CAEN Presentation

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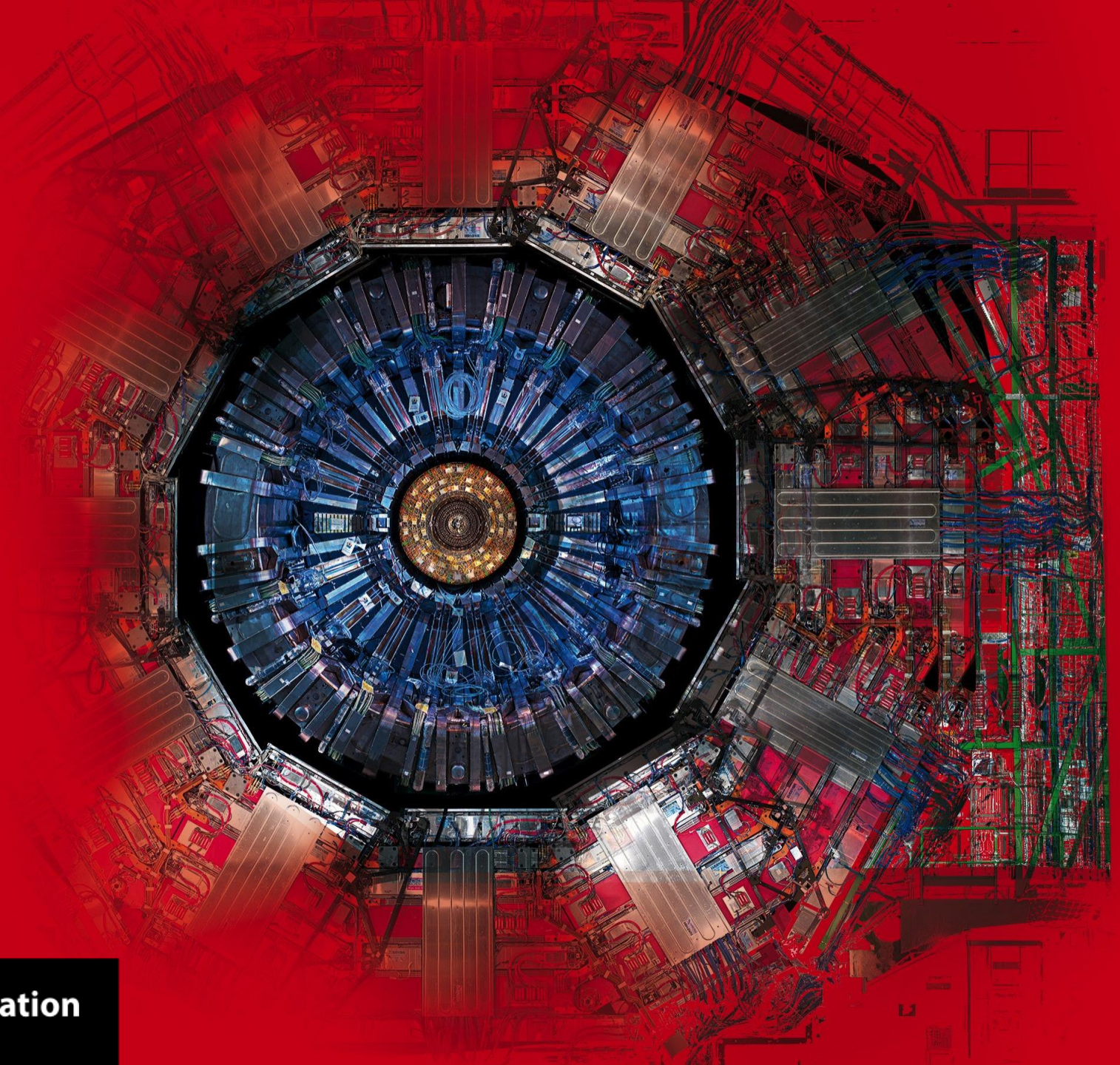
CAEN
Tools for Discovery

