

As oportunidades para a indústria portuguesa no CERN

Opportunities for Portuguese Industry at CERN

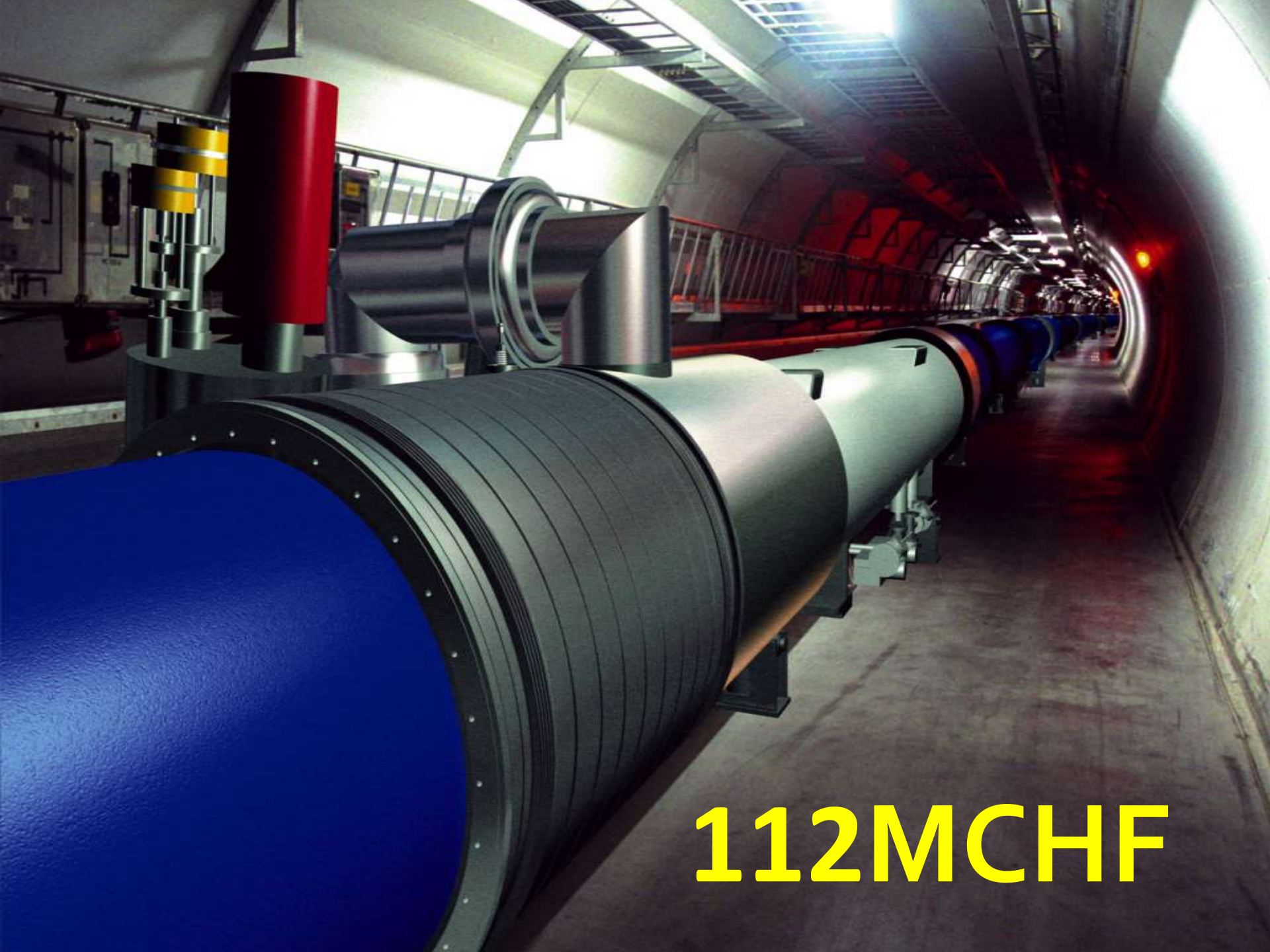
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Outline

