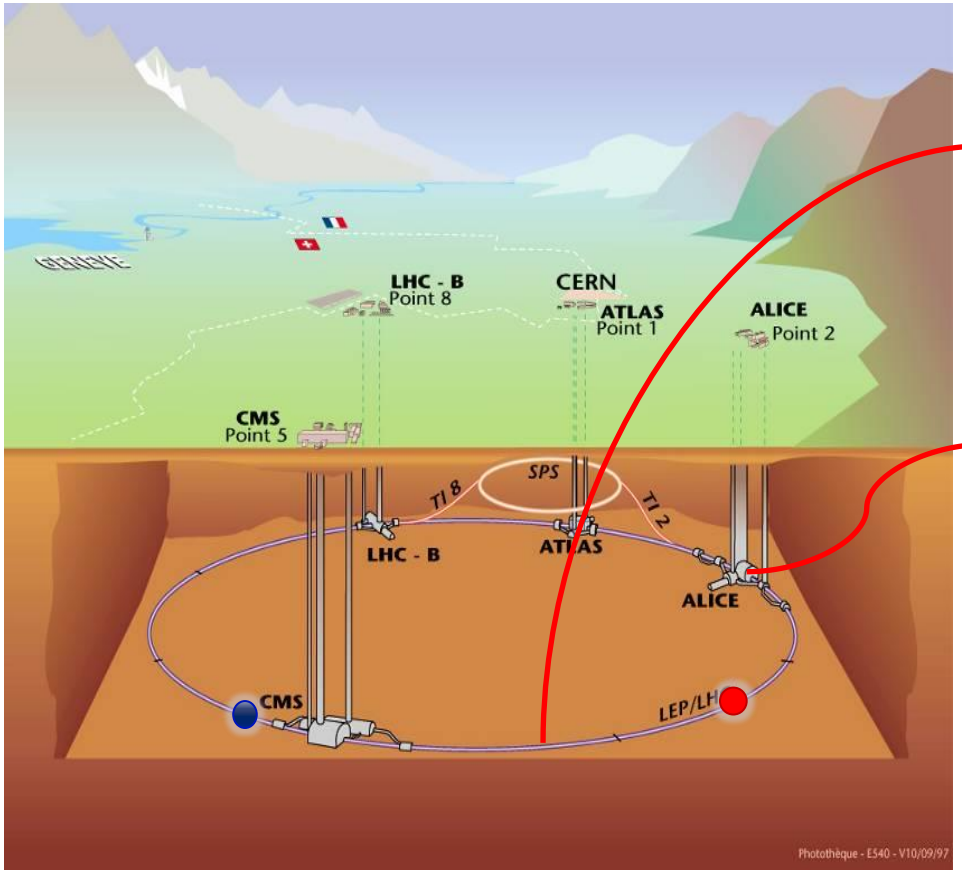
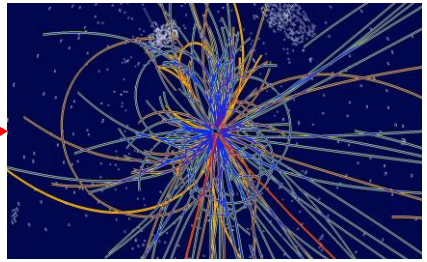
Knowledge Transfer @CERN

