Welcome and Opening
Industry meets EuCARD^2

Applications of Thermal Management Materials

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EuCARD-2 is co-funded by the partners and the European Commission under Capacities 7th Framework Programme, Grant Agreement 312453

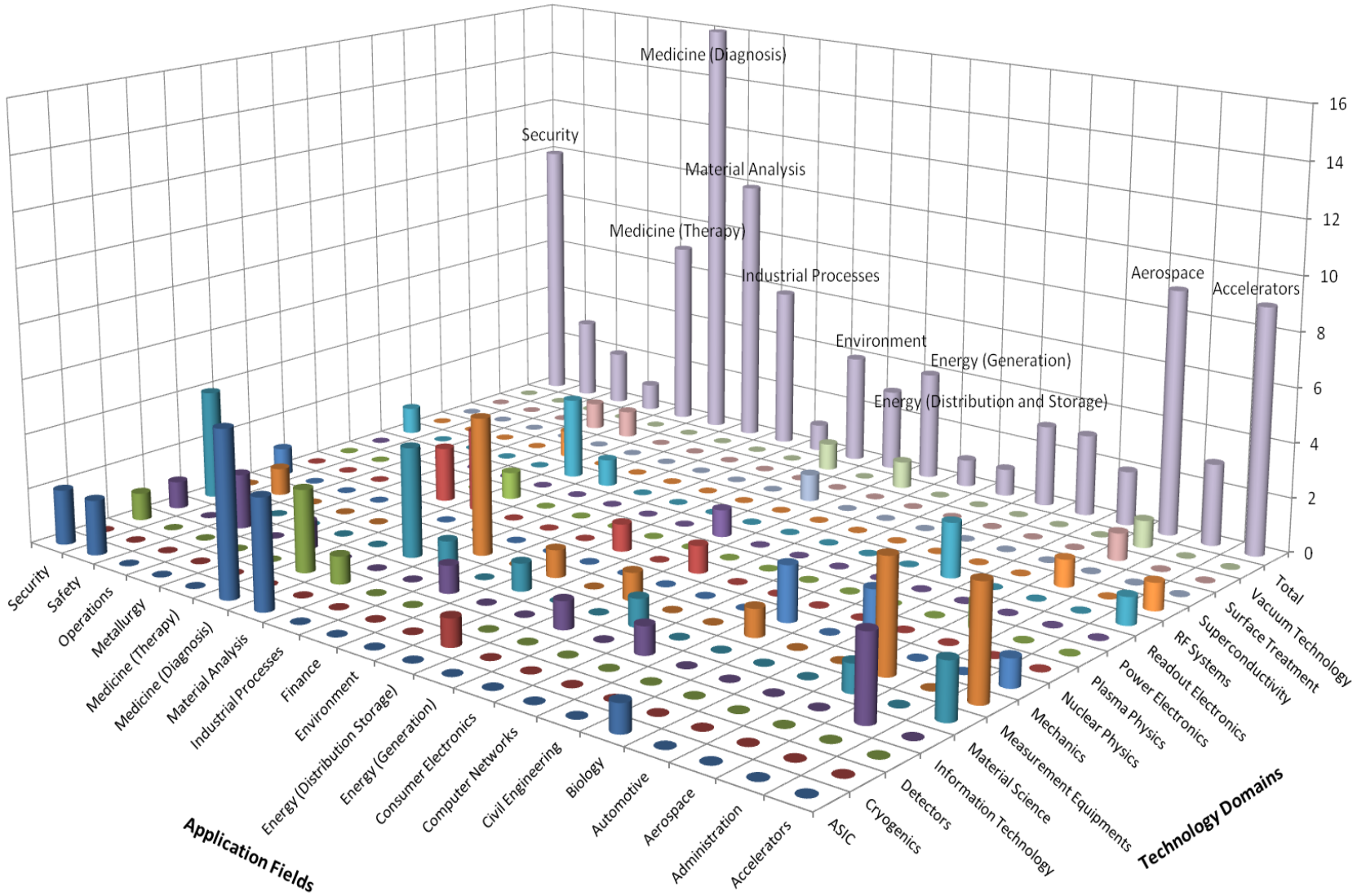
Introduction

- EuCARD-2 is a 4-year Integrating Activity Project for coordinated Research and Development on Particle Accelerators, running from 2013 till 2017
- The project has 40 partners from 15 European countries, including 10 accelerator laboratories, 23 technology institutes/universities, 5 scientific research institutes and 2 industrial partners
- The activities are divided over 13 Work Packages, covering various technical and networking activities
- The objective of Work Package 2 is to ensure that technology developments inside EuCARD-2 are known and, where possible, transferred to industry. This is done via joint project meetings with industry, Technology Transfer (TT) offices of each partner and workshops such as today

