



IAEA

Nuclear Physics at the IAEA

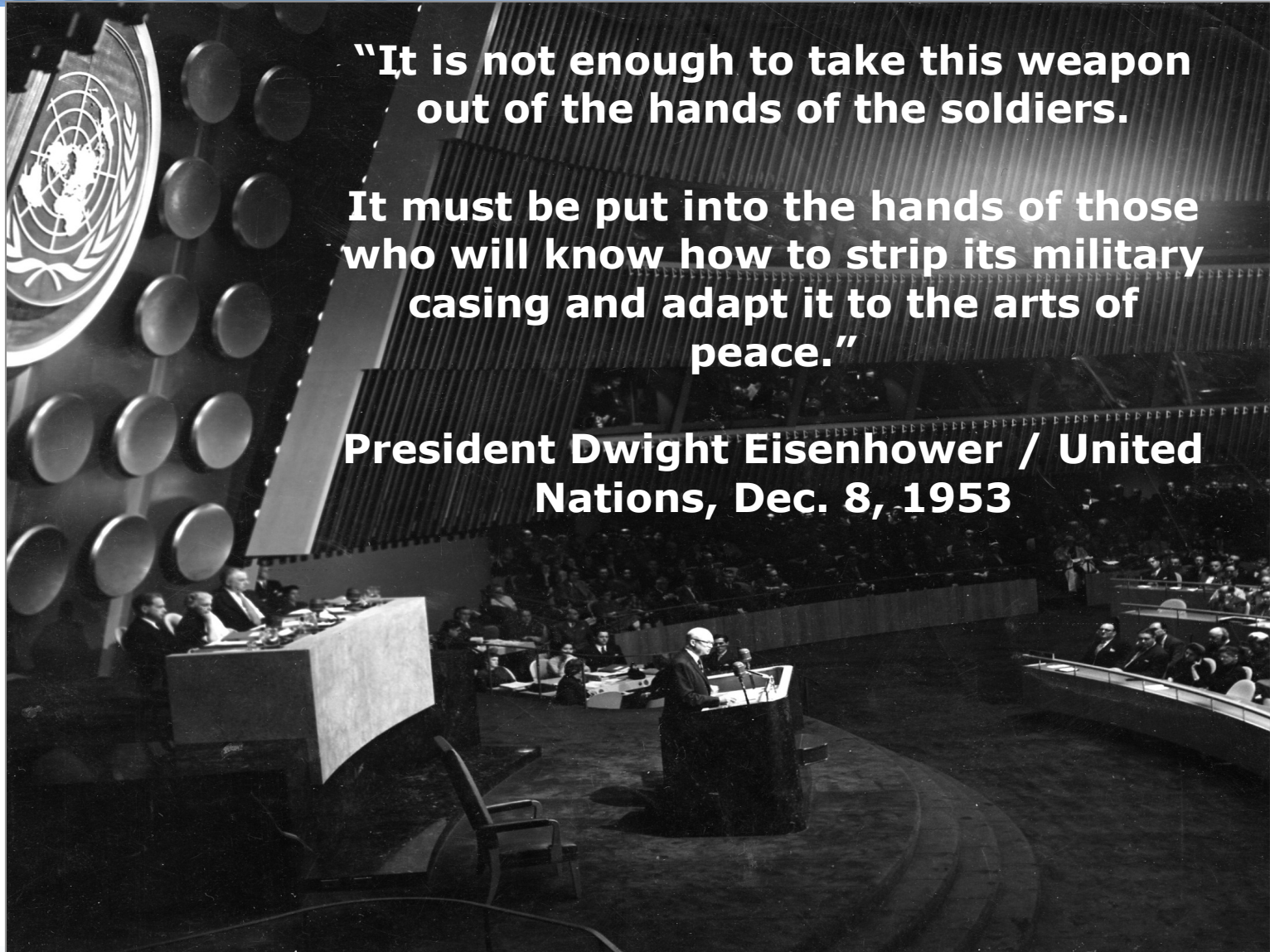
Ralf Kaiser
Section Head Physics

Atoms for Peace

**"It is not enough to take this weapon
out of the hands of the soldiers.**

**It must be put into the hands of those
who will know how to strip its military
casing and adapt it to the arts of
peace."**

