SPS Experimental Areas Renovation: Status and Outlook

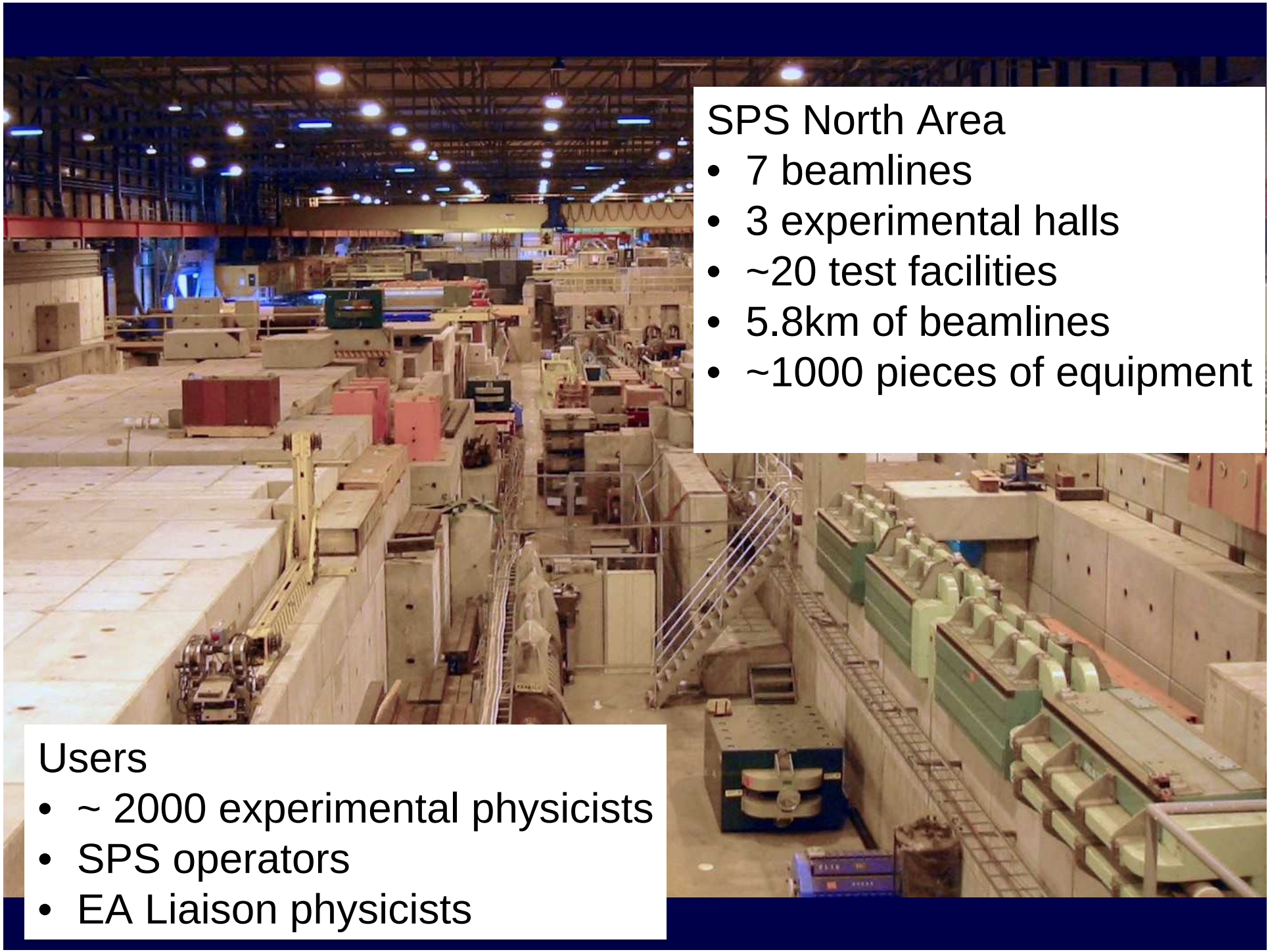
“You’ve done a good job, but there is still work to do. Please don’t abandon the project now.”

Vito Baggiolini AB/CO

with input from K. Cornelis, I. Efthymiopoulos, L. Gatignon, J. Spanggard, F. Follin, E. Hatziangeli et al.