Giovanni Anelli
Knowledge Transfer Group Leader
CERN

CERN's areas of excellence



Accelerating particle beams



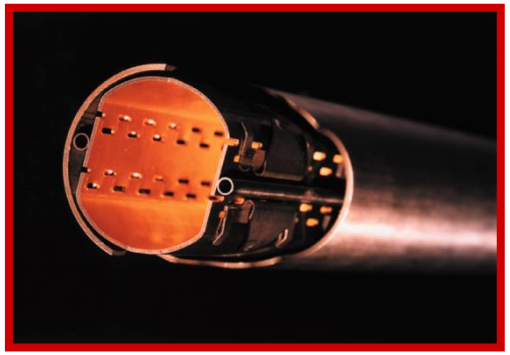
Detecting particles

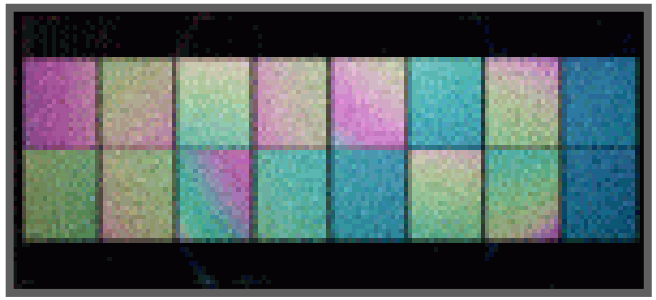
IT technologies

CERN Core Competences

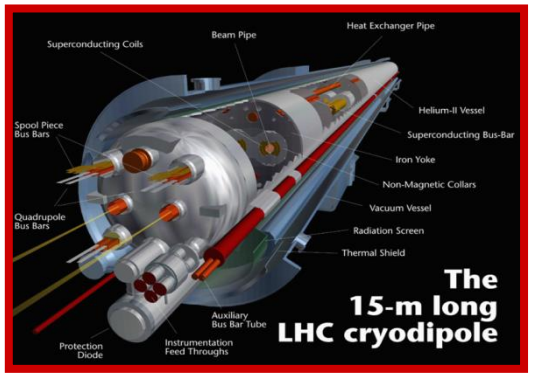
Cryogenics
(1.9 K)

Vacuum
(10^{-15} bar)



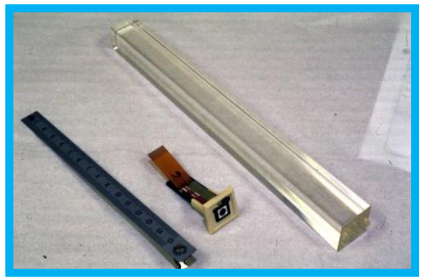


Superconductivity
(13 kA, 7M joules)

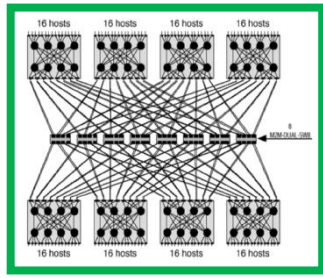


Magnets
(10 T)

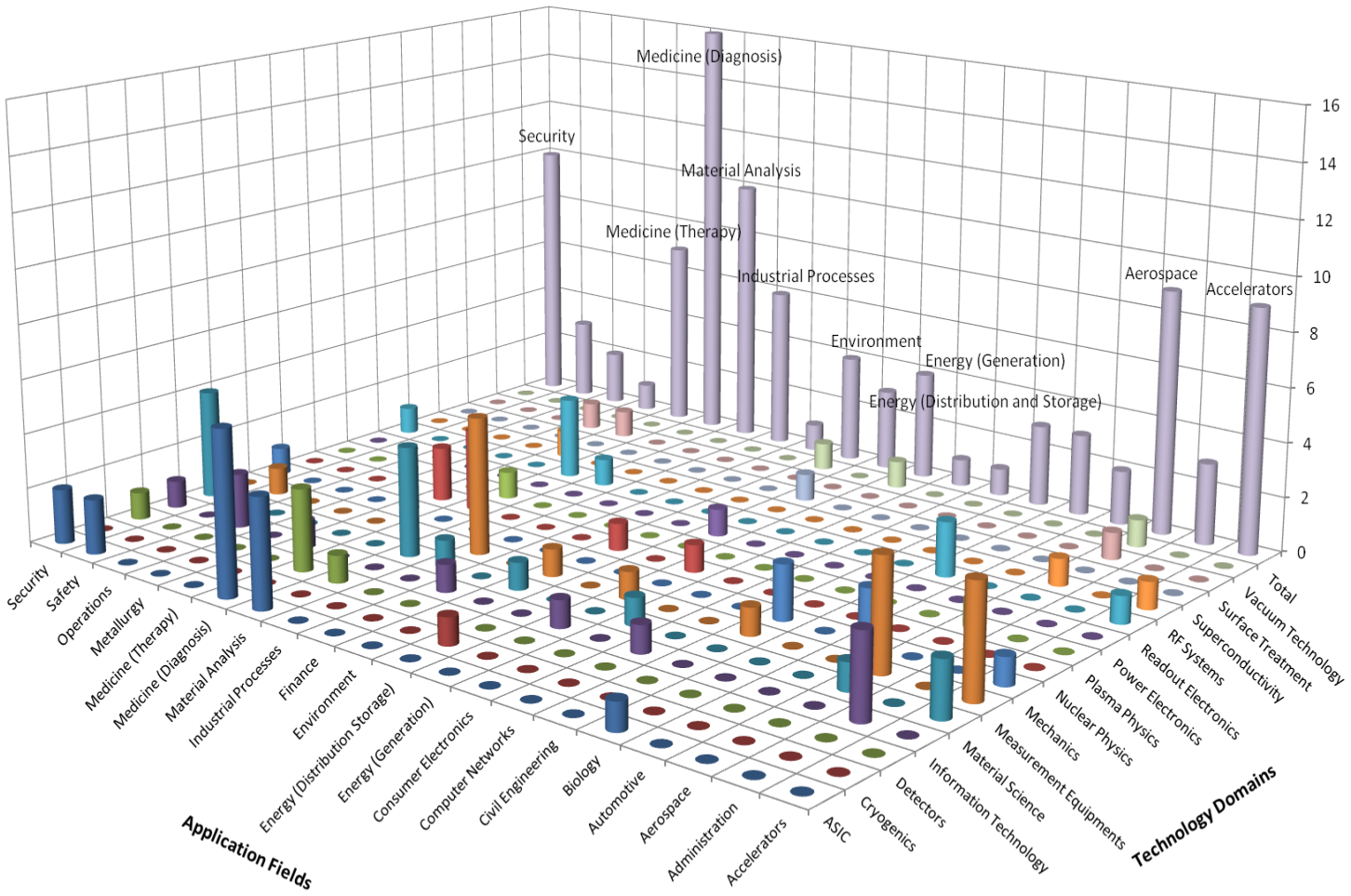
Very high performance detectors and electronics



