

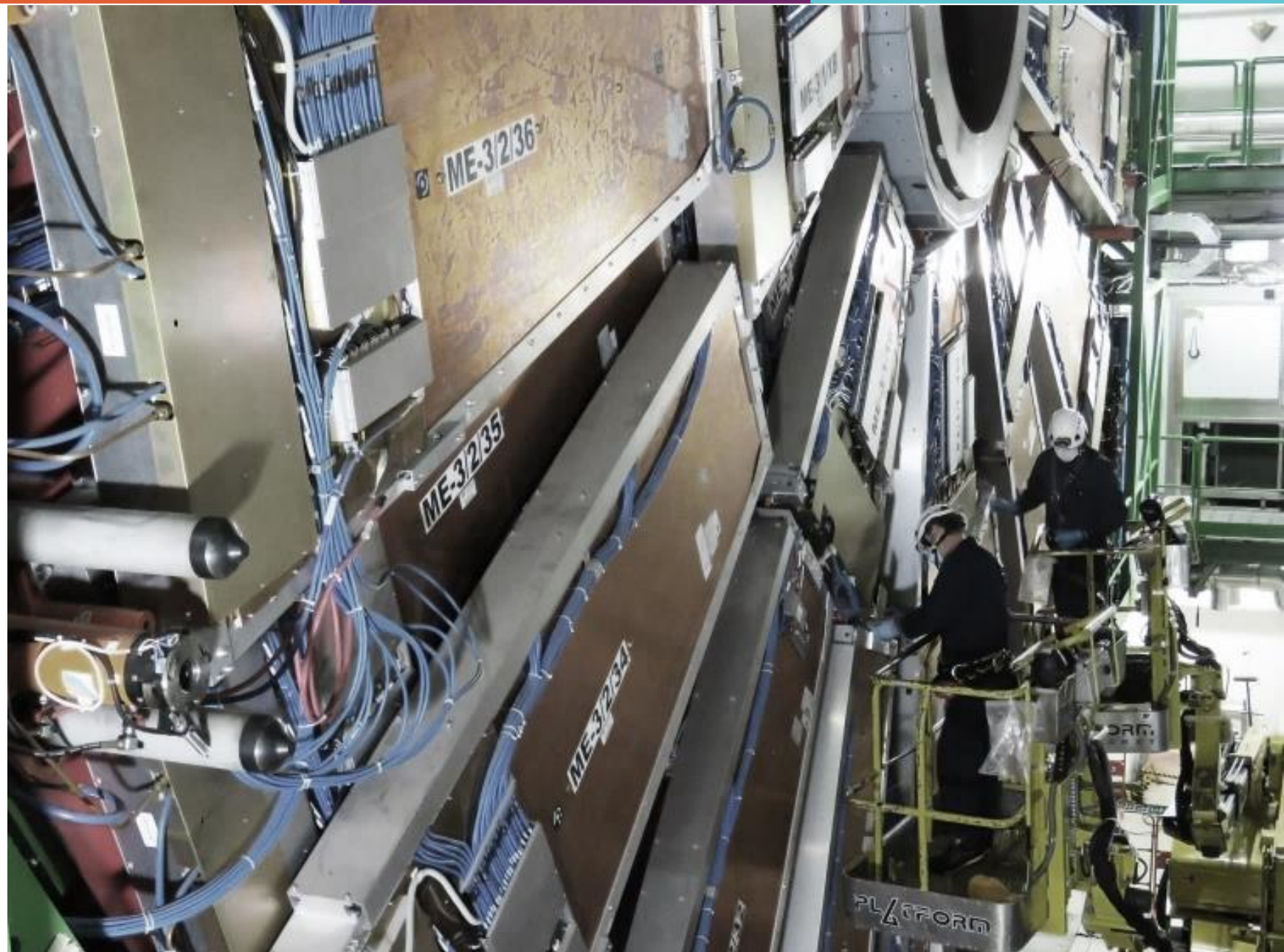


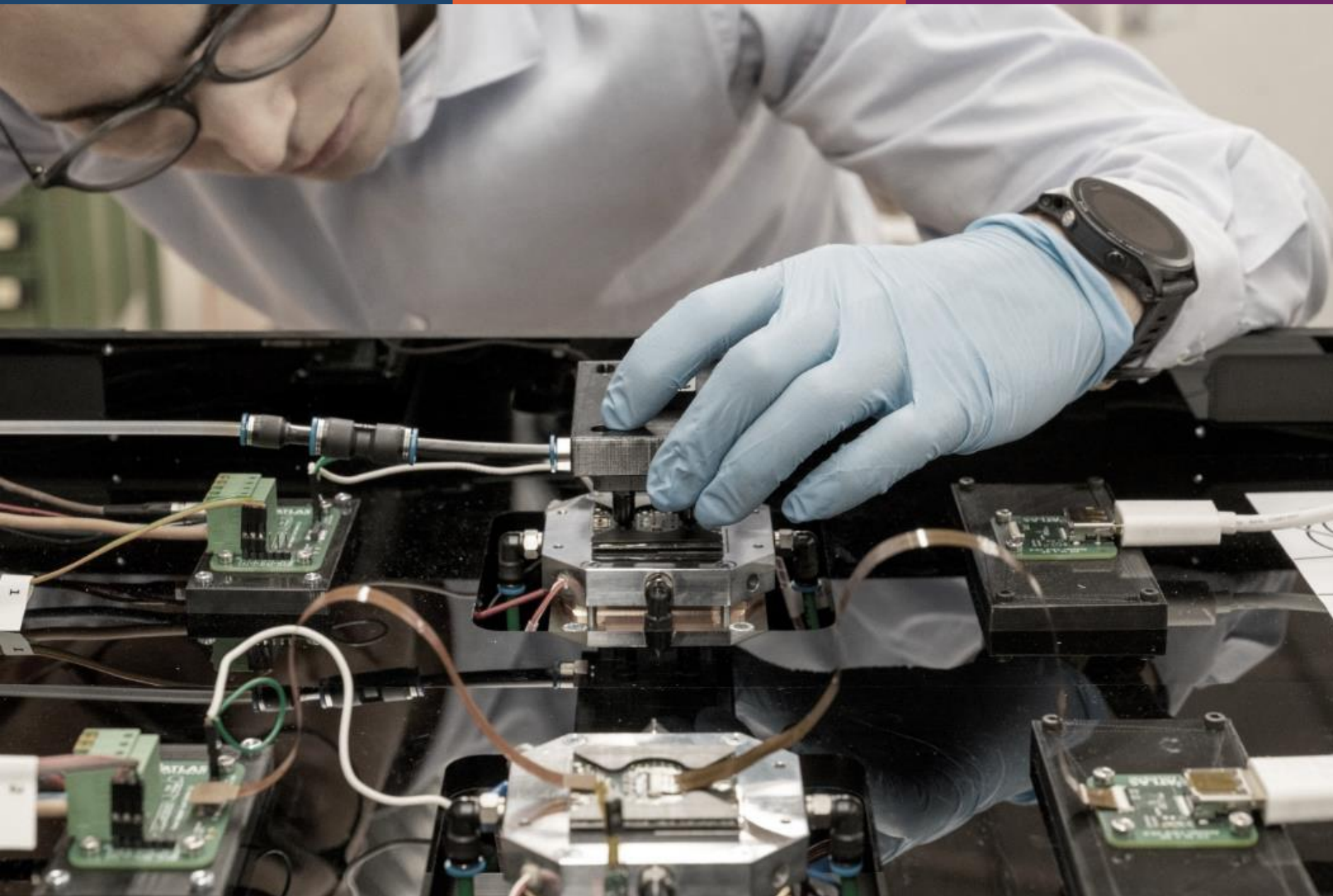
Accelerating Innovation

How CERN Technology Makes its Way into Society

Amanda Díez Fernández, Knowledge Transfer Officer, CERN

We develop our own technologies and engineering capabilities to cover needs not addressed by industry





Could they be useful to companies developing innovative solutions in other fields?

