



PLC BASED CONTROL SYSTEMS ICALEPCS'17 WORKSHOP

E. BLANCO

PLC based control systems at CERN

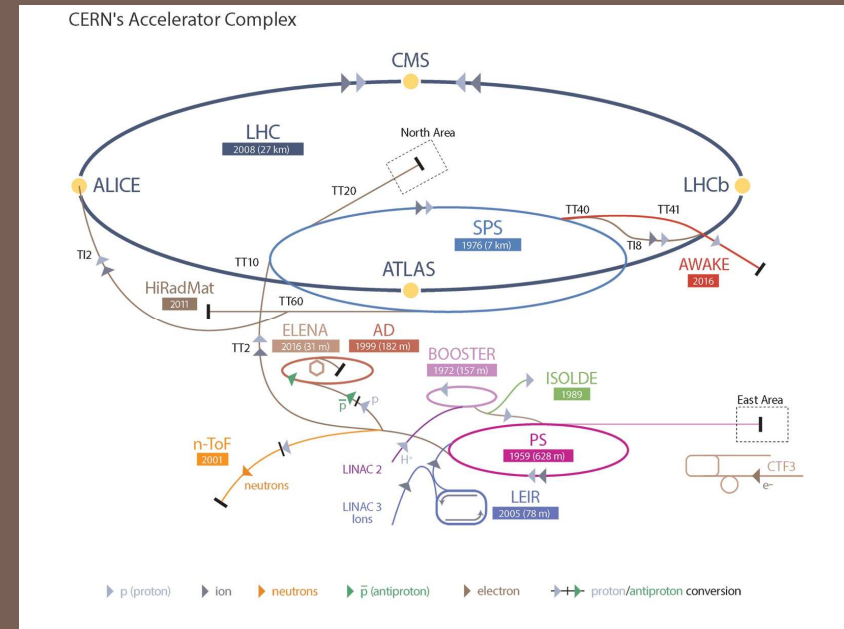


□ CERN mission

- ▣ To perform world-class research in fundamental physics
- ▣ To provide a unique range of particle accelerator facilities that enable research at the forefront of human knowledge

□ Key figures

- ▣ Budget 1100 MCHF
- ▣ 22 member states
- ▣ 2500 Staff + 1800 Associates + 13000 users + 2000 External firms



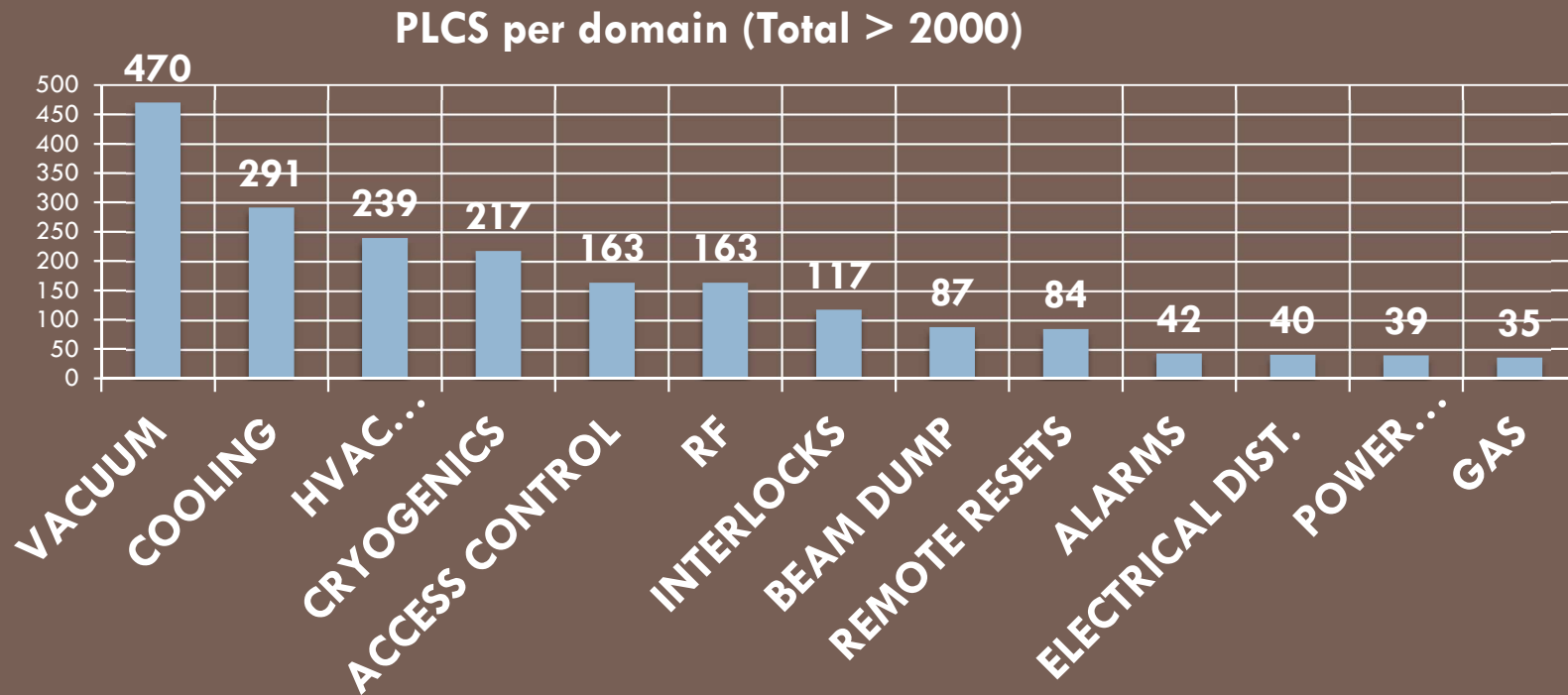


PLC inventory by domain *(fairly accurate)*

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Not including Twido's from EN-EL, S7-200 TE-VSC

