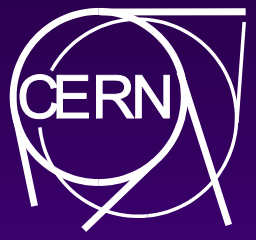
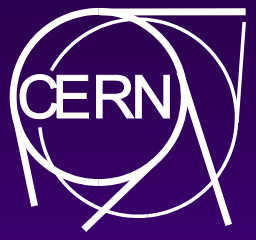


Managing the LHC Experimental Area

Point 5, CMS: Martin Gastal (PH/CME)
Point 1, ATLAS: François Butin (TS/LEA)
Point 2, Alice: Sebastien Evrard (TS/LEA)

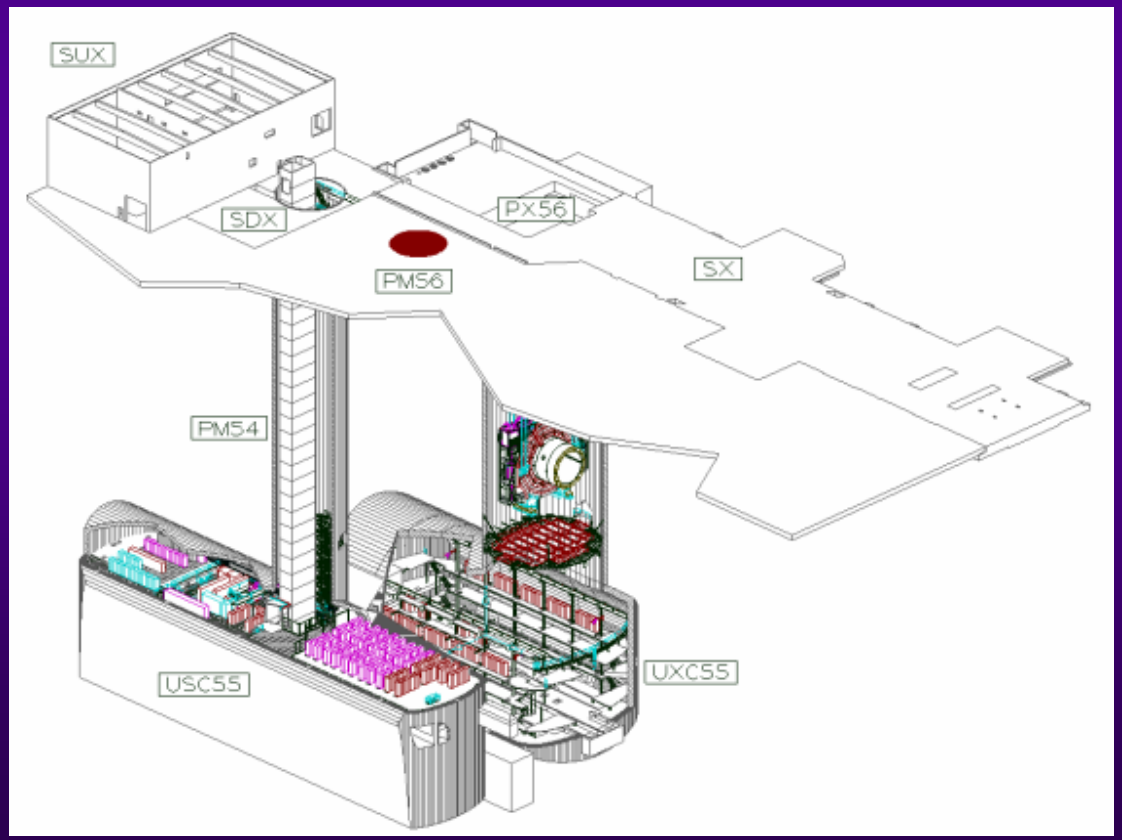


Planning for CMS at TS-LEA

Martin Gastal, PH/CME

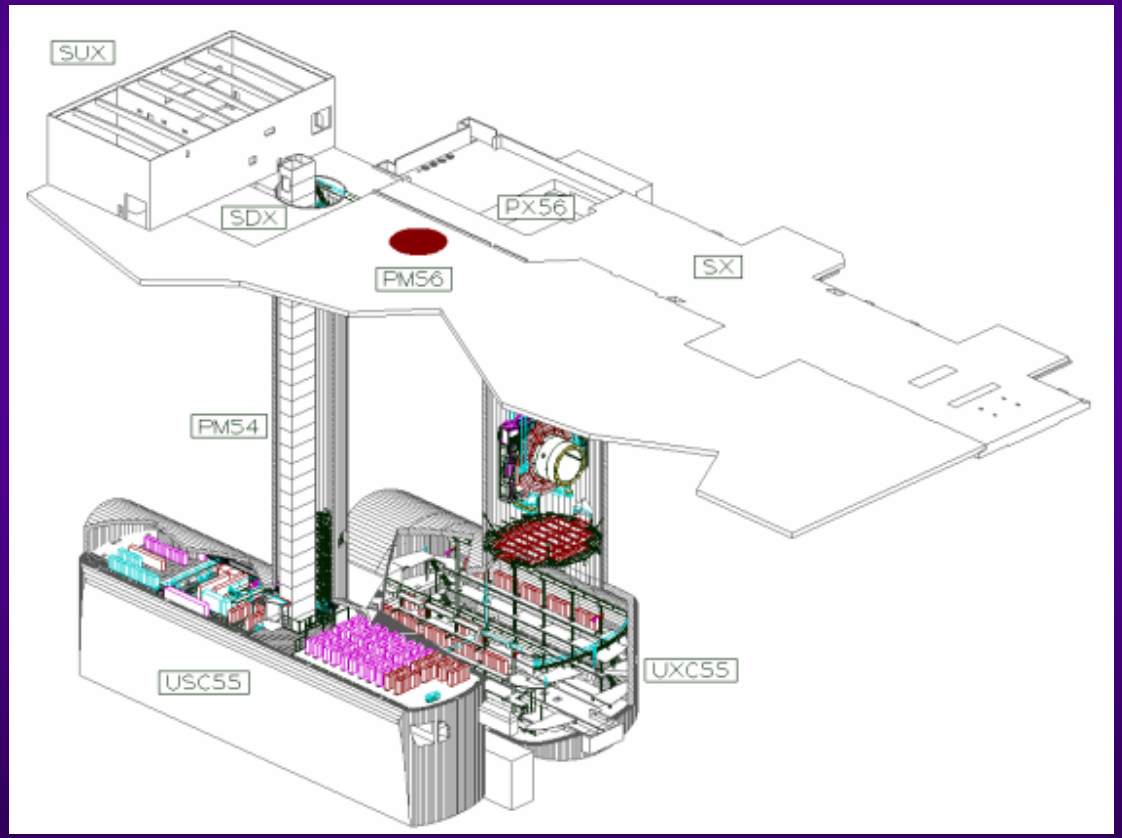
Planning for CMS at TS-LEA

- **Scope: To provide an optimised planning for technical installation of Point 5**



Planning for Point5 (CMS) installation

- **Scope: To provide an optimised planning for the installation of infrastructure and technical services**



Coordination of:

- **Technical Services**
  CE, CV, power, transport, heavy handling, lifts, telecom, access control, survey
- **Metallic Structures**
- **Radiation Shielding & Monitoring**
- **LHC Machine**
  TAS, Inner Triplets, Electronics / Power Supplies
- **Additional Services**
  heating, air conditioning, LV systems, cleaning & waste management
- **Environment Protection**
  gardening, upkeep of site, noise pollution

Experimental Area Coordination Team

- CMS-LHC Machine Interface Coordinator & Deputy
  (E. Tsesmelis, J-C Fabris)
- Experimental Area Coordinator
  (J. Osborne, J.Juenet)
- Planning Officer
  (M. Gastal)
- Point 5 Area Integration
  (J.-F. Michaud)
- CMS Detector Installation Coordinator & Deputy
  (L. Veillet, J-P Girod)
- Safety Coordinators
  (C. Schaefer, J. Weber)
- P5 Transport & Logistics Task Leader
  (S. Prodon)
- Gerant de Site
  (M. Aubert, R. Spigato)

Status

Latest Version: V2.3

CE delivery June 1st
Available on-line

http://ts-dep.web.cern.ch/ts-dep/groups/lea/cms/Pag2/TECOPA5_home.htm

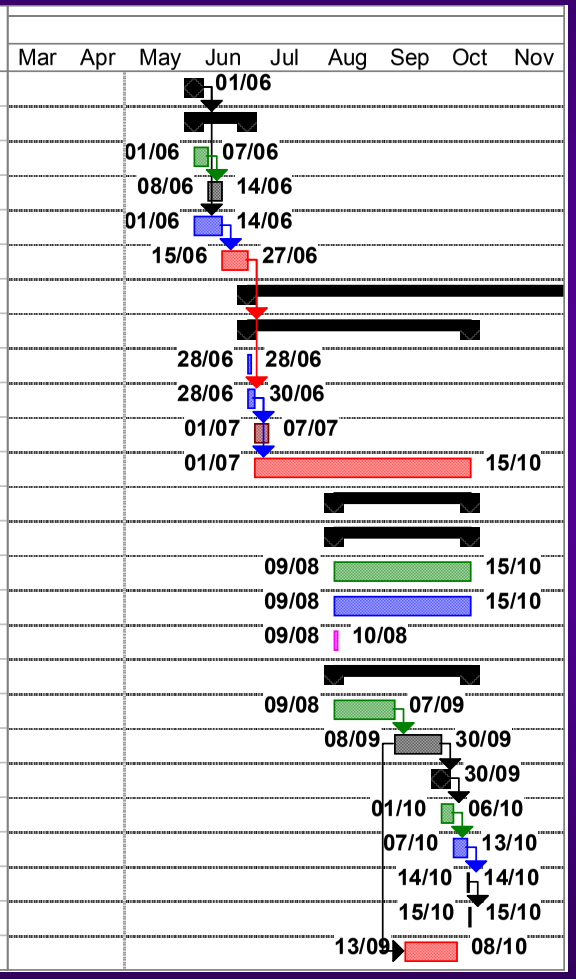
Focus: From USC delivery to "ready for crates"

