » brain storming
- **Year 3:** Propose a strategy to address applications identified in Y1 & Y2 (beam modification...)
Estimate a budget to the proposed strategy

-> Select 2 subjects to be studied into details during T1 2018 (in coordination with GANIL Direction, CEA/DRF, IN2P3)

Potential Topics	Impact GANIL / SPIRAL	Connex impact	Comment
BNCT	SPIRAL2 adaptation	Development of neutron capture studies	Complementary to Archade
Neutrons for analysis and Neutron Activation Analysis	NFS : Structure neutronography, diffusion & hot cells ?	Visibility of neutron offer to be increased	Discuss with LLB
Production Radiolotopes	Development of new production methods? Use of the Beam Dump ?	Radiochemistry	Strong demand for health developments
Membranes & filtration	Develop instruments with CIRIL for these applications	Give more visibility to this activity	Ganil environment positive for these applications

Extract of the table of subjects to be deepened



Medical radioisotope tendency

Innovation and Industries deliverables

Task1: Limited pilots of access provision to research teams from industries and involvement of industrial users

- D4.1 Business plan for the industrial application activities at GANIL (M36)

Task 2: Industrial Applications and Technology Transfer

- D4.2 Report on the technology transfers developed in the framework of the project (M36)

Task 3: Increase of Innovation Potential

- D4.3 Report on the increase of innovation potential study (M36)

Innovation and Industries milestones

Milestone number	Milestone name	Due date	Means of verification
MS9	Beam profile monitors: Licence contract and R&D collaboration contract with the company	Months 6 DELAYED	Report
MS10	Report on the methodology for the technology transfer for radioisotope production	Months 30	Report

Budget and human resources

Partner	Budget (Euros)	Human Resources Person.Month
GANIL	485000	30 (6 p.m GANIL staff)
NUCLEOPOLIS	222500	30
CEA/DRF	83585	6

Thank you for your attention