1. Successful stories of Portuguese Industry at CERN
 - Three examples: Multinational, SME, Start-up
2. To be a CERN successful supplier company
3. Opportunities for industry



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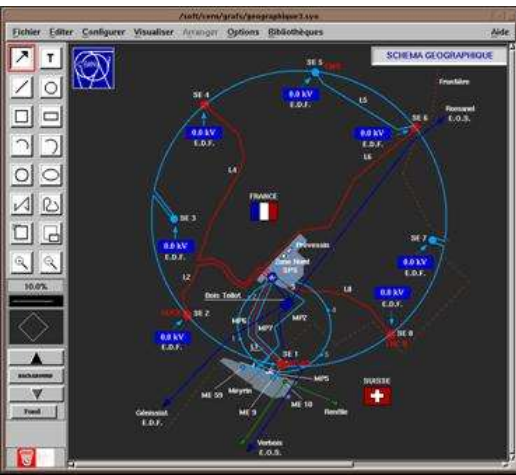
Successful stories

Example 1 – Multinational



EFACEC

www.efacec.com



Network Management

Network Optimization, Energy Management and Operations Management (Forecasting, Short circuit analysis)

SCADA System Operation

Control and Supervision of Electrical Substation Information; Alarms and alerts received in real-time for situational awareness and decision support; Historic Data archiving and Reporting support.

Field Automation

Protocol translation to IEC60870-5-104 from different third party IEDs using multiple communication protocols, high reliability, local archiving and local human machine interface, Clock Synchronization.

Power Supplies

Auxiliary power supplies for the LHC (Large Hadron Collider) particle accelerator. PS booster multipole correction magnets. Linac 2/3 & PSB transfer lines.

Converters for LHC

Four quadrant power converters. DC switch mode converter modules. Power converters modules (MaxiDiscap and MiniDiscap). AC/DC-DC converter modules. MAXIDISCAP power converter up to 1kV.

Successful stories Example 2 – SME



SIROCO, S.A.
SOCIEDADE INDUSTRIAL DE
ROBÓTICA E CONTROLO

www.siroco.com.pt



**High precision copper
machining**

Machining of Precision

- Prototype manufacturing
- Tools and accessories manufacturing
- Execution of small and medium series

Industrial Equipments

- Industrial automation solutions
- Assembly lines
- Robotized cells
- Automatic testing systems
- Others according customer request

Successful stories Example 3 – **Start-up**



"doDOC helps researchers streamline scientific writing and collaboration, so they can focus on the science!"



