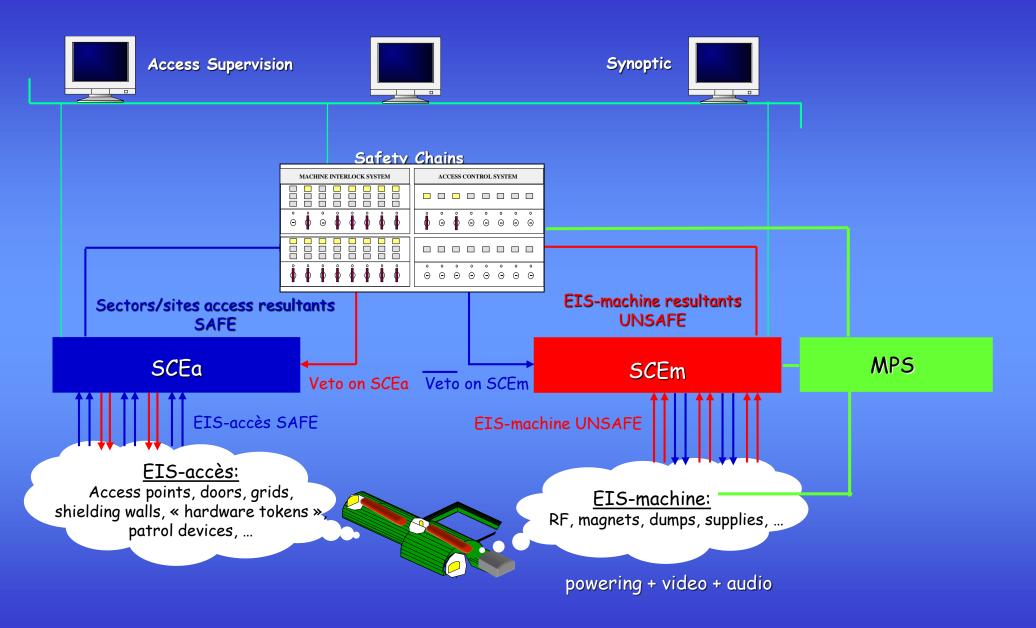


LHC Access Control

Planning & Deadlines

E. Cennini / ST-AA-AC

LHC ACCESS & MACHINE SAFETY SYSTEMS



 Access control program application Databases MMI Integration to the communication networks 	 Synoptic, event logging, diagnostics Injectors operation informations MMI 	SUPERVISION LAYER
☑ Operator interface☑ Design, prototyping of	cion (kind, number, future evolution)? of the SGCI (central safety keys ?!) ontrol network (hardware links, communications) Definition of the SCEm Elaboration of the equipment resultants Technology used ? Cabling, connections (redundancy)	CONTROL LAYER
□ Definition/identification/location	□ Definition/identification/location	

- Definition/identification/location of the EIS-accès
- oxdiv Detailed functional description of the EIS

- Definition/identification/location of the EIS-machine
- Detailed functional description of the EIS

EQUIPMENT LAYER

MLESTONES - DEADLINES - GENERAL PLANNING

MAIN MACHINES MILESTONES

SPS

SPS: TT40 Extraction Tests (mid 03)

CNGS

CNGS: TT41 injection Tests (March/April 05)

CNGS Closed (May 05)

CNGS: First Beam (31/5/05)

LHC

LHC: TI8 injection Tests (Q1-2004)

LHC: Sector Tests (1/4/04 => 30/09/04)

LHC: Ring Closed (31 December 2005)

LHC: First beam(1 February 2006)

LHC: TI2 injection Tests (march 06)

LHC: First collision (1st april 2006)

LHC: SD (1st may 2006 => 31 july 2006)

LHC: Physics run (01/08/06 => 28/02/07)