CERN as trusted non-commercial innovation partner



HEALTHCARE



ENVIRONMENT



DIGITAL



AEROSPACE



QUANTUM

KT's Mission



Promote CERN as a centre of excellence for technology and innovation

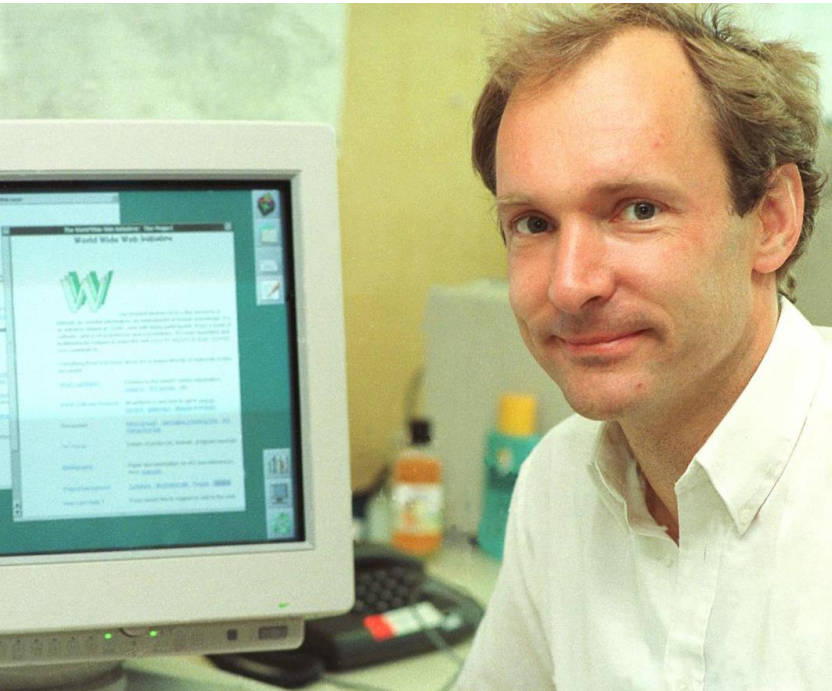


Maximise the technological and knowledge return to society, in particular through Member States industry



