WP12 - Societal Applications

Task 12.1 - A Strategy for Implementing Novel Societal Applications of Accelerators

Sub-task 5. Accelerator production of radioisotopes for imaging and therapy

C. Oliver and D. Obradors

Sub-Tasks

- Sub-task 1. Coordination and Communication
  (Rob Edgecock - HUD)
- Sub-task 2. Novel forms of radiotherapy
  (Angeles Faus-Golfe - CNRS)
- Sub-task 3. Environmental applications of electron beams
  (Toms Torims – RTU
  Andrzej Chmielewski - INCT)
- Sub-task 4. Accelerator imaging
  (Graeme Burt - ULANCS)
- Sub-task 5. Accelerator production of radioisotopes for imaging and therapy
  (Conchi Oliver - CIEMAT)
- Sub-task 6. Barriers to accelerator adoption by industry
  (Andrzej Chmielewski – INCT
  Andrea Sagatova – STU)

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Task12.1.5: Radioisotope Production

The million dollar question:

How can particle accelerators contribute to consolidate and improve the production of well-known and emergent radioisotopes?

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Three thousand dollar questions:

- What radioisotopes?
- How is the status of current radioisotope market?
- Any bottlenecks for the next generation of machines?

Task12.1.5: Radioisotope Production

What radioisotopes?

- Both for imaging and therapy
- Current radioisotopes under use: does the production match the (increasing) demand? If not, which are the showstoppers? are they only related to accelerators?
- New emergent radioisotopes?
- Feedback from users, clinicians, etc.

Task12.1.5: Radioisotope Production

Existing accelerators and on-going developments for radioisotope production

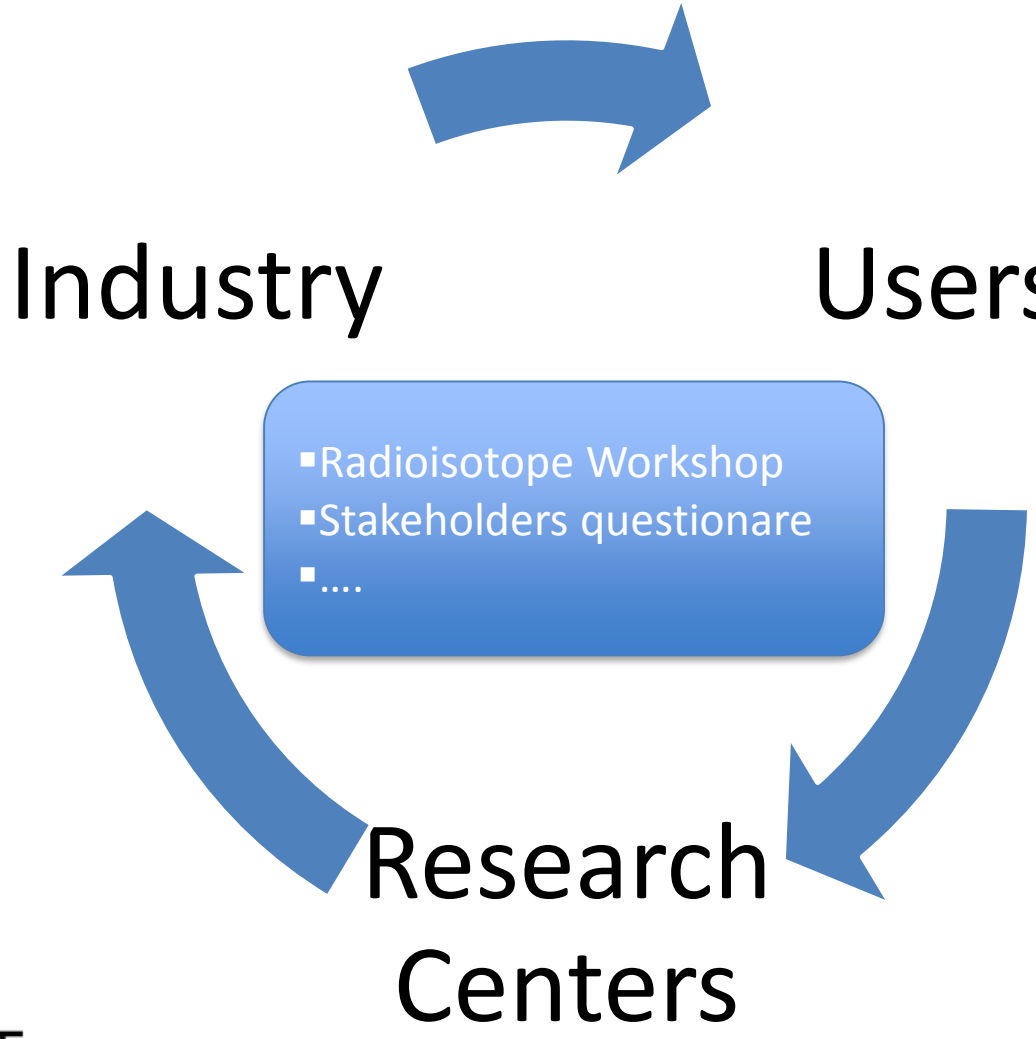
- Current machines (cyclotrons)
- Future developments: compact linacs, laser-plasma
- Devoted accelerators for radioisotope production vs multipurpose facilities
- Driving force: reductions on space, cost, efficiency, maintenance, …
- Industry and research centres feedback

Task12.1.5: Radioisotope Production

Develop a **strategy** to deliver the **radioisotope roadmap**

- Different type of accelerators
- Superconductivity
- Cryogenics
- Ion sources
- Targets
- Shielding
- Maintenance
- …

Task12.1.5: Radioisotope Production



Task12.1.5: Radioisotope Production

To be updated …

Research Institute	CIEMAT
	ITEP (ITEP-NRC Kurchatov Institute)
	CERN
	HUD (Huddersfield University)
Industry	CYCLOMED
	IBA (Ion Beam Applications)
	PMB Alcen
	GE (General Electric)
	RI (Research Instruments GmBH)