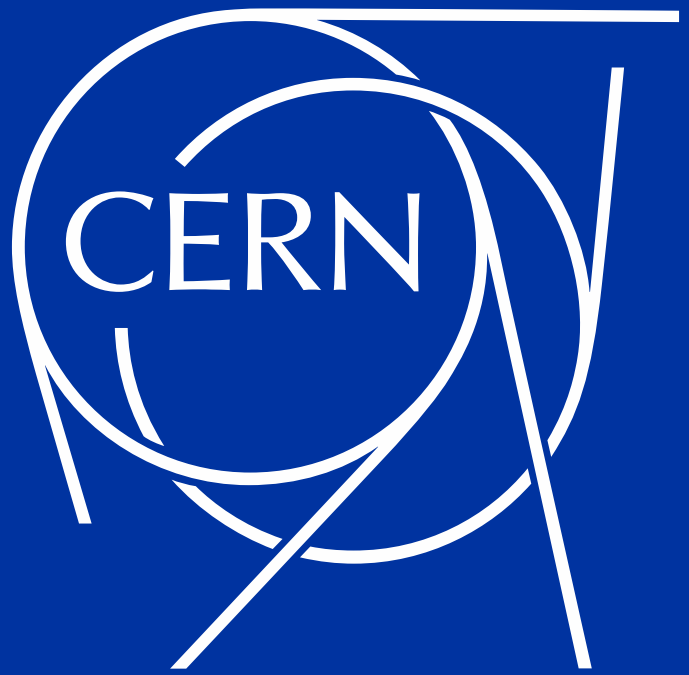
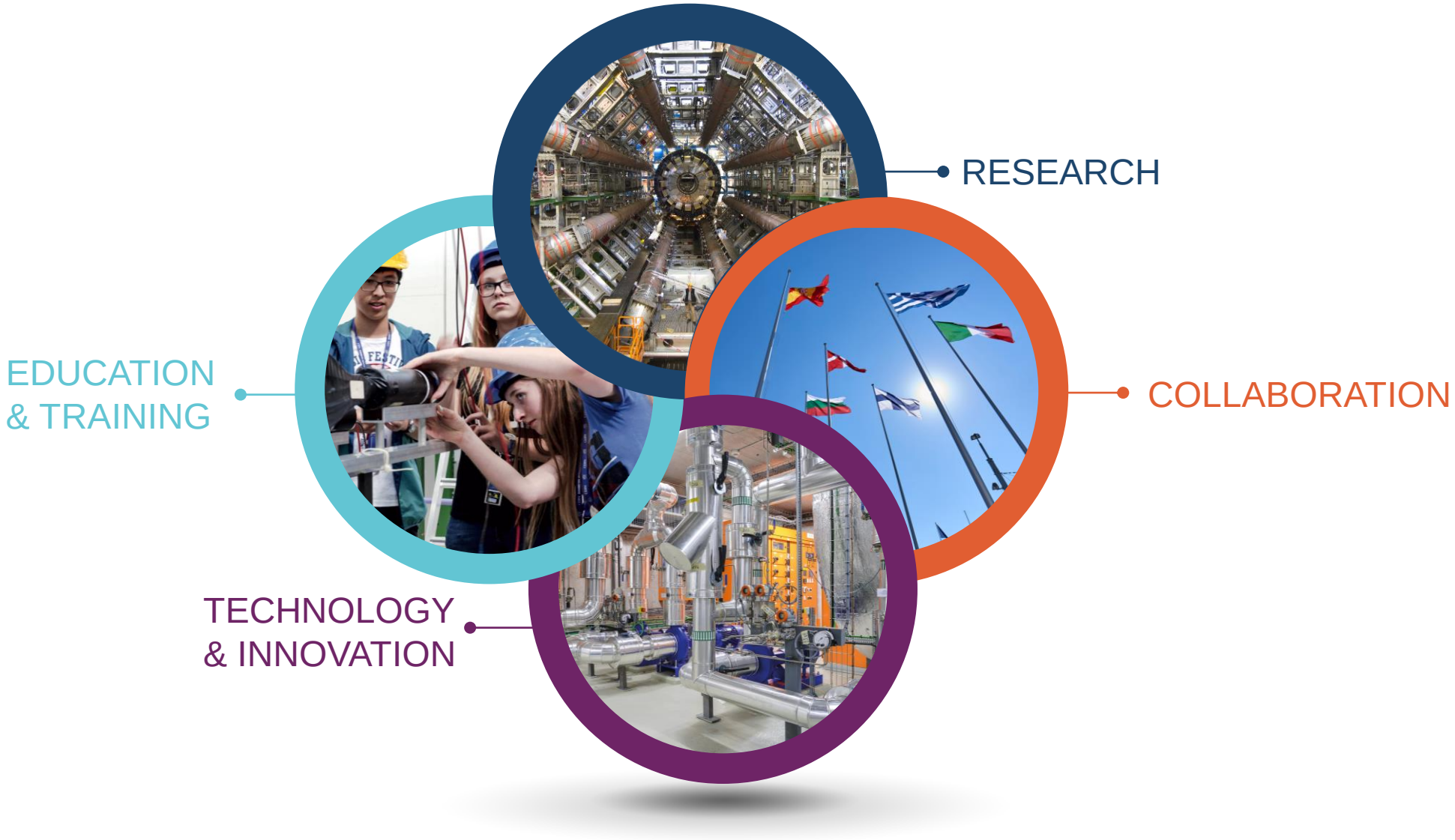