Demonstrate the importance and impact of fundamental research investments

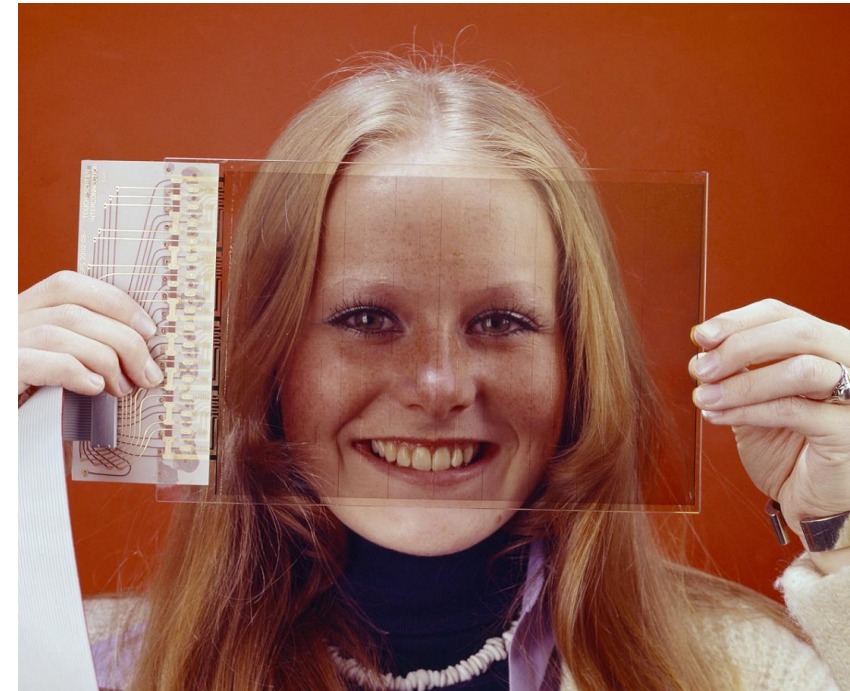
Some historic examples



WWW

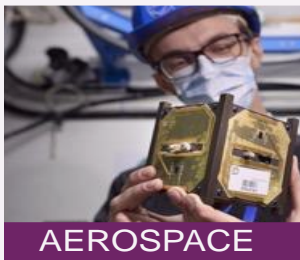
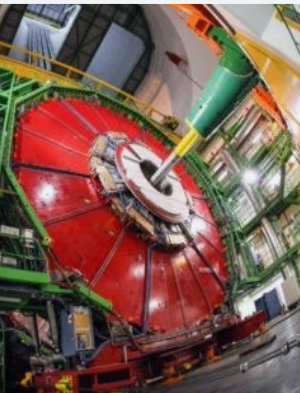


TRACKERBALL



TOUCHSCREEN

Hybrid strategy: tech push & market pull



Mobilize tech experts

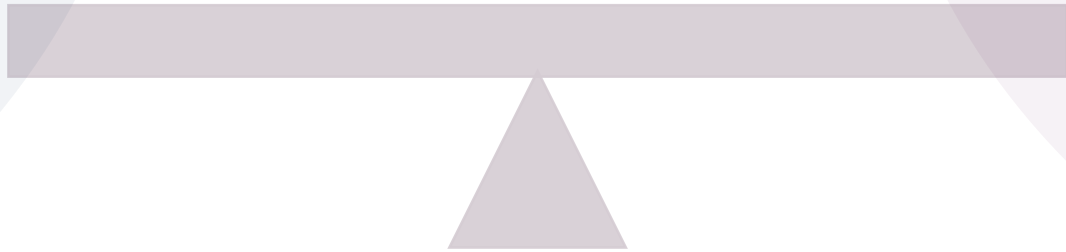
Mobilize innovation partners

Create tech and IP dossiers

Create value propositions

Scout for technologies

Search unmet needs



Technologies/Facilities/Expertise

Materials Expertise and Testing Facilities

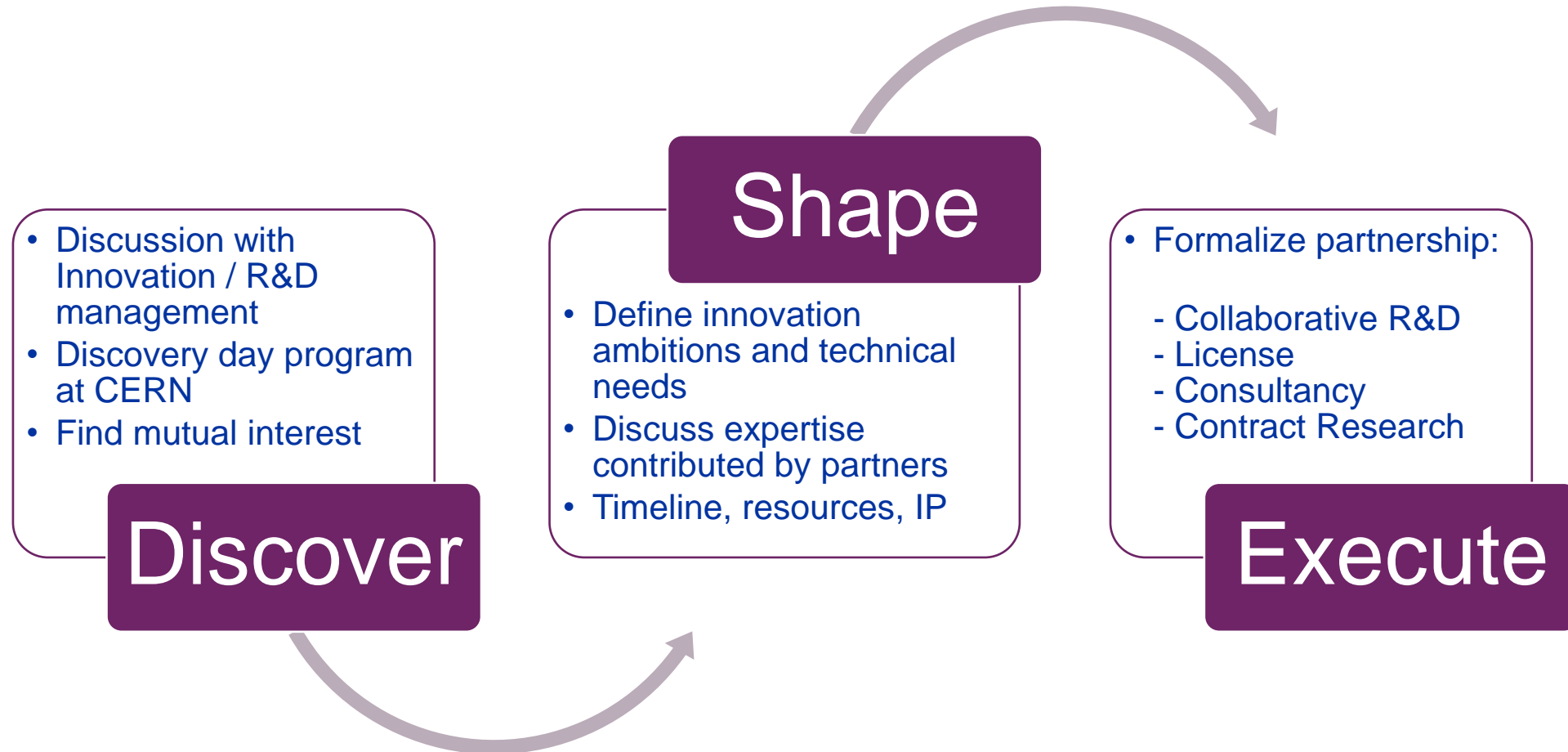
Expertise in Vacuum and Testing Facilities