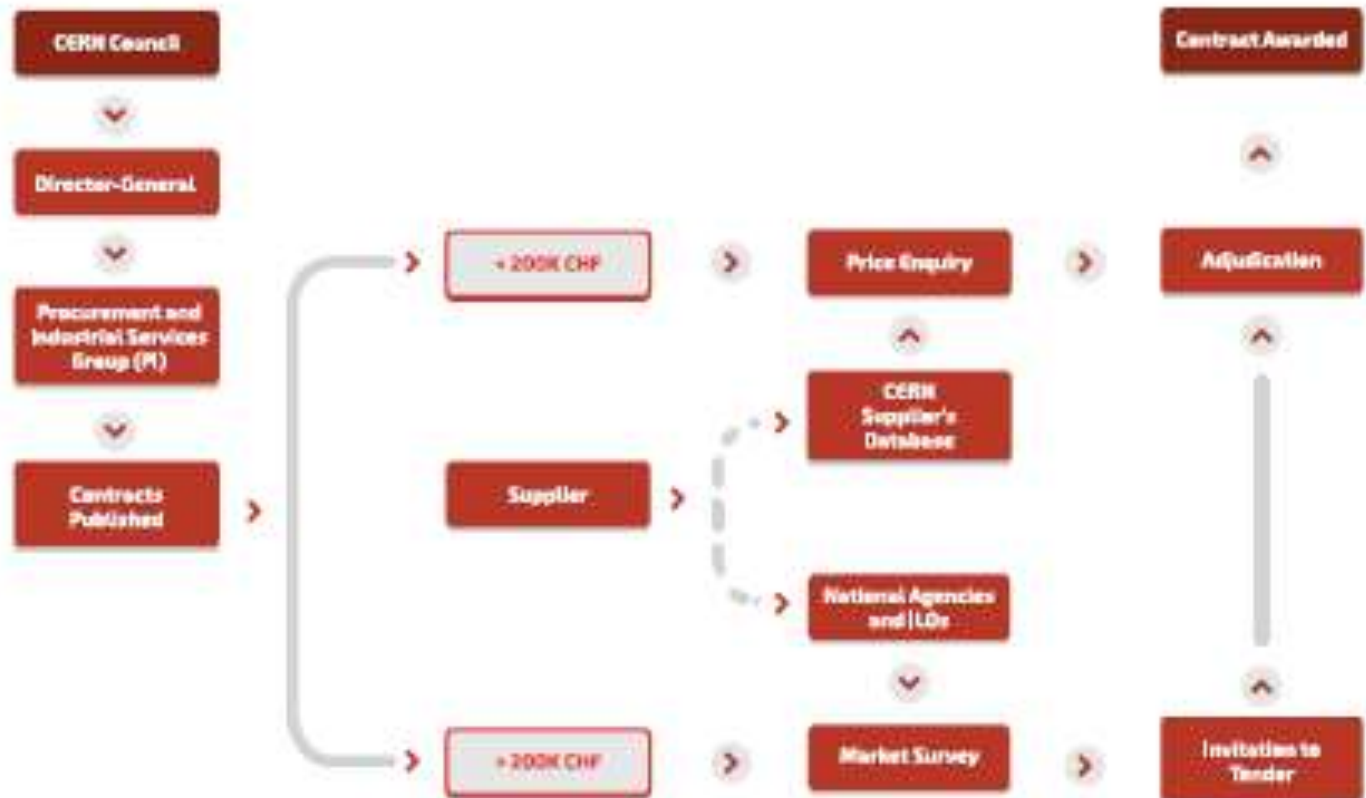
The consortium chose doDOC to:

- Collaborate in a single platform
- Automate project and document workflows
- Securely access granular information
- Have complete oversight of all documents

2. To be a successful CERN supplier company

Must comply with the rules of a well established

PROCUREMENT PROCESS



However, 3 issues a company must truly consider

- Allocate the **best qualified human resources** to start discussions with CERN (*with proven technical experience and qualifications*)
- Be ready to **invest (time and money)** before any commercial supply/service contract is won with CERN
- Understand that CERN is not a typical market, but
 - **An Innovation platform for the future**
 - **A reference that represents**
 - **Uniqueness, Challenge and Elevated Quality**

Outcomes of contracts with CERN

(based on results of impact study, survey of more than 600 companies)

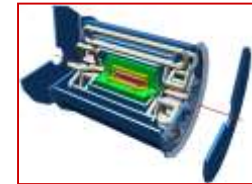
- 38% had developed new products
- 60% acquired new customers
- 44% improved technological and technical learning
- 42% increased international exposure
- **All consider the CERN reference as strategic for their business**