Data processing

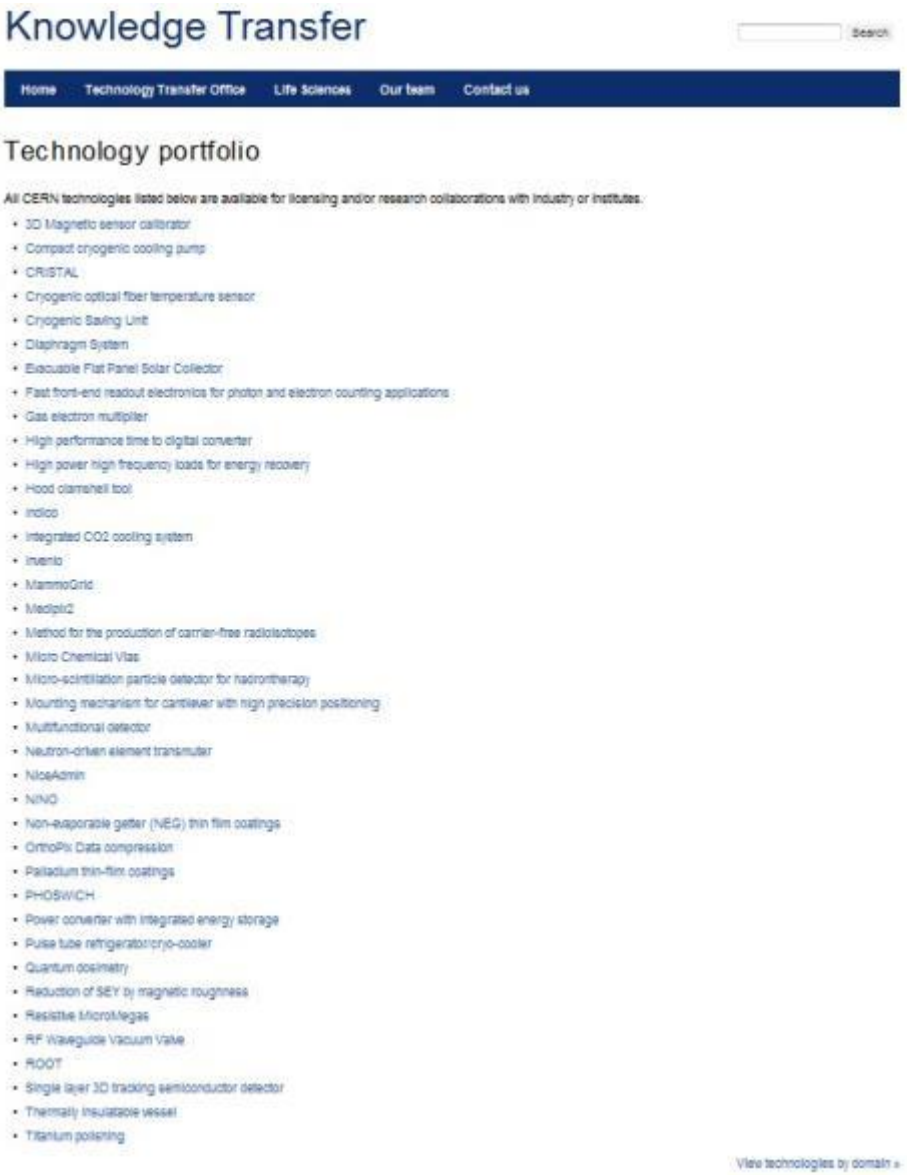


CERN's Technology Portfolio



Visit our website to have a look at our technology portfolio in detail

www.cern.ch/knowledgetransfer



A whole spectrum of opportunities

Licensing