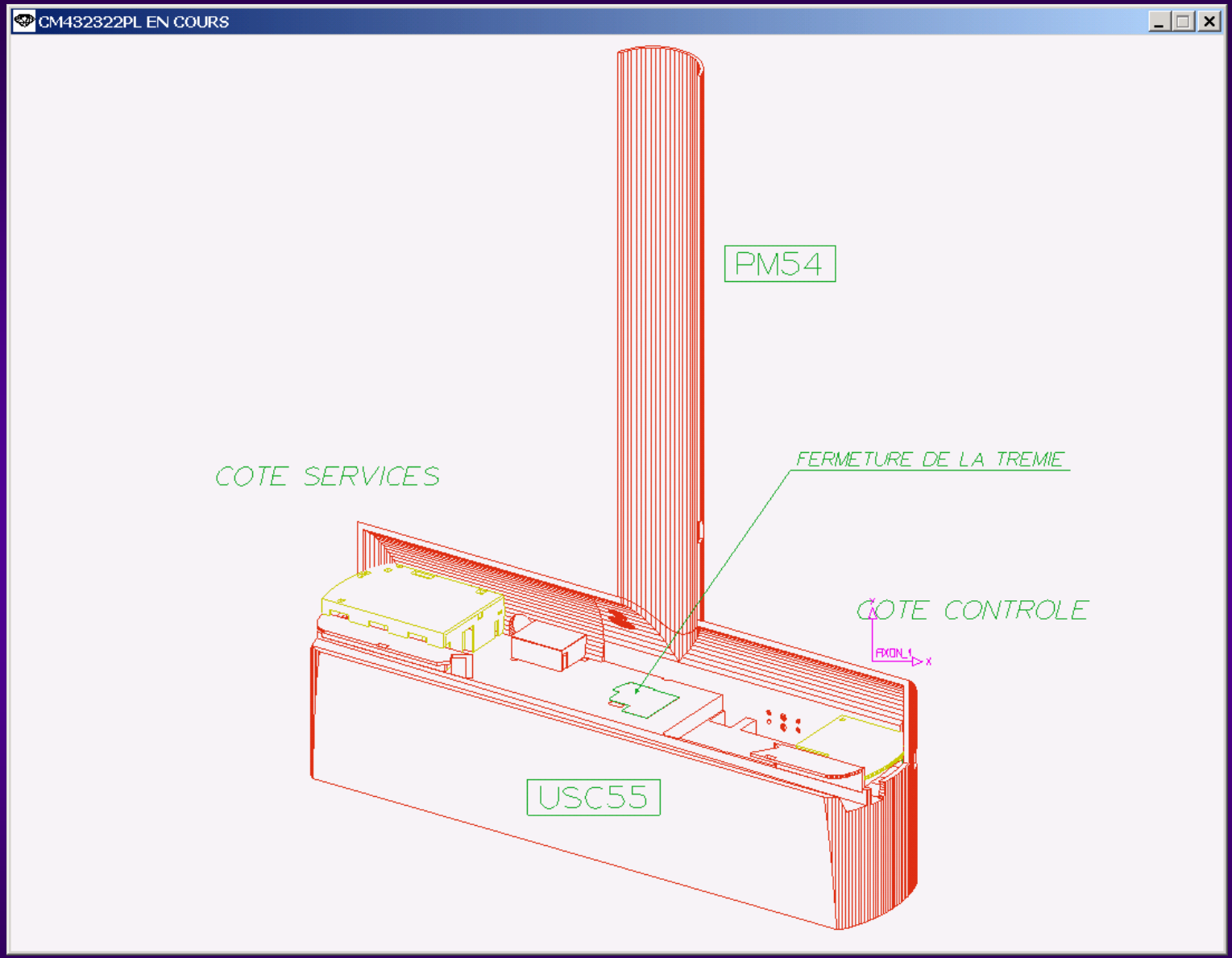
Constraint: CMS deadline

"Ready for crates in USC"
July 15th 2005

PM54

Task Name	Owner	Duration	Contractor(s)
PM54 & USC55 Delivery	TS-CE	0 days	DRAGADOS
PM54 Installation		**20 days**	
Temporary ventilation USC+CE services removal	**TS-CE/CV**	1 wk	GESCO
Shaft protection plug on top of pit	**TS-CE**	1 wk	DRAGADOS
Temporary electricity	TS-EL	2 wks	HADRALEC
Installation of USC 10t platform (tremie)	TS-IC	2 wks	COSMI
Lowering and installation of material for USC55		**357 days**	
Lowering prior to 10-week window		**80 days**	
18-t Mobile Crane in USC55	TS-IC-LO	1 day	CICERON
10-t gantry crane + rail + 2 personnel hoists	TS-IC-LO	3 days	CICERON
Transfer lines for He	**AT-ECR**	5 days	AirLiquide
Metallic structures for USC55	TS-IC	77 days	COSMI
10-week window		**50 days**	
Lowering (done at night)		**50 days**	
Ventilation units and ducts	**TS-CV**	10 wks	GESCO
6-t transformers and other material	TS-EL	10 wks	HADRALEC
Copper bus bars + metallic structure	PH-CMI	2 days	TS-IC(HM)
Installation (done during daytime)		**50 days**	
Permanent Ventilation installation	**TS-CV**	22 days	GESCO
Concrete modules installation	TS-CE	17 days	ELEMENT
Penultimate module installation	TS-CE	0 days	ELEMENT
Ventilation inside the Concrete Modules	**TS-CV**	4 days	GESCO
Lift Machinery installation	TS-IC-HM	1 wk	AS service
Last module installation	TS-CE	1 day	ELEMENT
Closing the machinery roof	TS-CE	1 day	ELEMENT
Metallic staircase modules installation	TS-IC	4 wks	COSMI




CM432322PL EN COURS
PM54
COTE SERVICES
FERMETURE DE LA TREMIE
COTE CONTROLE
AXON_1
X
USC55

PM54

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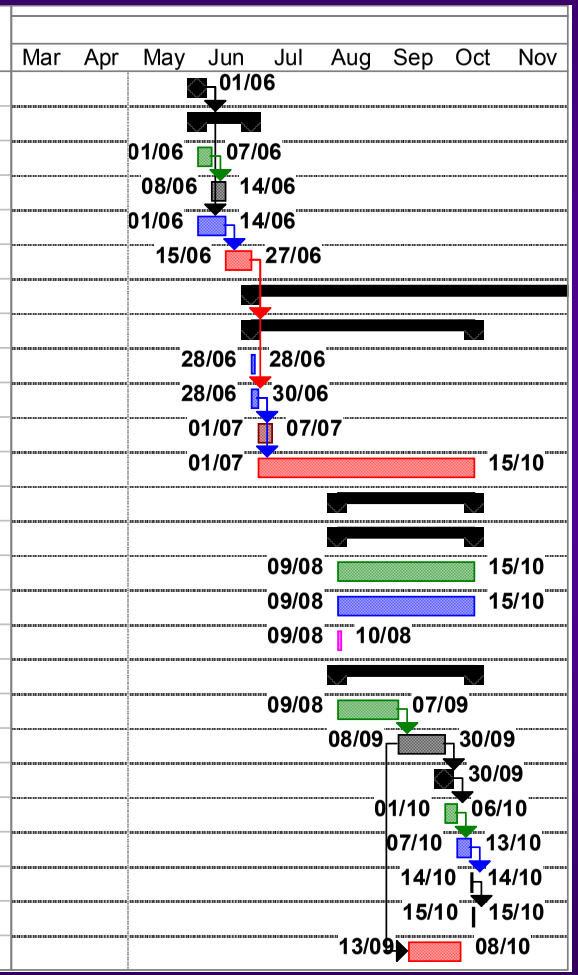