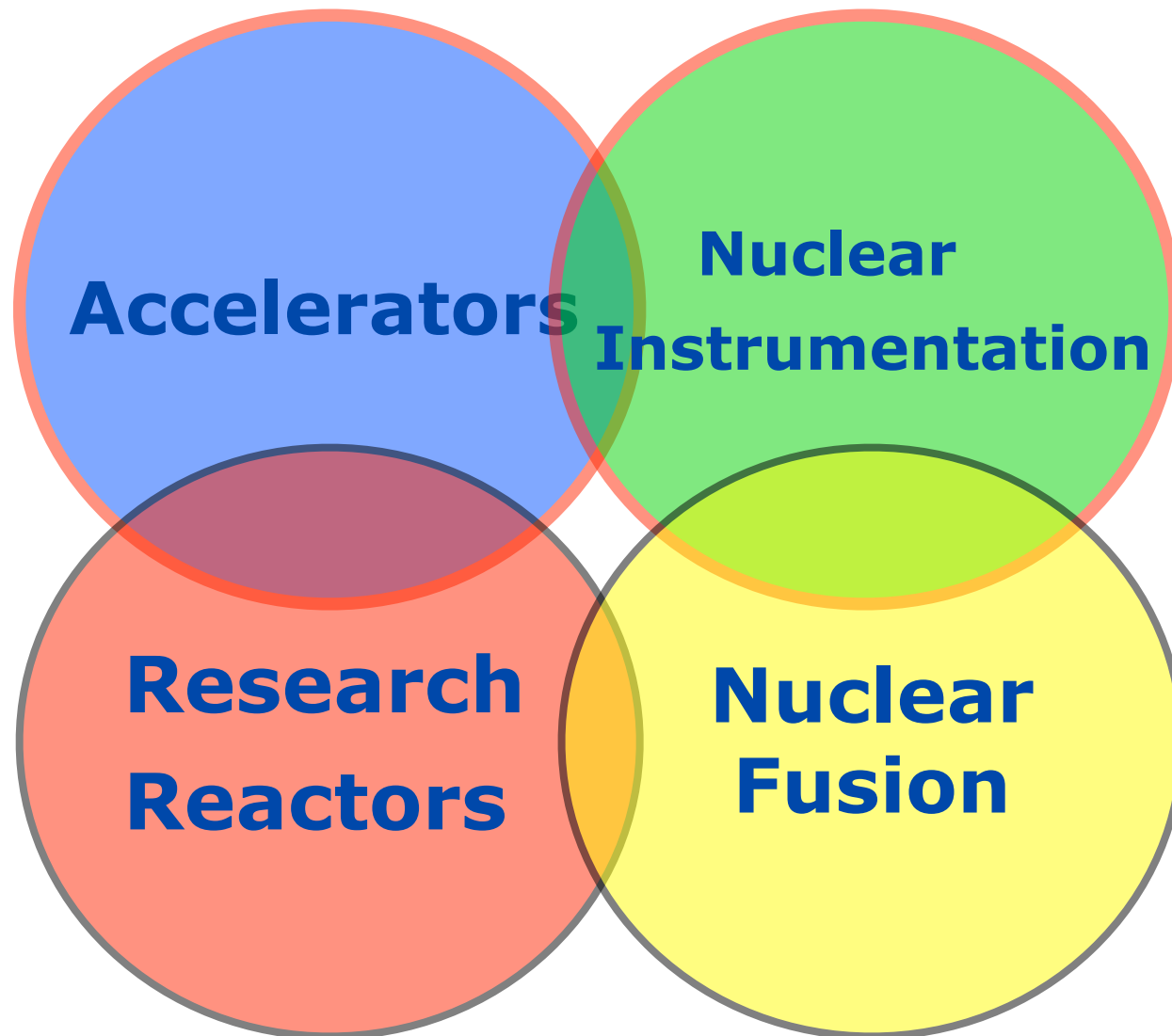
**President Dwight Eisenhower / United
Nations, Dec. 8, 1953**



- Founded in 1958, seat in Vienna, Austria
- 164 Member States, and growing
- 71 intergovernmental and non-governmental organizations worldwide having formal agreements with the Agency.
- about 2300 professional and support staff
- €507 million total budget for 2015
- 2 liaison offices (in New York and Geneva) and 2 safeguards regional offices (in Tokyo and Toronto).
- 2 international laboratories (Seibersdorf and Monaco).
- 120 active Coordinated Research Projects
- 175 states with safeguards agreements

Depending on which aspect is seen the IAEA can be perceived as very different things:

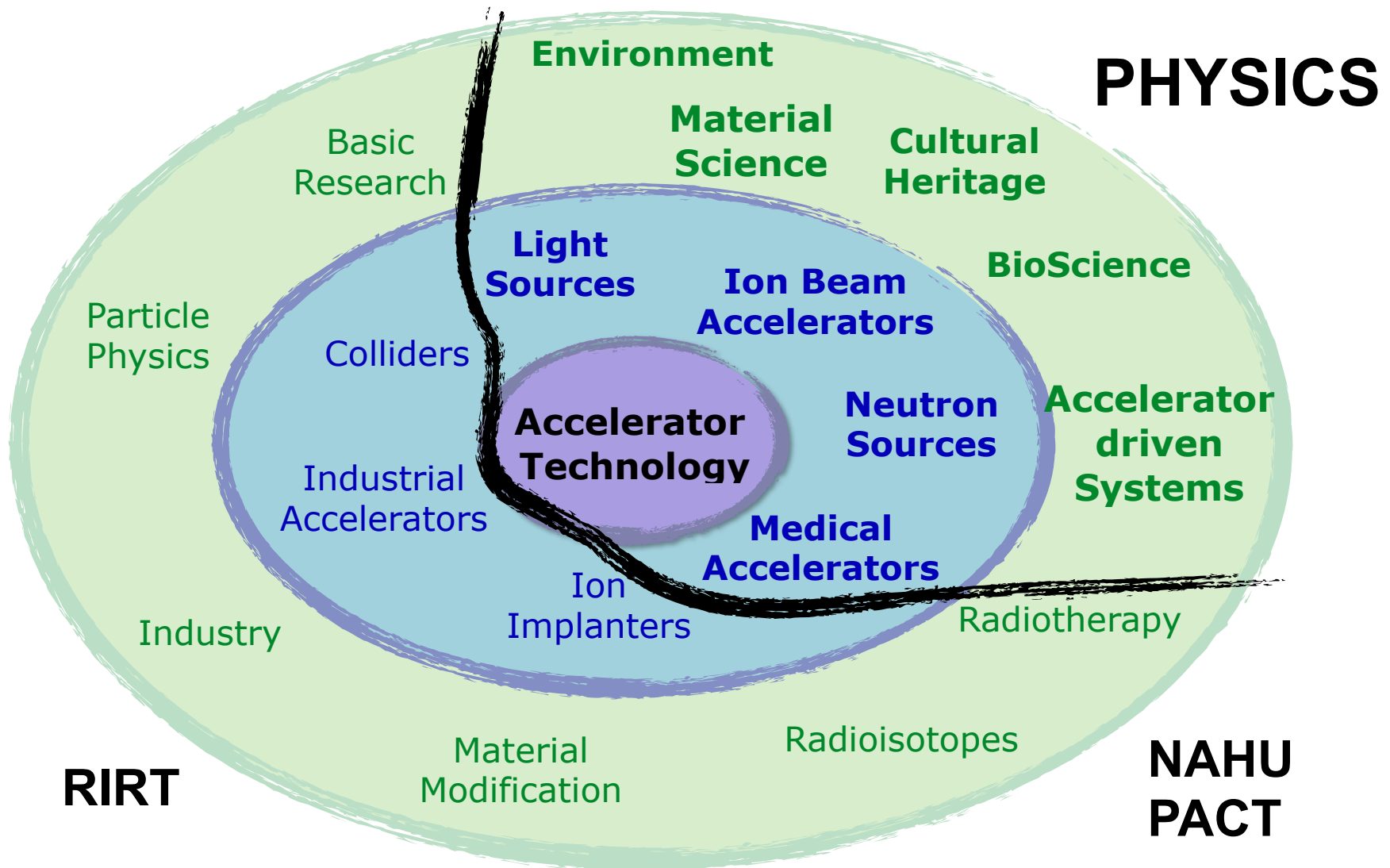
- nuclear watchdog
- safety and security agency
- technical development agency
- funding agency
- publisher
- conference organiser
- part of the United Nations system
- the labs in Seibersdorf and Monaco can be seen as 'international lab for countries without national labs'



Physics Section in Numbers

- 19 formal staff positions - plus consultants, temporary staff, fellows, PhD students, interns, typically 25 - 30 in total
- Half of the Section in HQ, the Nuclear Science and Instrumentation Laboratory in Seibersdorf
- 3.7 Mio Euro annual regular budget in 2014/15, plus a few hundred thousand Euro extra-budgetary funds
- 12 Coordinate Research Projects with about 150 groups from > 50 Member States
- About 90 Technical Cooperation Projects in >50 Member States
- >30 Meetings per year


Accelerators at the IAEA



- There are about **30,000 accelerators** in operation in the world today.
- Large accelerators for basic research, like the LHC, capture the most headlines, however:
- About 2/3 in industrial applications, 1/3 in medicine - and less than **1% in basic research**.
- All products processed, treated or inspected using beams from accelerators have a collective value of about **\$500 billion per year**.
- Accelerator technology is part of the technological development for a country, typically starting with ion beam accelerators.