Electronic Instrumentation

40 YEARS OF INNOVATION 1979-2019

Company Overview



CAEN Electronic Instrumentation

Tools for Discovery

Milestones 1979-2022

1979
CAEN established in Viareggio by a group of senior engineers from INFN

1986
First High Voltage Power Supply System (400.000 HV channels delivered worldwide in 30 years)

1991
CAEN started VME design for nuclear market (1991-2016: 600.000 FE & DAQ channels delivered worldwide)

1994
CAEN Microelectronics
spin-off

1996
CAEN Aerospace
spin-off

1997
UNI EN ISO 9001 quality certification

1998
Started electronic design for LHC/CERN experiments (1998-2016: 8.500 electronic devices 250.000 boards/ sub-boards)

2001
UNI EN ISO 9001: Vision 2000

2003
CAEN RFID
(Radiofrequency Automatic Identification)
spin-off

2005
CAEN Technologies Inc.
a CAEN branch company in the US

2006
CAEN GmbH
a CAEN branch company in Germany

2010
CAEN ELS
(Accelerator Electronic Instrumentation)
spin-off

2012
CAEN qS
(Cyber Security)
spin-off

2016
CAEN SyS
(Systems and Spectroscopy Solutions)
spin-off

2019

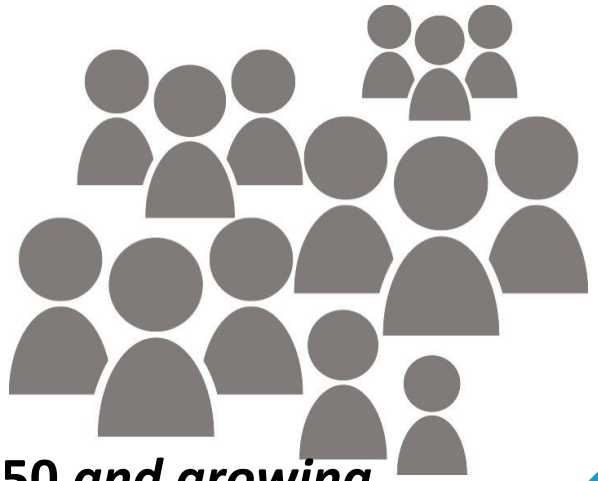
Network of Companies

Founded in 1979, CAEN SpA (Costruzioni Apparecchiature Elettroniche Nucleare) is an important industrial spin-off of the INFN.

Core business: Electronic Instrumentation for physics experiments (world leader)

CAEN incubated and launched:

> CAEN Nuclear (1979)
> Aurelia Microelectronics (1994, *Sold in 2010*),
> CAEN Aerospace (1996, *Sold in 2010*),
> RFID (2003),
> CAENels (2010),
> CAENqS (2012),
> CAEN SyS (started in 2016)



Total Employees: 150 *and growing*

Worldwide presence

Worldwide sales network offices in Italy, Germany, USA, Distributors in more than 30 countries.

Portfolio: > 5000 customers

Customers Include all world leading research centres as:

- **Europe: CERN, INFN, CEA, CNRS; GSI, ESO, ISIS, Ganil, PSI, …**
- **USA: FNAL, SLAC, Los Alamos, BNL, Jlab, …**
- **Asia: J-Park, KEK, Riken, IHEP, TIFR, …**
- **Africa: iThemba Labs, …**

And private companies:

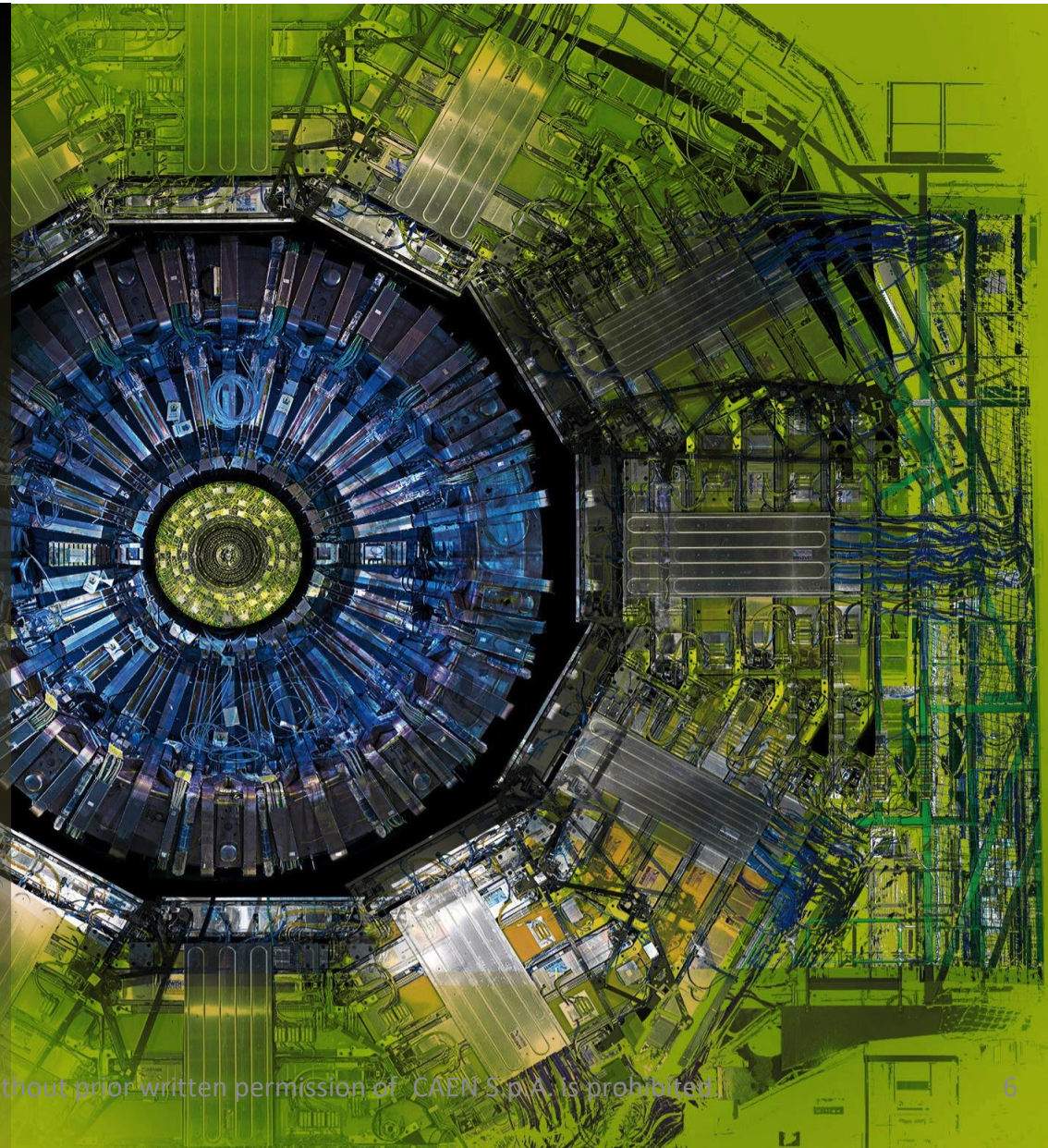
- **GE, Siemens, SAIC, L3, Raytheon, Lockheed…**

