

Experimental Areas Controls Review

2006 start-up and beyond

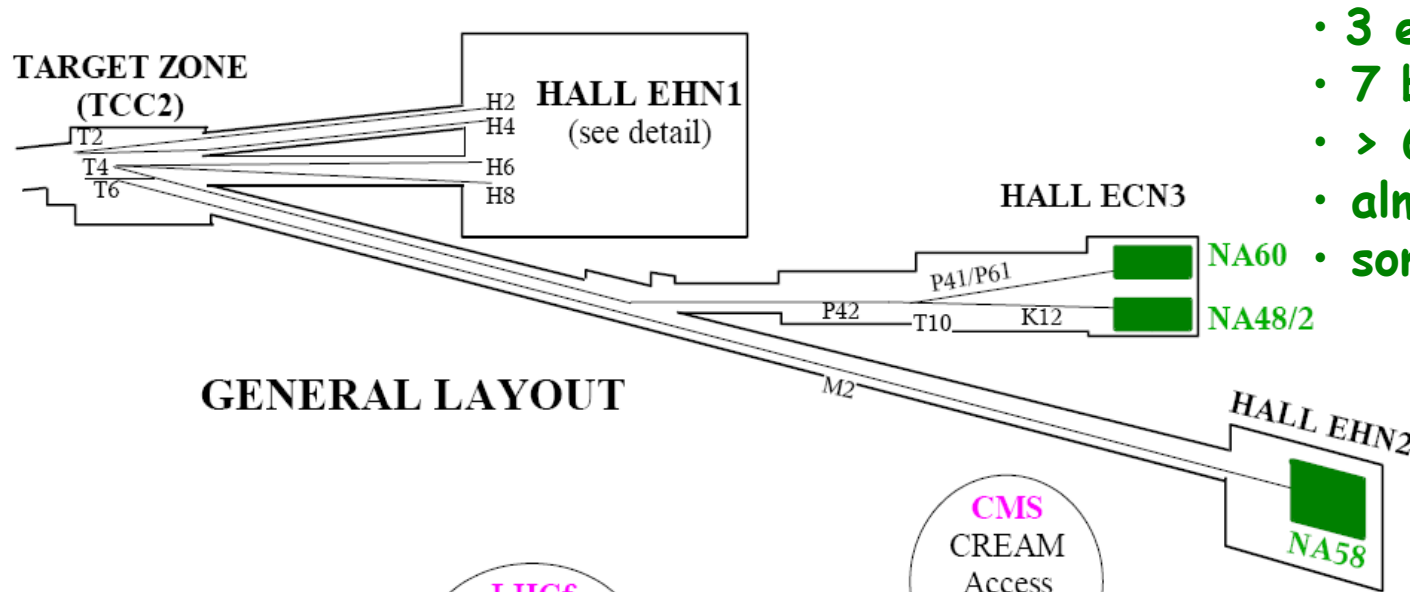
Lau Gatignon / AB-ATB-EA

This presentation covers:

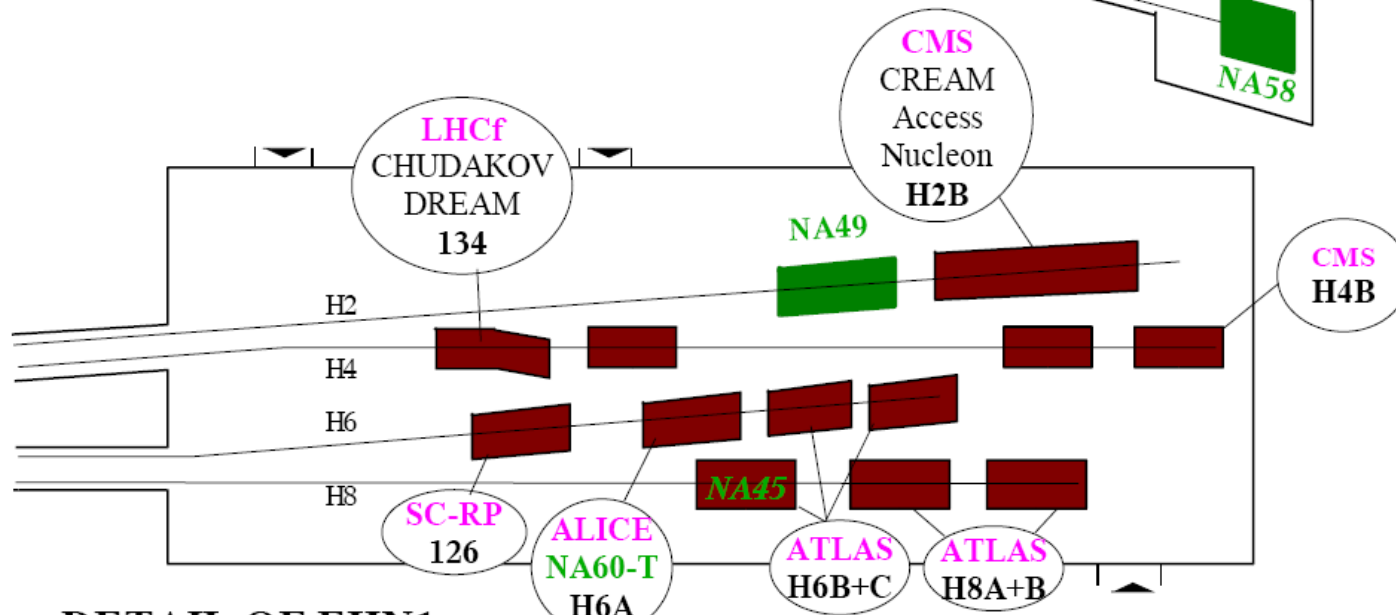
- North Area at the SPS
- East Area at the PS
- n_TOF
- The CNGS secondary beam and target

The primary beams have been covered in the previous talk

The North Area at the SPS



- 3 experimental halls
- 7 beam lines
- > 6 km length
- almost 2000 users
- some 1000 equipments



SPS NORTH EXPERIMENTAL AREA (Situation for 2004)

Operated by:

- EA users from their own CR's
- Operators from CCC
- EA experts
- Equipment experts

Controls: CO → V.Baggiolini et al

North Area controls is being renovated completely.

New in 2006:

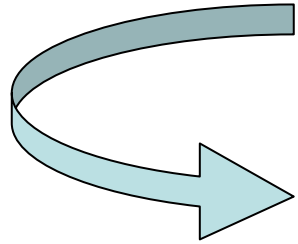
- BDI instrumentation from CAMAC to VME, equipment oriented modules
- Access control changed to PLC (managed between CO and TS)
- Vacuum control changed to AT/VAC standard PLC's
- I/O motor and I/O settings control changed to PLC's
- Magnet control to be changed from JC (G64) to VME (for 2006 or 2007?)
- Software from Nodal to Cesar with completely new applications & GUIs as well as a Jython based scripting environment
- Data-modules to FESA and PLC software
- Implementation of configuration database
- Timing from TG3 to TG8
- Replace obsolete NCD X-terms in BDI and user barracks by PC's

Tests of parts of Cesar and some VME modules have been performed in the West Area (now closed) in 2004, but **for the 2006 start-up a lot of new hardware and software needs to be tested and commissioned.**

The hardware transformations are progressing and essentially on schedule for the 2006 start-up, except for the XEMC&CEDAR electronics (→ later in 2006)

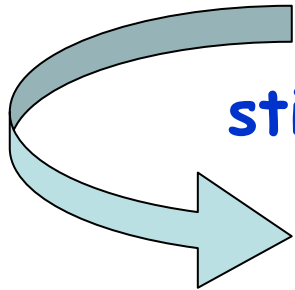
CO: Fesa-II is incompatible with Nodal.

Therefore there is no foreseen way to operate the North Area without Cesar



Cesar MUST work in 2006 !!!

BDI: The VME Equipment Bus master still requires Nodal expert programs and SL-equip.



Nodal MUST work, too !!!

To make sure that it works: Dry Runs

Purpose:

- Validate proper functioning of all equipments required for 2006
- Validate proper functioning of control system under full load
- Validate BDI diagnostic tools, required for HW commissioning

Two phases:

- 10 & 11 November 2005 (+ preparations): concentrate on H2+H4 beams
- 15 - 17 February 2006 (+ preparations"): whole of North Area

Strategy:

Simulate the commissioning, switching on and steering of the beam lines at the same time from a number of PC's, in parallel with BDI commissioning.
Approved by the ABMB.

Need CO for preparation of HW&SW + timing + some PC's in NA and 936.