Service and Consultancy

R&D collaborations

From high vacuum…

- NEG (Non-Evaporable Getter thin film coatings)

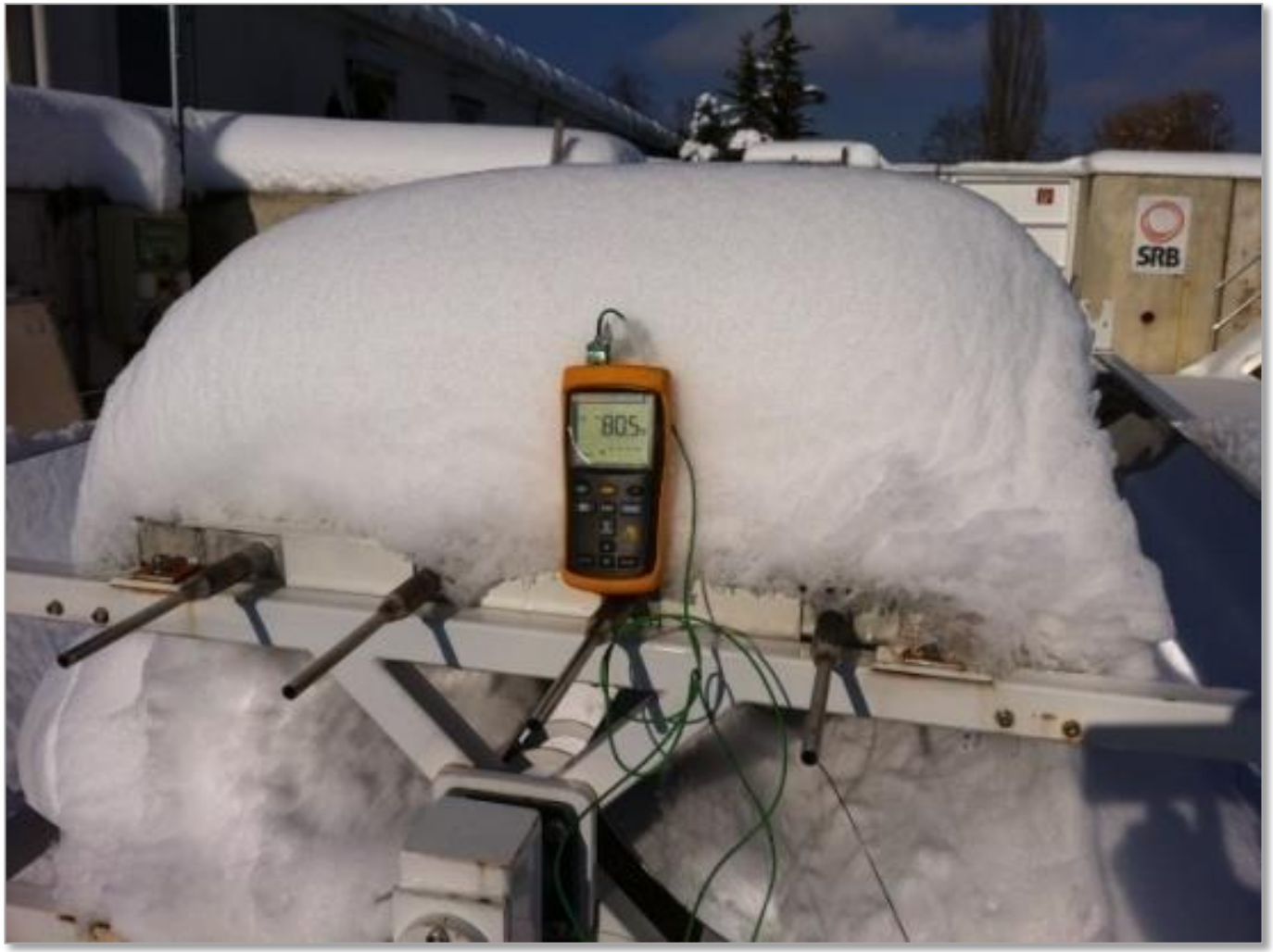
Technology used to create and maintain ultra-high vacuum in the accelerator vacuum chambers.