LHC: Lead ion run $(01/03/07 \Rightarrow 12/04/07)$

MAIN SPS SAFETY SYSTEMS MILESTONES

MAIN LHC SAFETY SYSTEMS MILESTONES

MAIN LHC SAFETY SYSTEMS INSTALLATION MILESTONES

LHC SAFETY SYSTEMS: GOING TO TENDER MILESTONES

LHC SAFETY SYSTEMS STUDIES MILESTONES

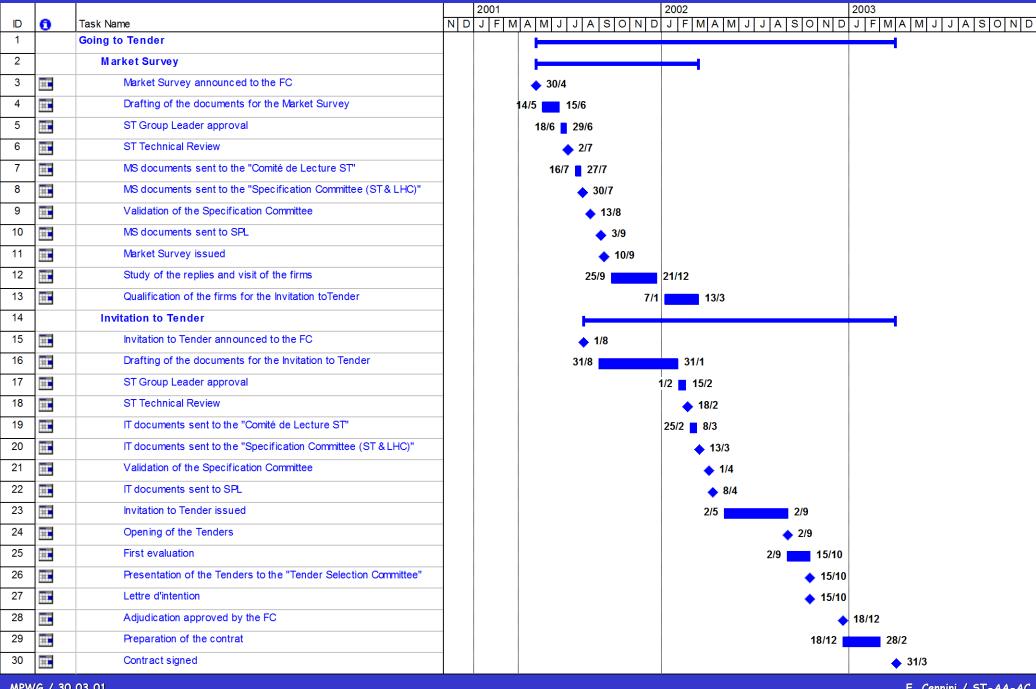
					001		2002	2003	2004	2005	2006	200
ID	0	Task Name	Q2 Q3 Q4	C	21 (Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1
1		Main SPS/CNGS/LHC Milestones	ı	۲							<u> </u>	
2		INB Activities for the SPS/CNGS/LHC		┡								
3		INB authorisation for LEP Dismantling	•	• 1	15/12	2					III	
4		Drafting: Etude des déchets de l'ensemble des installations	8/1								23/12	
5		Drafting: Plan d'Urgence Interne	8/1			29/6					-	
6	111	Drafting: Etudes rejets/effluents pour le SPS, CNGS et LHC	8/1				31/5					
7	1	Drafting: Rapport Provisoire de Sûreté SPS/CNGS/LHC	8/1				31/5					
8		Avis du GPU (présentation du rapport d'expertise de l'IPSN)						12/6				
9		Avis (favorable?) du GPU de la DSIN pour le RPS						†	12/11			
10	-	INB authorisation for SPS/CNGS/LHC Operation (?)							RPS INB OK !		6/1	
11		SPS: TT40 Extraction Tests						1/5 31/7				
12	-	LHC: TI8 injection Tests (requires INB authorisation)						5/1	31/3		INB OK!	
13		LHC Sector Tests							1/4 30/	" /9 -		
14		LHC (Pre)commissioning & Tests							1/10		23/12	
15		LHC : RING CLOSED								•	23/12	
16		LHC: FIRST BEAM								•	1/2	
17	-	LHC BEAMS: FIRST COLLISION							RPS INB OK!	***************************************	4 3/4	
18		LHC: PHYSICS RUN START						L			4 1/8	
19		CNGS: TT41 Injection Tests								1/3 29/4		
20		CNGS CLOSED								4 2/5	111111111111111111111111111111111111111	
21		CNGS: FIRST BEAM								31/5	***************************************	
											111111111111111111111111111111111111111	