Equipment control affecting CO: *For reference*

Item	Eqpts	H/W	FESW	Role CO	Date
New BDI eqpt-ortd HW	XSCI,FISC, XDWC, XION,SCAL	2005	FESA	Cesar adaptations	Dry r.1
New BDI eqpt-ortd HW	XCET	4Q05	FESA	New GUI	Dry r.2
New BDI eqpt-ortd HW	XEMC	1Q06	FESA	New GUI	start-up
VME-based CEDAR	XCED	mid-06	FESA	New GUI	3Q06
MAGEA *)	Power supplies	OK	FESA?	Cesar Adapt	Dry r.2
VME EQ-bus master	Continue till 2007 with existing SL-Equip/Nodal software				
Eqpt Bus based HW port to FESA	XWCA, Position contr (colls, tax, ...)	as now	FESA	Cesar adaptations	1Q07
In/out motorisations	e.g. ABSMIO	ok	FESA PLC	FE softw, Upgr GUI	Dry r.1
Other PLC-based items	e.g. IGOR	ok	FESA PLC	FE softw, New GUI	Dry r.1
Access control via PLC	Between CO and TS				Dry r.1

BDI expert and diagnostics software

Has been discussed extensively in two meetings between CO, BDI, EA, PO and OP, organised by H.Schmickler (01/03 and 17/05).

This software will be based on 5 approaches, 3 of which involve CO:

- FESA navigator (simple get/set/sub) → BDI
- FESA expert programs (incl. sequences of commands) → BDI/SW
- No expert GUIs requested for PLC's!
- **Minor additions to CESAR GUIs** → **Cesar team**
- **Working sets & knobs (for PLC)** → **CO**
configuration of WS & knobs by BDI/EA
- **Integration of Jython scripts into Cesar GUI** → **CO**

The VME equipment bus (and MAGEA?) will still use SL-equip and nodal in 2006, but will be moved to FESA navigator and expert GUIs a.s.a.p. (for 2007?)

⇒ **Nodal is still required at least in 2006, CMW gateway to be stabilised !!**

The FESA PLC software will be provided by CO/FC by October

Integration in common platform coordinated by BDI/EA with help from CO/AP

Applications for beam line operators, users:

- Development by CO within Cesar framework
- Jython integration
- Access control application program
- Reading of Radiation monitors
- Settings management
- Surveillance, alarms, fixed displays (teletext)
- Logging (surveillance, measurements, actions)
- Printing
- User documentation & Training for operators and EA+BDI experts
- Long term maintenance and adaptation to new requirements
(apart from configuration - done by ATB-EA)

