

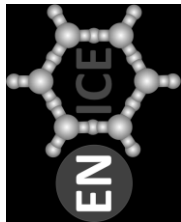
Industrial Controls in the Injectors:

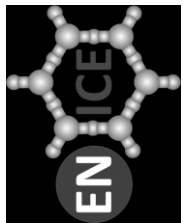
"You (will) know that they are here"

Hervé Milcent
On behalf of EN/ICE

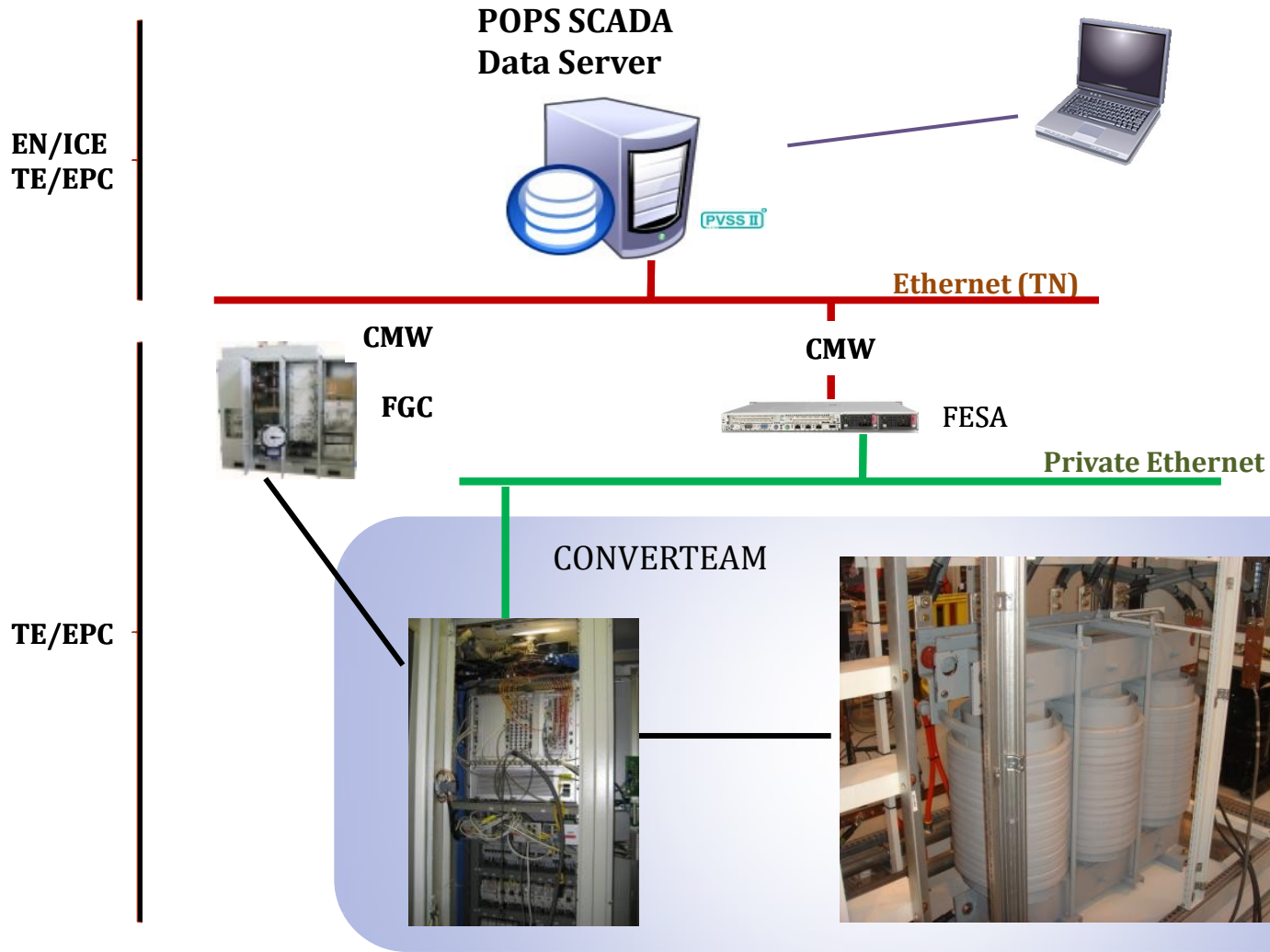
IEFC workshop 2011

- Involvement in injectors
 - PVSS based application and its integration
 - POPS
 - Vacuum Isolde
 - WIC PS/SPS
 - CIS
 - RADE based application and its integration
 - PS beam spectrum analyzer
 - Linac 4 emittance scanner
- Future projects
- Support
- Summary