CERN

Accelerating Innovation

How CERN Technology Makes its Way into Society

Han Dols, Head of Business Development & Entrepreneurship, CERN

Four pillars underpin CERN's mission



Machine Learning and Deep Learning

Industrial Controls and Automation

Metrology

High and Ultra High Vacuum Systems

Data Analytics

Health, Safety and Environment Management

Cryogenics

Optoelectronics and Microelectronics

High Volume Data Management & Storage

Superconducting Magnets

Particle Acceleration and Control

Radiation Protection and Monitoring

Particle Tracking and Calorimetry

Sensors

Material Science

Cooling and Ventilation

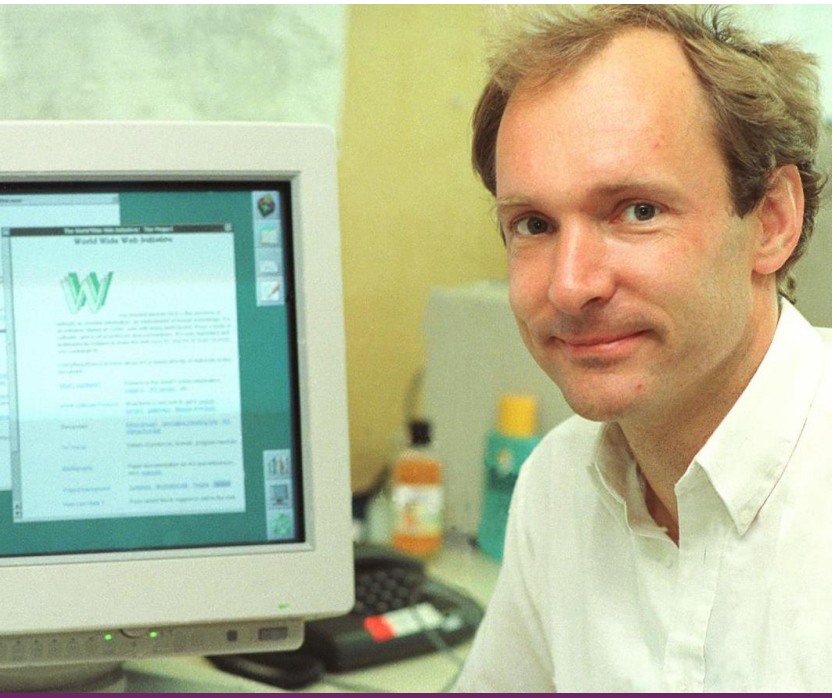
Robotics

Collaboration Tools

Radio Frequency Technology

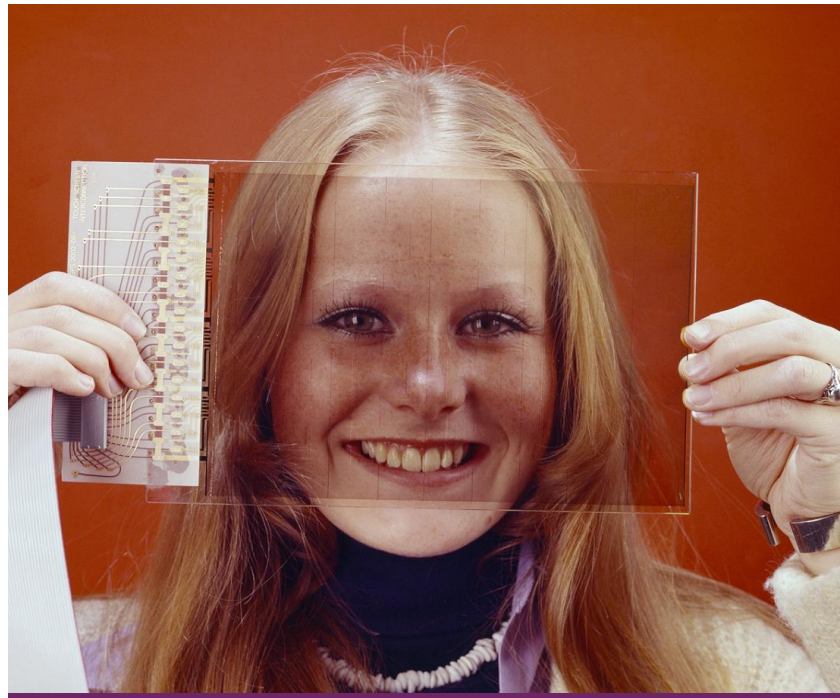
Manufacturing and Mechanical Processes

Some historic examples



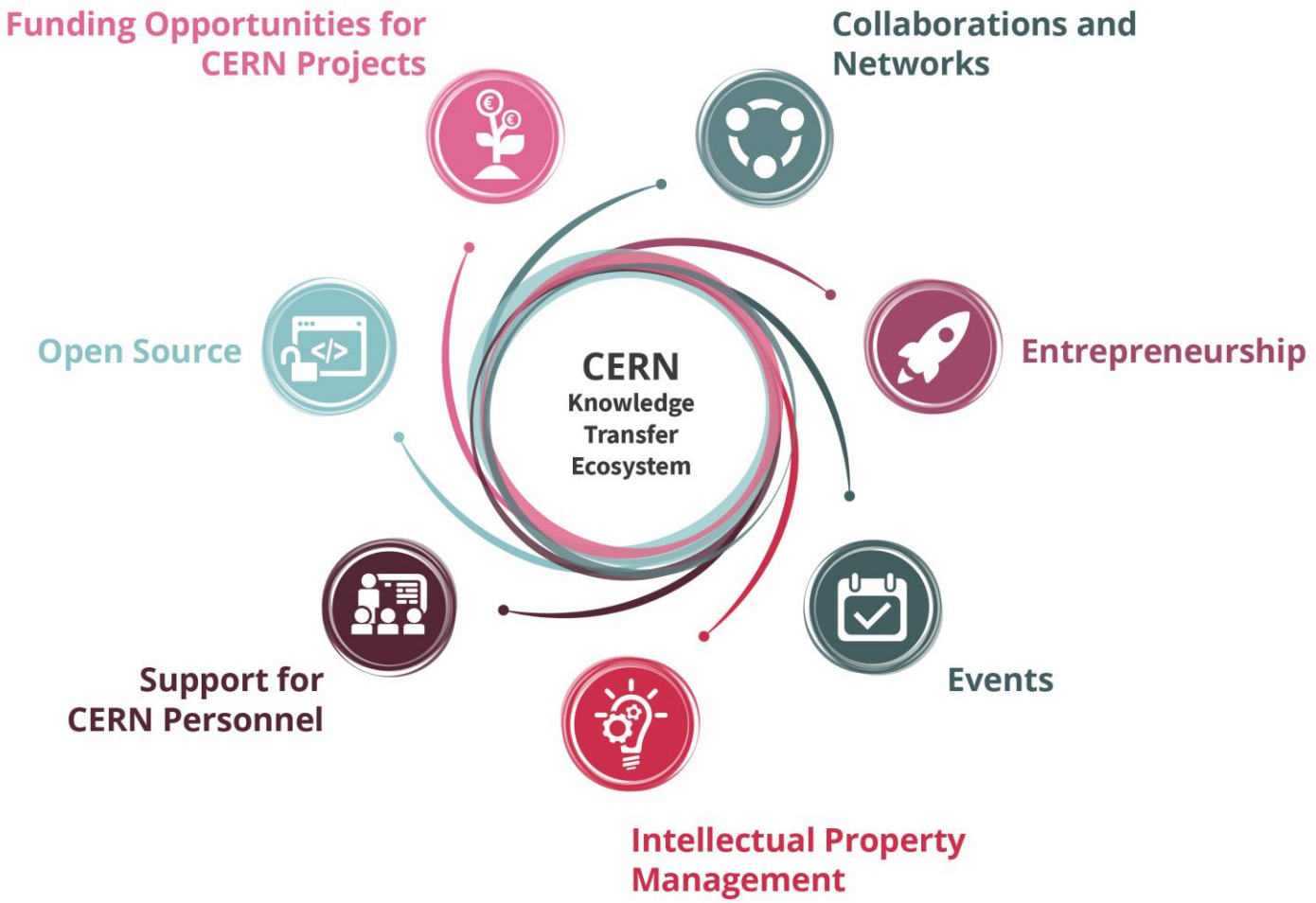
WWW

TRACKERBALL



TOUCHSCREEN

Our toolbox to accelerate innovation



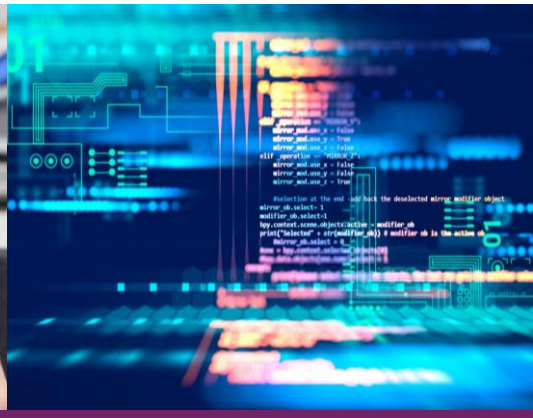
CERN as trusted non-commercial innovation partner

HEALTHCARE

ENVIRONMENT

DIGITAL

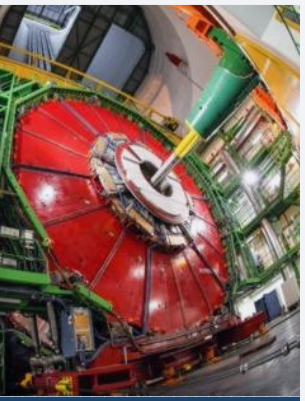
AEROSPACE



QUANTUM

Hybrid strategy: tech push & market pull


ACCELERATORS


DETECTORS


COMPUTING

- Mobilize tech experts
- Create tech and IP dossiers
- Scout for tech and knowhow