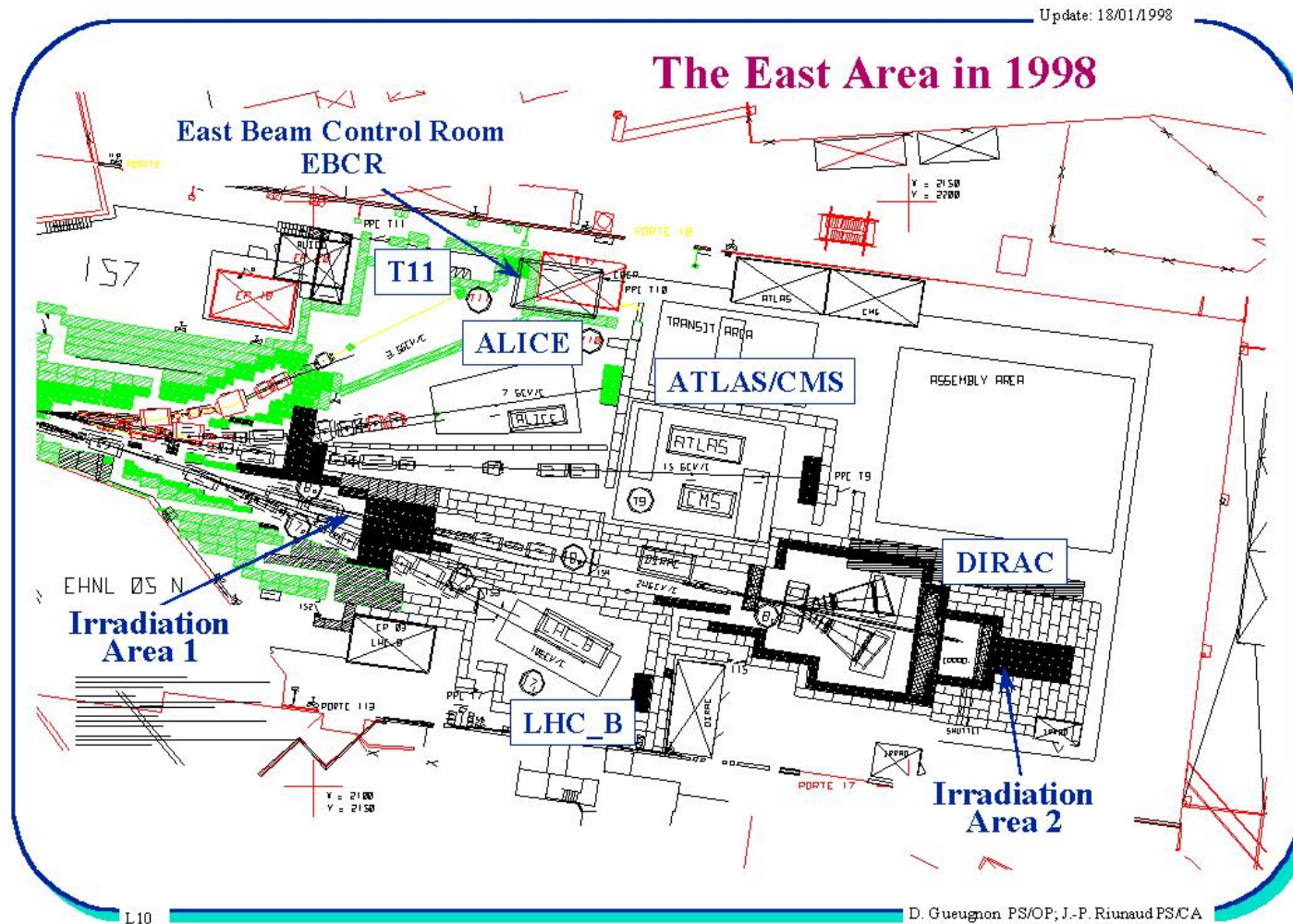
Cesar should be fully operational before the 2006 start-up.
A detailed list of remaining items exists and was discussed with CO/AP at the end of 2004.

Very active participation of CO experts in commissioning, tests and dry runs is essential

Other CO responsibilities:

- ❑ Long term maintenance & support for all software under CO responsibility
- ❑ Timing with 5 events, that should 'always' be present (also for dry runs), including VME hardware, software and support
discussed & agreed at RPC June 15th - see minutes for details
- ❑ Tools to populate & maintain configuration database (AB/CO/DM)
- ❑ Transmission of beam line status to the users ("STDBLK, NSTDBLK")
- ❑ Provides and supports PC's for CCC and areas
- ❑ Console manager

The East Area at the PS



- 5 beam lines
- > 500 users
- Gets even more important after WA closure
- DIRAC expt approved for 3y
- CLOUD proposal under consideration
- Very little instrumentation
- Only local control, except for magnets

Needs for 2006 and beyond:

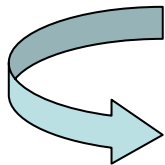
All the needs we have for the North Area, apart from the upgrade related items.

This includes:

- Maintenance of existing software
- Timing
- PC configuration and maintenance in EBCR
- Control consoles in CCC

However, the CCC is far from the East Area, the lack of remote control becomes serious handicap.