CERN Research Ingredients

Accelerator



Experiments



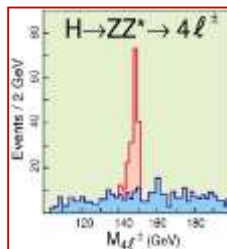
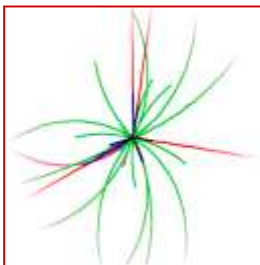
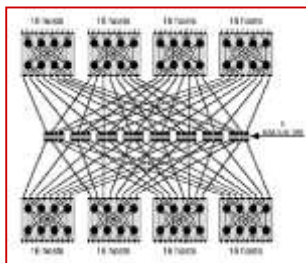
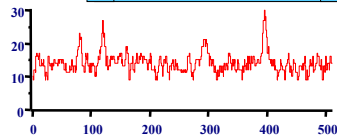
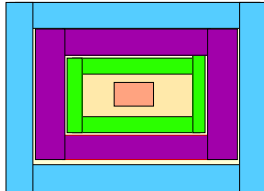
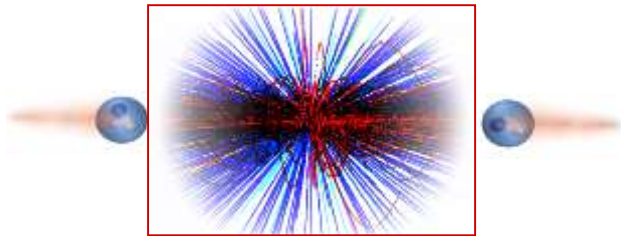
Measurements and selection



Data communication



Data processing



3. Opportunities for industry

- **What CERN buys** – recurrent supplies and services

Civil Engineering	Buildings, roadworks
Utilities	Cooling & Ventilation Power Distribution, cables
Infrastructure & Services	Metal Structures Mechanical Engineering Radiation Shielding Transport & Handling Safety & Access Control
Installation, operation & maintenance	
Data Acquisition, computing & networking	
Various supplies	Furniture, tooling, etc...

- **What CERN buys** – accelerator technologies required for consolidation projects and new developments