White Rabbit Technology

Application Domain



Shaping innovation partnerships





Collaborative R&D

MedAustron and CNAO offer hadron therapy using CERN technology.

Collaborative R&D



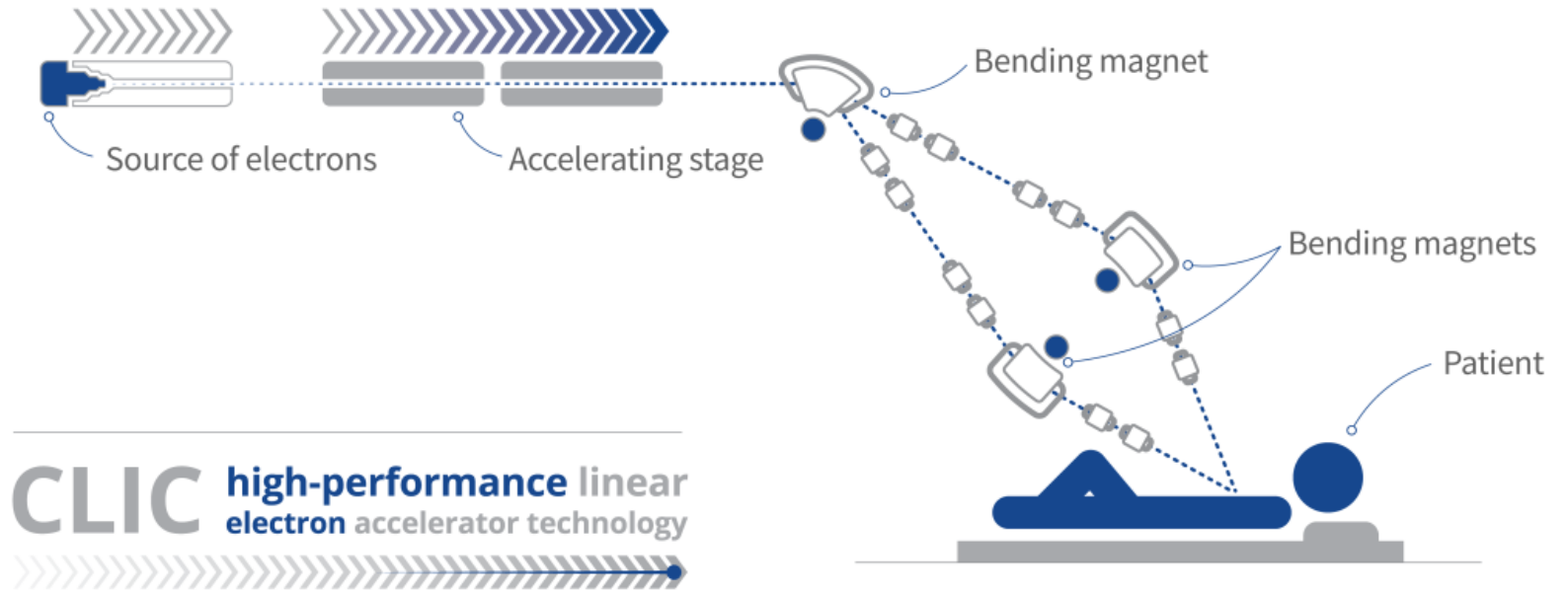
MedAustron and CNAO offer hadron therapy using CERN technology.