… to solar energy!

- License and partnership with a start-up company

Development of a commercial product able to use diffused or indirect light and reach very high temperatures of up to 300 degrees
Development of a prototype production chain

Vacuum is an excellent insulator!



Solar panels plant

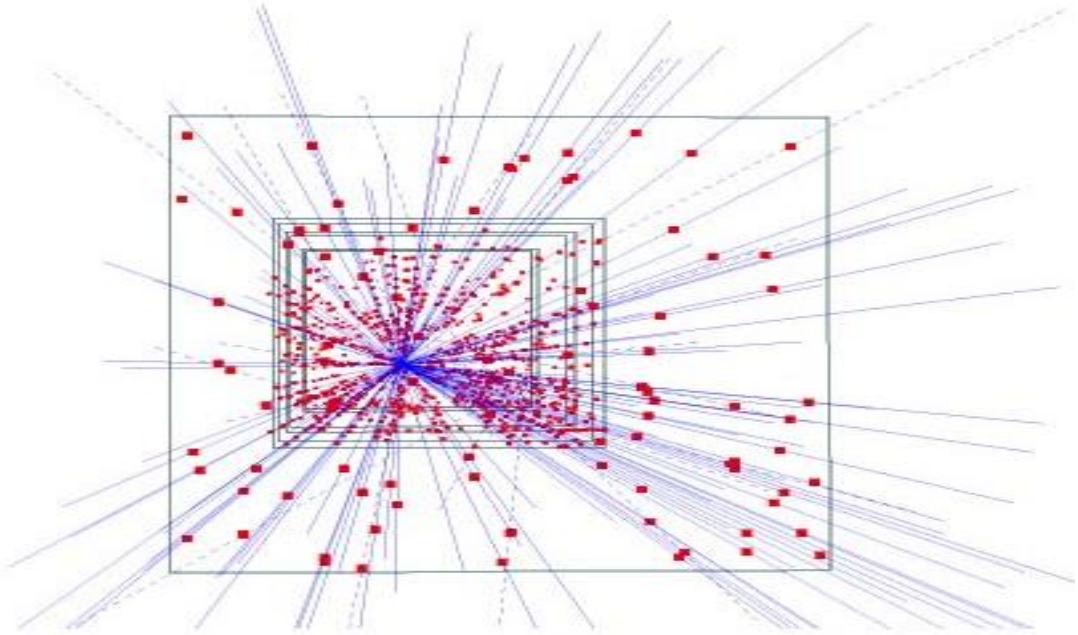
- Civil-engineering company opened a new solar power plant

  Environmentally friendly "solar field" heats close to 80,000 cubic metres of bitumen to 180 degrees.

Installation at GVA airport

Silicon pixel detectors (SPDs)

- Hybrid silicon pixel detectors for tracking applications in High Energy Physics