Accelerator Knowledge Portal

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Accelerator Knowledge Portal ▶

Welcome to the Accelerator Knowledge Portal

The Accelerator Knowledge Portal (AKP) is IAEA's community driven website for the benefit of accelerator scientists, accelerator users and service providers worldwide. The portal consists of two parts:

- A database of MV particle accelerators in the world, publicly accessible and searchable. The content of the database is contributed by research facilities in the Member States.
- Several **networking and community features** to bring together the Accelerator Community: up-to-date information on relevant conferences, workshops and schools; relevant papers and books; links to relevant software packages and database tools etc. You are invited to contribute to the content, building a community around the accelerator database.

You can add your own documents , events, highlights or pictures by [REGISTERING](#) to the Accelerator Knowledge Portal

[REGISTER](#) ▶



Focusing system - IN2P3 Orsay







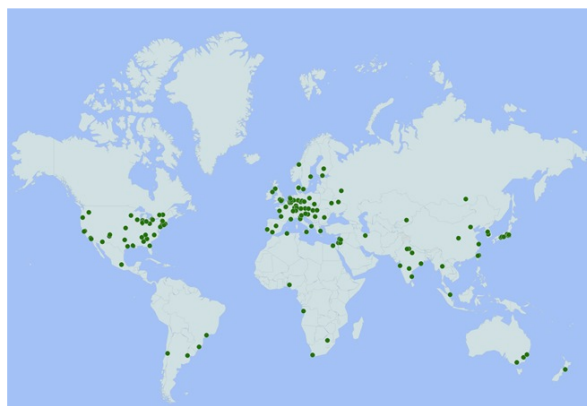
ANNOUNCEMENTS

Technical Meeting
Friday, July 10, 2015
Formulating strategies for keeping accelerator based technologies at the forefront of scientific endeavour. Visit the Ion Beam Techniques Roadmap page

[Read More...](#)

Knowledge Repository

-  Codes
-  Documents
-  Online Resources
-  Reports



Linear Accelerators Database (199 total)

<input type="checkbox"/> Country	City	Facility Name	Accelerator Type	Accelerator description	Terminal Voltage (kV)
Algeria	Algers	Centre de Recherche Nucleaire d'Alger	Single-ended	Van de Graaff	4000
Argentina	Buenos Aires	Comisión Nacional de Energía Atómica	Single-ended	EN-FN-MP-UD	20000
Australia	Canberra	Australian National University	Tandem	Van de Graaff	1200

HIGHLIGHTS

Technology and Components of Accelerator-driven Systems
Monday, June 29, 2015
Second International Workshop
Proceedings have been released

[Read More...](#)

Events

< August 2015 >						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

[View full calendar](#)

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Next Events

2/9/2015 - Fourth DataFurnace mini-school: making full use of Total-IBA, Surrey Ion Beam Centre, Guildford, UK

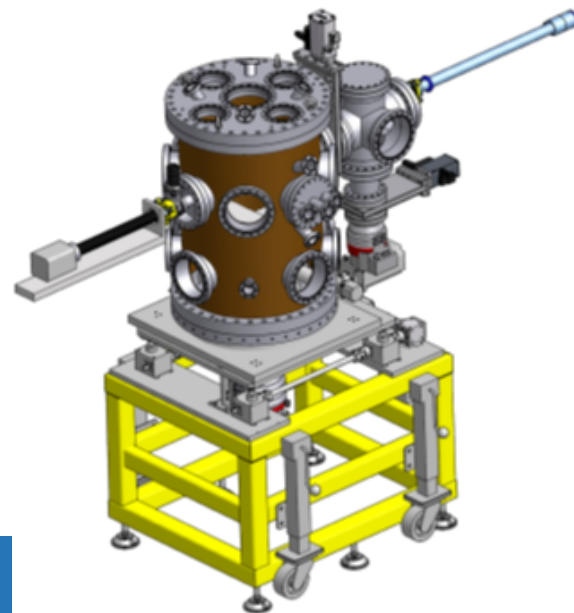
7/9/2015 - HIAT2015 - 13th International Conference on Heavy Ion Accelerator Technology, Yokohama, Japan

13/9/2015 - IBIC2015 - International Beam Instrumentation Conference, Melbourne, Australia