Instrumentation is very limited



At the EA day a controls upgrade project will be presented for 2007

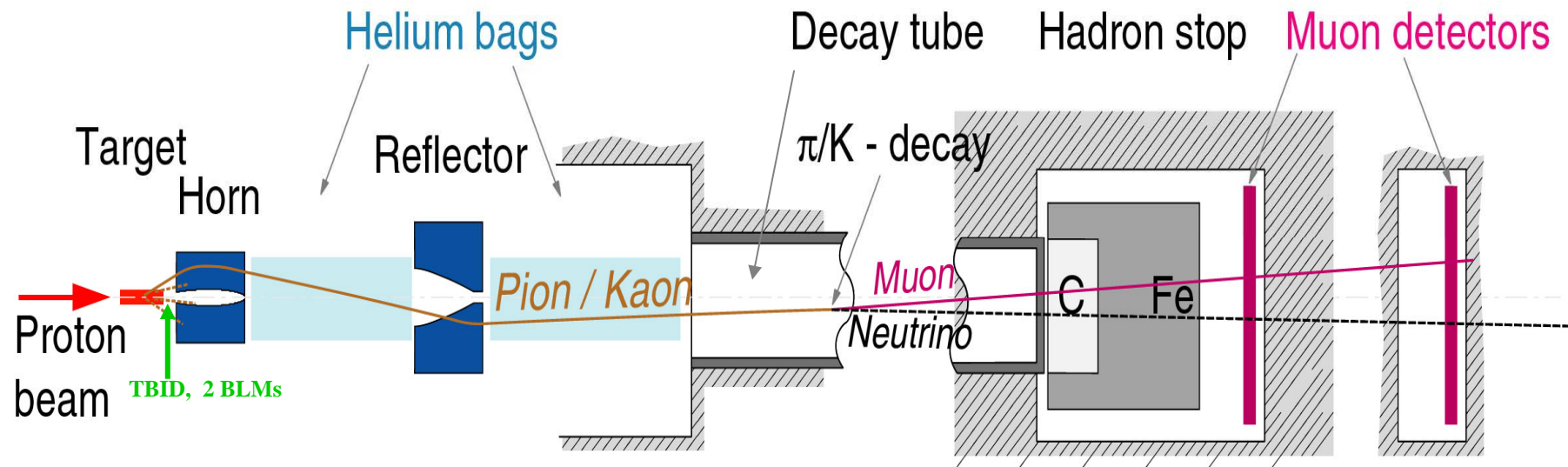
n_TOF:

The new n_TOF11 experiment (MERIT) requires a change of the primary proton beam line to n_TOF.

- Possibly include standard PS (or SPS) instrumentation in the FTN line
- Precise requests will be formulated before the end of 2005, n_TOF11 is scheduled for beam in spring 2007.

No precise request to CO for the time being

CNGS target and secondary beam



Controlled by operators from CCC, EA experts, equipment experts

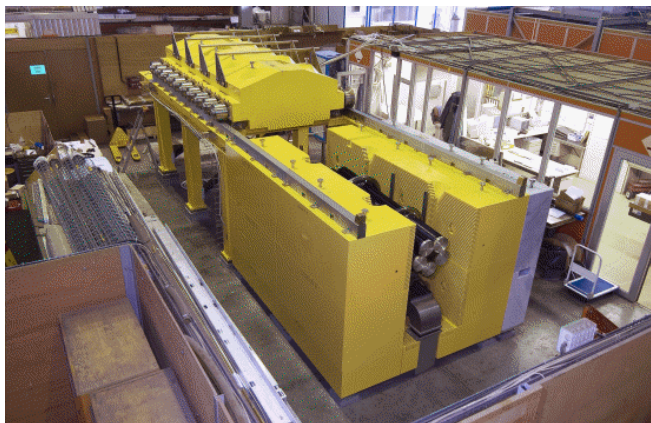
Dead-line for controls: end January 2006

CNGS target control:

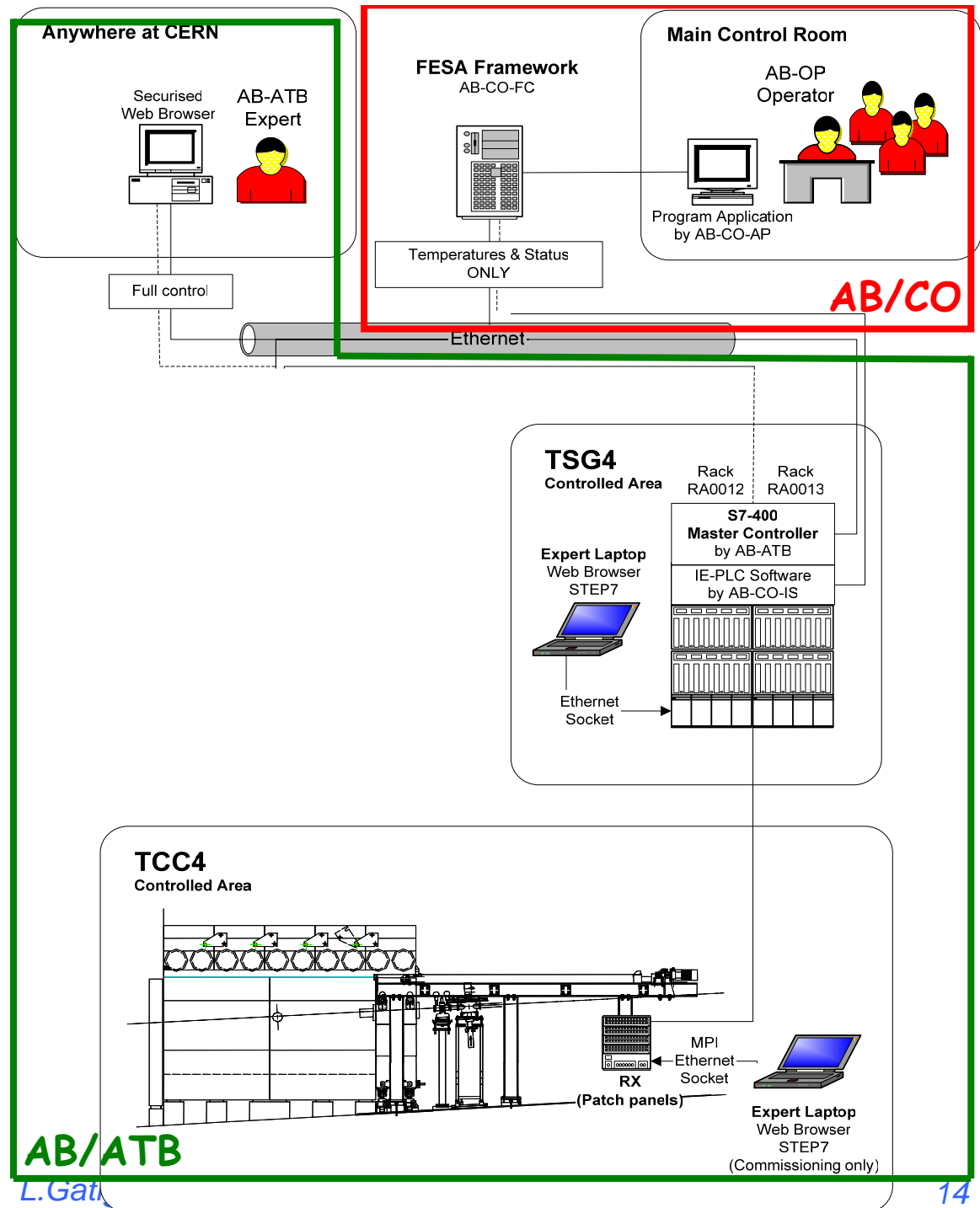
(from EDM5 881032)

Expert software provided and only to be used by AB/ATB. Based on Siemens PLC.

Reading of target status (positions, shielding temperature) from CCC. Needs FESA PLC (CO/FC) and a application program (CO/AP). Deadline November 2005.



