CDR of the

Wire Scanner Acquisition System:

Time Schedule

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1. Time Schedule

1.1. Project breakdown

The work break-down structure of the WS ACQ SYS project is reported in Table1.

Task #	Description	notes
1	System design	SEM section and SCINT section
2	PDR-1	SEM section
3	PDR-2	SCINT section
4	Prototype construction	SEM and SCINT
5	Prototype in-house test	SEM and SCINT
6	Prototype test at Partner lab	SEM
7	CDR	jointly, SEM and SCINT
8	Prototype test at Partner lab	SCINT
9	WS Vertical test (mech+ACQ SYS)	at ESS
10	Series construction	SEM
11	SEM Series in-house acceptance	at Elettra
12	SEM series delivery to ESS	
13	SAR-1	Acceptance test at ESS / SEM
14	Series construction	SCINT
15	SCINT series in-house acceptance	at Elettra
16	SCINT series delivery to ESS	
17	SAR-2	Acceptance test at ESS / SCINT

Table 1: WS ACQ SYS break down structure tasks

At the time of writing, the first set of tasks (1 to 7) have been completed; this is summarized in figure 1, where the first half of the Schedule has been reported.

Differently from what originally planned, also due to the overall ESS project delays, the developments of the two sub-systems of the WS ACQ SYS, the SEM section and the SCINT section, ended almost at the same time resulting in a single CDR.

There are also some other minor changes from what originally foreseen, like:

- line 19 *shipment of the 2nd dev. station to Elettra* …. never accomplished
- line 20 *delivery of final μ-TCA acq. board* ….. never accomplished
- line 25 *delivery of WS mech. assembly* …… never accomplished

As a matter of fact, line 19 and line 25 tasks are somehow linked as the delivery of the 2nd development station (line 19) to Elettra has been foreseen in the original schedule to take advantage from the availability, at Elettra, of the WS mechanical assembly (line 25) which never occurred due to late construction & delivery of WS mechanical assembly by other ESS external partners.
This change moved the burden of tuning the Motion Controller parameters to ESS. Elettra will therefore just import these setting into its EPICS code to move the actuators. This will be implemented and double checked during the Vertical Integration Test scheduled for the 1st half of 2018 at ESS.

ID	Milestone	Task Name	Duration	Start	Finish	Predece
1		**WSACQ**	**859 days**	**01/10/15**	**11/01/19**	
2	1	Kick-off meeting	0 days	01/10/15	01/10/15	
3	2	ESS final specification for the scintillator	0 days	01/04/16	01/04/16	
4		WS ACQ SYS layout definition	198 days	01/10/15	30/06/16	
5		Design of SEM prototype	198 days	01/10/15	30/06/16	
6		SEM ICS integration preliminary design	132 days	01/01/16	30/06/16	
7	4	PDR-1 Full system SEM (ICS+AD)	0 days	28/06/16	28/06/16	
8		Shipment of 1st ICS development station to Elettra	0 days	15/02/17	15/02/17	
9		SEM ACQ SYS design	88 days	01/06/16	30/09/16	
10		SEM board&module; prototype & characterization	195 days	01/09/16	31/05/17	
11		Controls Detailed Design Document	0 days	16/12/16	16/12/16	
12		Control Acceptance Test Plan	0 days	30/06/17	30/06/17	
13		SEM prototype integration in ICS	97 days	01/12/16	14/04/17	
14		SEM ICS engineering and interface panels	108 days	15/02/17	14/07/17	8
15		SEM ICS computation SW	108 days	15/02/17	14/07/17	8
16		SCINT detection protoype design	87 days	01/09/16	31/12/16	
17		SCINT ICS integration design	195 days	01/11/16	31/07/17	
18	6	PDR- 2 - Full system SCINT	0 days	13/12/16	13/12/16	
19		Shipment of 2nd ICS development station to Elettra	0 days	31/10/17	31/10/17	
20		Delivery of final uTCA boards to Elettra	0 days	31/10/17	31/10/17	
21		SCINT ACQ SYS prototype	65 days	02/01/17	31/03/17	
22		SCINT ACQ SYS CDR Data package	109 days	01/03/17	31/07/17	
23		SCINT PROTOTYPE characterization	129 days	01/02/17	31/07/17	
24		SCINT prototype integration in ICS	44 days	31/10/17	29/12/17	19
25		Delivery of one Danphysique mechanical WS assembly to ESS	0 days	15/06/17	15/06/17	
26		SCINT ICS engineering and interface panels	44 days	31/10/17	29/12/17	19
27		SCINT computation SW	44 days	31/10/17	29/12/17	19
28	9	CDR- 1 - Full system design SEM (ICS+AD)	2 days	05/03/18	06/03/18	
29	11	CDR- 2 - Full system design (SCINT)	2 days	05/03/18	06/03/18	