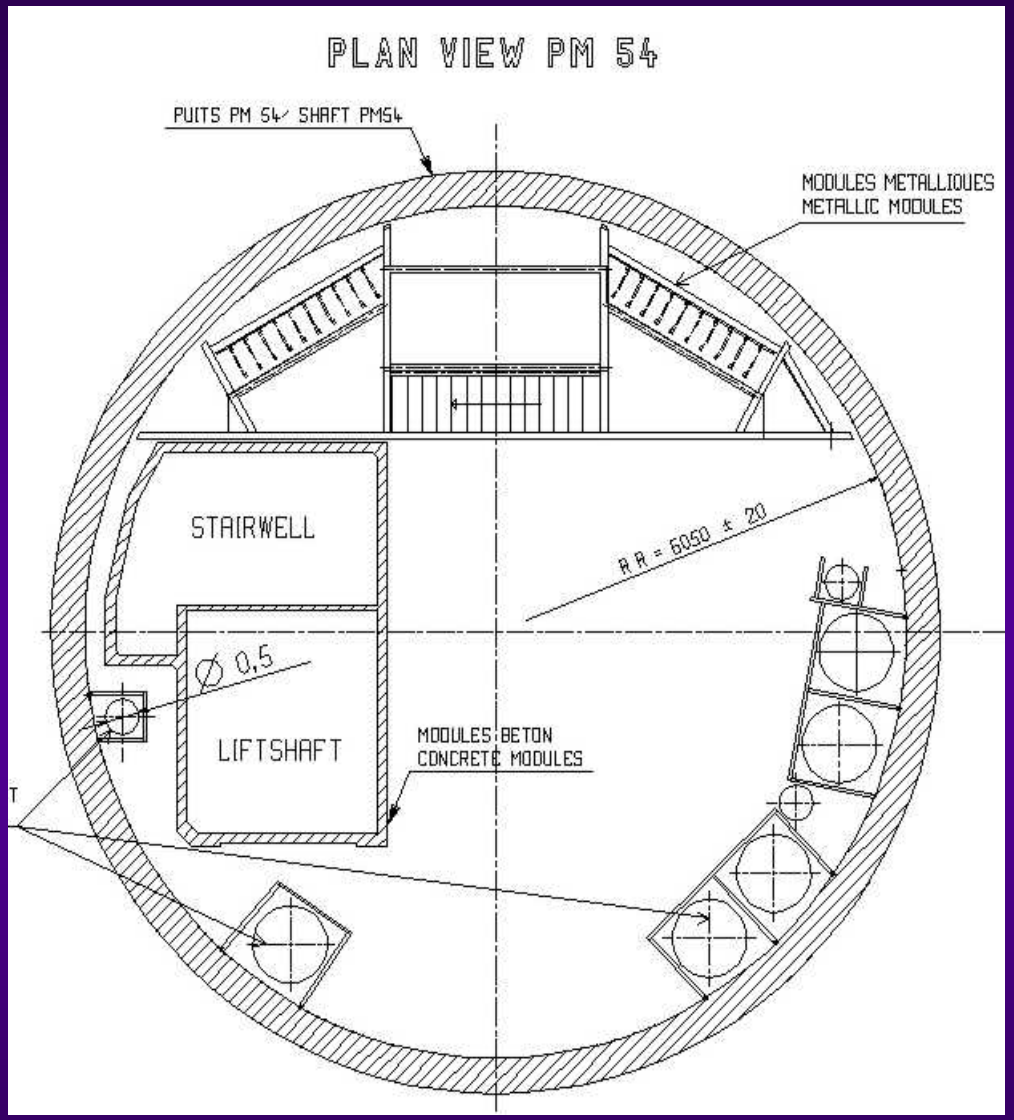
PLAN VIEW PM 54
PUITS PM 54/ SHAFT PM54
MODULES METALLIQUES
METALLIC MODULES
STAIRWELL
R R = 6050 ± 20
Ø 0,5
LIFTSHAFT
MODULES BETON
CONCRETE MODULES

PM54

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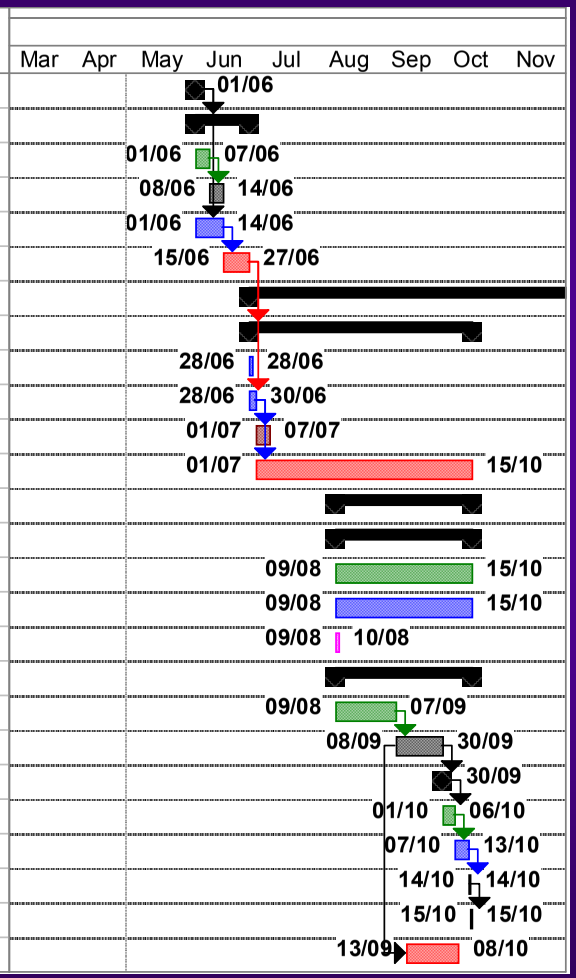
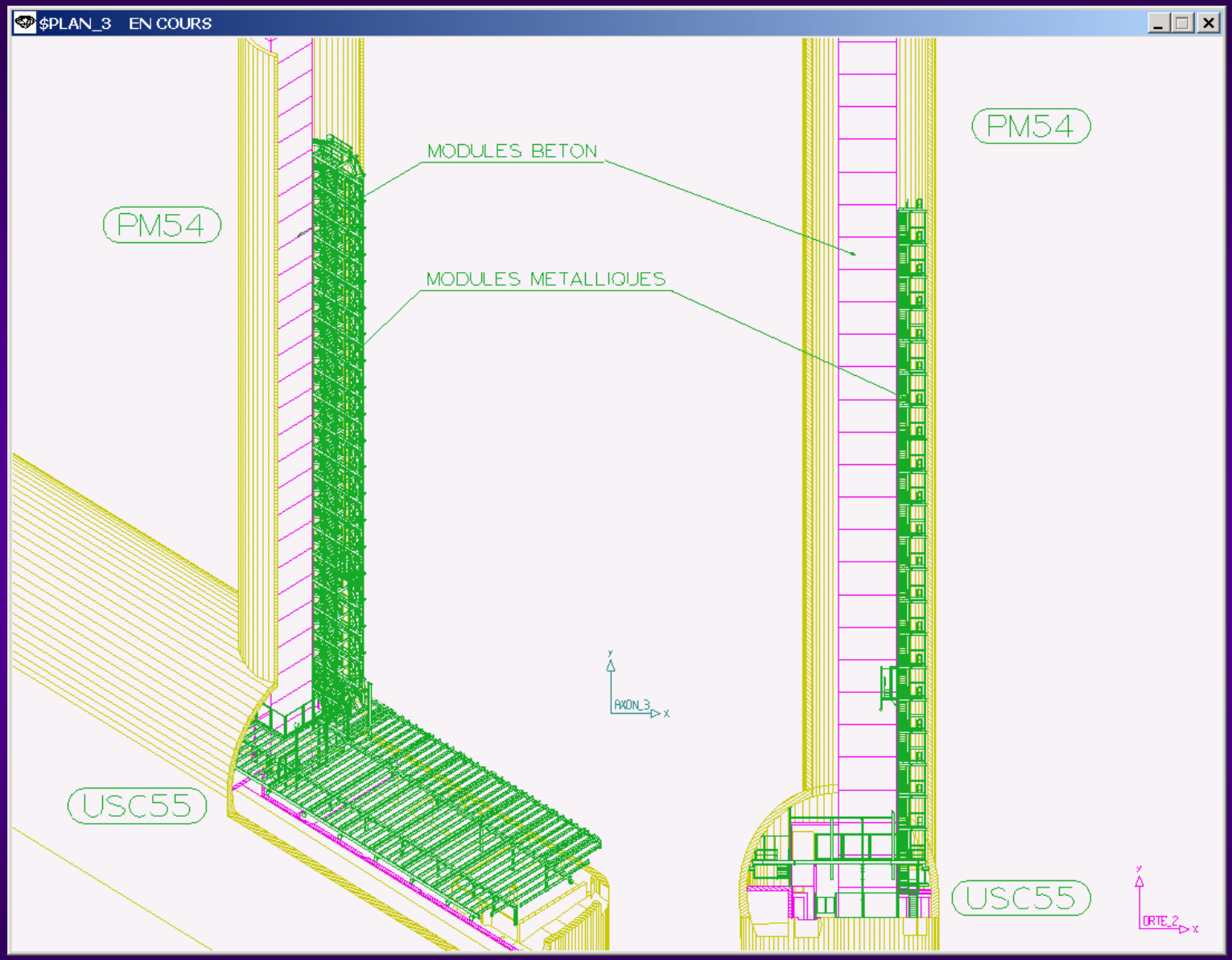
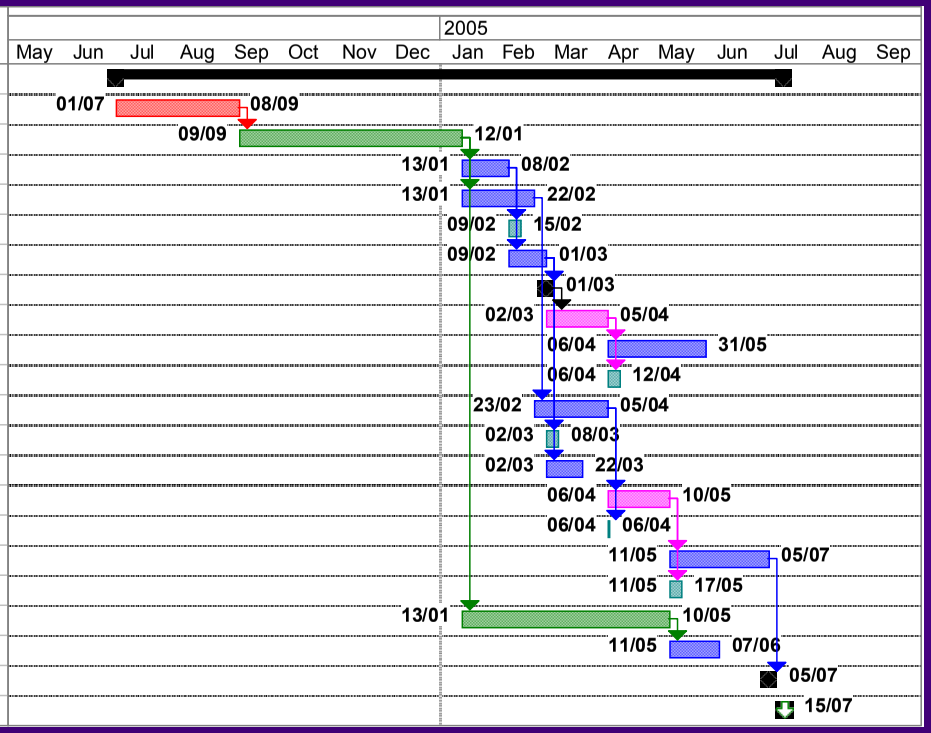
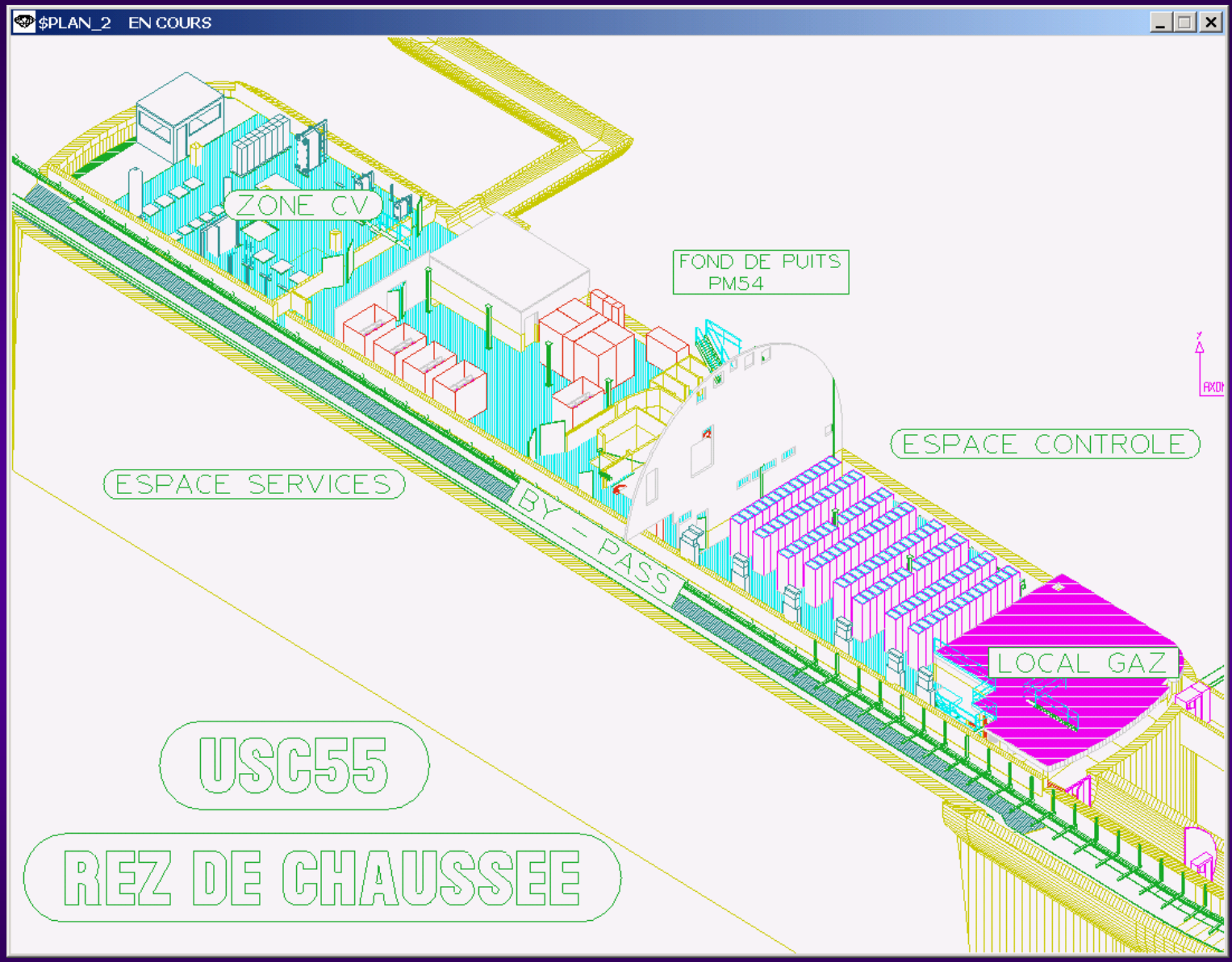