POPS: architecture



- Use of UNICOS framework with custom development
 - E.g.: Event list
- EN/ICE:
 - Widget, device development
 - Deployment
 - Correct functioning of the PVSS infrastructure
 - Interface to knob/working set
- TE/EPC:
 - View drawing

POPS supervision

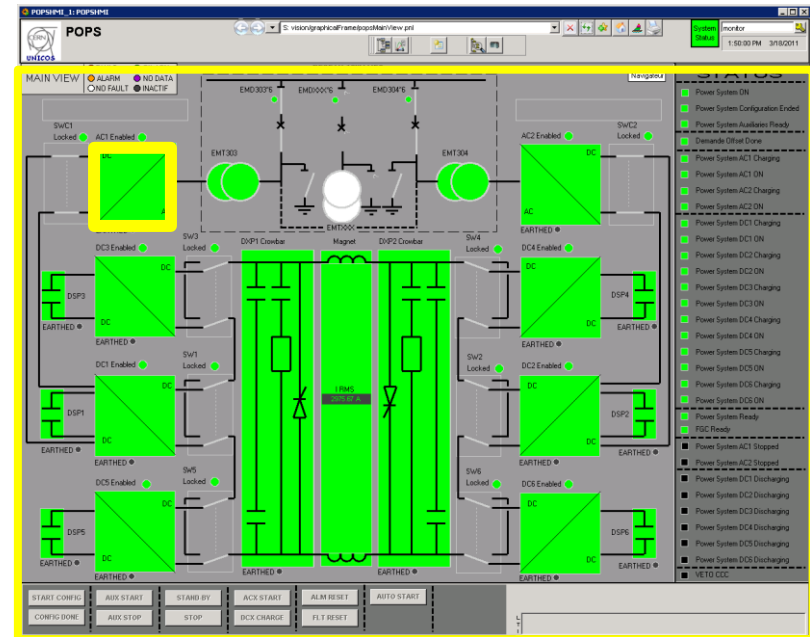
CONVERTEAM

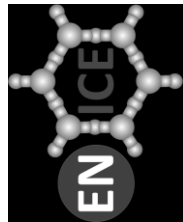


POPS SCADA
Data Server



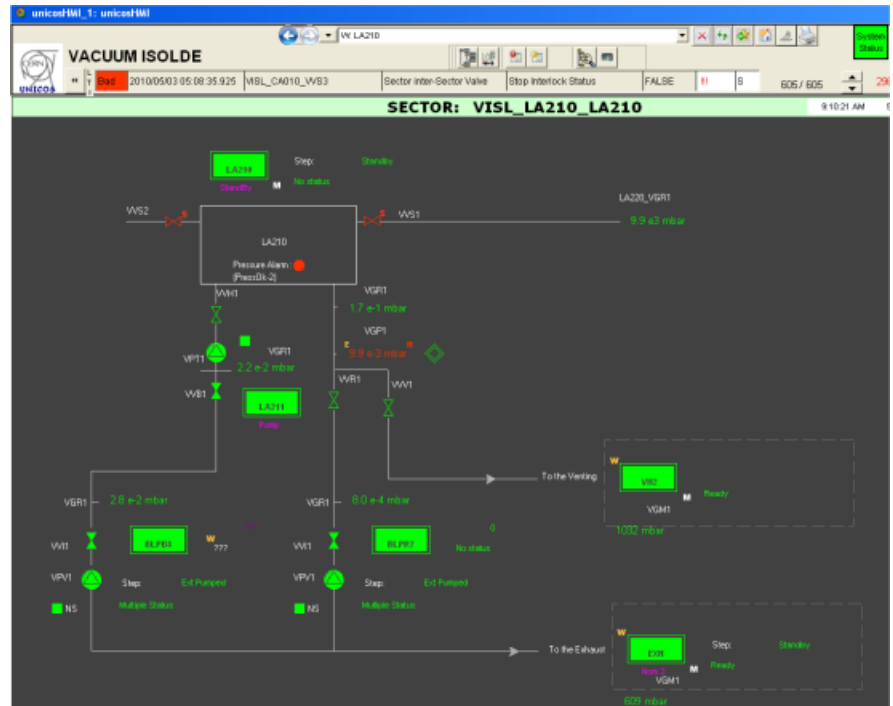