- Mobilize innovation partners
- Create value propositions
- Search unmet needs


HEALTHCARE

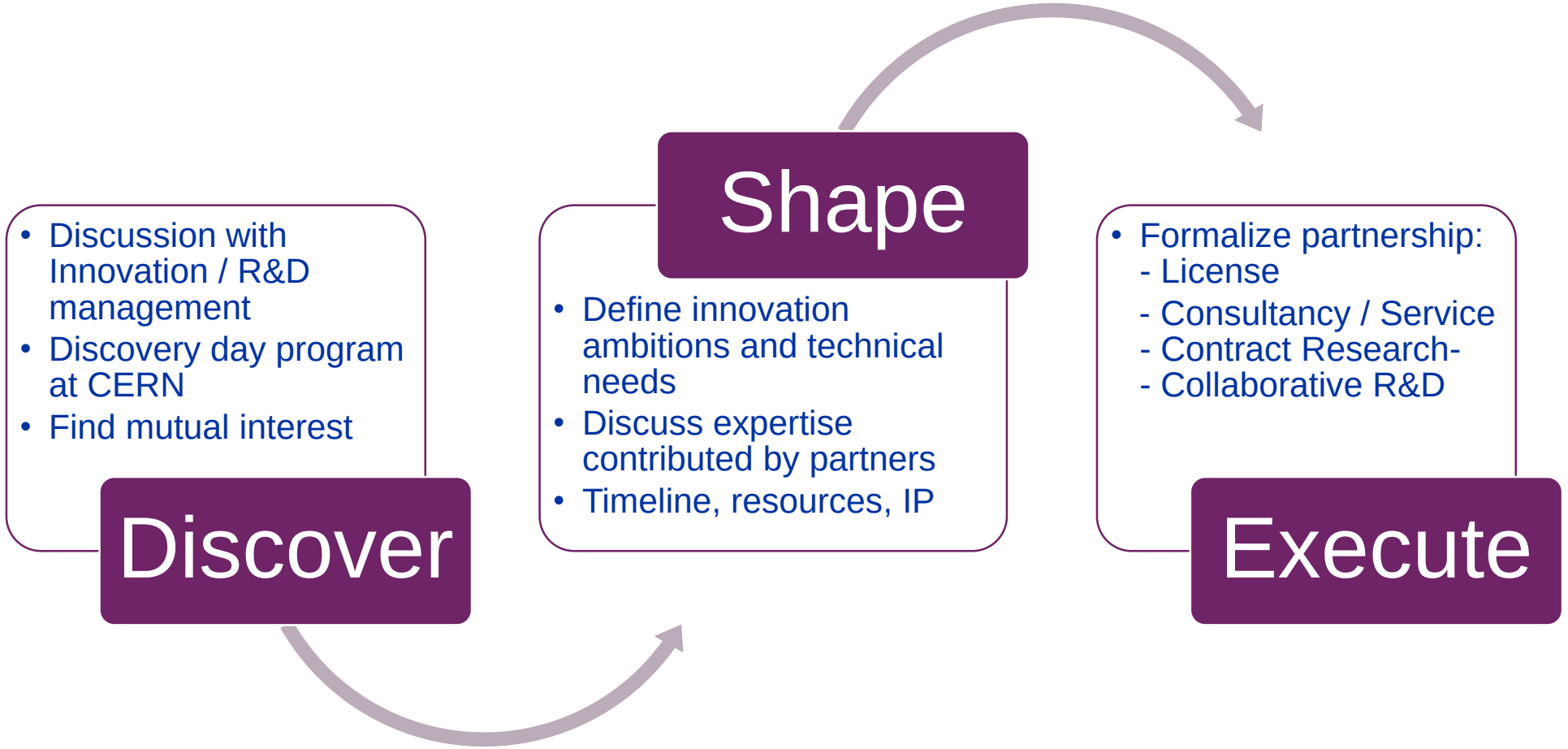

ENVIRONMENT


DIGITAL


AEROSPACE


QUANTUM

Shaping innovation partnerships



Licence	Consultancy/Service	Contract research	Collaborative R&D
• Access to existing solution • Support to implement	• Specific issue • Time of experts • Time of facilities	• Specific solution • Outsource its development to CERN	• General issue • Jointly find solution • Jointly develop solution

How much time does it take to create a R&D Partnership?

Collaborative R&D

MedAustron and CNAO offer hadron therapy using CERN technology.

Collaborative R&D

MedAustron and CNAO offer hadron therapy using CERN technology.

Consultancy

Bundesdruckerei (Berlin) works with CERN on next generation ideas for identity management and cryptography and data handling.