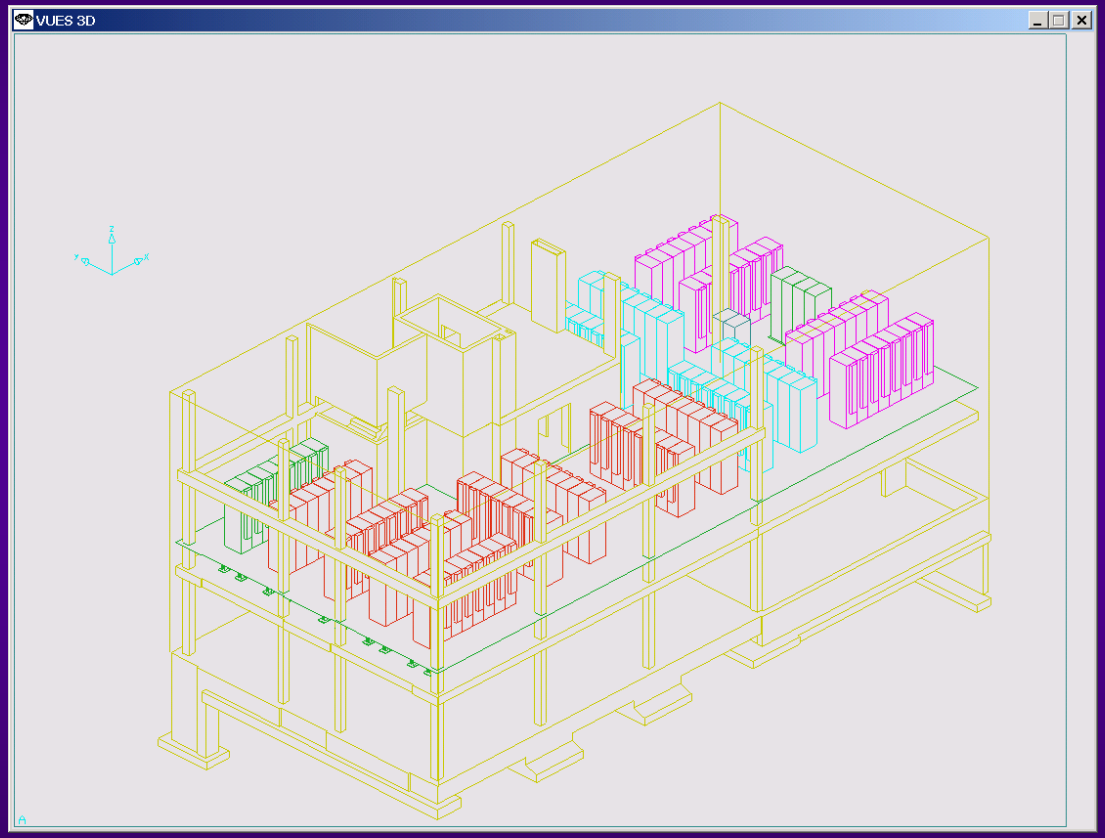

$PLAN_3 EN COURS
PM54
MODULES BETON
MODULES METALLIQUES
PM54
USC55
USC55
AXON_3
ORTE_2

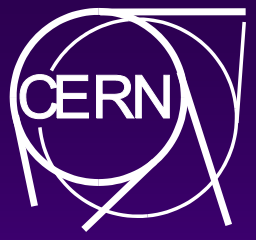
USC55

Task Name	Owner	Duration	Contractor(s)
USC55 Control Area (Gas Room End)		**272 days**	
Metallic structures installation	TS-IC	10 wks	COSMI
Ventilation ducts for racks	**TS-CV**	18 wks	GESCO
General services	TS-EL	4 wks	HADRALEC
Power distribution for racks 1st Phase GndFloor	TS-EL	6 wks	HADRALEC
IT network Cabling 1st phase GndFloor	IT-CS	1 wk	Amec-Spie
Cables tray installation GndFloor	TS-EL	3 wks	HADRALEC
Ready to install racks		0 days	
Racks Installation GndFloor	PH-CMI	5 wks	tbd
Power distribution for racks 2nd phase GndFloor	TS-EL	8 wks	HADRALEC
IT network cabling 2nd phase Gnd Floor	IT-CS	1 wk	Amec-Spie
Power distribution for racks 1st Phase 1stFloor	TS-EL	6 wks	HADRALEC
IT network Cabling 1st phase 1st floor	IT-CS	1 wk	Amec-Spie
Cables tray installation 1stFloor	TS-EL	3 wks	HADRALEC
Racks installation 1stFloor	PH-CMI	5 wks	tbd
IT racks installation 1st floor	IT-CS	1 day	Amec-Spie
Power distribution for racks 2nd phase 1stFloor	TS-EL	8 wks	HADRALEC
IT network cabling 2nd phase 1st floor	IT-CS	1 wk	Amec-Spie
Cooling pipe installation	**TS-CV**	17 wks	tbd
Separation wall building	TS-CE/IC	4 wks	tbd
Ready for crates		0 wks	
CMS Deadline "Ready for crates"		0 days	