CERN Knowledge Transfer

- Maximize the technological and knowledge return to the member states' industry and society
- Promote CERN as a center of excellence for technology

Technology and Application domains



Open Source Software (OSS)

Software developed at CERN is often released as open source

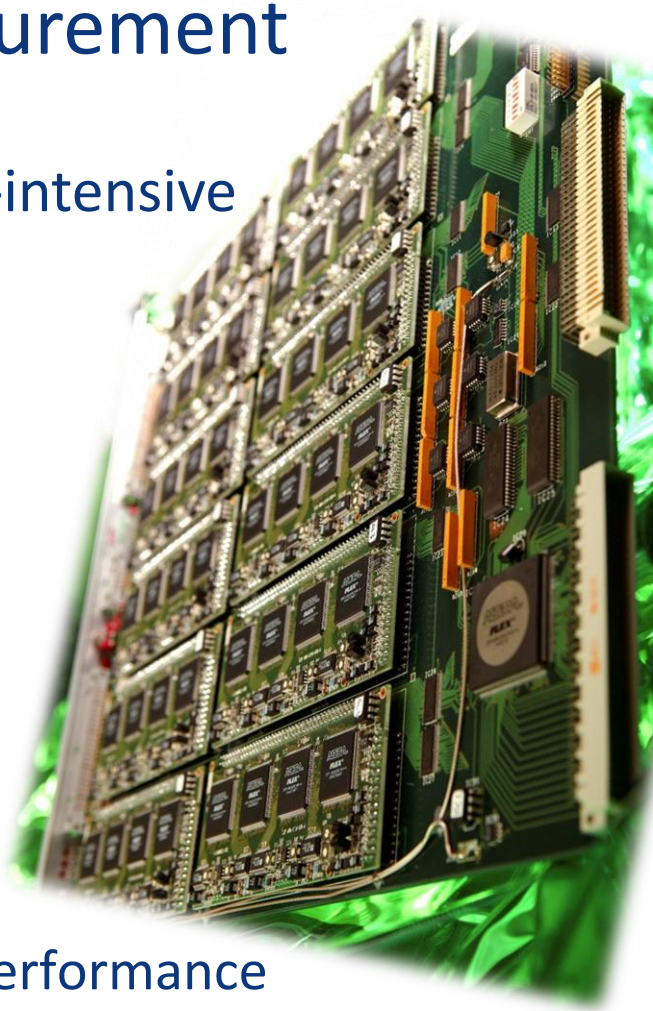
CERN Open Hardware License

Legal framework

Electronic design community

Facilitate knowledge exchange

Knowledge Transfer through Procurement



Survey of companies involved in technology-intensive procurement contracts with CERN.

