CERN Cooling system control

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Work distribution

- 4 members
- 3 nationalities
- 3 fields of study — Distribution
- 2 separate parts
- 1 goal

Problem Statement

7700 **servers**

3300 **servers**

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1 group

15 racks

2 sets

Fans/actuators
PLCs
Temperature sensors
Humidity sensors
Fire sensors

System sum up

Field level

Control level

Supervision level

Management level

P&ID

Comunication

- **Fieldbus ✉ PROFIBUS**

- **Ethernet for high level**

Hardware

Cost estimation

Security analysis

- # Reliability
  ### Redundancy

- # Cybersecurity
  ### Segmentation   Encryption
  ### Firewalls
  ### Restricted accesses
  ### Scans   Updates   Audits

Conclusion

- **Efficient**
- **Safe**
- **Reliable**

Cooling system

Questions?