Figure 1: 1st half of the WS ACQ SYS schedule, start to CDR.

In figure 2 the 2nd part of the WS ACQ SYS project schedule is reported. Some of the listed tasks have been already accomplished, like:

- line 32 *in-house test of SEM boards* …. completed
- line 34 *SEM prototype tested* …. completed
- line 35 *arrange AFE module test at Partner Lab* …. completed
- line 36 *(AFE+BE+ADC) module test at P. Lab.* …. completed
- line 37 *AFE prototype tested (with beam at P. Lab.)* completed

The tasks (8 to 17 of Table 1) to be carried out for the project completion are dealing with:

- SCINT test at Partner lab line 45
- Vertical integration with one mechanical set-up line 33
- Production of the two series: SEM and SCINT lines 39 to 41
  lines 47 to 48
- Acceptance test, in-house at Elettra lines 42 & 49
- Shipment to ESS lines 43 & 51
- SAR, 1 and 2 lines 50 & 53

A new line has been added to the schedule, line 38: construction budget release after signature.

28		9	CDR- 1 - Full system design SEM (ICS+AD)	2 days	05/03/18	06/03/18	
29		11	CDR- 2 - Full system design (SCINT)	2 days	05/03/18	06/03/18	
30			setup TRR data package	216 days	06/11/17	03/09/18	
31		15	TRR -Test readiness for SEM prototype	0 days	14/09/18	14/09/18	
32			In-house test of SEM boards (AFE+BE)	86 days	01/02/17	31/05/17	
33		12	Vertical test in lab: test of WSAS on WS MECH at ESS	22 days	19/04/18	18/05/18	25
34			SEM Prototype TESTED (no beam)	0 days	30/06/17	30/06/17	
35			arrange AFE module test at partner lab; including ICS part	119 days	04/04/17	15/09/17	
36		7	(AFE+BE+ADC) module test at partner lab	29 days	10/10/17	17/11/17	
37			AFE Prototype TESTED (with beam, @PARTNER LAB)	0 days	17/11/17	17/11/17	36
38			Construction budget release after Signature	0 days	23/02/18	23/02/18	
39			SEM PO for: Components; PCB; Assembly	24 days	23/02/18	28/03/18	38
40		14	Delivery of first series to ESS (SEM)	60 days	29/03/18	20/06/18	39
41			Manufacturing of SEM module series	56 days	21/06/18	06/09/18	40
42			In-house acceptance test of SEM module series	19 days	07/09/18	03/10/18	41
43			Shipment to ESS – SEM modules	5 days	04/10/18	10/10/18	42
44			Delivery of SCINT prototype by ESS	0 days	27/04/18	27/04/18	
45		13	SCINT detector prototype test at Partner facility (SCINT)	25 days	27/04/18	31/05/18	44
46			SCINT mode TESTED	0 days	31/05/18	31/05/18	45
47			SCINT PO for: Components; PCB; Assembly	50 days	01/06/18	09/08/18	46
48			Manufacturing of SCINT Module series	80 days	10/08/18	29/11/18	47
49			In-house acceptance test of SCINT module series	20 days	30/11/18	27/12/18	48
50		17	SAR-1 SEM only	0 days	12/10/18	12/10/18	43
51			Shipment to ESS – OFE modules	11 days	28/12/18	11/01/19	49
52			COTS hardware available & tested at ESS site	0 days	01/06/18	01/06/18	
53		21	SAR-2 Full system SCINT	0 days	11/01/19	11/01/19	51

Figure 2: 2nd half of the WS ACQ SYS schedule, CDR to SAR.