AB-CO review, 19-09-2005

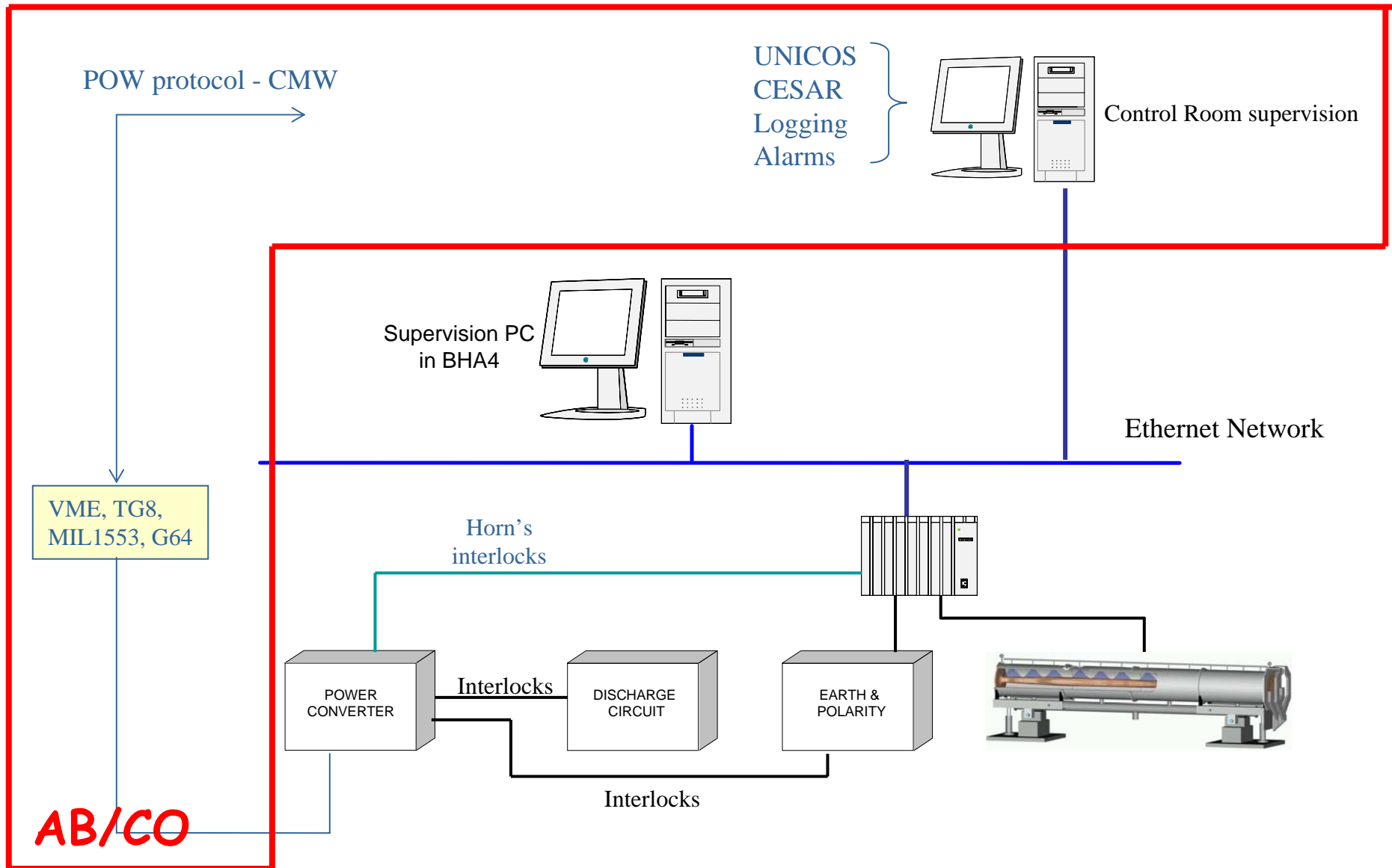


Equipment Control:

For reference

Equipment	#	Responsibility of CO
TBID	1	Read, log & display, fit, orthogonal scans with magnets upstream the target
'BLM' (used as ion chambers)	2-4	Read, log & display
Horn/Reflector	1/1	On, Off, Reset, change current by max. 10%, change polarity, grounding; switch valve (water cooling); Read, log & display water cooling system parameters
Helium Tube	2	Read, log & display of Oxymeter
Shutter	1	Read, log & display position, move shutter for Access
Decay Tube	1	Read, log & display pressure
Muon Monitors 2 x (17-34 fixed +1 motorized)	36-70	Read, log & display intensity in each monitor, display profiles; set or scan position of motorized monitor
Temp. Probes	40-56	Read, log & display
Timing + data interchange		GPS time stamp for every extraction, data interchange between CERN and Gran Sasso
Alarms, Interlocks, ACCESS		

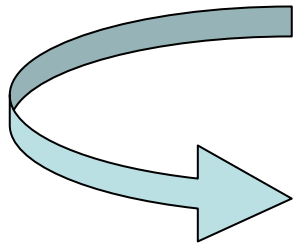
Horn & Reflector Controls



Key points:

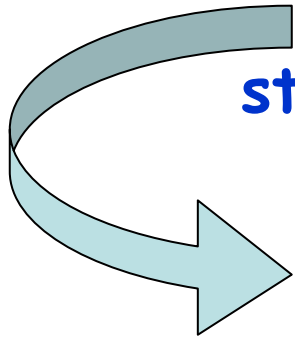
CO: Fesa-II is incompatible with Nodal.

Therefore there is no foreseen way to operate the North Area without Cesar



Cesar MUST work in 2006 !!!

BDI: The VME Equipment Bus master still requires Nodal expert programs and SL-equip.



Nodal MUST work, too !!!

CNGS and East Area MUST work in 2006 !!!