Industrial controls

Beam collimation

Beam injection, ejection & dump

Radio-frequency equipment

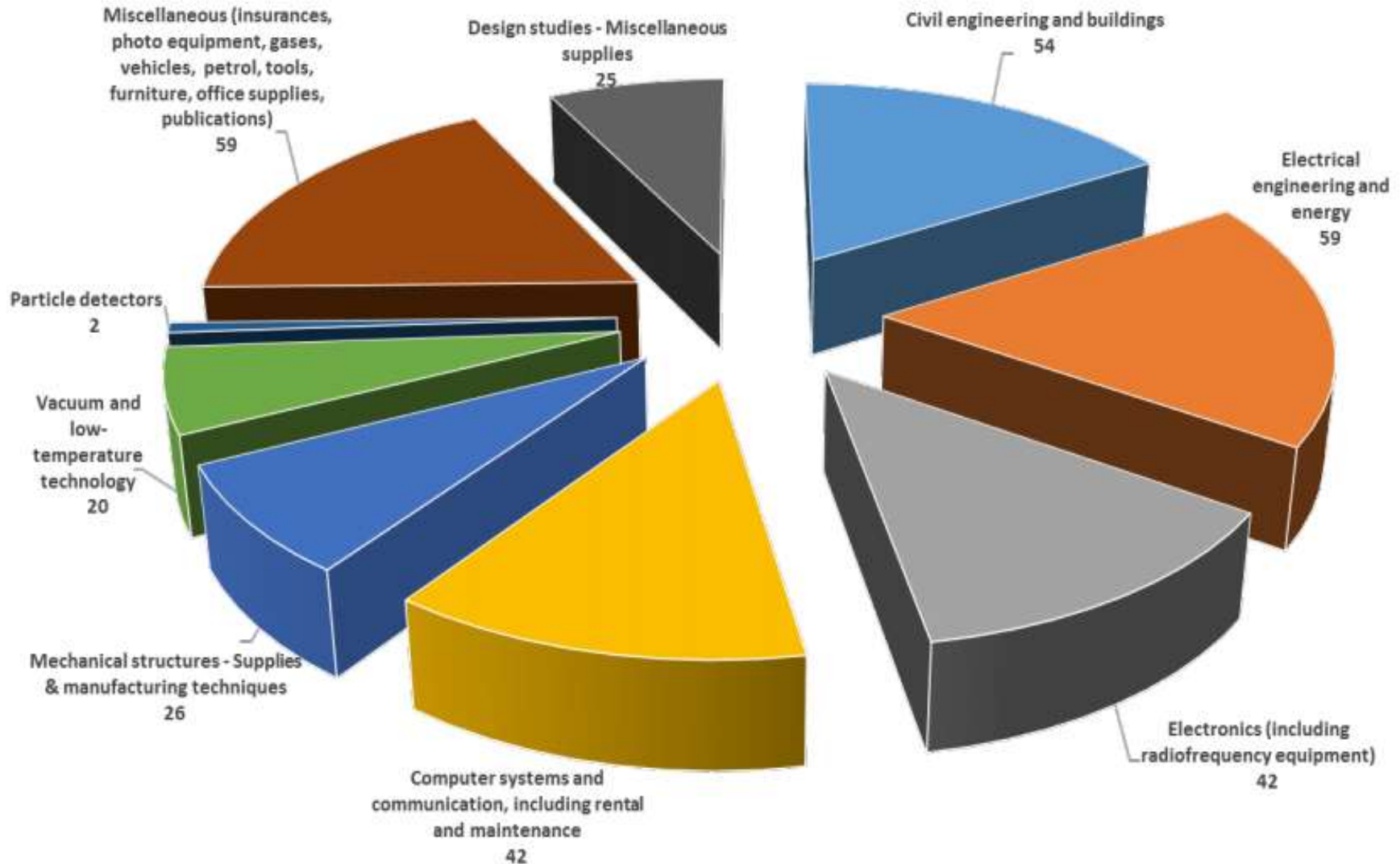
Power converters

Beam instrumentation & diagnostics

Cryogenic equipment

Electronics & Micro-electronics

(2014) Distribution procurement



The next 10 years, opportunities for industry (2016-2026)

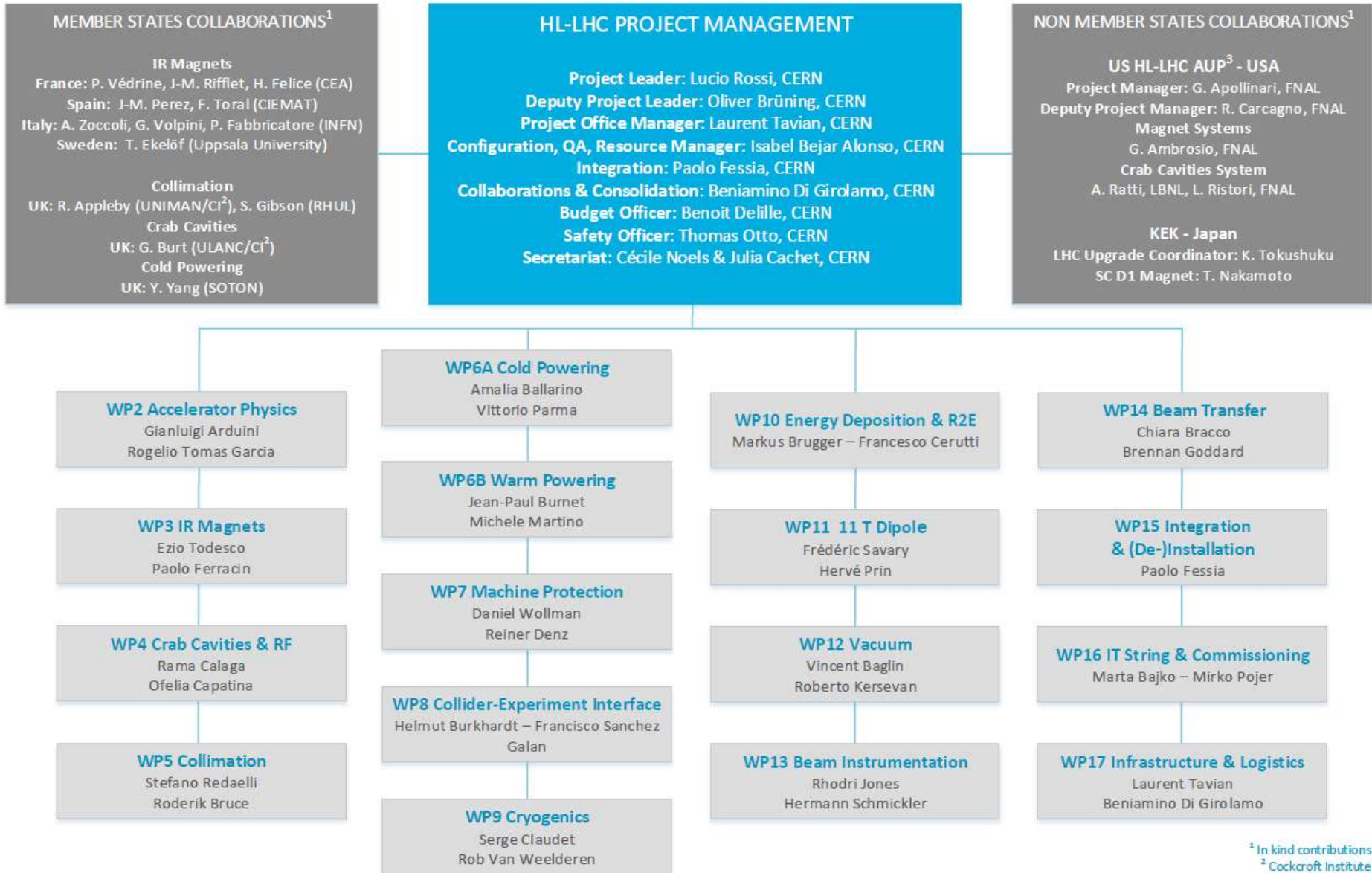
LHC Detectors Upgrade (CMS, ATLAS, ALICE, LHCb)	LHC Injectors Upgrade	High Luminosity LHC
<p>Various technical areas (Electronics, Micro-Electronics, Detector cooling, Electrical services, cooling and ventilation, cranes, optical fibres, fast readout electronic systems “rad-hard”, new detectors, data center, etc...)</p>	<p><i>Linac 4</i> <i>Interface Linac 2-3-4 in the PS switch yard</i> <i>Linac 3 (ions upgrade)</i> <i>PS Booster</i> <i>PS machine</i> <i>Surface of the PS complex</i> <i>SPS machine</i> <i>SPS to LHC Transfer Lines</i></p>	<p><i>Magnets</i> <i>RF & Cryo-lines</i> <i>Collimation</i> <i>Collider-Experiment Interface</i> <i>Cryogenics</i> <i>Vacuum</i> <i>Beam diagnostics</i> <i>Beam transfer and kickers</i> <i>Civil Engineering</i></p>