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

Collaborative R&D

Collaborative R&D

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

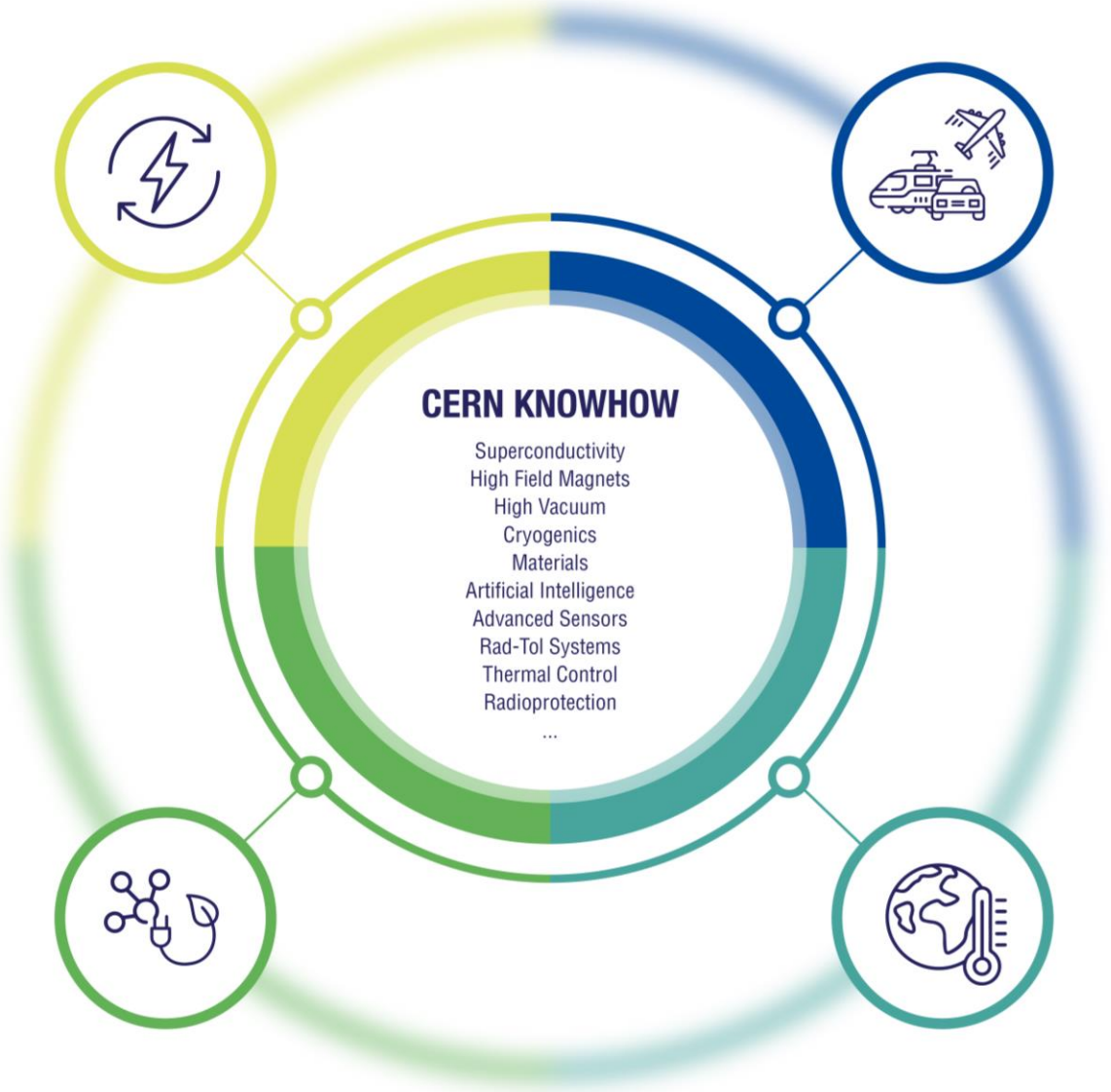
Contract research

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


CIPEA
CERN Innovation Programme
on Environmental Applications

RENEWABLE AND LOW-CARBON ENERGY

Production
Transformation
Distribution