PVSS II



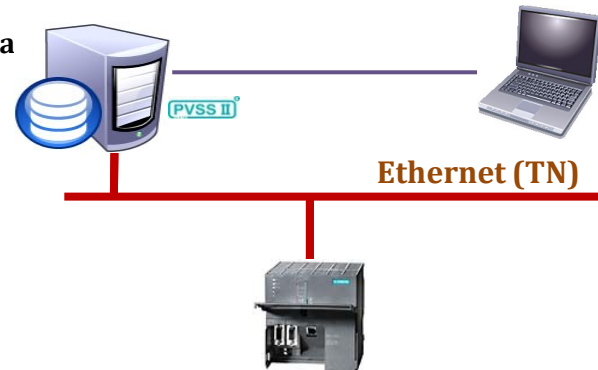


- Re-engineering: by TE/VSC, EN/ICE:
 - functional analysis and specifications
- Continuous Process Control UNICOS application
- EN/ICE:
 - Turn key for the first implementation
 - Coaching TE/VSC
- Transferred to TE/VSC
- EN/ICE:
 - Correct functioning of the PVSS infrastructure

Vacuum Isolde

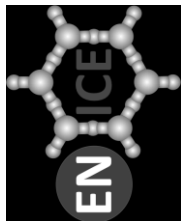
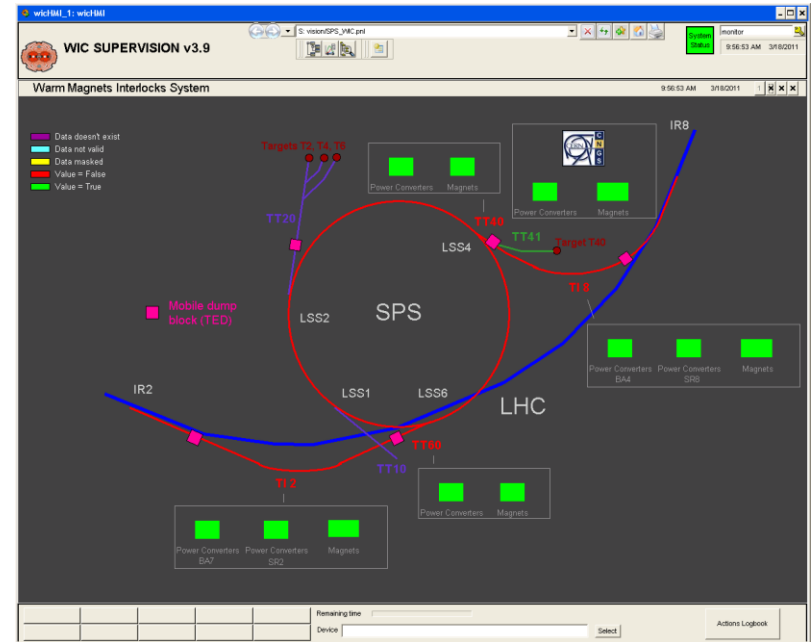