- 178 questionnaires analyzed
- 503 MCHF procurement budget

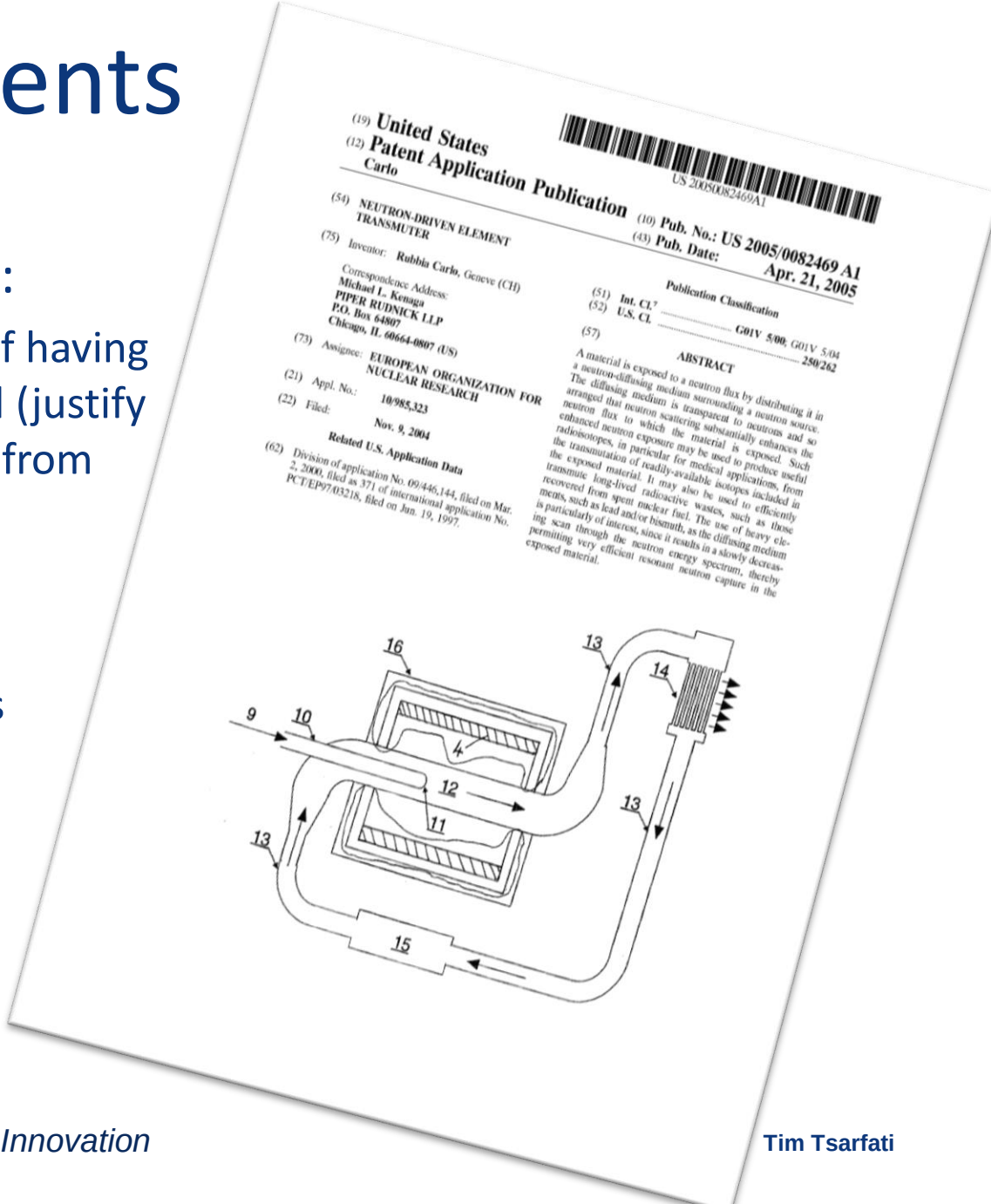
Results:

- 44% indicated technological learning
- 42% increased their international exposure
- 38% developed new products
- 36% indicated market learning
- 13% started new R&D teams
- 41% would have had poorer technological performance
- 52% would have had poorer sales performance without CERN

CERN and patents

Patents are taken when it:

- Increases the probability of having the technology transferred (justify development investments from industry)
- Significantly enhances the commercial value
- Is needed to ensure CERNs recognition as inventor



(19) United States
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(43) Pub. Date: Apr. 21, 2005