Storage



CLEAN TRANSPORTATION AND FUTURE MOBILITY

Aviation
Shipping
Rail
Automotive

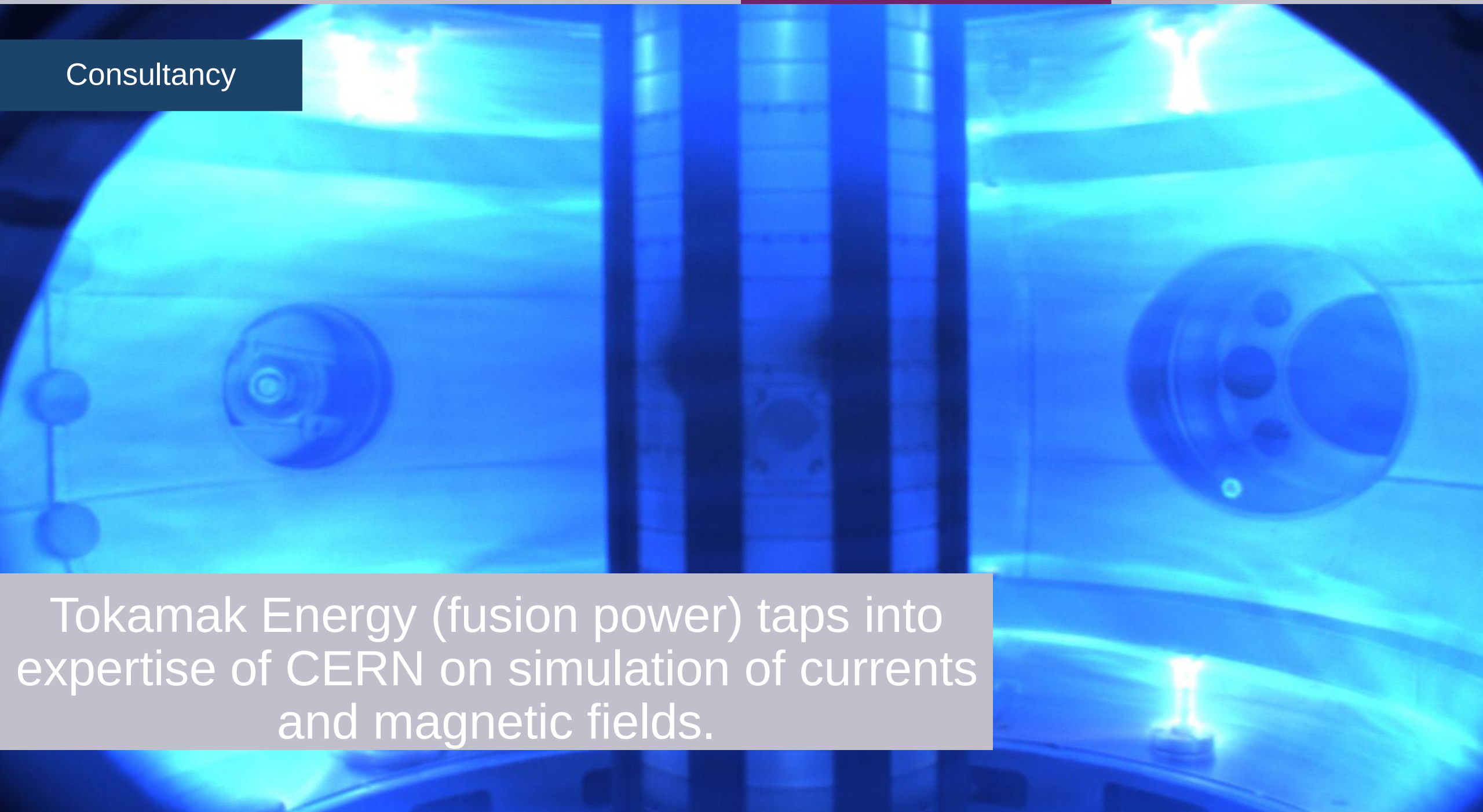
SUSTAINABILITY AND GREEN SCIENCE

Power Management
Heat Management
Industrial Processes

CLIMATE CHANGE AND POLLUTION CONTROL

Monitoring
Modelling
Mitigation

Consultancy



Tokamak Energy (fusion power) taps into expertise of CERN on simulation of currents and magnetic fields.