Market

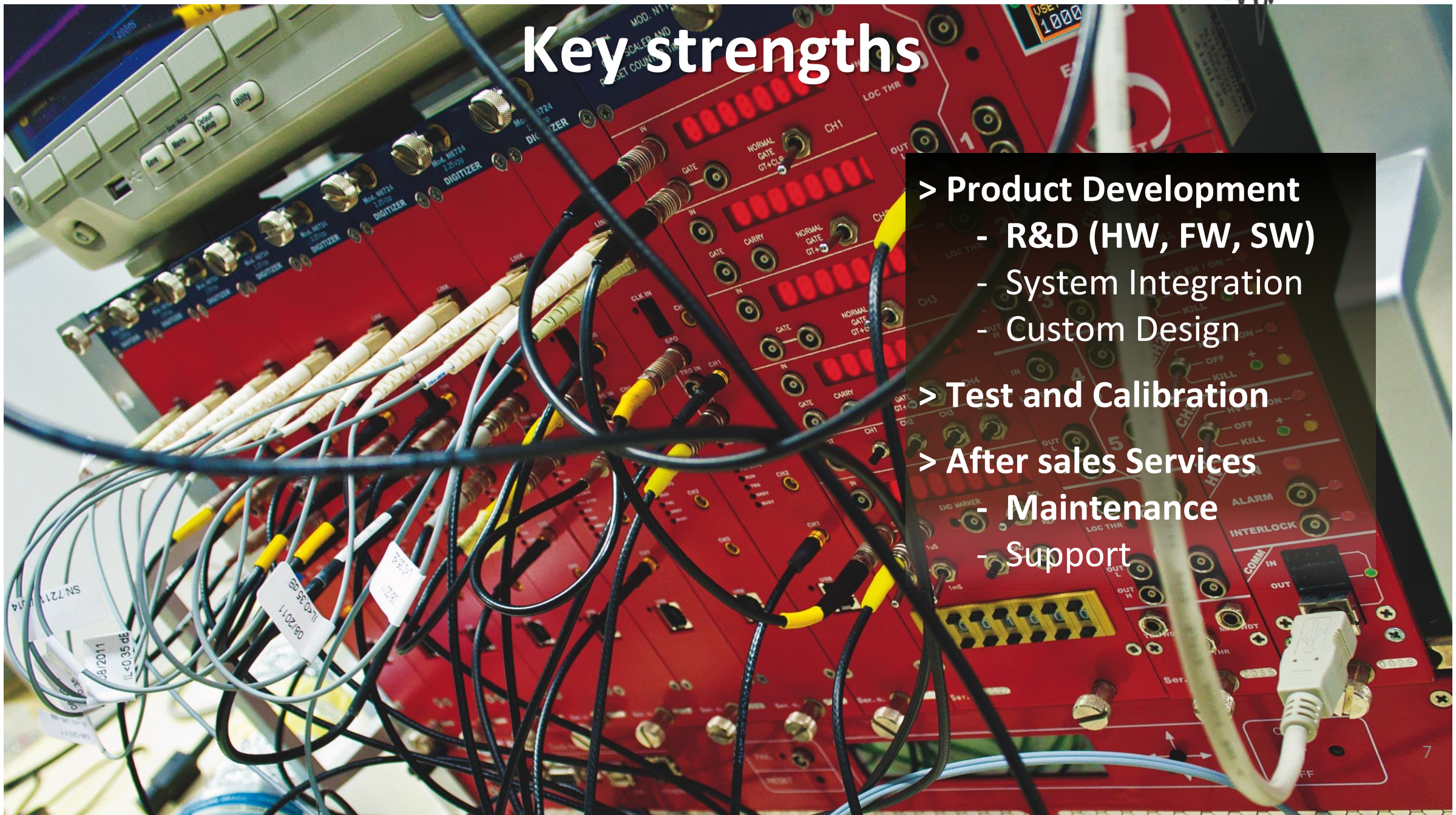
For more than 40 years CAEN has been providing Scientists and Engineers with the most advanced electronic instrumentation for any particle or radiation detectors

Strong of an extremely close collaboration with the world major research laboratories CAEN is proud to produce the best tools for:

- **> High Energy Physics**
- **> Astrophysics**
- **> Neutrino Physics**
- **> Dark Matter Investigation**
- **> Nuclear Physics**
- **> Material Science**
- **> Medical Applications**
- **> Homeland Security**
- **> Industrial Applications**



Key strengths



> **Product Development**
- **R&D (HW, FW, SW)**
- System Integration
- Custom Design