(54) NEUTRON-DRIVEN ELEMENT TRANSMUTER

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(21) Appl. No.: 10/985,323

(22) Filed: Nov. 9, 2004

Related U.S. Application Data

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(52) U.S. Cl. 250/262

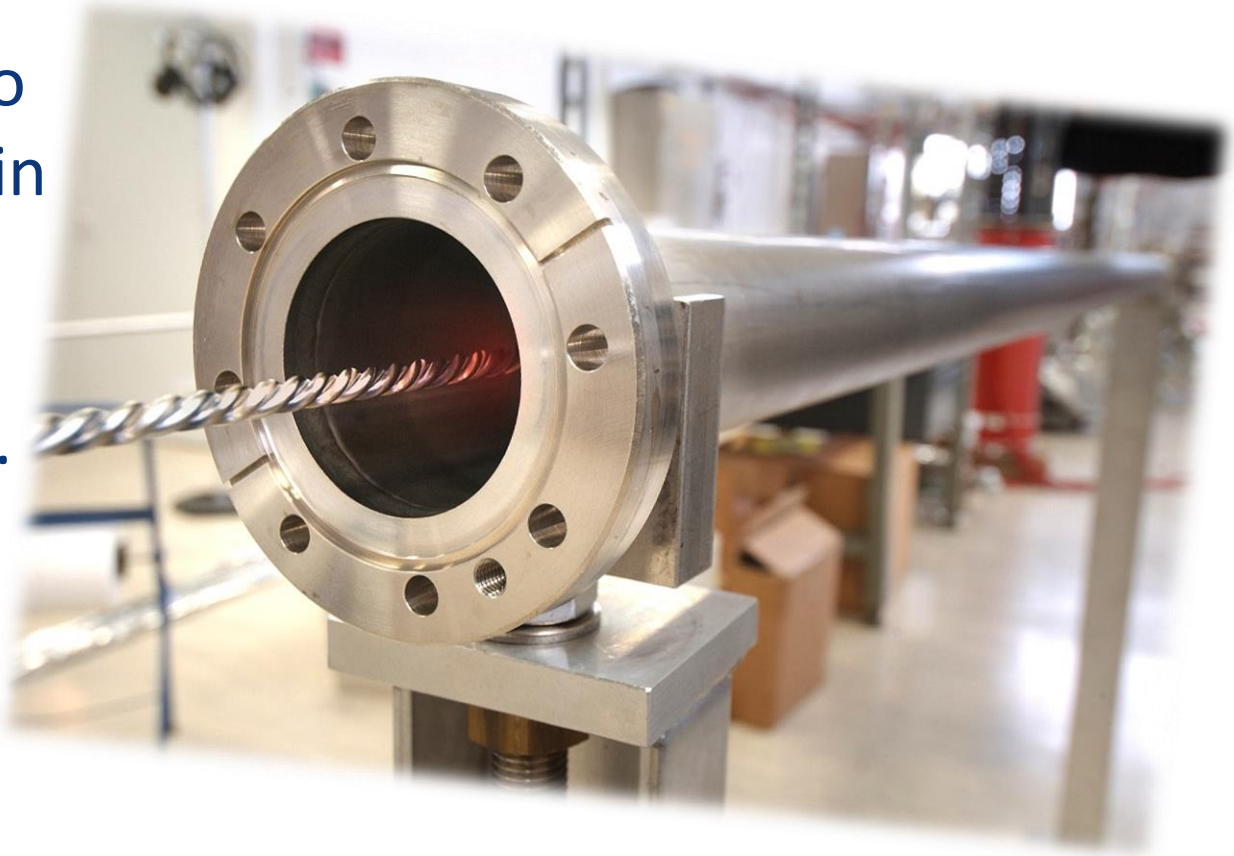
(57) ABSTRACT

A material is exposed to a neutron flux by distributing it in a neutron-diffusing medium surrounding a neutron source. The diffusing medium is transparent to neutrons and so arranged that neutron scattering substantially enhances the neutron flux to which the material is exposed. Such enhanced neutron exposure may be used to produce useful radioisotopes, in particular for medical applications, from the transmutation of readily-available isotopes included in the exposed material. It may also be used to efficiently transmute long-lived radioactive wastes, such as those recovered from spent nuclear fuel. The use of heavy elements, such as lead and/or bismuth, as the diffusing medium is particularly of interest, since it results in a slowly decreasing scan through the neutron energy spectrum, thereby permitting very efficient resonant neutron capture in the exposed material.

From high vacuum…

NEGs - Non-Evaporable Getter thin film coatings

Technology used to create and maintain ultra-high vacuum in the accelerator vacuum chambers.



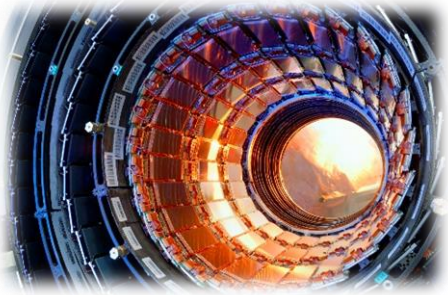
… to solar energy collectors

The innovative technology within the collectors was developed at CERN and commercialized by the CERN spin-off company, SRB Energy.