SCADA Data Server

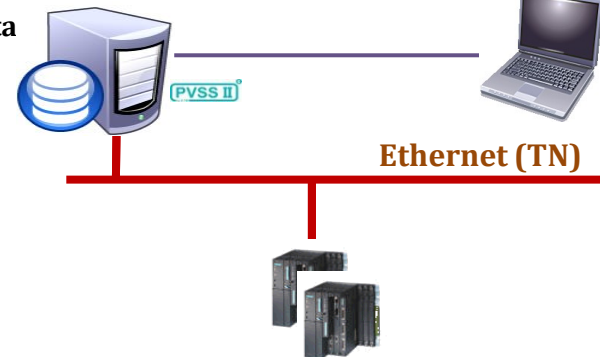


Warm Interlock Controller (WIC) PS complex/SPS complex

- Re-use of WIC LHC software
- EN/ICE:
 - Standard and safety Siemens PLC: programming, bug fixing, update, etc.
 - PVSS: turn key application
 - deployment, device, monitoring
 - Correct functioning of the PVSS infrastructure
- TE/MI:
 - Cabling
 - Hardware deployment in situ
- PS complex:
 - Linac 3, LEIR
- SPS complex:
 - TI2, TI8, TT40, TT60
 - HiRadMat (03/2011)

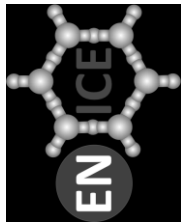
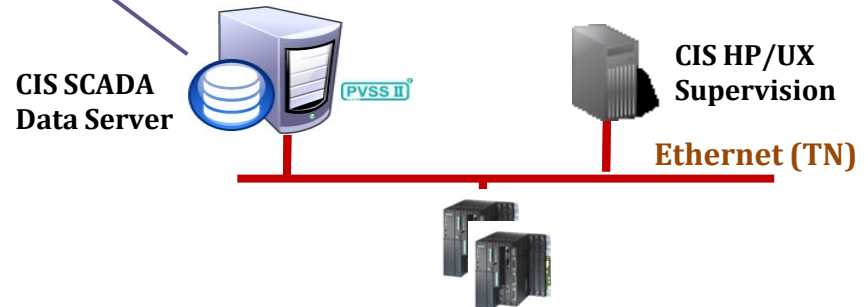
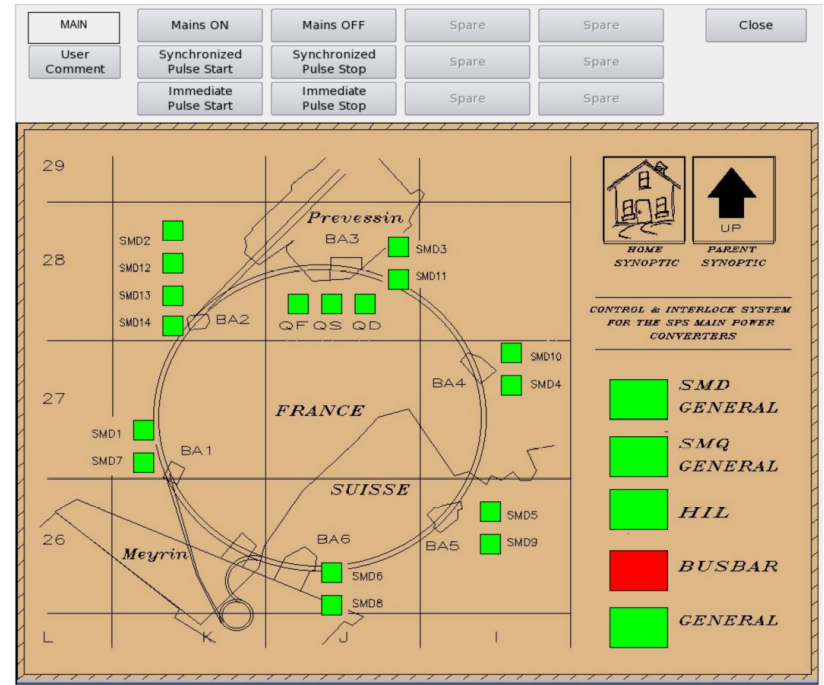


