



Controls for Technical Services Session Summary

- ◆ 08:40 Electricity Distribution S. Poulsen
- ◆ 09:10 Cooling and Ventilation H. Jena
- ◆ 09:40 Radiation Monitoring G. Segura Millan
- ◆
- ◆ 10:30 Level 3 Alarms L. Scibile
- ◆ 11:00 Personnel Access E. Cennini
- ◆ 11:30 Technical Services Communications P. Sollander

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1



Topics

- Major User Requirements
- Proposed architecture
- Major technical choices, outstanding issues
- Infrastructure requirements (location, technical services, control system services, communications ...)
- Plans for installation and commissioning
- Milestones for the work

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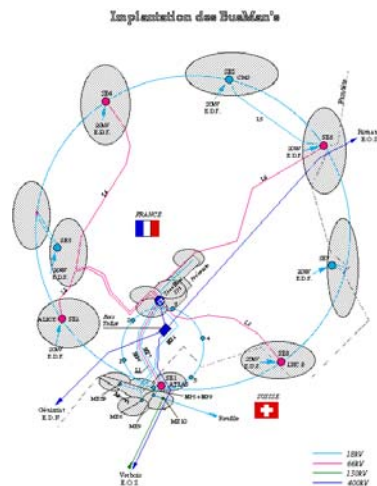
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Electrical Network Supervisor

S. Poulsen

- ◆ **Centralized**
 - SCADA applications
 - Configuration and logging databases
 - Web services
 - Integrated in TCR
- ◆ **Distributed**
 - Data acquisition interfaces (front ends)
 - Serial lines to equipment
 - Field-buses
- ◆ **Electronic equipment interfaces**
 - Digital input
 - Analogue input via transducers (limited usage)
 - Output



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ENS Planning

- ◆ **SPS**
 - Partial installation (no complete SPS renovation yet)
 - BA4 completed, BA7 planned for 2003
 - SPS electrical renovation not yet funded
- ◆ **LHC**
 - Surface buildings completed by September 2003
 - Underground not yet started – limited installation
 - Some LEP equipment still operational in alcoves!
- ◆ **Meyrin**
 - Planned for shutdown 2003-2004

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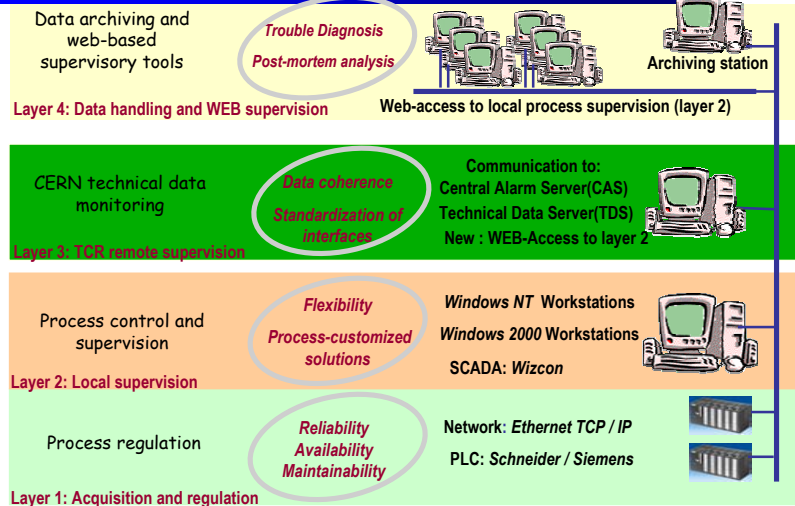
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CV Control System Architecture

H. Jena ST-CV



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ST/CV Projects and Contracts (running and terminated)