[Voir en français](#)

CERN, CHUV and THERYQ join forces for a world first in cancer radiotherapy

CERN, CHUV and THERYQ have signed an agreement for the development of a revolutionary FLASH radiotherapy device

25 NOVEMBER, 2022



CLIC high-performance linear electron accelerator technology

FLASH
treatments of large and deep-seated tumours



< 200 ms

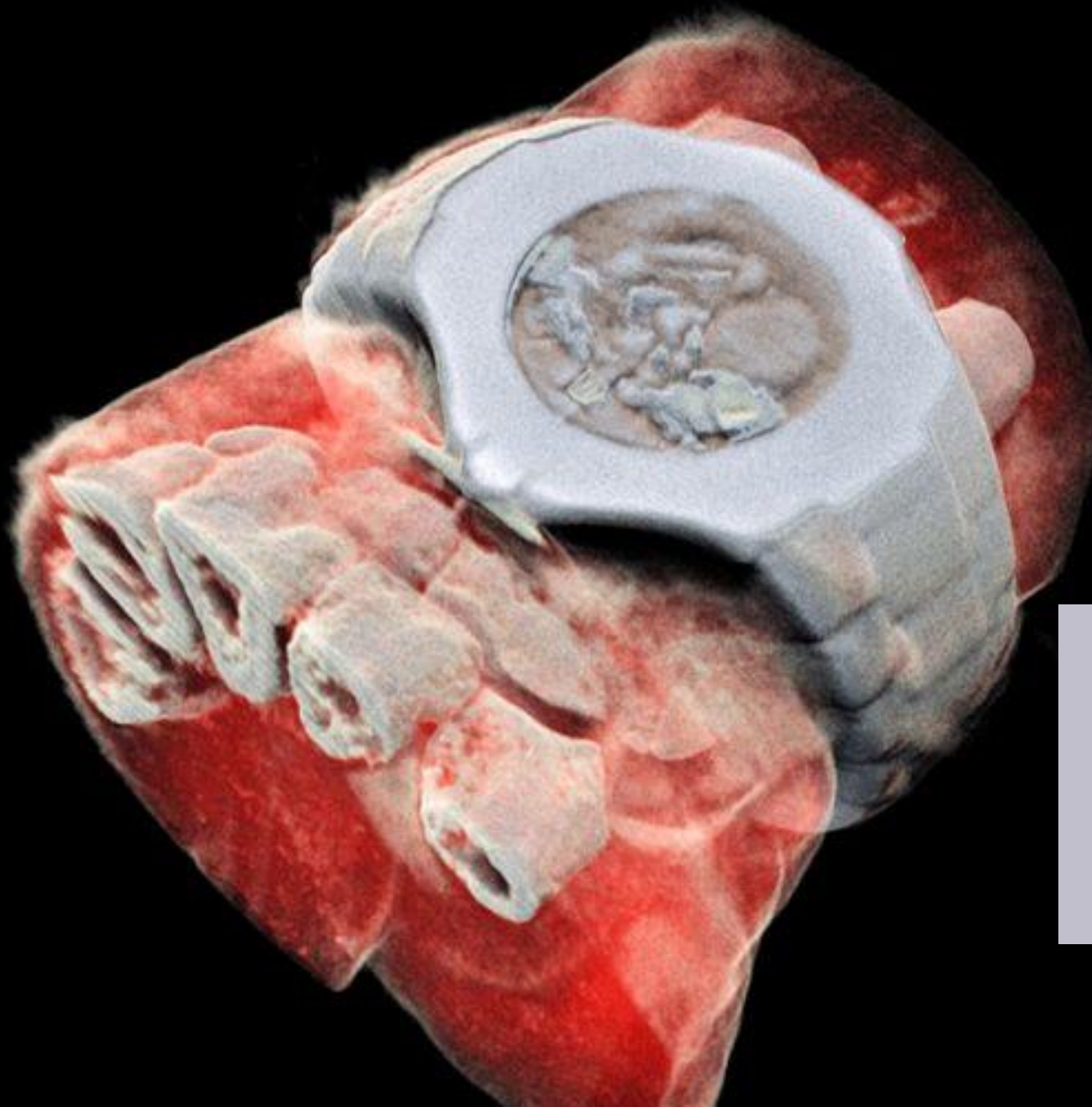
Full dose is delivered by a beam of electrons in less than 200 ms

More healthy tissue spared



Innovative Radiation Therapy with Electrons

<https://home.cern/news/news/knowledge-sharing/cern-chuv-and-theryq-join-forces-world-first-cancer-radiotherapy>



MARS Bio Imaging:
next generation X ray
finally in color using
CERN chips

InsightART: Using CERN Medipix detector to analyse art.

License



ZENSEACT (Volvo Cars Company) teams up with CERN on extremely fast machine learning using FPGAs.

Collaborative R&D





Collaborative R&D

Collaboration to support national banks and regulators to detect trading anomalies in stock market.

A person wearing a blue hard hat with a logo, safety glasses, and a light blue surgical mask is holding two printed circuit boards (PCBs) in a laboratory or industrial setting. The PCBs are mounted on a dark brown frame and feature gold-colored traces and components. One PCB has a white label with a barcode and the text "CR-070238". The background shows blue structural elements and various cables.

Contract research

Development of high energy beam for testing radiation hardness with ESA.