$PLAN_2 EN COURS
ZONE CV
FOND DE PUITS
PM54
ESPACE CONTROLE
ESPACE SERVICES
BY - PASS
LOCAL GAZ
USC55
REZ DE CHAUSSEE


VUES 3D



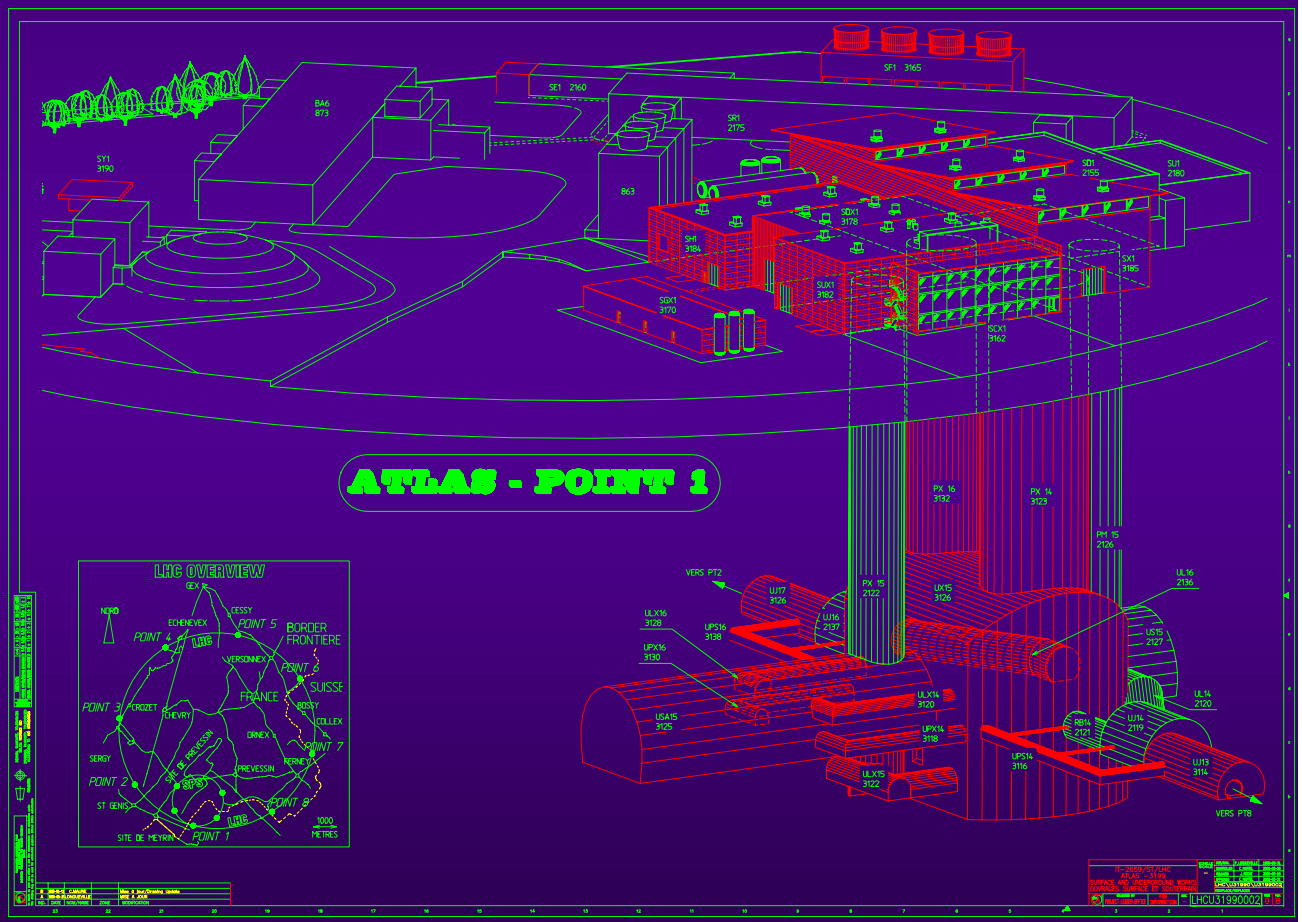
Managing Experimental Areas
LHC Point 1: ATLAS

François BUTIN

TS/LEA/AT

Status of ATLAS Exp Area installation

- All buildings and underground caverns delivered to end users
- Infrastructure well under way
- Detector installation started underground



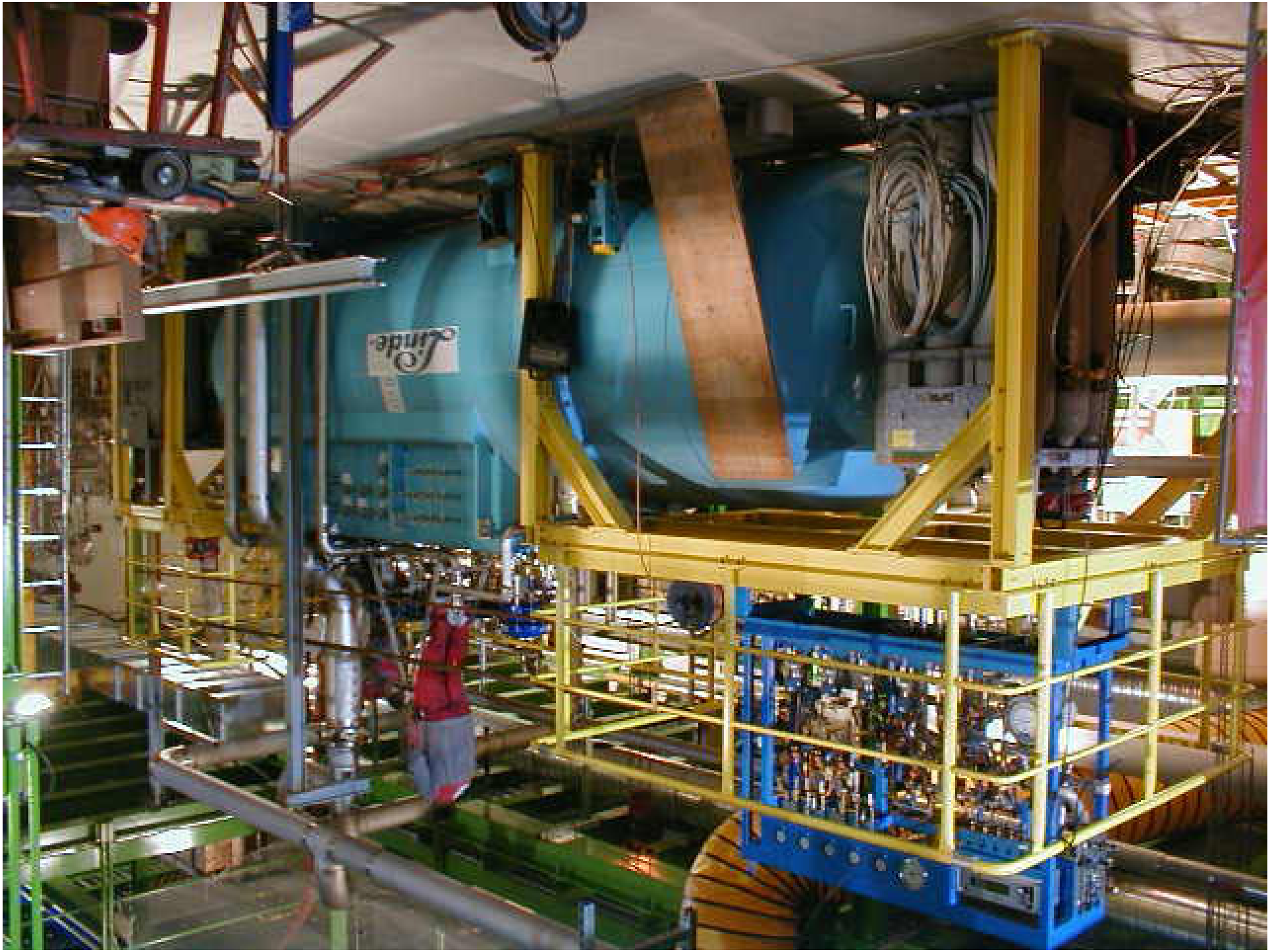
USA15 installation

USA15 infrastructure nearing completion:

- Metallic structure finished
- Water distribution finished
- Gas piping finished
- Electrical substation and general services 80% done
- Cooling station and ventilation being commissioned

Experiment services installation started:

- DAQ rooms being equipped with racks (150 installed)
- Magnet bus bars and control installation in progress (40%)
- Cryogenic plant in progress (80%)



UX15 infrastructure installation

Infrastructure installation nearly complete:

- LHC/ATLAS interface shielding installed
- Metallic structures finished (1000 tons)
- Cranes fully operational after long delays
- Cryogenic dewars installed (1 missing)
- Cryogenic fluids distribution piping in progress (30%)
- Lifts installation in progress (75%)
- Fire fighting installation complete, foam system 80%
- Ventilation 7 months late (85%)

Coming next:

- Electrical general services
- Gas piping

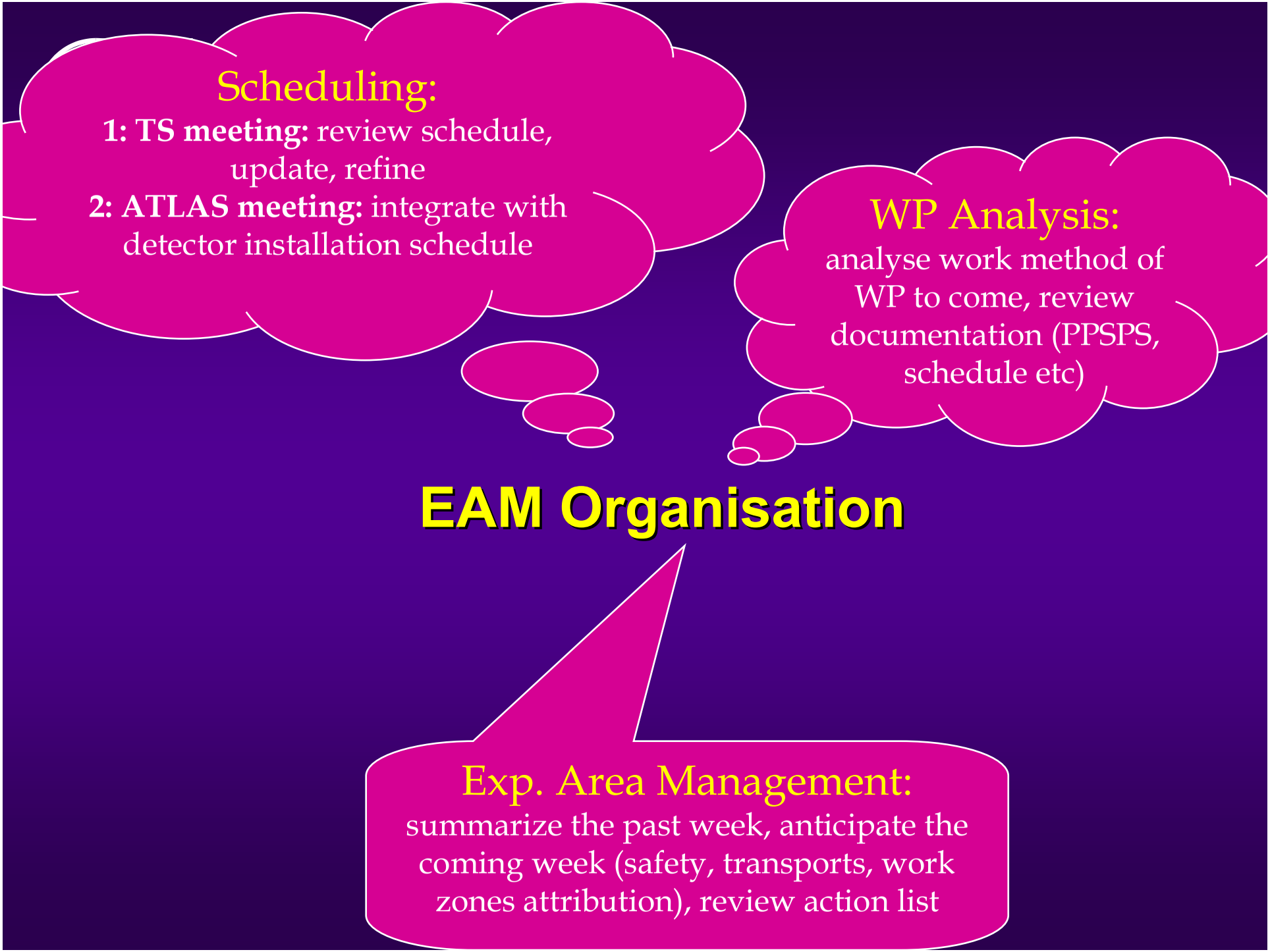
UX15 experiment systems installation

Installation of detector systems started on time:

- Feet and rail system aligned
- Trucks installed, TB lateral supports installed
- Tile calorimeter lowered 1 month ahead of schedule (50% complete)
- Muon big wheel supports in progress (75%)
- Proximity cryogenics installation (20% done)

Coming next:

- Test of dummy TB coil lowering into UX15 26th May, first coil expected in August
- LAr barrel calorimeter expected in October


Scheduling:
1: TS meeting: review schedule, update, refine
2: ATLAS meeting: integrate with detector installation schedule
WP Analysis:
analyse work method of WP to come, review documentation (PPSPS, schedule etc)
EAM Organisation
Exp. Area Management:
summarize the past week, anticipate the coming week (safety, transports, work zones attribution), review action list

EAM safety management

- Insist on early preparation of PPSPS, request presentation of work method in presence of safety coordinator
- Enforce display of PPSPS's and their application: change of work method implies amendment !
- Weekly tour of site by GLIMOS and safety coordinator, report in EAM meeting
- 1 safety action man: in charge of enforcing safety measures, correcting obvious problems.

EAM issues

Availabilities of cranes:

- Main tool for any underground installation
- Installation delays have direct consequences on all the other works
- Breakdowns are extremely prejudicial

Important delays in large scale works: ventilation

- Poorly organized contractor, little supervision: safety issues, quality pbs, and delays incurred…
- Ventilation in UX15 is huge, contractor not allowed to work at night: delays have impacted all the works there since half a year

EAM solutions

What we learnt:

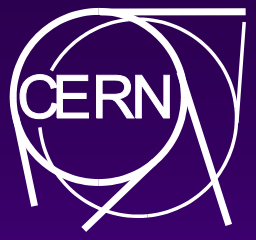
- Safety must have precedence over schedule constraints
- Safety coordinators are vital partners
- Design engineers should remain involved in installation stages
- Work supervisors presence on site is essential
- Constant presence of EAM team required on site

Some conclusions

- Extremely dense installation work
- More than 100 WP dealt with so far
- Decried problems are due “only” to 2 contractors, but essential (cranes, ventilation)

Nevertheless

- Over about 50 contractors working on the site, mostly satisfactorily
- No serious accident so far
- Experiment installation started well on time



Managing Experimental Areas
LHC Point 2: ALICE

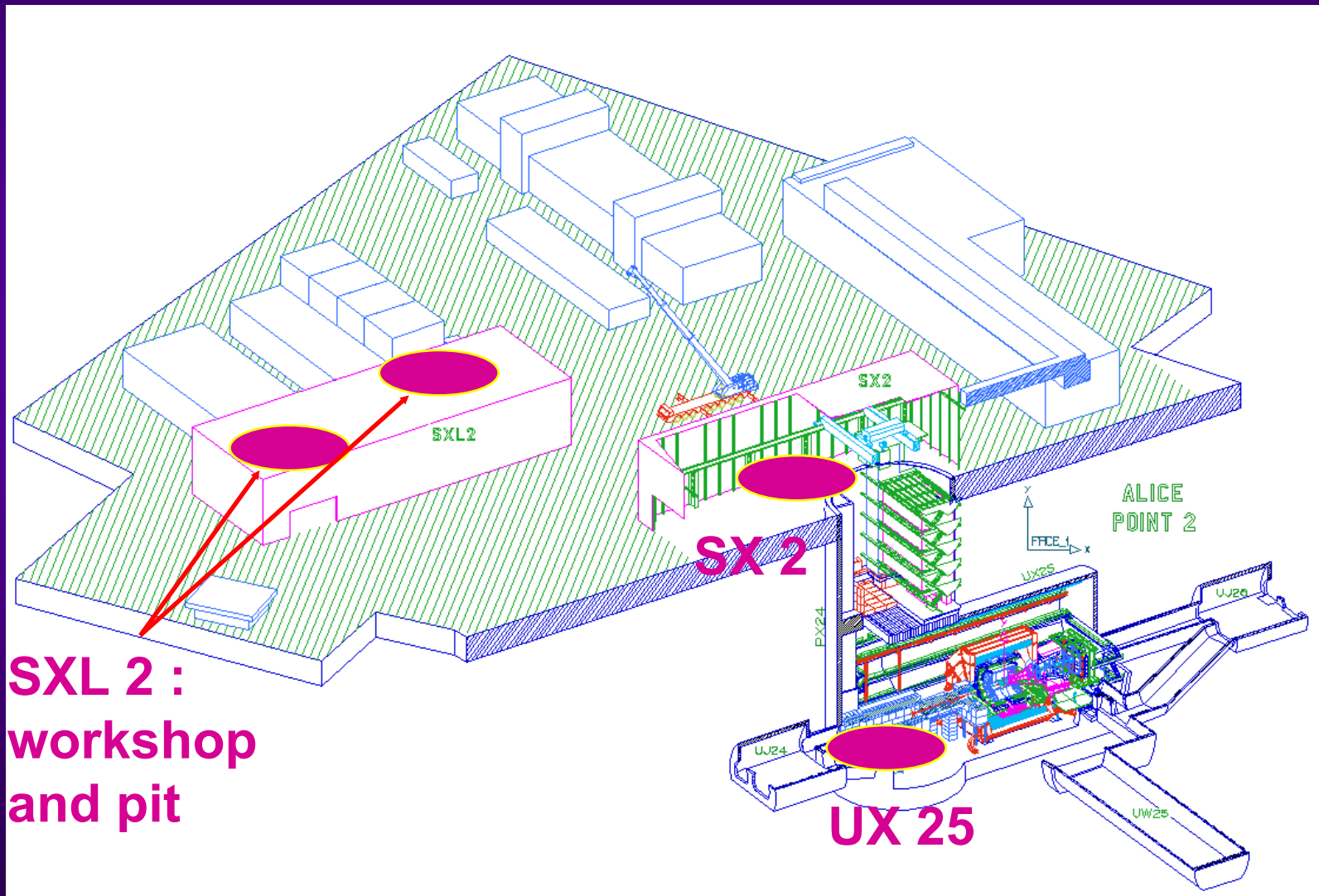
Sébastien EVRARD

TS/LEA/ALI

Alice experimental area

- Like LHCb, re-use an existing LEP exp. Area
- TS-LEA took the keys from the L3 team in June 2001
- 2001 : L3 Exp. Dismantling
- 2002-2003 : Site and L3 Modifications in order to match new requirements of Alice
- 2003-2004 : New detector construction