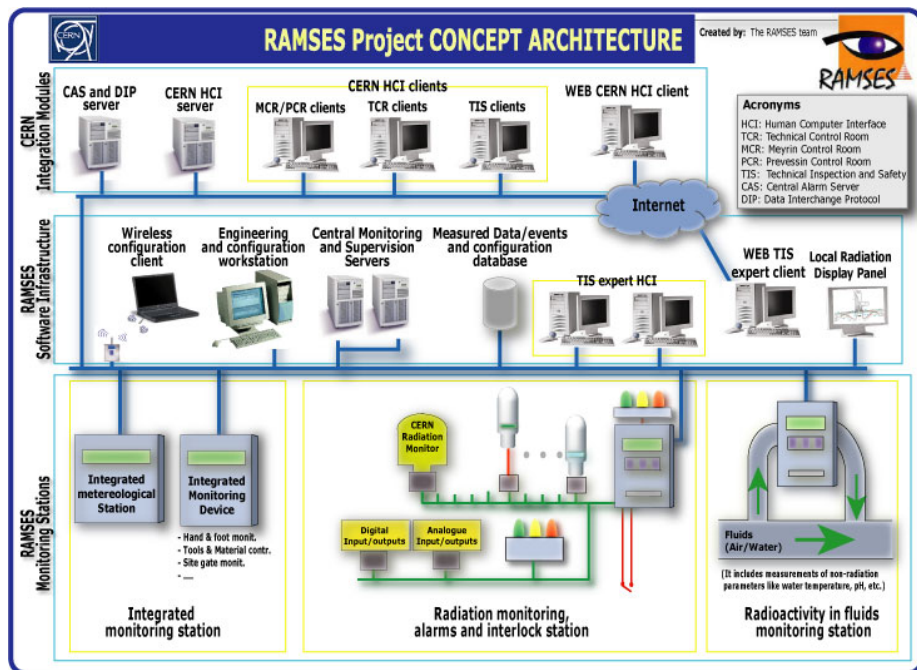
- F - 292 New pumping stations for LHC experimental points 1 & 5 (2002)
- F - 300 Air conditioning of new LHC surface buildings (1999-2004)
- F - 310 Chilled water production for LHC experimental points 1 & 5 (2003)
- F - 405 Air handling installations for two experimental areas ATLAS / CMS (2004)
- F - 480 Supply and installation of air-conditioning for the SCX 1 building (2004)
- F - 472 Hydraulic, electrical and control modifications of LEP water cooling (2004)
- F - 478 Supply and installation of underground cooling plants for ATLAS (2003)
- CA-1281377 Ventilation of ALICE Control room (2003)
- CD-1000869 Supply and installation air extraction for T12 and T18 injection tunnels (2003)
- CD-1000931 Demineralised water circuits for CMS surface tests (2003)

Examples for some projects (PLC configuration and SCADA Mimic Diagrams) ...

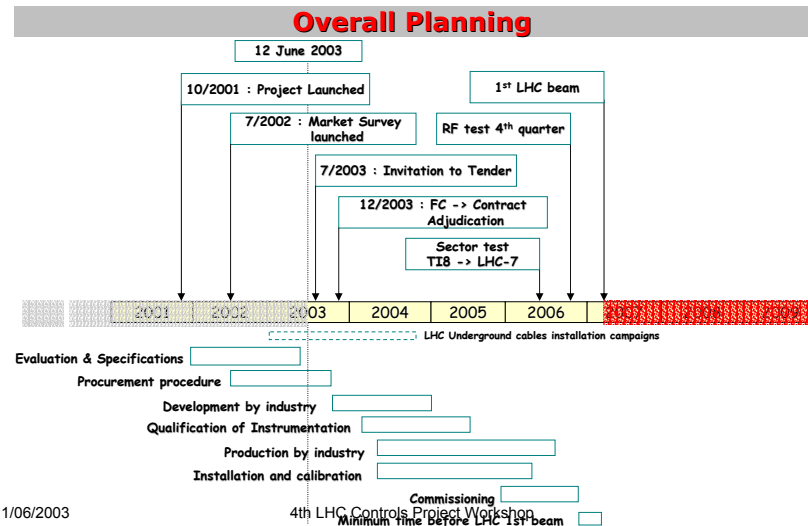
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RAMSES project