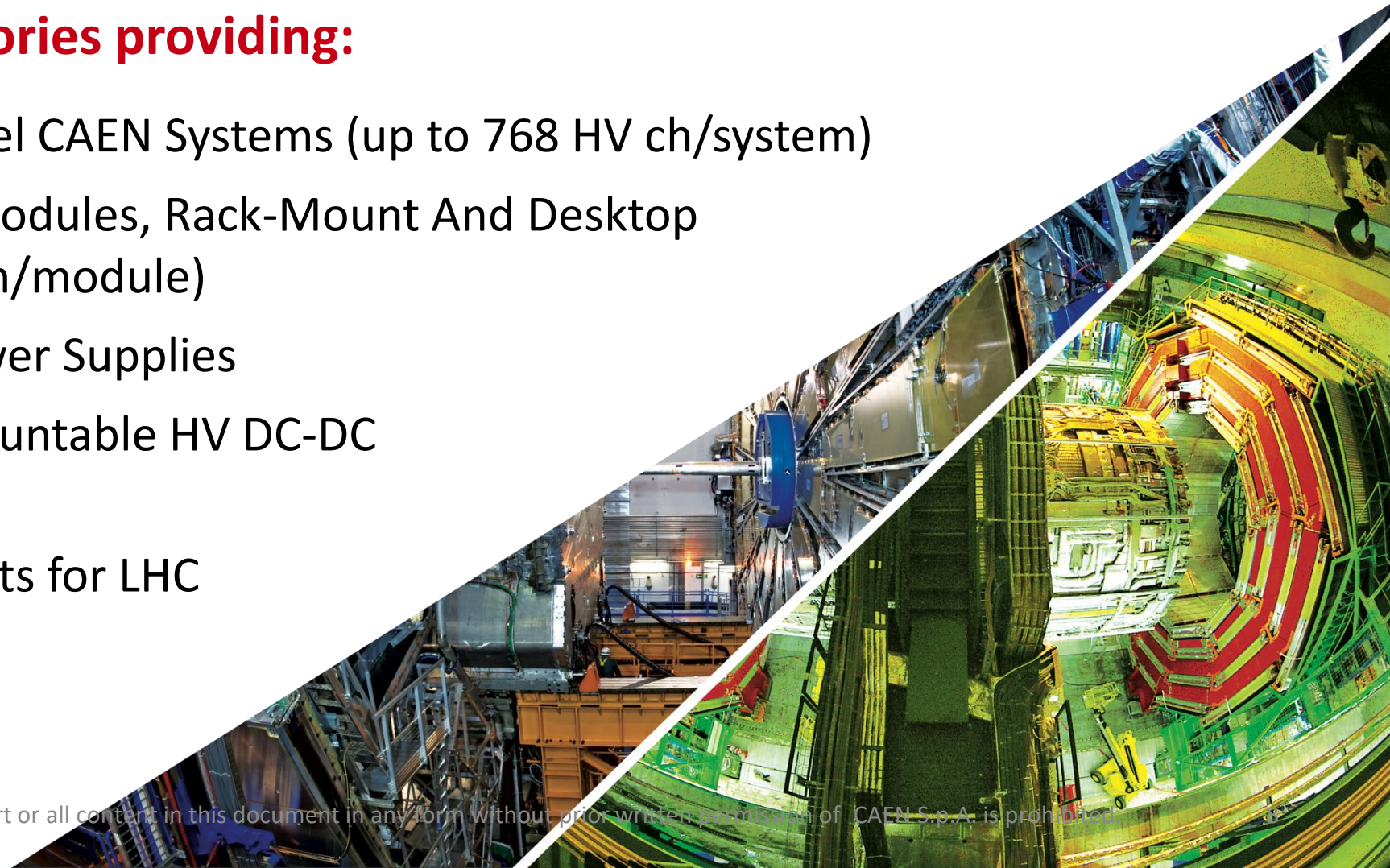
> **Test and Calibration**

> **After sales Services**
- **Maintenance**
- Support

Power Supplies Expertise

High Voltage & Low Voltage Power Supplies for Particle Physics Experiments and Laboratories providing:

- Integration: Multi-Channel CAEN Systems (up to 768 HV ch/system)
- Granularity: NIM, VME Modules, Rack-Mount And Desktop Devices (from 1 ch to 8 ch/module)
- Custom: Stand-alone Power Supplies
- HV Components: PCB mountable HV DC-DC converters
- Hostile Area developments for LHC



Pulse Processing Expertise

Signal Conditioning, Read-out Electronics - interface between the experiment and the scientist: from detector signals to visualization of data!

- Waveform Digitizers & Digital Pulse Processing
- FPGA algorithms for the Digital Pulse Processing
- Analog Pulse Processing
- Programmable Trigger module
- Multichannel Analyzer
- Preamplifiers
- Custom project