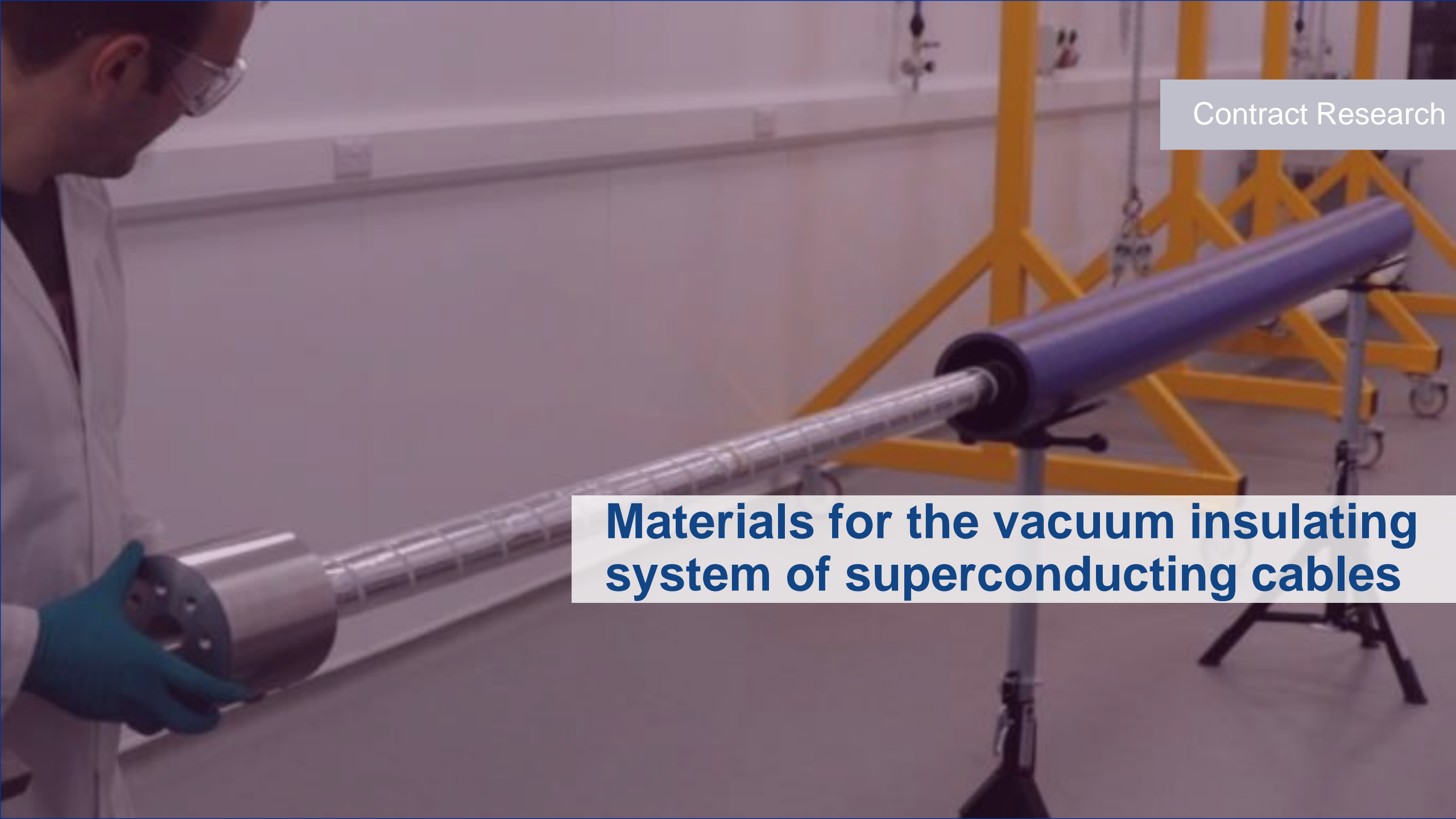


Consultancy

Materials for Liquid Hydrogen Tanks

Contract Research

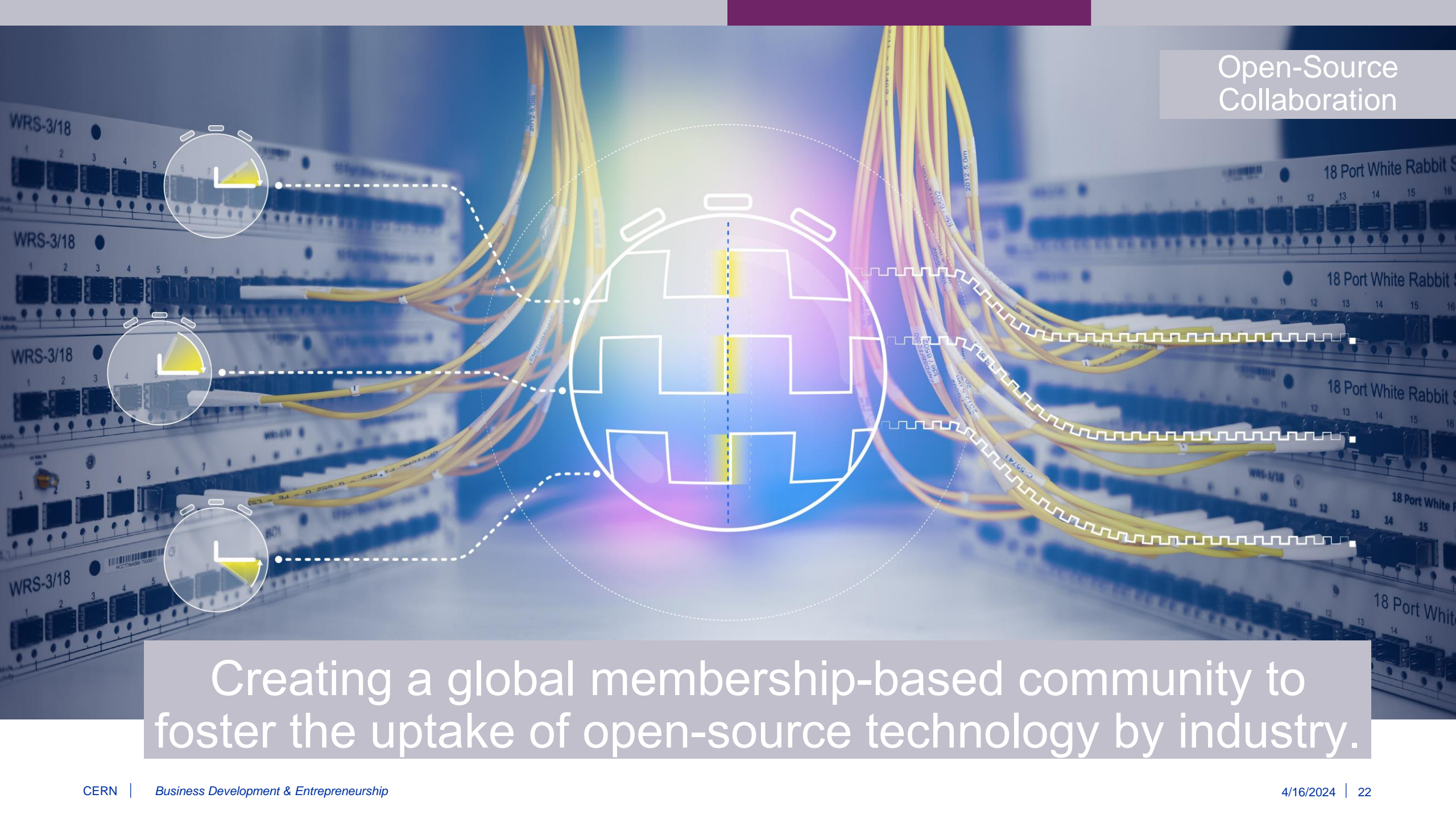
Materials for the vacuum insulating system of superconducting cables