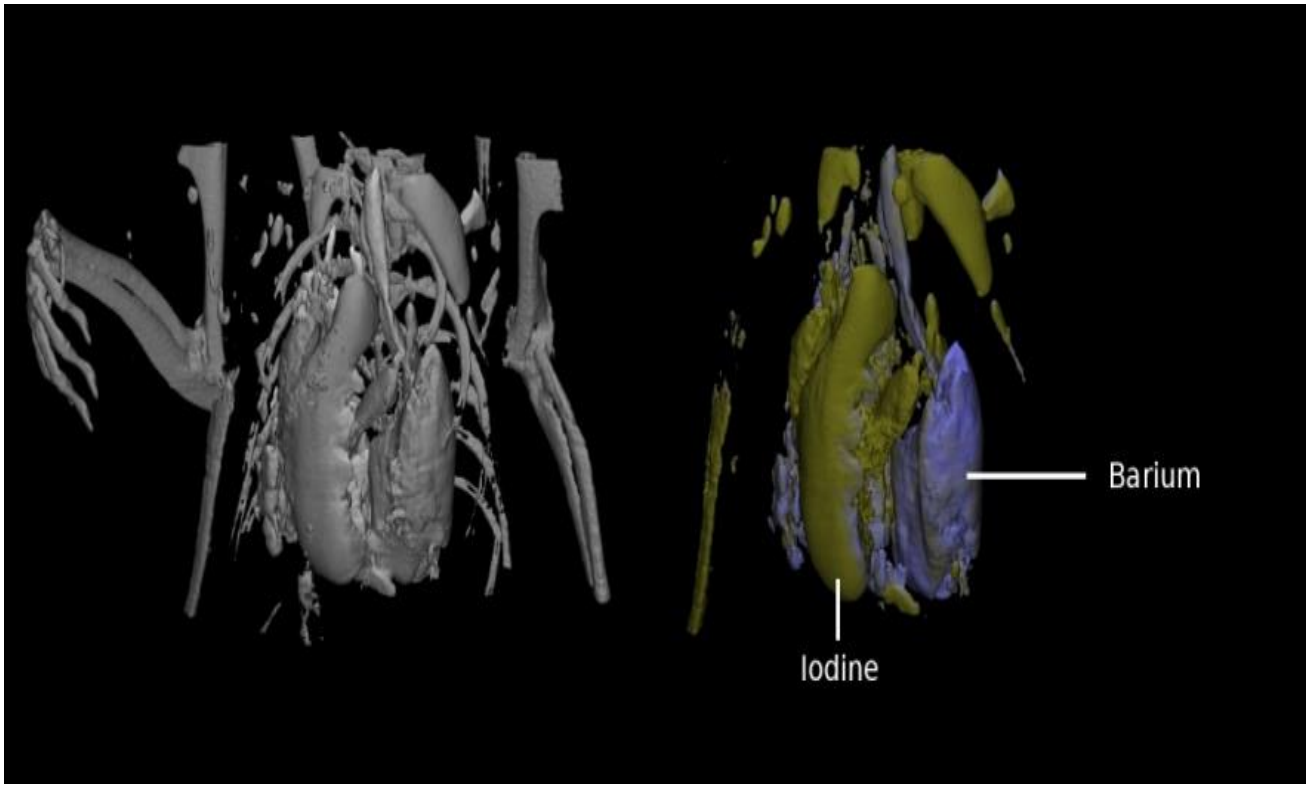


153 high energy particle tracks flying through a telescope of half a million pixels in the WA97 experiment back in 1995