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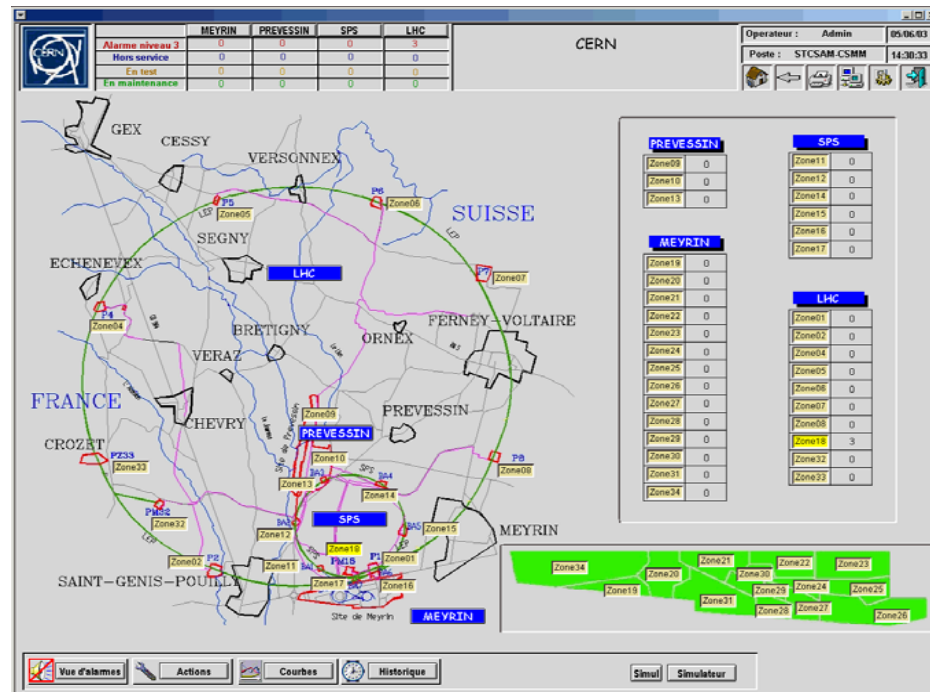


CERN Safety Alarm Monitoring system

L. Scibile



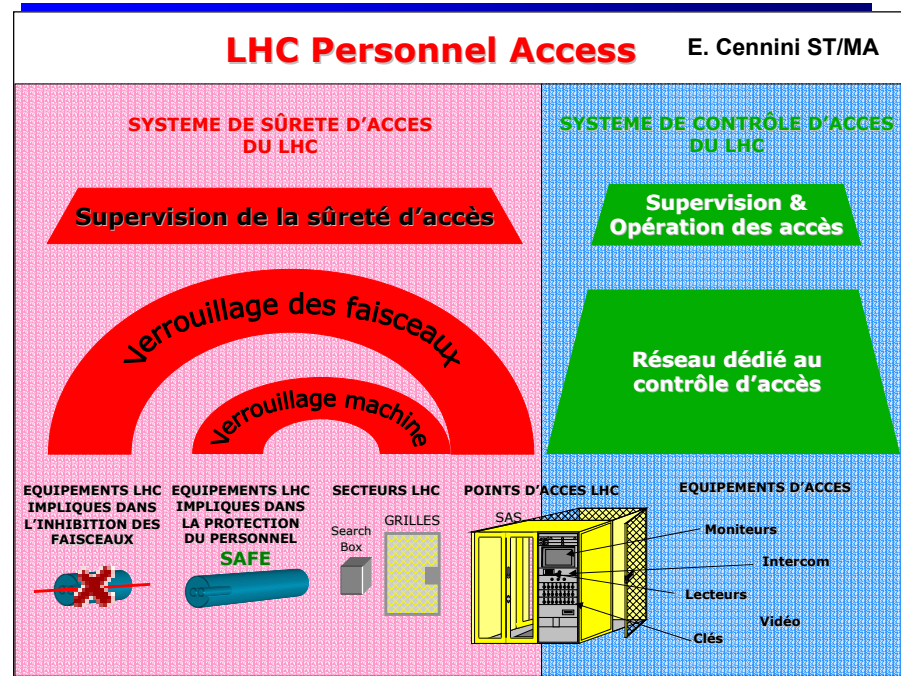
- ◆ The safety alarm monitoring systems included in the ST/MA deliverables are:
 - The SCR and TCR central monitoring systems
 - All LHC safety zones (10) alarm acquisition and display systems
- ◆ Main Functions:
 - A local monitoring from the 10 LHC safety zones
 - Fire Brigade central monitoring, archiving, display and reporting
 - Non-interruptible 24h/365d system based on redundant networks
 - Specific human computer interfaces and tools for the alarm handling