Collaborative R&D

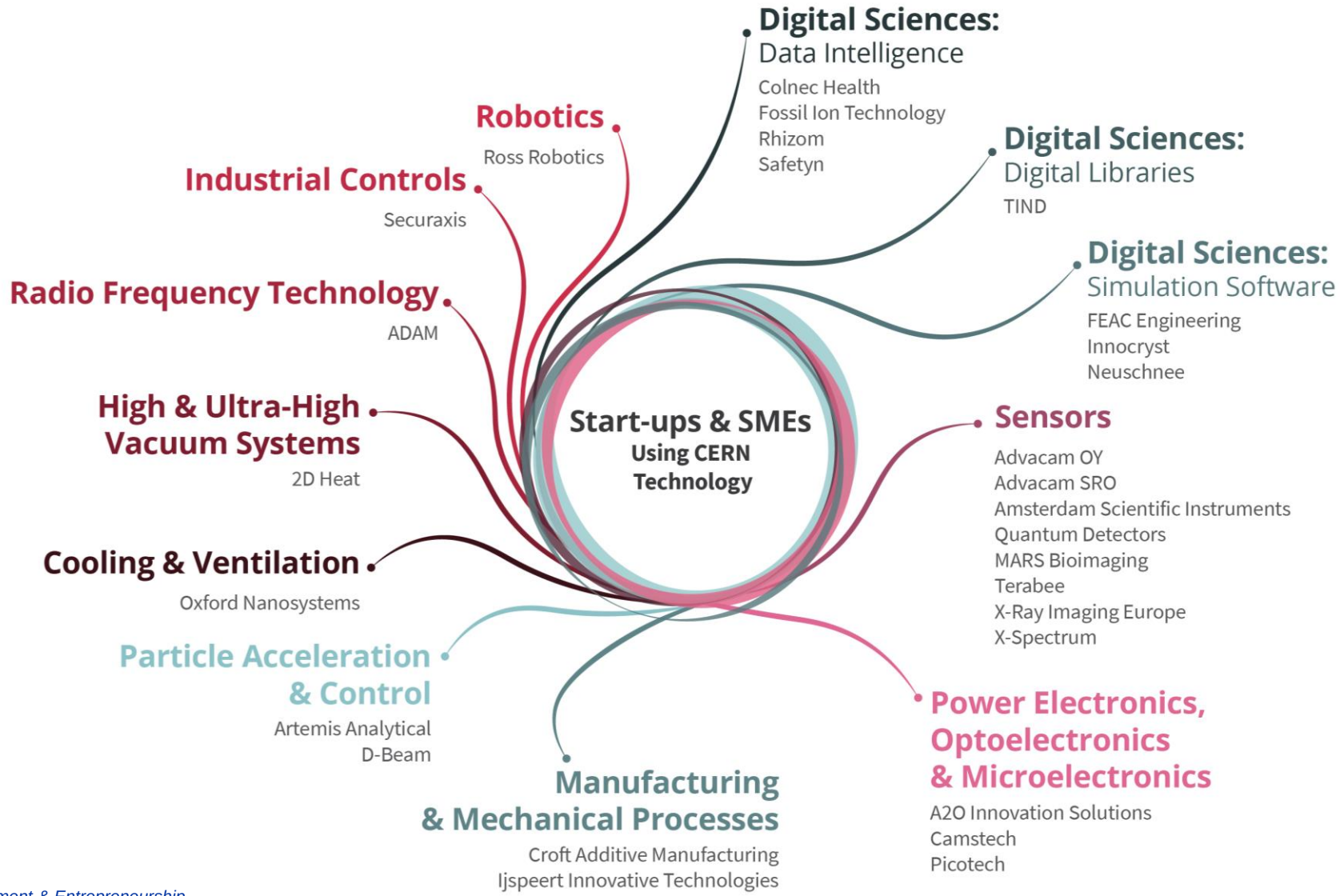
CERN and ABB team up on reducing electricity in cooling and ventilation.

CERN and Airbus collaborate to assess superconducting technologies for future zero-emission aeroplanes.

Collaborative R&D


CERN
CERN
Venture Connect

Startups and Spin-offs



InsightART: Using CERN Medipix detector to analyse art.

License

Startup TIND: Digital archive, library management and preservation.

License

License

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