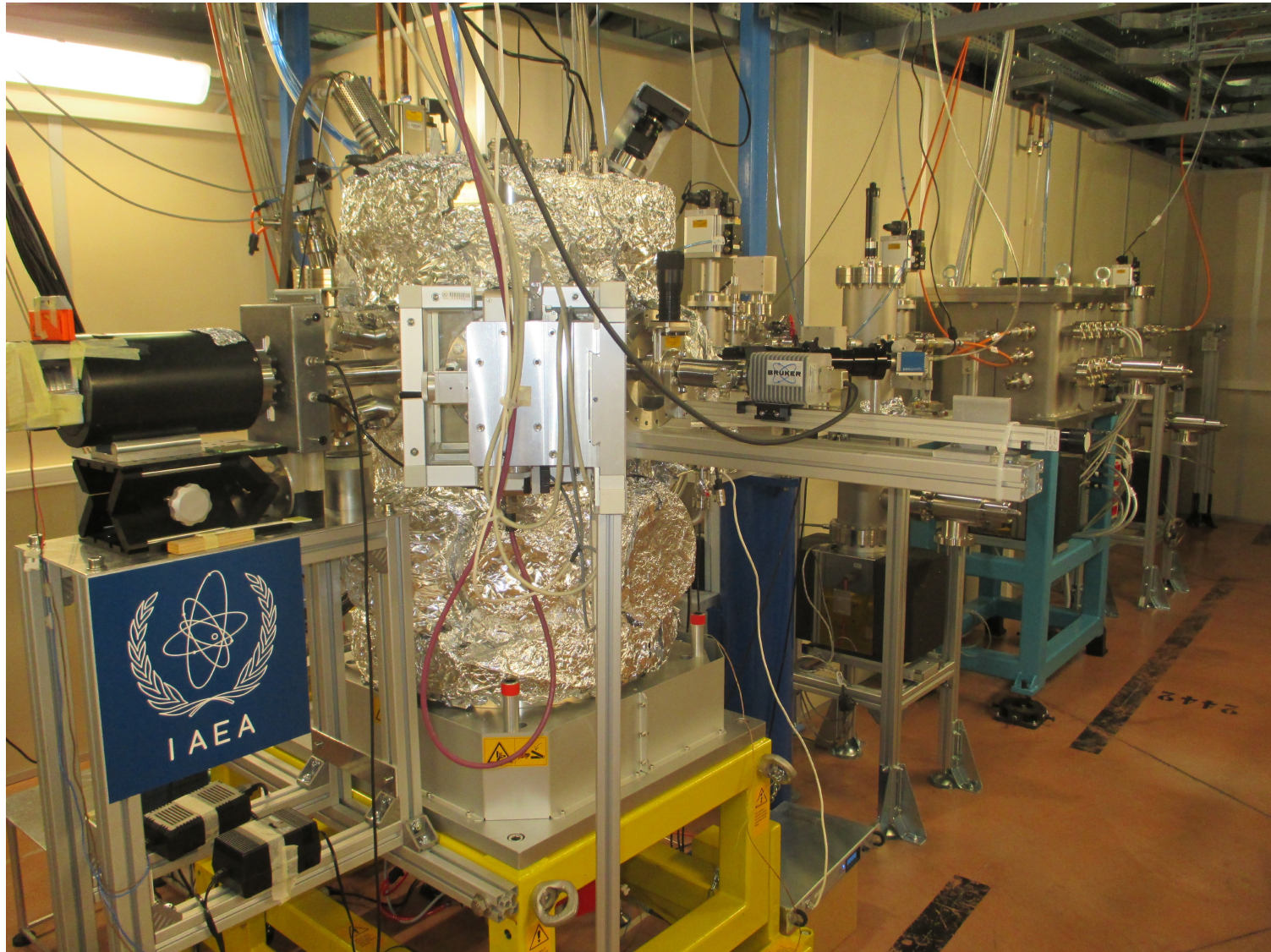
nucleus.iaea.org/sites/accelerators/

IAEA Beam Line at Elettra

- **IAEA Ultra-High Vacuum Chamber** installed on the new XRF beam line at the ELETTRA synchrotron in Trieste, opened by DG Amano 6.Oct.2014
- Cooperation with TU Berlin and PTB Berlin
- **40% of the beam time** (about 49 days) will be available for IAEA projects
- Training, Workshops and Schools in collaboration with ELETTRA and ICTP
- **Access for Research Groups from developing Member States**