SCADA Data Server



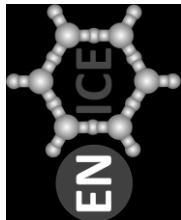
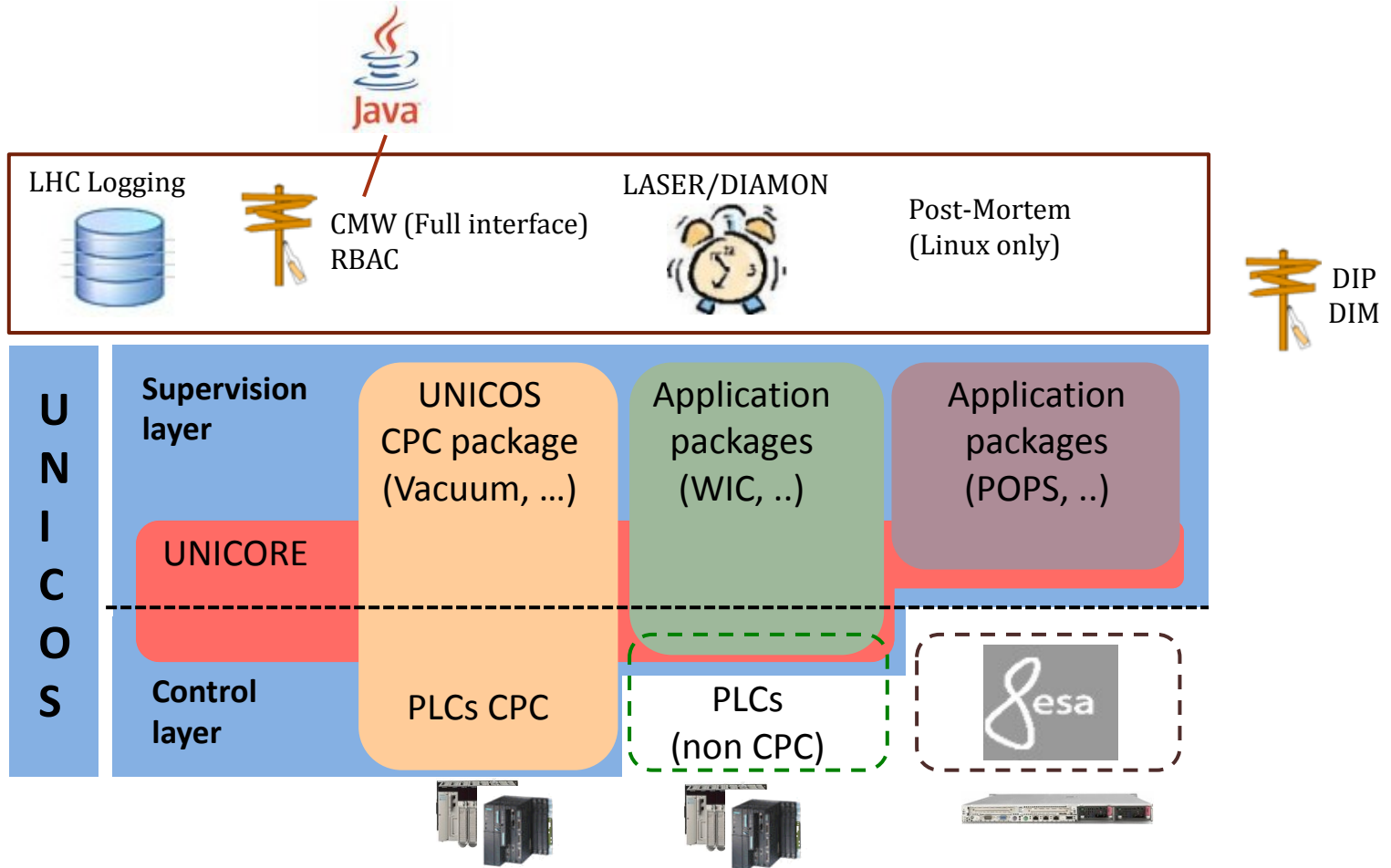
Control Interlock System (CIS)

- EN/ICE:
 - Reverse engineering of supervision based on HP/UX and PLC adaptation
 - Monitoring, backup of HP/UX supervision
- Next Christmas technical stop: replacement



UNICOS: integration within the accelerator complex

- Expert applications, operational applications



PS beam spectrum analyzer

- EN/ICE:
 - Correct functioning of the application

EN/ICE



LabVIEW



Ethernet (TN)