Outline

- SPS-EA and the renovation project
- Current state of work
- Outlook
- Color code:
  - Under control – no need to worry
  - Still to be organized or staffed – but no real worry
  - Issue that needs attention – could become major problem



SPS North Area

- 7 beamlines
- 3 experimental halls
- ~20 test facilities
- 5.8km of beamlines
- ~1000 pieces of equipment

Users

- ~ 2000 experimental physicists
- SPS operators
- EA Liaison physicists

Renovation project

- Original scope: replace BI electronics and Nodal
  - Later extended to other equipment
- Since 2000, with interruptions and resource sharing
  - Work on LEIR, CNGS, LHC in parallel
  - Effort spent on controls development + homogenization
- Successful collaboration of many groups
  - ATB, BI, BT, CO, OP, PO
  - AT/VAC, TS/CSE

State of Hardware Renovation

- Most of the important equipment families renovated and validated!
- Instrumentation (9 families, 200 equipments)
  - 5 main instrument families migrated (Scalers, Scintillators, Filament Scintillator, Delay Wire Chamber, Cherenkov)
  - 4 more specialized instruments (CEDAR, Calorimeter, Ioniz. Chamber, Analog Wire Chamber): work ongoing, to be finished in 2007 and 2008
- Motorizations (~20 types of equipment, > 200 motors in total)
  - All in/out motors migrated to PLCs
  - Positioning motors not yet renovated, unreliable low-level controls
- Vacuum (~70 gauges, ~70 pumps)
  - Migrated to PLCs, handed over to AT/VAC
- PO controls ➔ Yves Gaillard's talk
- Zone access system (~35 zones) ➔ Rui Nunes' talk
  - 2 equipment families migrated to PLCs
  - 1 equipment: work organized, to be finished for start-up 2007

State of Software Renovation

- We ran the SPS-EA with the new software!
- Positive feedback from our users
  - No critical problems encountered
  - Intuitive CESAR applications
  - Good overall stability and performance
  - FESA-based devices worked very well (after initial debugging)
- Still work to be done

Problems encountered during Run

- Some teething problems with new FESA devices
  - Especially new power-converter control (➔ Y. Gaillard)
- Unreliable low-level controls of non-renovated devices
  - Controls chain to zone access system was unreliable
  - Low-level control of positioning motors (collimators, taxes)
- Sporadic slow-downs of CESAR system
  - Reason identified. Due to an 3rd-party communication library, (JMS broker) which will be replaced.

Missing features and improvements

- Items necessary for Run 2007
  - Debug + fix low-level controls of positioning motors
  - Finish renovation of controls chain to zone access system
  - Finish CEDAR and XEMC + developments in CESAR
- CESAR items that make operations more efficient / less error prone
  - Show only settings (beamfiles) which match active Wobbling config.
  - Facility to document “golden” beamline settings (both steering elements + instrumentation) as reference for OP → E-Logbook?
  - Support for EA physicists to adapt settings when layout changes
  - Better printing support for long status GUIs
- Work which needs to be done “sooner or later”
  - Replacement of an obsolete user interface library (Netbeans)
  - 2008: Renovate last two instruments + adapt CESAR
  - Renovation of positioning motors (hand over BI → ATB)
  - Many minor things to really finish the renovation project

Resource planning

- Items necessary for Run 2007
  - Debug + fix low-level controls of positioning motors (1-3 man-months)
  - Finish renovation of controls chain to zone access system (AB: 2 mm)
  - Finish CEDAR and XEMC + developments in CESAR (6-8 mm)
- CESAR items that make operations more efficient / less error prone
  - Show only settings (beamfiles) which match active Wobbling config. (2mm)
  - Facility to document “golden” beamline settings (both steering elements + instrumentation) as reference for OP → E-Logbook? (0mm)
  - Support for EA physicists to adapt settings when layout changes (3mm)
  - Better printing support for long status GUIs (1mm)
- Work which needs to be done “sooner or later”
  - Replacement of an obsolete user interface library (Netbeans) (~ 6mm)
  - 2008: Renovate last two instruments + adapt CESAR
  - Renovation of positioning motors (hand over BI → ATB)
  - Many minor things to really finish the renovation project

Legend: organized and staffed – to be organized and/or staffed – potential problem

Maintenance plan after renovation project

- Each group/section maintains their developments
  - HW + device-specific software: equipment groups
  - Application software: CO/AP + OP/SPS + ATB/EA
    - OP/SPS: user interfaces made by OP members
    - ATB/EA: some EA-specific user interfaces
    - CO/AP: control system core; backup of OP members during shifts
  - Configuration in database: ATB/EA
  - Infrastructure (computers, FESA, CMW, Java libraries, etc): CO
- Routine work done without big official planning
  - E.g. small additions/modifications
  - Adaptation to new version of hardware/software
- Exceptional work to be organized separately, as projects

Conclusions

- We successfully ran the SPS-EA last year
- We will do a few urgent work items needed for 2007
- Other things are less urgent but must not be forgotten!
- EA work is competing for resources with LHC