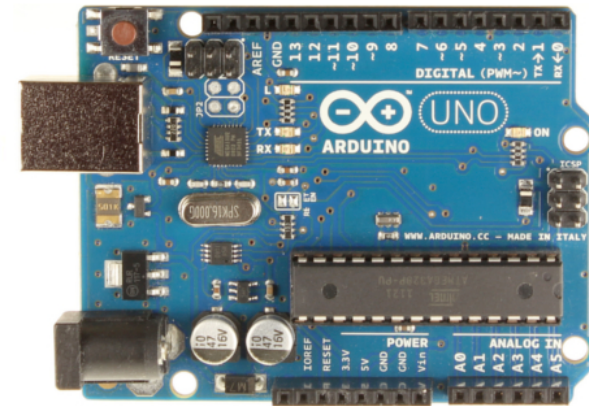
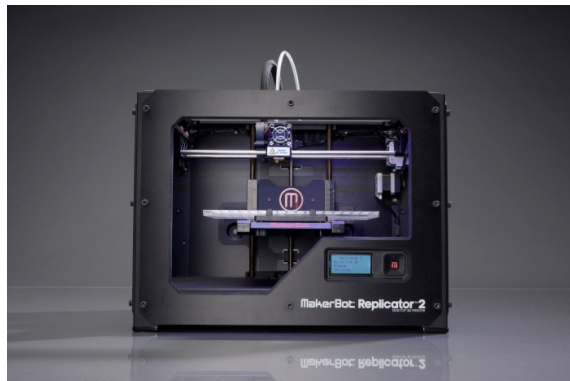
IAEA Beam Line at Elettra



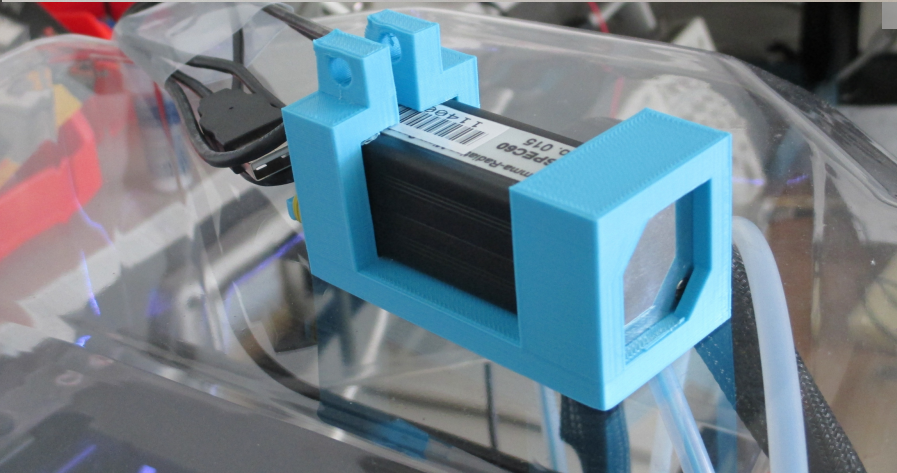
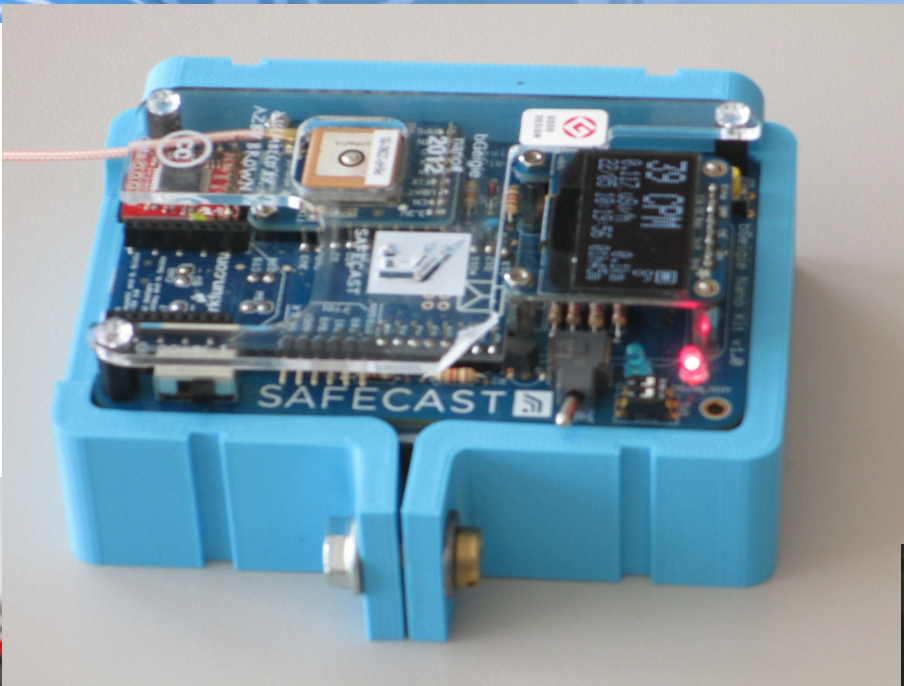
Nuclear Science and Instrumentation Laboratory