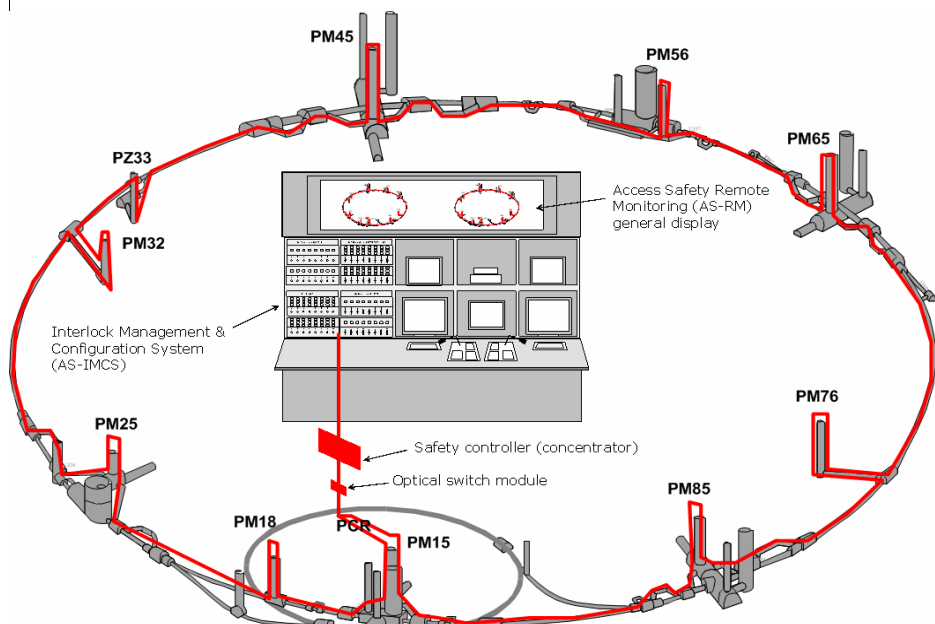
Milestones for the work



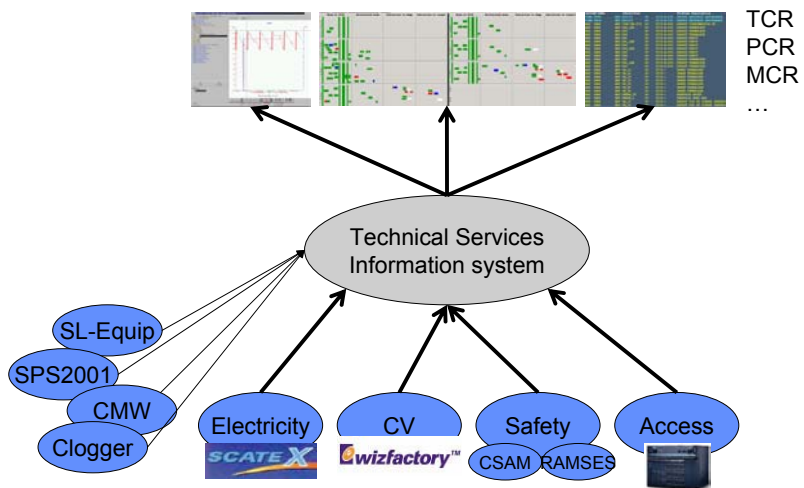
- ◆ Detailed design completed by September 2002
 - Safety validation of proposed architectures
 - ◆ System realisation completed by January 2003
 - Practical integration of all the safety systems in CSAM
 - ◆ Pilot installation in SM18 in June 2003
 - ◆ CSAM running in background until October 2003
 - ◆ Acceptance Testing by October 2003
 - ◆ If acceptance successful
- CSAM OPERATIONAL in SCR and TCR**
- ◆ After First Acceptance - One LHC point per month