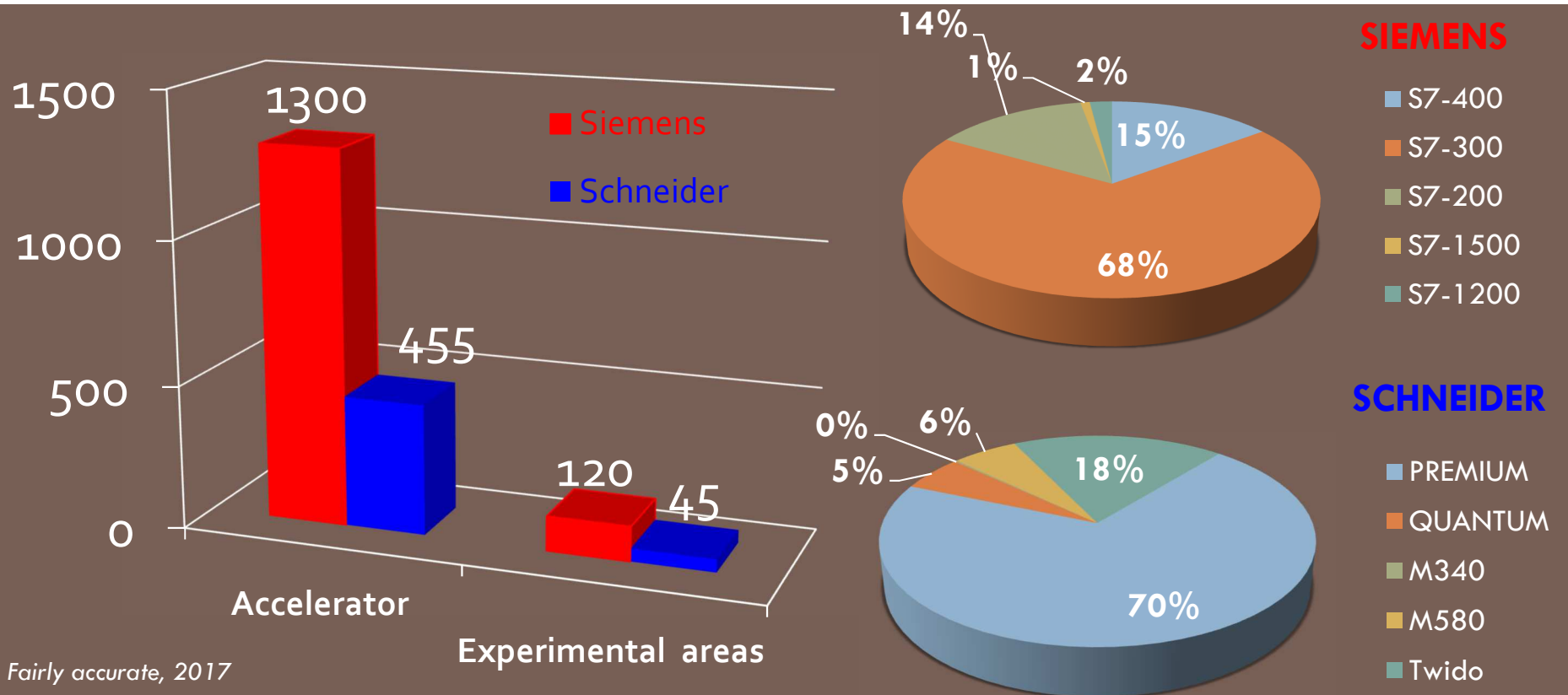


PLCs inventory at CERN

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PLCs use: applications

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Classic PLCs

- Cryogenics (Accelerator and experimental areas)
- Gas systems (LHC GCS, Linac4, Cloud...)
- Cooling systems
- HVAC
- Motion: servo-motors and Stepping motors
- RF
- Vacuum
- Electrical systems
- Protection & Interlocks (PIC, SPS Power converters interlocks, Collimators Temperature Interlocks)
- Monitoring: RAMSES, CSAM

Fail safe controllers : Safety Integrated

- Access Control
- Machine-tools sector (e.g. Winding machines)
- WIC: Warm magnets interlocks
- Cranes control
- AWAKE, Magnet test benches
- Autonomous Mobile Equipment: TIM

Redundant systems

- Protection in experimental areas: DSS
- Electrical systems
- HVAC
- Power converters



Experience with suppliers

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- More than 18 years of experience
 - There is not a perfect supplier but a **satisfactory** supplier
 - Lack of competition between suppliers is not healthy... as long as you can afford it.
 - Despite being a rather conservative technology segment (OT vs. IT), the supplier must follow tendencies (desirably without imposing continuous upgrades)
 - A strong and reactive technical team must be behind the curtains (commercials are not enough)
 - The **key** is not having suppliers but **partners**



UNICOS-CPC Engineering life cycle (PLC apps)

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