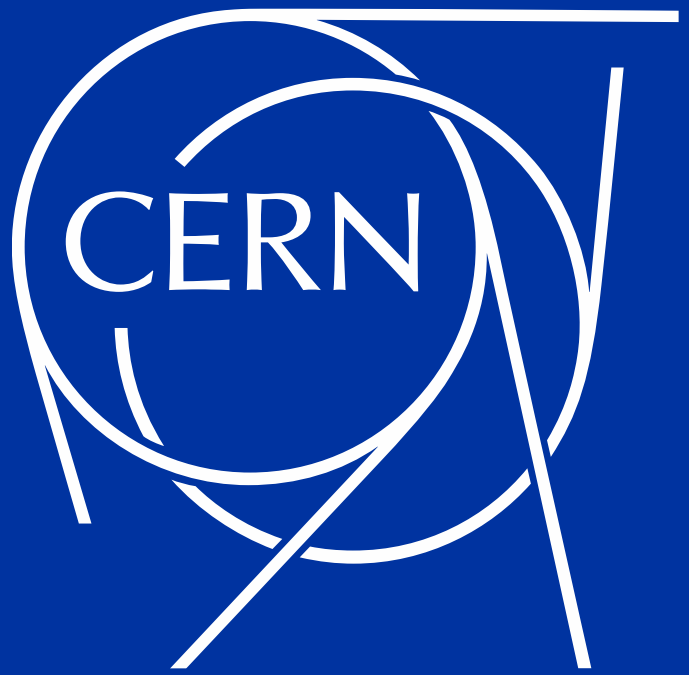
License

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

Key lessons learned when innovating together

- CERN is strong in the ‘extremes’ of the technology scale
- You need passionate experts on both sides to succeed
- Start with a concrete project and clear business need
- Mind the gap – in language, ‘clockspeed’ and culture
- Driving deep tech innovation requires courage

Be aware… magic may happen!



THANK YOU!

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kt.cern