EN/ICE
BE/OP

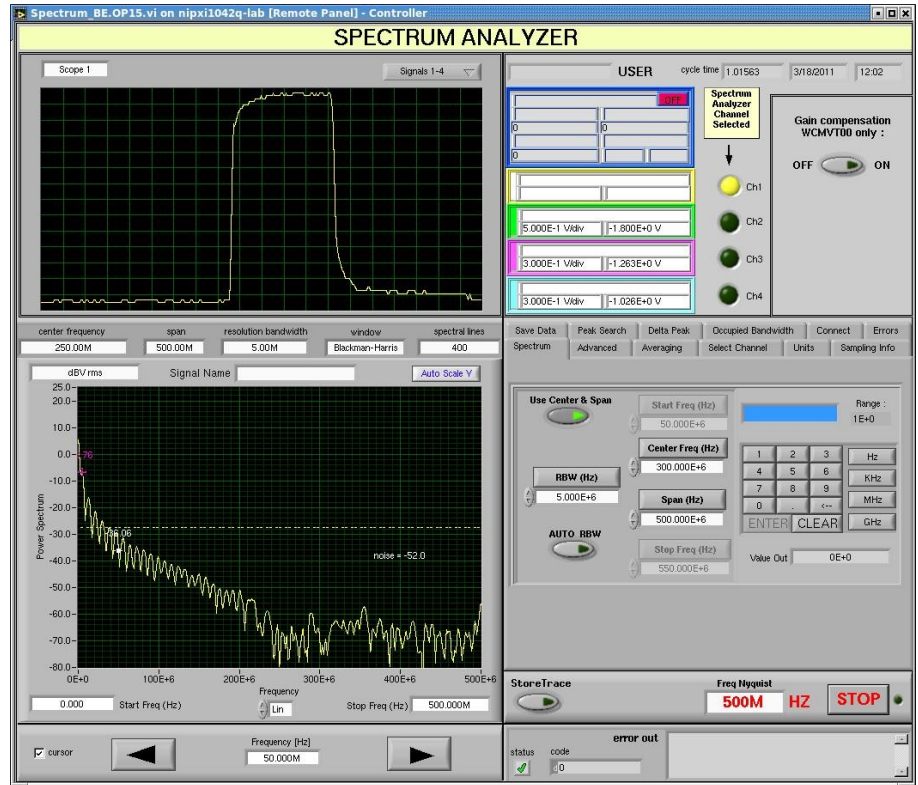


PXI

Analog input (1 GHz)



LabVIEW-RT



Linac 4 Emittance scanner

EN/ICE

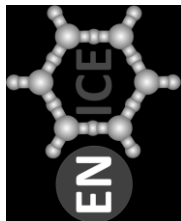
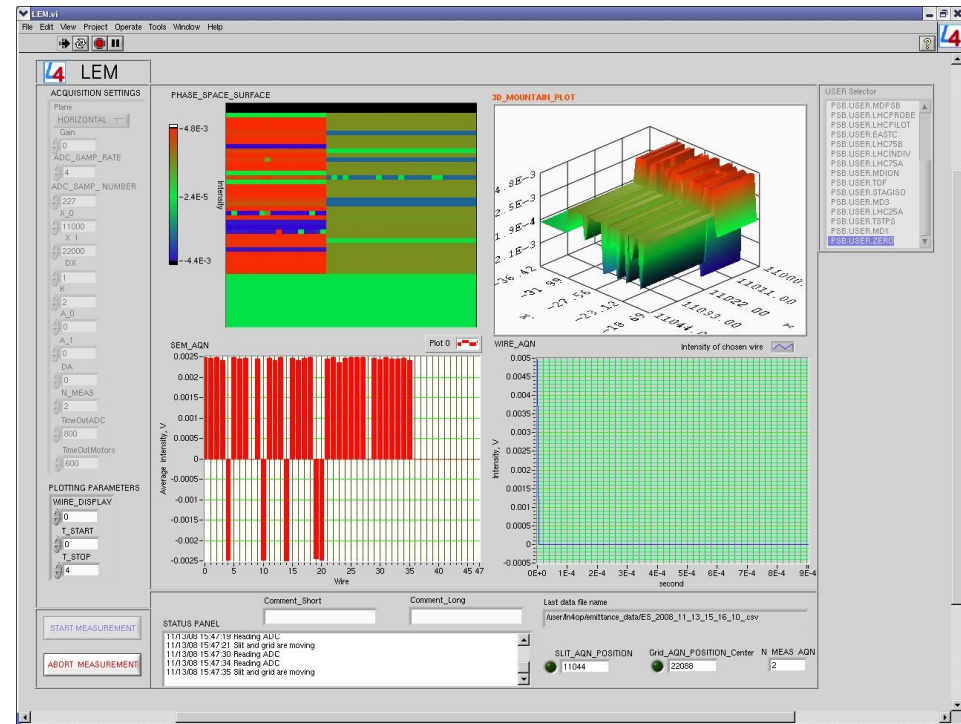
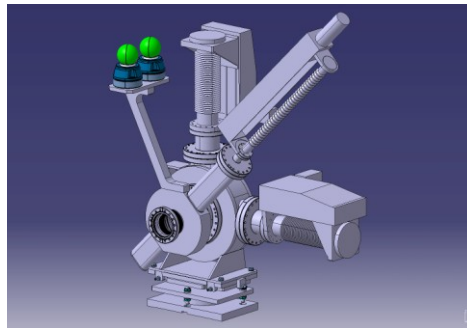