Alice Exp. Area



SXL 2 : workshop and pit

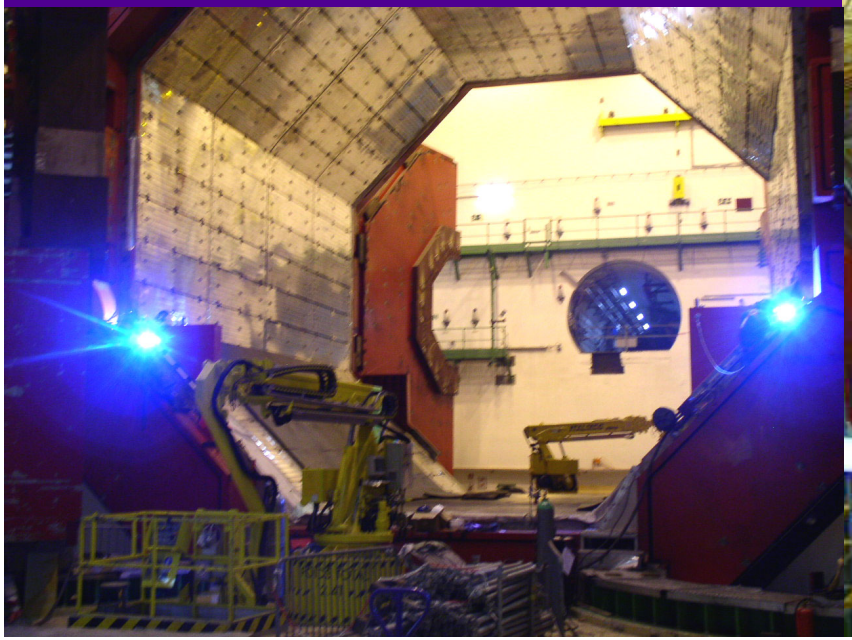
SX 2

UX 25

L3 Exp. Dismantling

Site and L3 Modifications

L3 magnet modifications

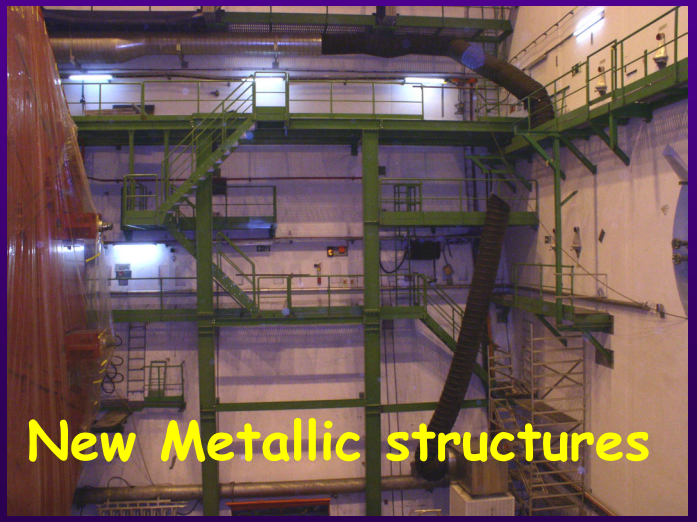


Site and L3 Modifications


New pit and clean room

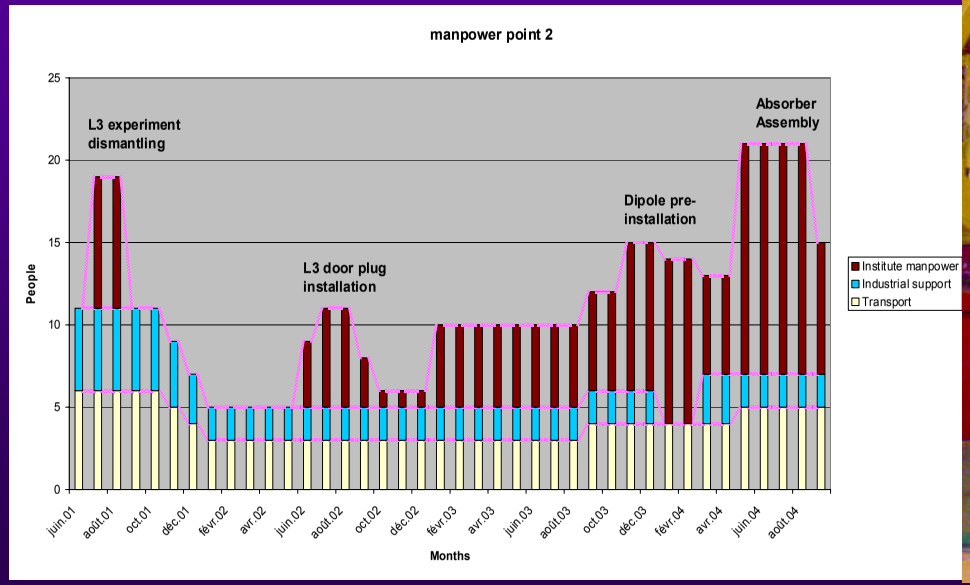

New overhead crane

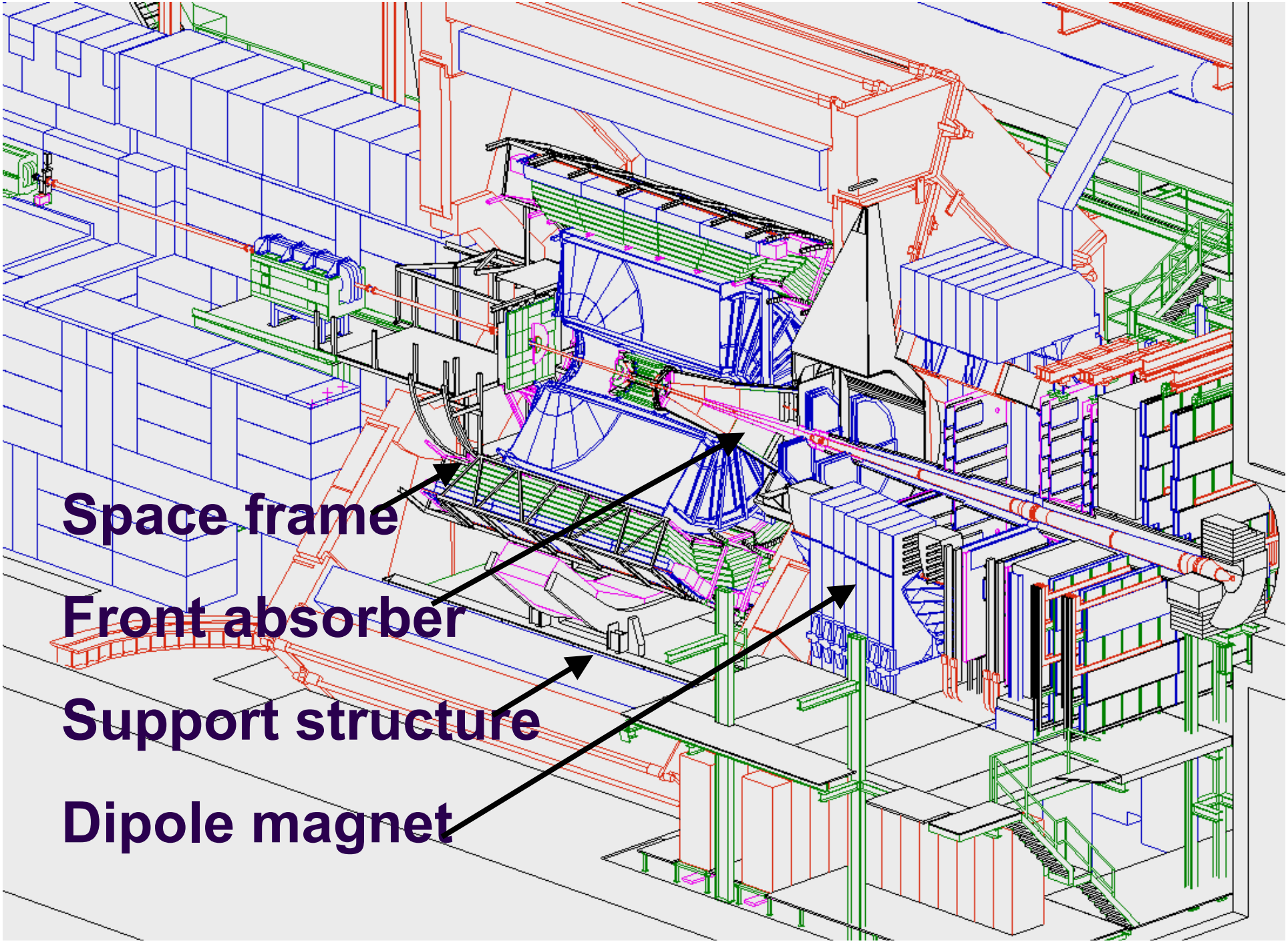

New Alice Control room


New Metallic structures

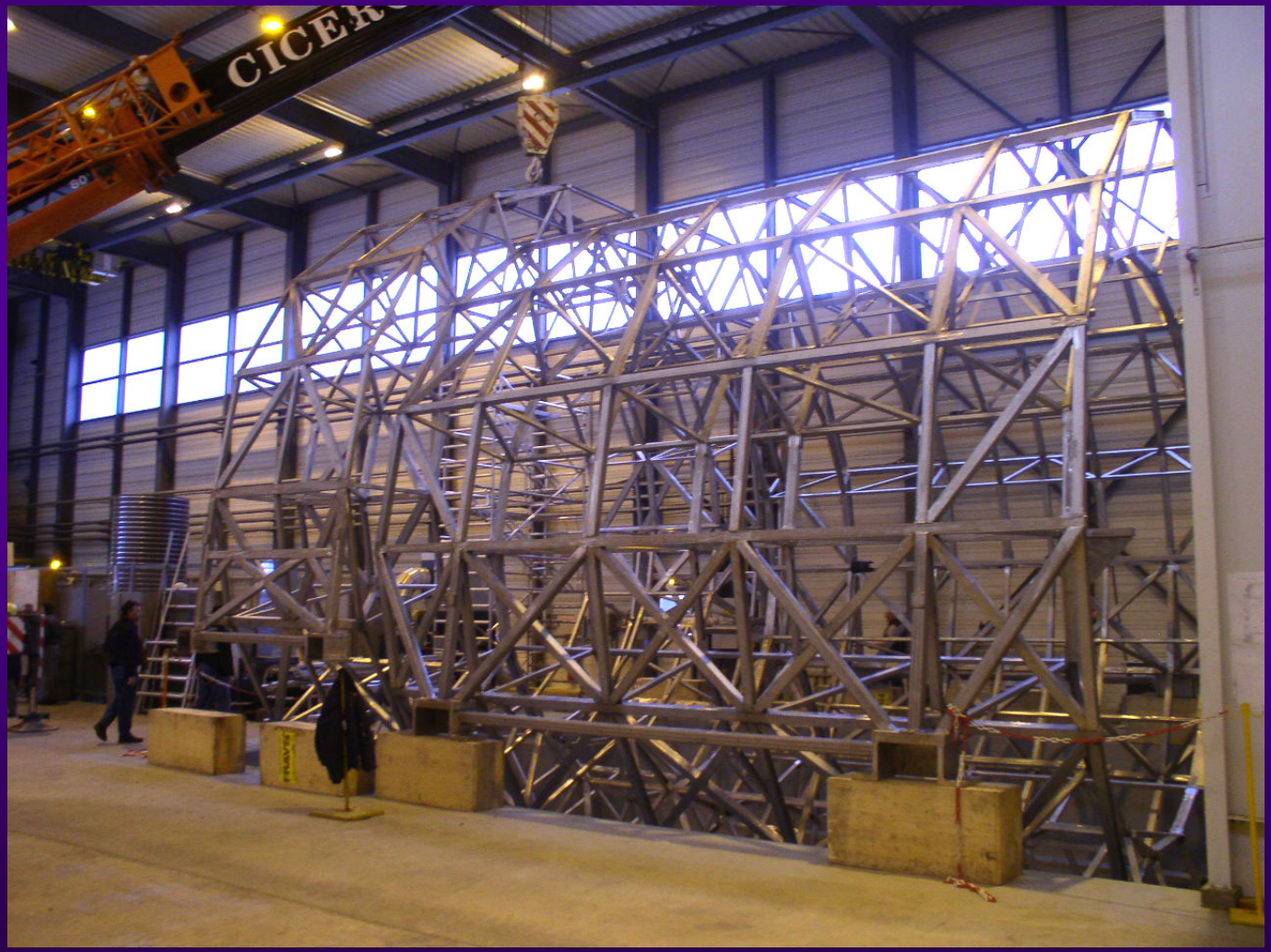
Detector construction and installation

- The Alice Installation team already exists and gathers people coming from various institutes of the Alice world-wide collaboration.
- From China
- From Russia



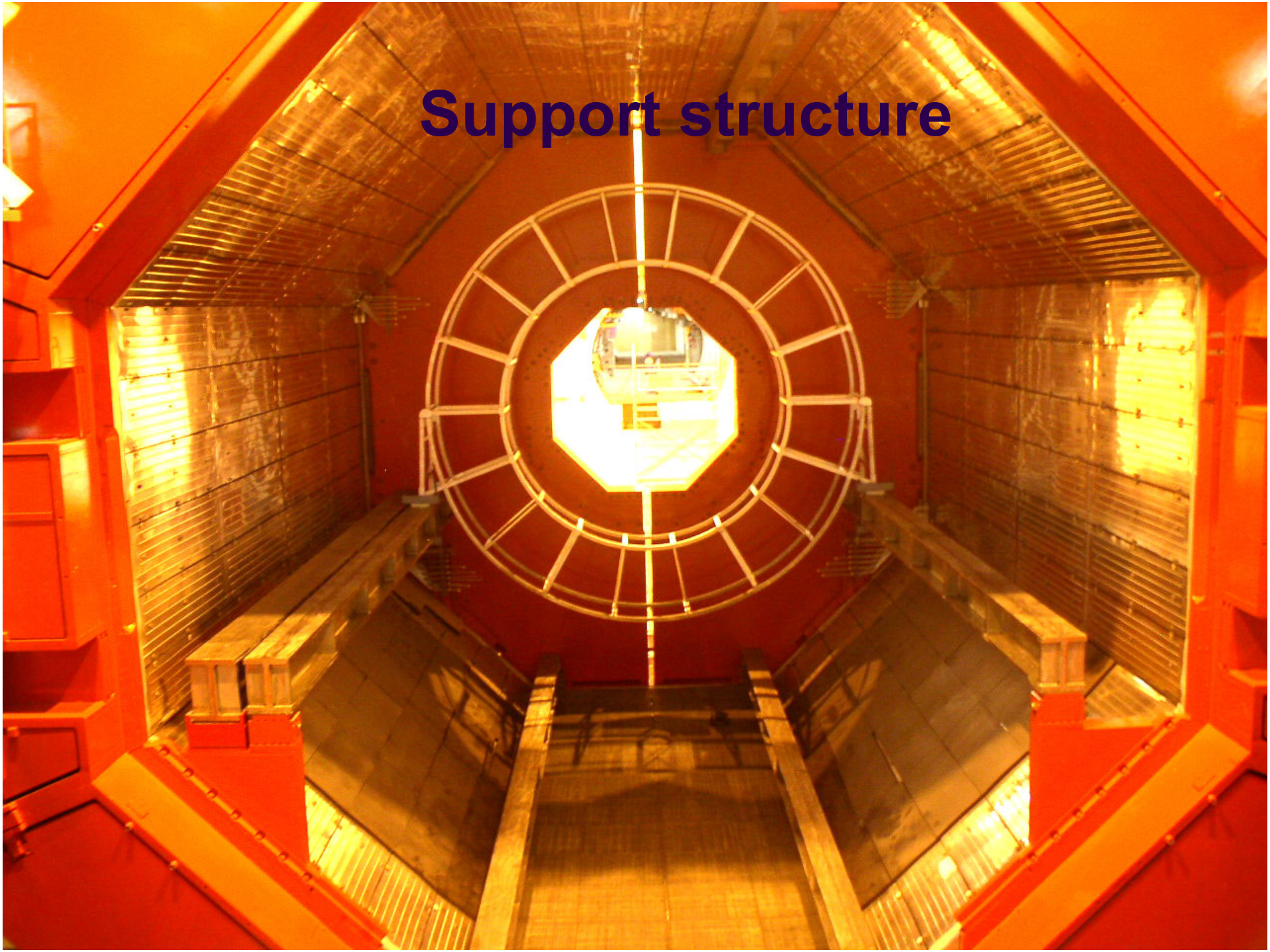

Space frame
Front absorber
Support structure
Dipole magnet

Space frame mechanical commissioning



Dipole Magnet yoke

Support structure

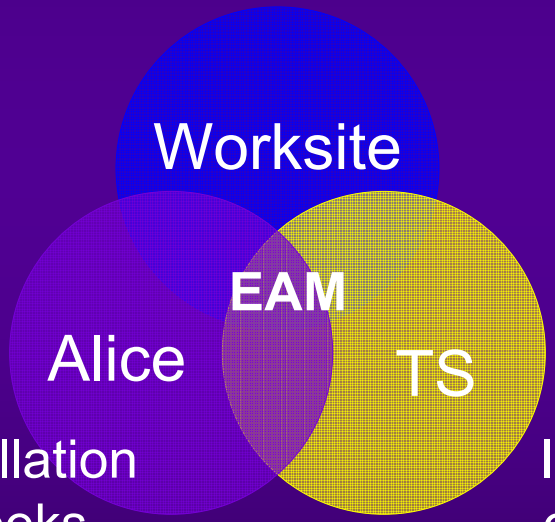


Front absorber assembly

Management tools

INSTALL MEETING MINUTES
EST-LEA ALICE Experiment Areas & its Infrastructure

Weekly Alice
meeting at point 2



Planning Alice Installation
Team every 2 weeks

Instal meeting
every 2 weeks

Management tools

- **Job request form**
  - **Job description**
  - **Budget code**
  - **Schedule**
  - **Manpower**
  - **Orders**
  - **Safety**

CERN
TS/LEA

27/04/2004 File name: P2TJR-

Job Request for point 2 ALICE team

JOB INFORMATION	
OB Title:	SG building cleaning and modifications
OB description: (if needed, ease add a separate sheet with the tailed description)	- Remove unuseful pipes and supports + storage or waste removal - Dismount 1 electrical cabinet and clean 2 other - Modify existing and add 2 supports for patch panels
ocation (build/room):	SG2 / 2270
udget Code for material:	32421
ate of initial information:	02/09/2002
equested completion date:	30/09/2002
elated documents :	Our on-site visit (04/09/2002)
elated drawings :	GDS-point2-SG-2270

REQUESTER				
	Name	*Division/Group*	*Telephone*	*Mobile*