The image shows the interior of a tokamak fusion reactor. It features a central column of vertical structures, likely the central solenoid, surrounded by complex machinery and structural elements. The scene is illuminated with a strong purple and blue light, creating a futuristic and industrial atmosphere. A person in a white protective suit is visible on the left side, working on the equipment.

Service

Materials Testing for Fusion Tokamaks



Creating a global membership-based community to foster the uptake of open-source technology by industry.

White Rabbit

has seen an important uptake outside CERN, both in industry and other research infrastructures



[Our company](#) [Products/services](#) [Insights](#) [Investor relations](#) [Media](#) [Career](#) [Responsibility](#) [Regulation](#)

ESG Product Hub

> Investment Management Solutions

> Pre-IPO and listing

> Trading

> Market data and analytics

> Clearing

Settlement and asset servicing

Collateral, lending and liquidity solutions

Fund services

> [Information technology](#)

Time services

State-of-the-art network time synchronisation with the T7 trading infrastructure

∨ **Time Service (PTP)**

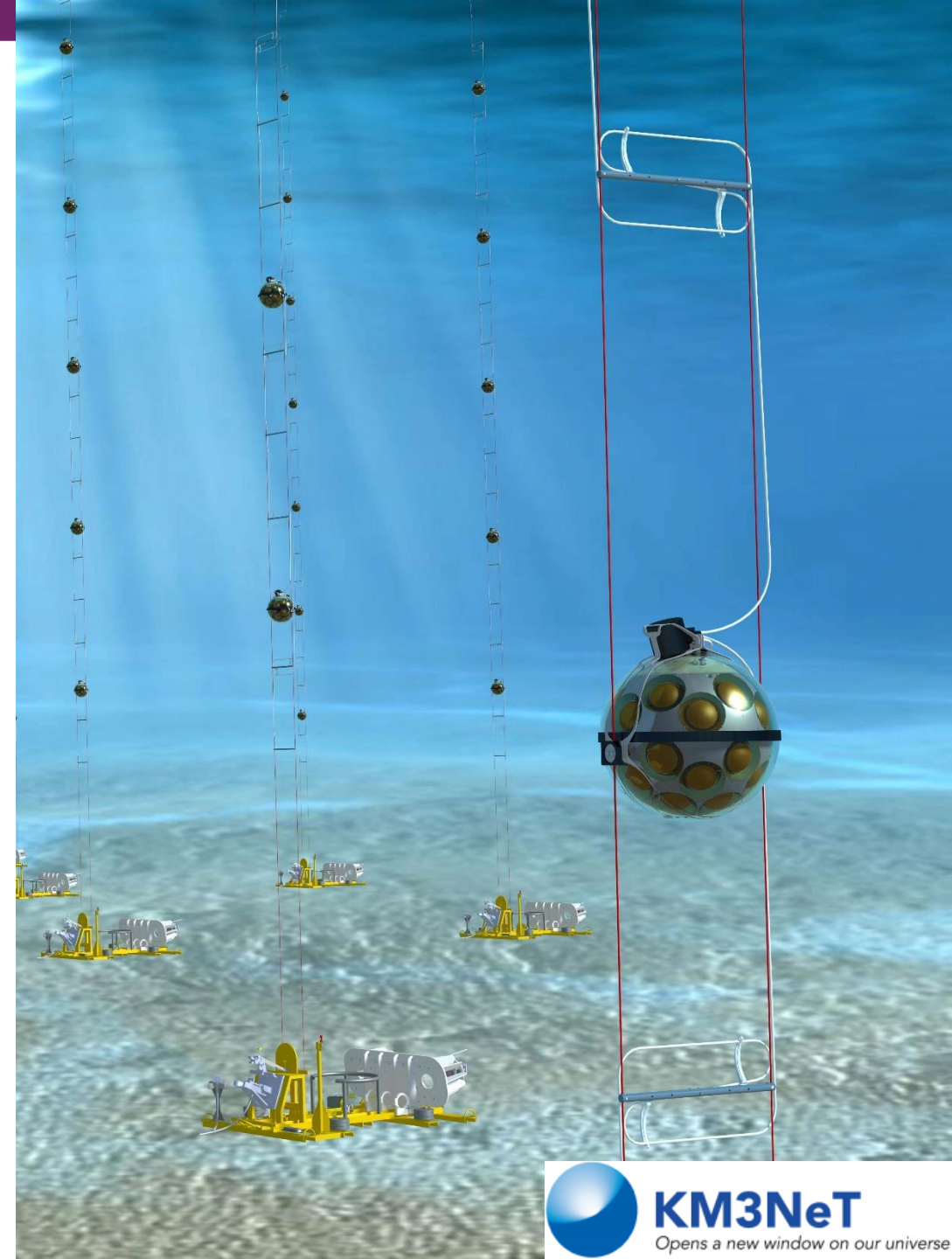
∧ **Time Service (White Rabbit)**

High precision time synchronisation

Key benefits

- Application measurements with an accuracy of less than a nanosecond