LabVIEW + RADE



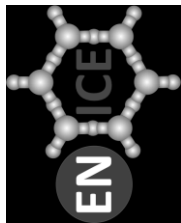
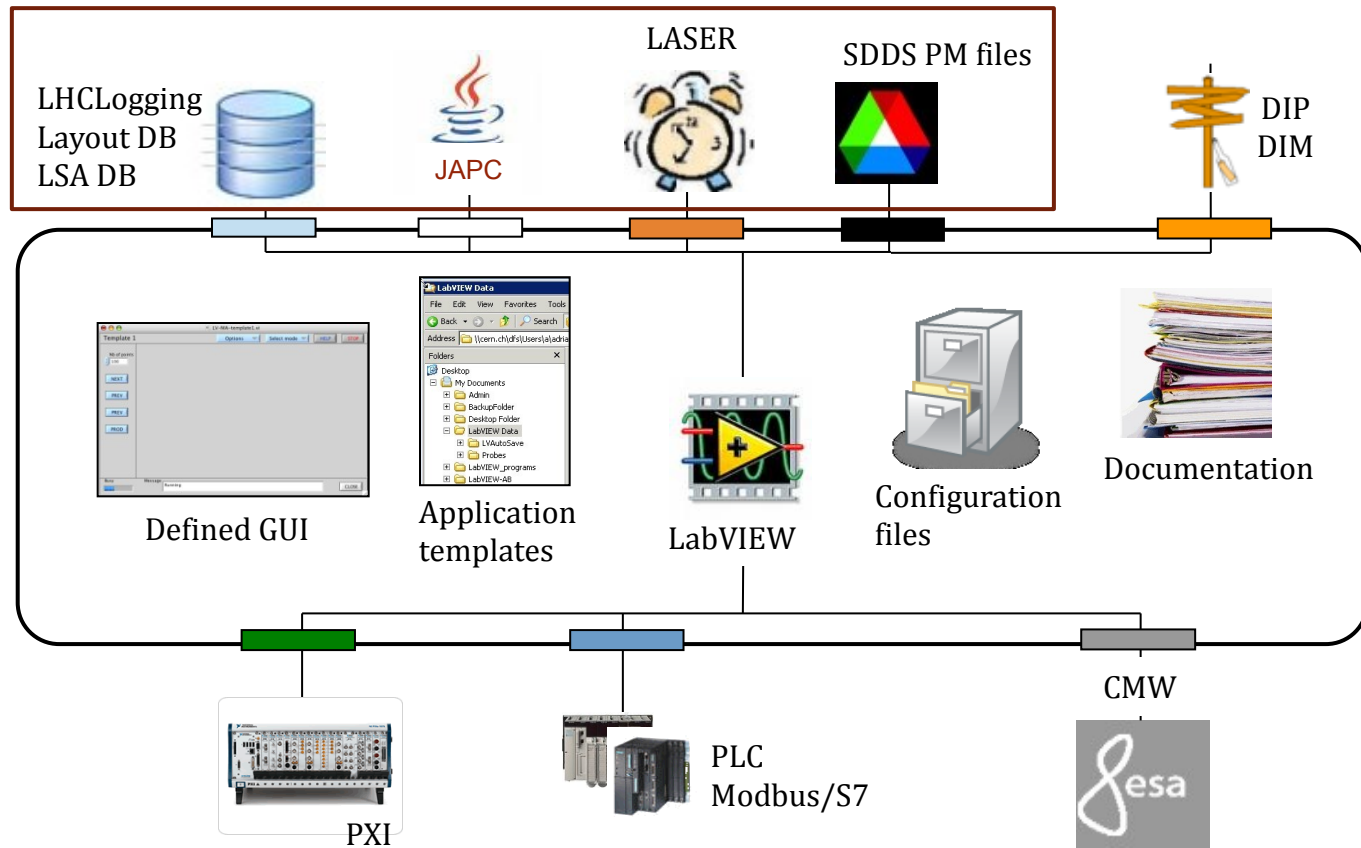
Ethernet (TN)