											111111111111111111111111111111111111111	
		·	L		_						1	

			1999	200	00	2001	1 2	2002	2003	2004	4	2005	2006	2007	2008	2009	201
ID	0		H1 H2									H1 H2					
1		SPS Safety Systems Milestones vs CNGS and LHC							1				_				
2		INB Activities for the SPS						\dashv									
3		Drafting of the chapter "Systèmes de Sûreté SPS/CNGS" for the "Rapport Provisoire de Sûret			8/1			31/	5								
4		Drafting of the "Annexe Technique et RGE du RPS" for SPS/CNGS			8/1			31/	5								
5		Achieving the "Analyse de Sûreté de Fonctionnement du SPS/CNGS"			8/1			31/	5								
6		Drafting the conclusions of the "Analyse de Sûreté de Fonctionnement du SPS/CNGS"			8/1			31/	5								
7		Implementation of the new "TT40 Extraction" safety chain in the SPS						2/12	15	4							
8	***	Tests of the SPS safety chain "TT40 Extraction"						15	5/4 30	/4							
9		Start of the TT40 extraction Tests							• 1	/5							
10	-	INJECTION TI8 (SPS side): Integration of the TI8's BS in the SPS Safety Chain 1							1/9	8/12							
11	-	INJECTION TI8 (SPS side): Tests of the upgraded SPS Safety Chain 1							8/1	19/1	12						
12		INJECTION TI8: Start of the TI8 injection tests								→ 5/·	1						
13		CNGS (SPS side): Implementation of the new "CNGS" safety chain in the SPS								6/	12	11/2					
14	-	CNGS (SPS side): Tests of the new "CNGS" safety chain									14/2	28/2					
15		CNGS : Start of the TT41 injection tests										4 1/3					
16		CNGS CLOSED										+ 29/4	l				
17		CNGS: FIRST BEAM										4 31/	5				
18		INJECTION TI2 (SPS side): Integration of the TI2's BS in the SPS Safety Chain 1										9/1	10/2				
19		INJECTION TI2 (SPS side): Tests of the upgraded SPS Safety Chain 1										13/2	28/2				
20		INJECTION TI2: Start of the TI2 injection tests											1/3				
21		LHC BEAMS: FIRST COLLISION											3/4				
22		LHC: PHYSICS RUN START											• 1	/8			
				1												1	

			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
ID	ð	Task Name	H1 H2	H1 H2	H1 H2	H1 H2	H1 H2	H1 H2	H1 H2	H1 H2	H1 H2	H1 H2
1		LHC Safety Systems Main Milestones	_									
2		INB Activities for the LHC Safety Systems (Access Control & Machine Interlock)										
7		Studies (requirements, performances, constraints) for the LHC Safety Systems										
34		Going to Tender										
64		Contract start date				♦ 31/3	3					
65		Safety systems core network installation				Н						
74		TI8 safety implementation				ļ k						
79		TI8 Injection: start of the injection Tests					5/1					
80		LHC Ring safety implementation (in parallel with the LHC sector's installation)					-	+				
85		Tests, and final commissioning of the Safey Systems							4			
89		LHC RING CLOSED							23/12			
90		TI2 safety implementation										
95		FINAL INB TESTS AND VALIDATION OF THE LHC SAFETY SYSTEMS							♦ 31/	3		
96		LHC BEAMS : First Collision							4 3/4			
97		LHC PHYSICS RUN							1/8	28/2		
	C / 20		1	1 1	1	1	<u> </u>	1		F C	1	

				Qtr 1, 2001	Qtr 2, 2001	Qtr 3, 2001	_	Qtr 4, 2001	Qtr 1, 2002
ID	0	Task Name	Dec	Jan Feb Ma	Apr May Jun	Jul Aug	Sep	Oct Nov Dec	Jan Feb
1		Studies (requirements, performances, constraints) for the LHC Safety Systems		-			1		
2		Definition and location of the ES-accès		-			1		
3		CERN Safety Requirements (TIS/GS, /RP, LHC, SL)	8/1				31/8	SL	
4		INB Safety Requirements	8/1			1	31/8		
5		User Requirements for the machine		—			1		
6		Equipment Groups : Identification of the dedicated/shared areas and the access requirements	8/1				31/8	SL	
7		Operation: Patrol and access supervision performances	8/1				31/8	SL	
8		User Requirements for the Experiments		-			1		
9	***	ATLAS Requirements	8/1			1	31/8		
10	***	ALICE Requirements	8/1			1	31/8		
11	***	CMS Requirements	8/1				31/8		
12		LHC-b Requirements	8/1			-	31/8		
13		Definition/location of the SCEa	8/1				31/8	-	
14		Definition of the EIS-machine		}			1		
15	-	LHC Machine Operation scenarios (+ location of the equipment and the controls)	8/1			-	31/8	SL	
16		Definition of the Machine Equipment Tests during the shutdowns	8/1				31/8	SL	
17		Experiment Operation scenarios	8/1				31/8		
18		Definition of the Detectors Equipment Tests	8/1				31/8		
19		Definition/location of the SCEm	8/1				31/8	SL	
20		Definition of the SGCI		-			1		
21		Identification of the Test Safety Chains	8/1				31/8	SL	
22		Identification of the Local Safety Chains	8/1				31/8	SL	
23		Identification of the Principal Safety Chains	8/1				31/8	SL	
24		Design of the SGCI	8/1				31/8		
25		Definition of the Supervision Layer		1	***************************************		1		
26		Definition of the Middlew are Layer	8/1				31/8		
27		Operator's requirements for the access control programapplication	8/1				31/8	SL	
			ln r	ed : SL contrib	∥ ution to the safety	 v svstems s	studie		
					110000000000000000000000000000000000000				
MPW	<i>G</i> / 30.	03 01						E. Cennini / S	T-AA-AC