NSIL helps the Agency to remain on top of technological developments - examples include:

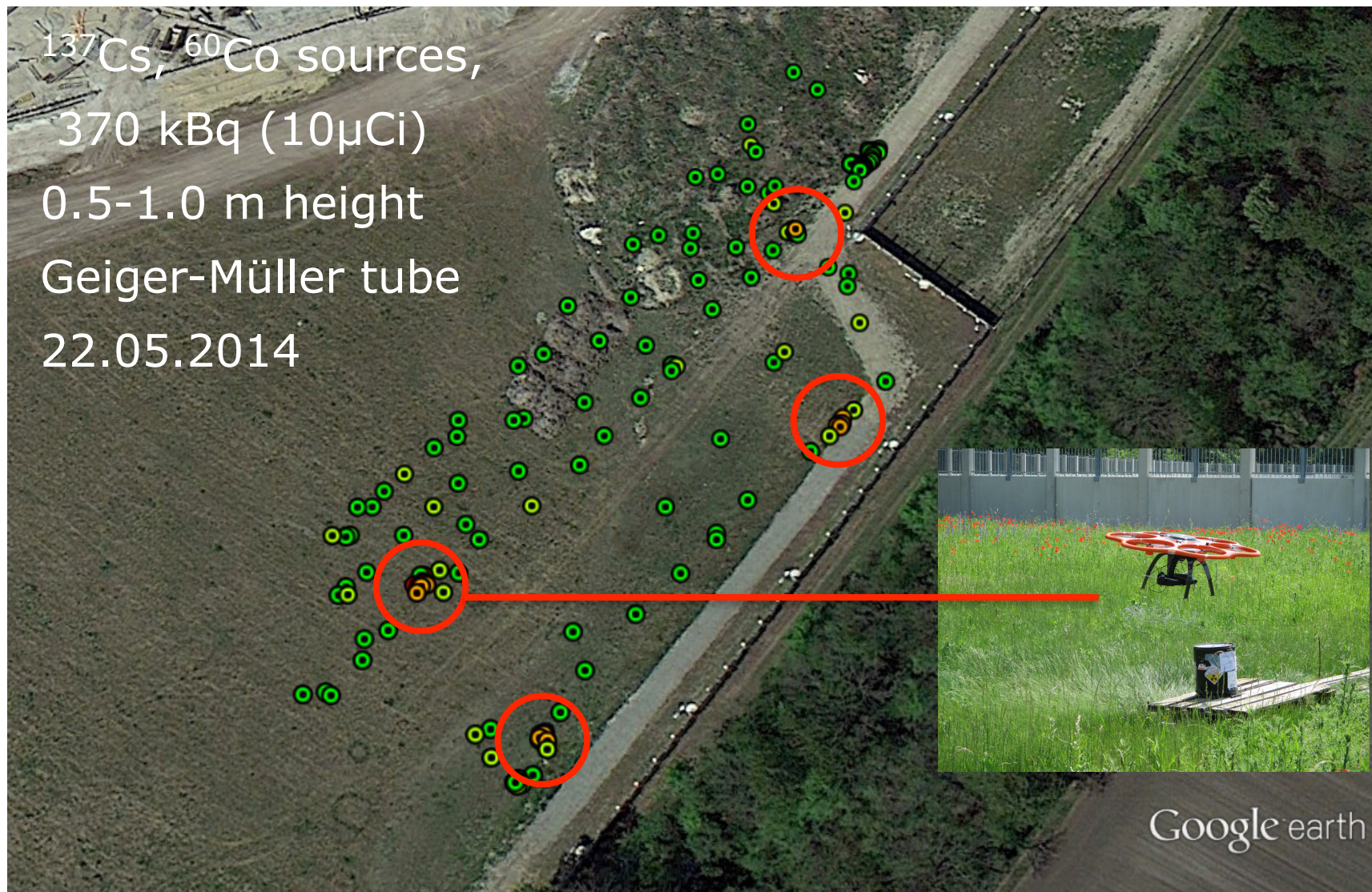
- Unmanned aerial vehicles
- Open source hardware, e.g. arduino
- Digital electronics, e.g. FPGAs
- 3-D printing
- Mechanically cooled portable Germanium detectors
- Wireless technology