BE/BI



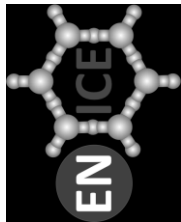
RADE: integration within the accelerator complex

- MD applications, expert application, prototyping



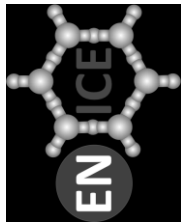
Future Projects

- Applications
 - All CV applications in the injectors: new systems and renovations (e.g. RFQ cooling)
 - Use of UNICOS CPC: PVSS and PLC (Siemens & Schneider)
 - WIC for HIE ISOLDE, Booster
 - POPS post mortem
 - Dashboard
 - ...
- Support to the injectors projects
 - Vacuum
 - Cryo Instrumentation Expert Tool (HIE ISOLDE)
 - Cryogenics (HIE ISOLDE)
 - ...



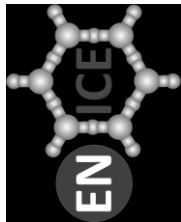
Support: Spare parts

- List of equipment established with CERN PLC user community
- Spare part PLC(Siemens and Schneider):
 - Critical spare equipment handled by EN/ICE
 - Fast delivery for replacement of equipment in critical stock
- If missing equipment, contact EN/ICE
- Will be extended to PXI (Q3 2011)



Support: Applications

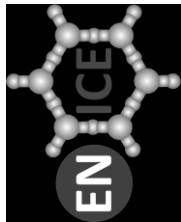
- Depends on the project responsibilities
 - EN/ICE: control infrastructure, e.g. link with the PLC, CMW interface.
 - Expert/equipment group: controlled process, e.g. interlock problem.
- Request via the application expert or equipment group
- EN/ICE: Monitoring of control infrastructure of the application
 - In order to anticipate the problems
 - 3 times a day
 - With an extended diagnostic tool, complementary to DIAMON
- EN/ICE rely on BE/CO for servers, front-end and console



Support: Whom to contact

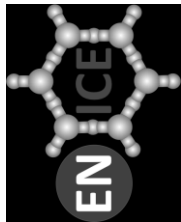
- EN/ICE standby service:
 - Outside working hours on call
 - Control infrastructure of the PVSS based Applications (not the controlled process)
 - PS beam spectrum analyzer
 - Post Mortem SDDS software
 - Spare parts PLC & PXI

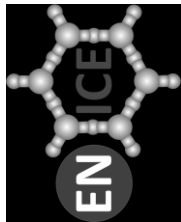
- EN/ICE application expert on best effort during working hours
 - PVSS based Applications infrastructure (interfaces, etc.)
 - RADE based application



Summary

- Industrial systems are already deployed and used in the injectors.
 - ICE involvement according to the needs
- Use standard CERN accelerator hardware and software frameworks.
- EN-ICE is providing a Standby Service, to cope with hardware and software failures.





Questions?