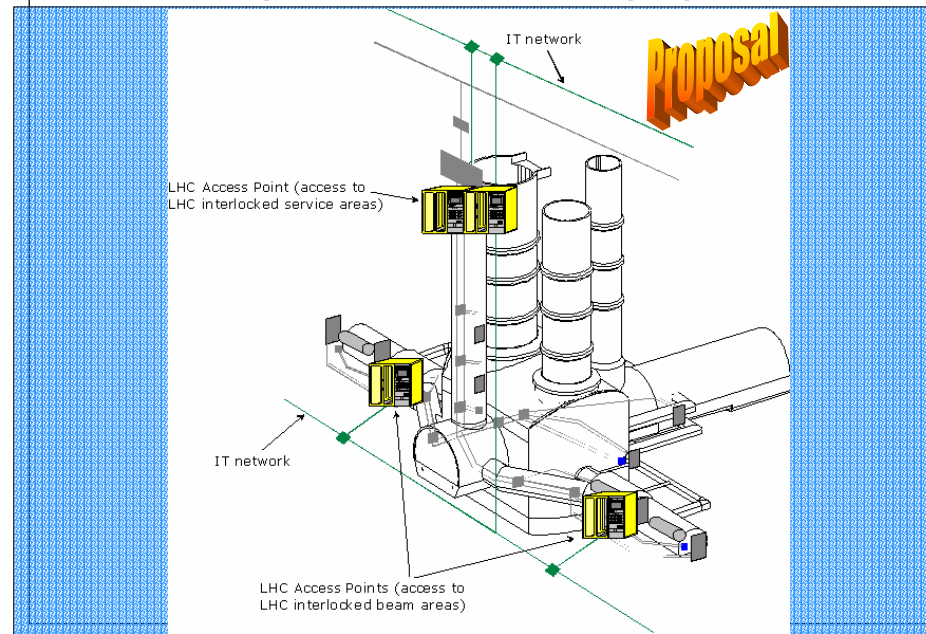
Architecture du système de sûreté d'accès (Control Room)



Technical Services Communications

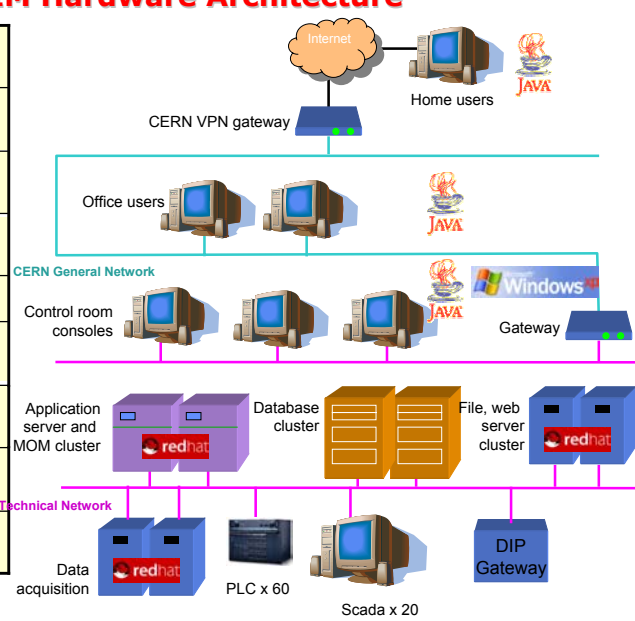


Architecture du système de contrôle d'accès (site)



TIM Hardware Architecture

- Home users: On-call specialists may connect to the system through the CERN VPN
- Office users: User interfaces and administration tools run from offices on the general network
- DIP Gateway: Collects data from other domains, publishes technical data as requested
- Control room consoles: Windows machines running user interfaces
- Database cluster: Configuration database and data persistence
- Application server and MOM cluster: Hosts Oracle9iAS and SonicMQ software.
- File server: Reliable server for application files (views etc) and web server for operations portal
- Scada: Wizcon and ENS scada systems communicating directly with application server
- Data acquisition: Acquires data from PLCs and updates application server



Data acquisition
PLC x 60
Scada x 20
DIP Gateway



Conclusion

- ◆ **System design completed, installation in progress**
 - -> ST/CV, Electrical Network Supervisor, CSAM (Alarm 3)
- ◆ **Contract in preparation, following CERN design**
 - RAMSES, Access Control System
- ◆ **In-house development**
 - TCR monitoring, LASER, AB logging clone, Sonic MQ to replace RT SmartSocket
- ◆ **Reliability, Availability (24h/365d) design**
- ◆ **AB concerns:**
 - How do we get the technical services data -> DIP
 - Post-mortem, logging
 - Data Time-stamping and time synchronisation