HL-LHC (High Luminosity LHC)

- The necessity to upgrade the LHC (**increase its luminosity – rate of collisions by a factor of 10**) has given rise to the HL-LHC project. HL-LHC relies on a number of key innovative technologies, representing exceptional technological challenges, such as **cutting-edge 13 Tesla superconducting magnets...**



High Luminosity LHC Project



¹ In kind contributions

² Cockcroft Institute

³ US HL-LHC Accelerator Upgrade Project



- **The High Luminosity project seeks industrial suppliers and collaborations to start the construction phase and make the High Luminosity upgrade.**
- CERN aims at fostering R&D collaborations and knowledge exchange also with SMEs, a perfect opportunity to match their capacity with the requirements of HiLumi.
- **Next 4 years there will be intensive prototyping and the production of some of the first series of components.**
- Understanding our needs is the first step to tender successfully.
- Understanding your capabilities and the know how that could come from industry is the best way to specify equipment that can be built by industry

Announcement

- It is presently being discussed with CERN the organization of a HL-LHC Industry Day in Portugal (Lisbon) on the 31st of October 2016
 - *Expected the participation of European industry (~ 300 participants)*
- The ideal venue to learn about the technical challenges of the HL-LHC and discuss with CERN experts through bilateral meetings
- Unique opportunity for Portuguese industry to explore and continue the business and technological connections with CERN

Useful links

- Doing business with CERN:
<https://procurement.web.cern.ch/announcement/doing-business-with-cern>
- HL-LHC: <https://project-hl-lhc-industry.web.cern.ch>

Thank you.