equester	C. GREGORY	EST/LEA	75381	163504
equester's deputy	D. McFARLANE	EST/LEA	78005	164247

	REQUIRED MANPOWER			*ALLOCATED MANPOWER*		
YPE	*HOW MANY*	*DURATION*	*QUANTITY*	*HOW MANY*	*DURATION*	*QUANTITY*
rane drivers						
lechanics						
lectricians	1	1 week	1 manweek	1	3 days	
'elders						
itters						
killed workmen	2	1 week	2 manweeks	2	3 days	
abourers						
OTAL	3	1 week	3 manweeks	3	3 days	2 manweeks

SCHEDULE			
	Requested	*Foreseen*	*Real*
tart date	09/09/02	09/09/02	10/09/02
ompletion date	13/09/02	13/09/02	12/09/02
eadline/Constraint	30/09/02 / painting SG		

MATERIAL, EQUIPMENT & OTHER			
laterial	DAI # : /	MAG # : /	Other: /
equired equipment	Elevating platform: no	Scaffolding: yes	Other: plumber tools
afety issues	Check no power supply prior to any electrical work		
ther comments	Recover all fittings that could be re-used. Work performed by the Slovak team		

EAM safety management

- PPSPS and Alice task procedure for institute people. (SN26 in Chinese, Russian,..)
- Display of safety documents on each worksite
- Daily check by the Alice TSO and safety coordinator
- Weekly check by Alice GLIMOS
- Reports and action in 3 kinds of meeting

EAM main concerns

Cranes and Crane drivers are key resources:

- Improve reliability of cranes
- Avoid manpower change in crane driver team.

Delivery delays:

- Dipole magnet delivered 8 months late.
- Deep impact on next jobs.

Ensure same level of safety:

- Institute people and contractors (PPSPS, AOC, VIC,…)

OUTCOME

- Point 2 : experimental area inherited from LEP is not Tailor-made. Modifications and refurbishment needed.
- As much as possible use of existing contracts (very few IT procedures launched)
- EAM team and Alice installation team act as one.
- Detector construction phase well in progress.
- Co-activities sometimes unavoidable but very difficult to live with.
- Safety organisation must take into account institute people.