- WR time distribution is also the basis for the High Precision Timestamps (HPT) Daily File Service.

The HPT Services uses the White Rabbit technology initially developed at CERN, the European Organization for Nuclear Research.

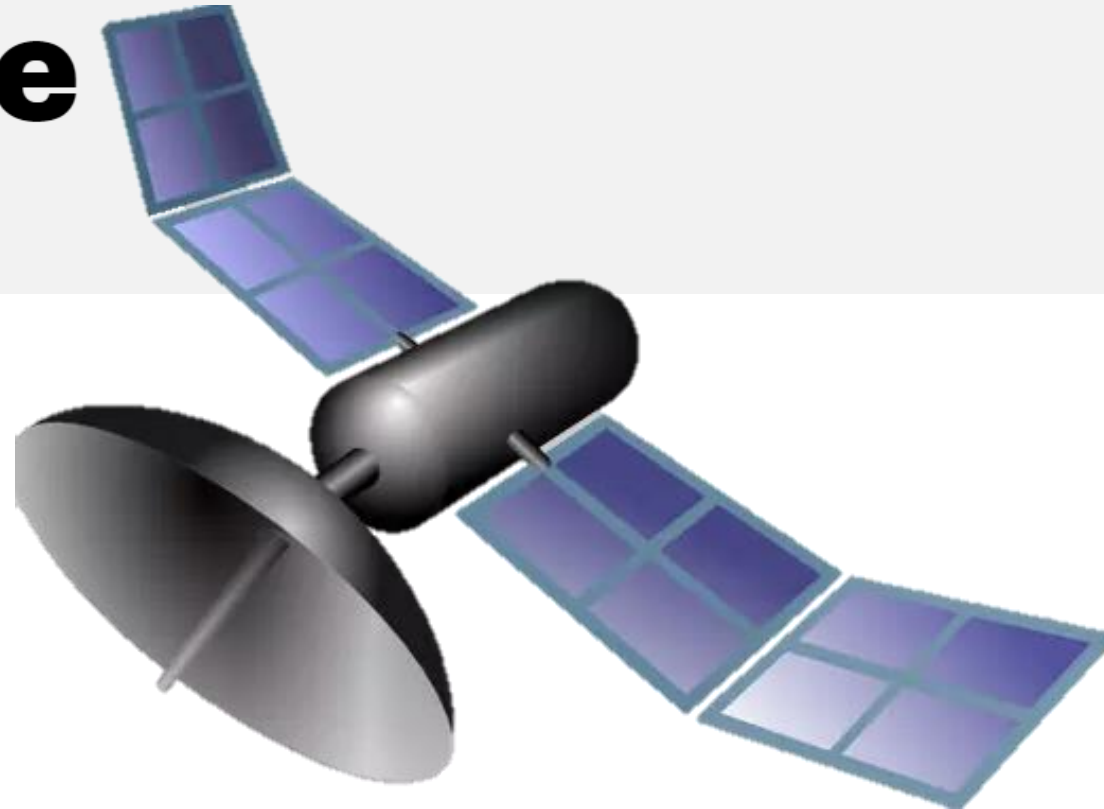




Cyber Defense

Overreliance on GPS Carries Risk for Everyone

JANUARY 10, 2022



<https://www.accenture.com/us-en/blogs/cyber-defense/overreliance-gps-risk>



European
Commission

EN English

EU Science Hub

[Home](#) > [Scientific activities A-Z](#) > [Critical infrastructure protection](#) > [Alternative Position, Navigation and Timing \(AltPNT\)](#)

Alternative Position, Navigation and Timing (AltPNT)

JRC conducted testing campaigns of the mature technologies able to provide precise time and position, without use of navigation satellites. Aim is to strengthen EU economy and critical infrastructure resilience.

https://joint-research-centre.ec.europa.eu/scientific-activities-z/critical-infrastructure-protection/alternative-pnt_en

[Voir en français](#)

CERN launches the White Rabbit Collaboration

White Rabbit, an open-source timing technology developed at CERN, has applications far beyond particle physics. To foster its uptake by industry, CERN has launched the White Rabbit Collaboration

22 MARCH, 2024



<https://home.cern/news/news/knowledge-sharing/cern-launches-white-rabbit-collaboration>



THANK YOU!