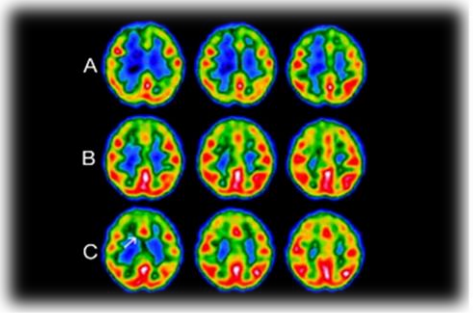
Thermal solar collector panels on the roof of Geneva airport

From Physics to Medicine

From particle accelerators to cancer therapy

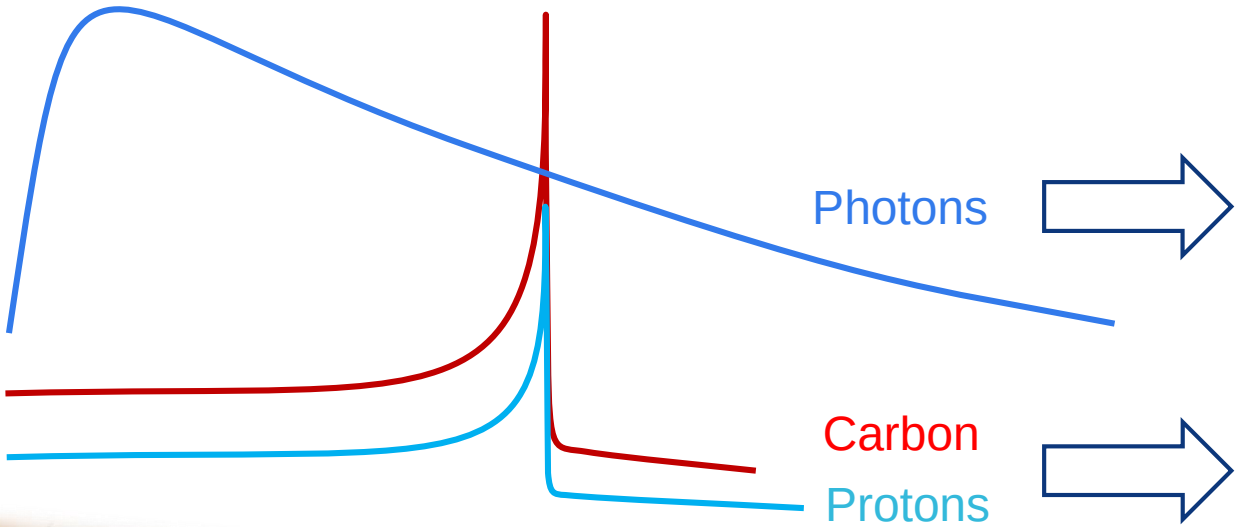


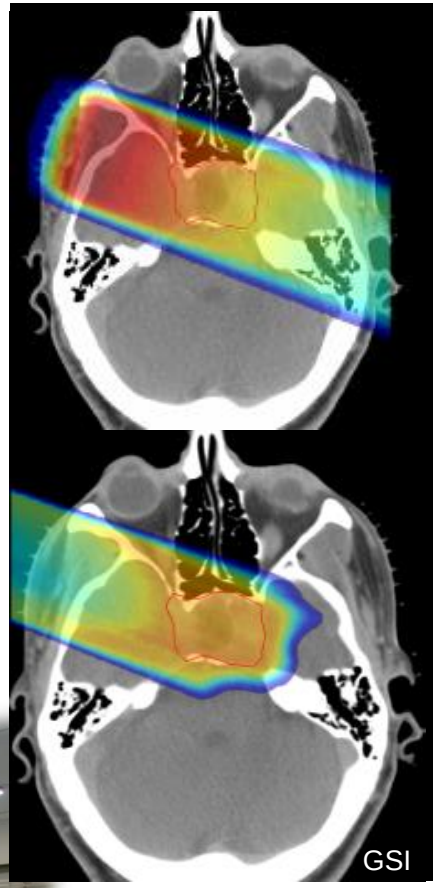
From particle detectors to medical imaging



From grid computing to medical data management and analysis

Hadron Therapy





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