

PLCs @ ELBE Accelerator Controls

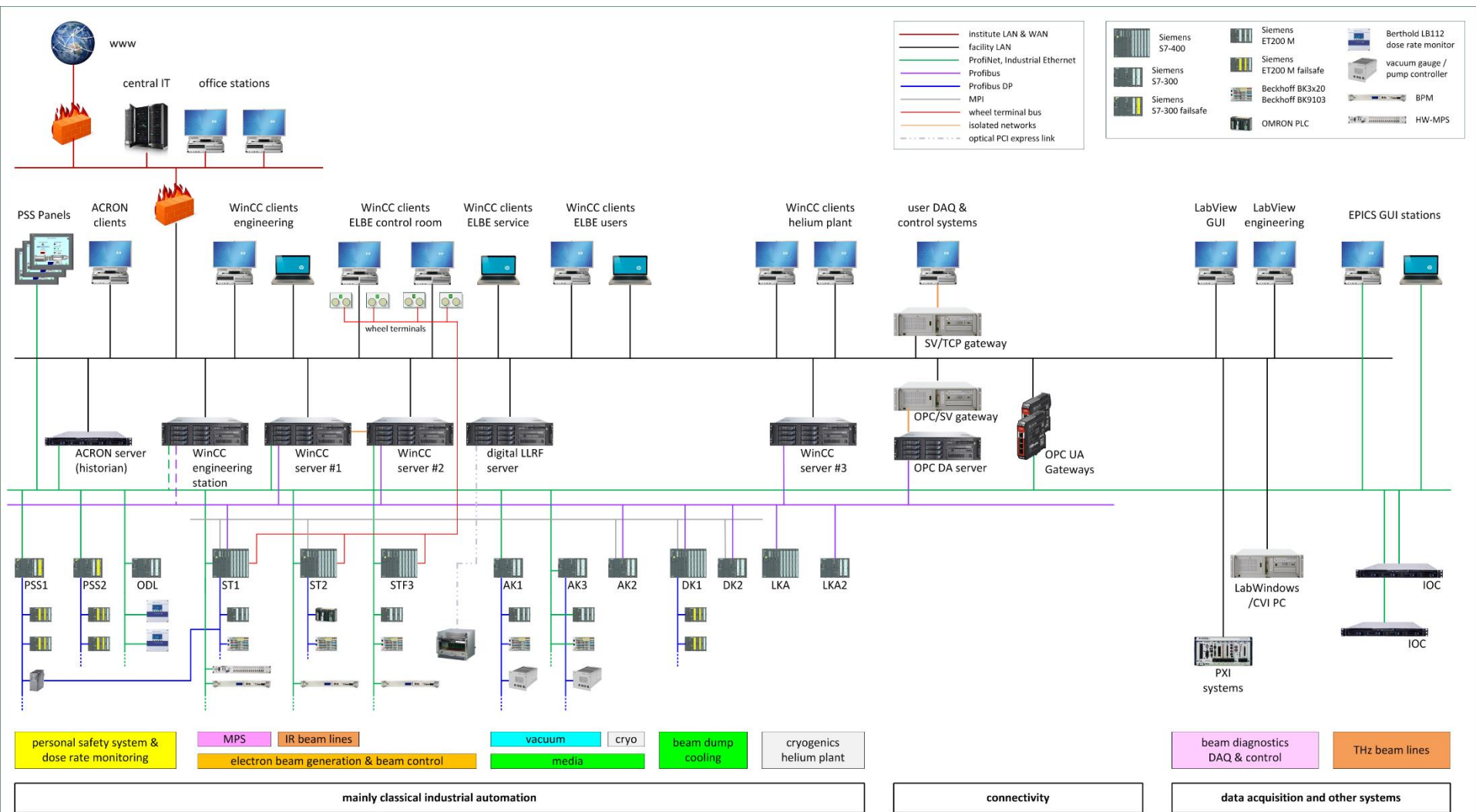


hzdr



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ELBE Control System - Overview



ELBE Control System – Facts & Issues

PLCs

- 25 PLCs
- main PLCs: Siemens S7-300/400 (beam control, vacuum, PSS, MPS)
→ Step7 V5.5...V5.7
- newer subsystem PLCs: S7-1500 or ET200SP
→ TIA Portal V15...V17

Fieldbus

- Profibus
- Profinet
- Siemens and Beckhoff distributed I/O

SCADA System

- WinCC V7.5 with redundant server and ~25 clients, 35k PVs
- separate similar system for He-Plant

Fast DAQ

- NI / LabView RT

ELBE Control System – Facts & Issues

IT Infrastructure

- Windows dominated
- SCADA network separated from institute LAN
- separated control networks (industrial ethernet)

MPS (TUPDP021)

- PLCs
- in-house built fast hardware systems

PSS

- Safety PLCs
- panels
- dose rate monitoring with separate historian

EPICS

- small system for THz optical beamline controls

Connectivity

- OPC DA (fading out)
- OPC UA
- Gateways to BACnet (building infrastructure)

ELBE Control System – PLC issues

DALI (Dresden Advanced Light Infrastructure) is emerging

- CDR has just been written and submitted
- ELBE remaining lifetime will be ~8...10 years
user operation fading out over the last 3 years of this time
- S7-300/400 are becoming legacy (will still be supported for a while)
→ will probably not do a full replacement of the ELBE PLCs at ELBE
→ spares contractors are being evaluated
- Step 7 V5.x and WinCC V7/8 may be fading out during that time
→ will have to live with some not-up-to-date

Ideas/Questions/Requirements for DALI:

- EPICS seems to be CS framework of choice
- PLC vendors evaluation
- vendor independent PLC code and rack design
- higher level languages (→ git; versioning)
- automatic code generation (cost-benefit-ratio ?)
- PLC system & fieldbus monitoring
- asset management