Application: Medical imaging

- MARS project

  Colour CT X-ray scanner based on the Medipix technology

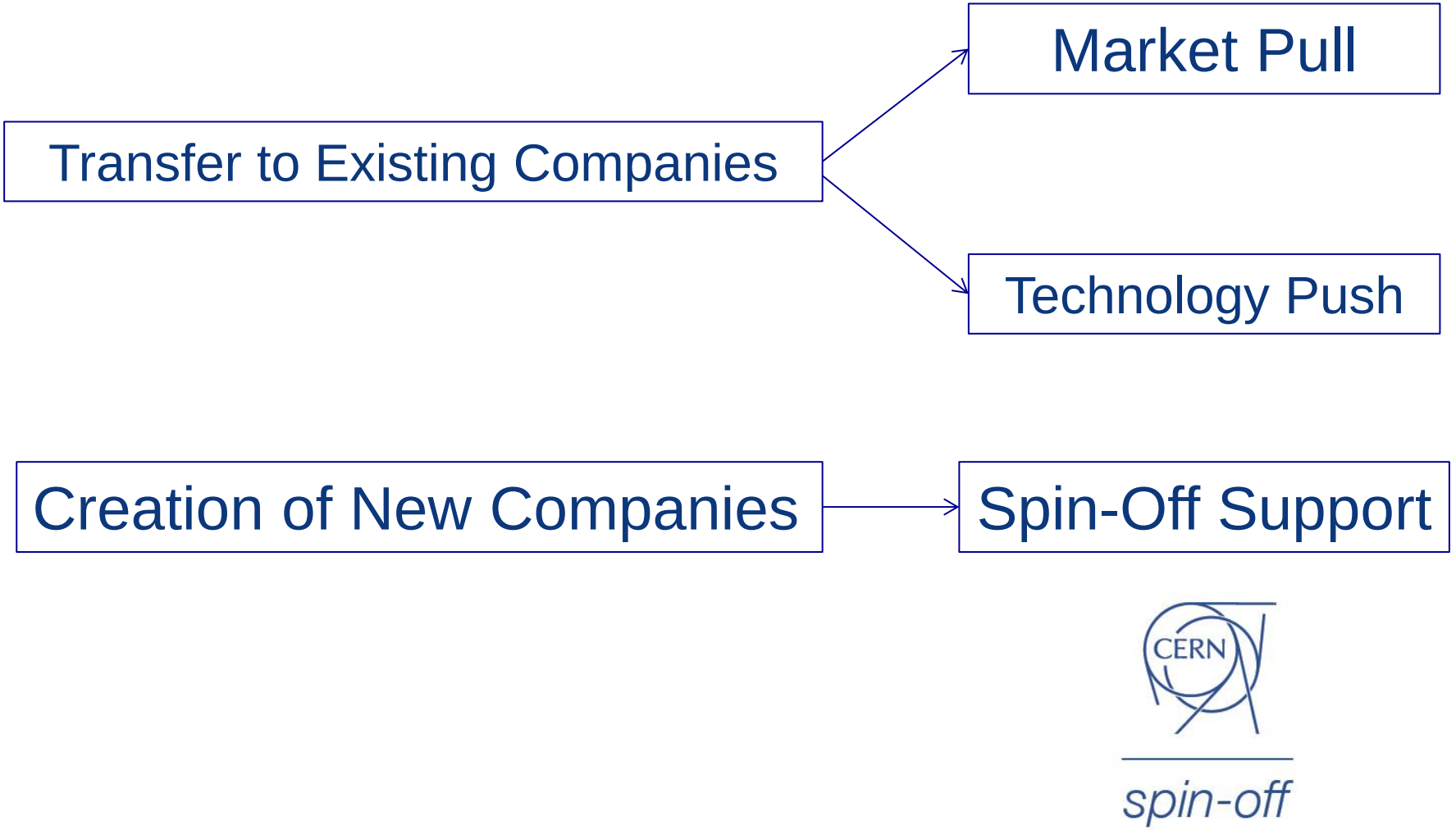


(courtesy of MARS Bioimaging Ltd)

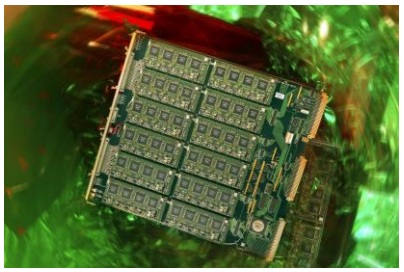
Application: Material analysis

- Partnership and license agreements with a company to build a X-ray diffractometer

KT implementation ways



CERN Business Ideas Accelerator



CERN
Pre-Incubator

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Turning CERN technologies into new business opportunities

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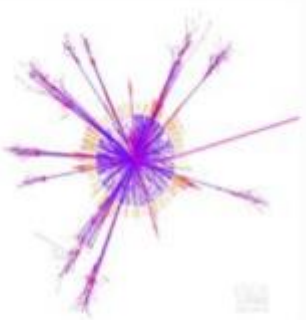
Welcome to the STFC CERN BIC

High energy physics accelerating business

Creating innovative new products, services and business opportunities from high energy physics technologies

The STFC CERN Business Incubation Centre (BIC) offers funding, business support and technical assistance to entrepreneurs and small high-tech companies seeking to accelerate their innovative business concepts.



Focused on developing new products and services using technologies originally developed for use in high energy physics research, this pilot scheme draws on the world-leading capabilities of the Science and Technology Facilities Council (STFC) and the European Organization for Nuclear Research (CERN), home of the Large Hadron Collider.