UAV-based Mobile Gamma Spectrometry



UAV-based Mobile Gamma Spectrometry



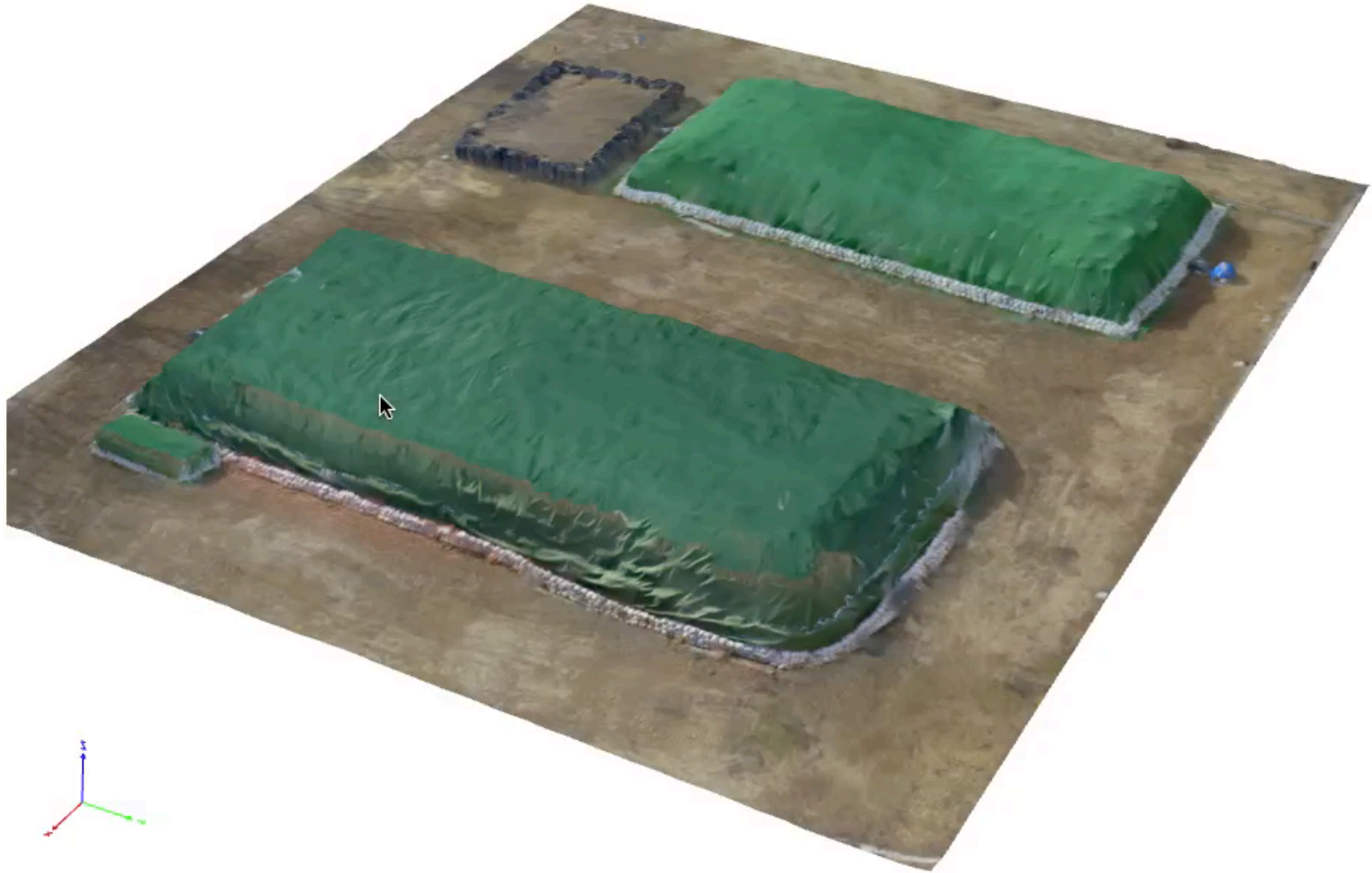
Summary

- The IAEA plays many different roles, e.g. as nuclear watchdog, safety and security agency and technological development agency.
- The IAEA Physics Section coordinates international research projects involving research groups from developed and developing countries, holds training workshops, provides data bases and carries out research in applied nuclear physics, e.g. mobile gamma spectrometry.
- There are different ways for nuclear physicists to interact with the IAEA: As technical expert, consultant, lecturer at training workshops or participant in a coordinated research project. Over the next days I will be happy to discuss these with you.



Additional Slides

Temporary Storage Site - 3D Model



Collaboration on Synchrotron Radiation