			9	20	00	2001	1	2002	2003	2004	2005	2006	2007	2008
ID	0	Task Name	H2											H1 H2
1		LHC Safety Systems Main Milestones				H							H	
2		INB Activities for the LHC Safety Systems (Access Control & Machine Interlock)						-						
7		Studies (requirements, performances, constraints) for the LHC Safety Systems				-	4							
34		Going to Tender				-								
64	-	Contract start date							♦ 31/ 3	3				
65		Safety systems core network installation												
66	III	Safety Systems design and co-developments achieved on the prototype (SGCl, SCEa, SCEm, Supervision)						31/	/3	3/11				
67	***	(Installation of the audio communication network - Public Address ?)						31/	/3	3/11				
68	-	Installation and pre-cabling of the SCEa						31/	/3	3/11				
69		Installation and pre-cabling of the SCEm							14/7	3/11				
70		Installation and pre-cabling of the SGCI in PCR							1/9	3/11				
71	***	Installation of the communication netw orks in PCR							1/9	3/11				
72	===	Middlew are implementation							1/9	3/11				
73	===	Softw are environment installation							1/9	3/11				
74		TI8 safety implementation								H				
75		Installation of the "TI8 Safety Chain's" EIS-accès							3/11	20/11				
76		Cabling of the EIS on the SCEa and SCEm for the "TI8 injection" safety chain							6/11	20/11				
77		Cabling of the SGCl and configuration of the "TI8 injection" safety chain							20/11	8/12				
78	111	Tests, commissioning and DSO approval of the "TI8 injection" safety chain							8/12	22/12				
79	-	TI8 Injection : start of the injection Tests								5/1				
80		LHC Ring safety implementation (in parallel with the LHC sector's installation)								—	-			
81		Installation of the EIS-accès for the commissioning of the LHC Sectors							1	/4 	;	30/9		
82		Cabling of the EIS on the SCEa and SCEm							1	/ ₄	†	30/9		
83	11	Cabling and configuration of the SGCI							1	/4 	<u> </u>	30/9		
84	===	Safety chain tests and pre-commissioning							1	/4	 	30/9		
85		Tests, and final commissioning of the Safey Systems												
86		Safety Systems final tests and commissioning (equipment)									17/10	23/12		
87	***	Safety Systems supervision program final installation and commissioning									17/10	23/12		
88	-	INB commissioning of the LHC Safety Systems									2/11	23/12		
89		LHC RING CLOSED									•	23/12		
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			9	20		2001	2002	2003	2004	2005	2006	2007	2008
	0	Task Name	H2	H1	H2	H1 H2			H1 H2				
89		LHC RING CLOSED								•	23/12		
90		TI2 safety implementation											
91		Installation of the "TI2 Safety Chain's" EIS-accès								27/2	20/3		
92	-	Cabling of the EIS on the SCEa and SCEm for the "TI2 injection" safety chain								27/2	20/3		
93		Cabling of the SGCl and configuration of the "TI2 injection" safety chain								27/2	20/3		
94		Tests, commissioning and DSO approval of the "TI2 injection" safety chain								20/	3 30/3		
95		FINAL INB TESTS AND VALIDATION OF THE LHC SAFETY SYSTEMS									4 31/3	! 	
96		LHC BEAMS: First Collision									4 3/4		
97		LHC PHYSICS RUN									1/8	28/2	
AADVA	G / 30	03.01						1	l		-	ni / ST-	