The BIC combines the incubation experience of STFC with the unique opportunity to access STFC and CERN intellectual property (IP), technologies and expertise. It will help businesses to grow from technical concept to market reality, from small start-ups into thriving high-tech companies.

There is an open call for applicants to join the scheme and the deadline for applications is **June 2013**.

For all the latest news, information and opportunities at the STFC CERN BIC, follow us on twitter **@STFC_B2B**.

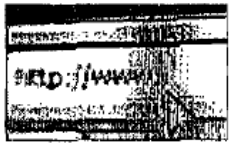
Medical scanners

Cern has been at the forefront of the technology behind PET and MRI medical imaging machines since building prototype scanners with Geneva's hospital in the 1970s. Electronics developed for Cern's atom-smashing Large Hadron Collider are offering fresh promise of combined PET/MRI scanners that would provide more detailed images of the human body.

Touch screens

More than three decades before the technology became ubiquitous, the first touch screen control pad was developed at Cern in the 1970s by Bent Stumpe, a Danish engineer. He had been asked to come up with a system to replace the thousands of buttons, knobs and switches needed to operate Cern's Super Proton Synchrotron particle accelerator.

World wide web



Tim Berners-Lee developed the world wide web in 1989 as part of a Cern project to improve information sharing between its network of 8,000 scientists working in universities and institutes around the world. The achievement was celebrated in Mr Berners-Lee's appearance in the opening ceremony of the London Olympics.

Greater commercial returns sought from Cern

By Andrew Bounds, North of England Correspondent

Britain is spearheading an effort to extract bigger commercial returns from the $8bn invested by the world's governments in Cern, the European physics research laboratory.

Cern is best known as home to the Large Hadron Collider, the most powerful atom smasher, where scientists in July discovered the Higgs boson "God particle", which explains matter.

Its research also helped create the world wide web and MRI scanning since its inception in 1954.

Yet, the UK believes more can be done to harness commercial value.

"We want to get technology from inside the ivory tower into the economy," says John Womersley, chief executive of the Science and Technology Facilities Council, the UK research body. "Cern understands this is something it needs to get better at."

Cern and the STFC are opening a competition this week for five companies to receive funding and technical help from scientists at the laboratory near Geneva.

Prof Womersley said the collaboration would help develop findings from Cern's atom-smasher in a way that "can impact on people's lives".

He said small companies were often best at exploiting new technology, noting how touch screens were first used at Cern but not commercialised by it.

Winning companies will receive £40,000 funding, up to 40 hours technical support from Cern and 40 hours form the STFC, access to intellectual property at preferential rates and cheap incubator space at Sci-Tech Daresbury, the council's innovation campus near Warrington.

Paul Vernon, head of campus development at STFC, said possible spin-offs could include airport security scanners – as Cern has developed technology to detect radiation – or treatments for conditions such as osteoporosis. But he added: "It is as likely to be something we didn't expect. That is why we are opening it up to these innovative companies."

Winning companies will also be able to collaborate with universities from Liverpool and Manchester as well as the 100 or so other businesses on the Daresbury site, which include IBM and Dell.

The STFC contributes £100m a year to Cern, a sixth of the council's budget. UK companies receive about £15m annually in contracts in return.

Steve Myers, Cern's director of accelerators and technology, said: "Cern is committed to maximising the benefit to society of Cern technology through the development and exploitation of innovative ideas."

The STFC's Rainbow venture capital fund could also become involved.

STFC Innovations, the commercialisation company, has created more than 16 spinouts worth £50m.

The STFC is collaborating with the European Space Agency on a similar model. There are some 15 businesses at its Harwell campus near Oxford, including Radius Health, which is working on a portable X-ray machine that could be used by paramedics at accident scenes. Another company is working on a drone that can map the condition of crops and then network with a tractor's GPS system to ensure the right amount of fertiliser is spread in the right place.

The space agency has seven technology transfer centres across Europe and Cern hopes to follow suit. The competition is open to companies from the 20 countries that pay for Cern.

Technology and trophies

£40,000	£100m
Funding winning companies will receive	**Sum the STFC contributes to Cern each year**
40hrs	£15m
Technical support from Cern winners will receive	**Value of Cern contracts UK companies receive annually**

Financial Times, 19.10.2012

More info / Contacts

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