







## Recent meetings with LIU on wire scanners

Production readiness review for mechanics on 29/3/17

- https://indico.cern.ch/event/618262/
- Open issues on budget and operational precision
- Green-light from impedance and vacuum

Wrap-up meeting for the review on 2/5/17

- https://indico.cern.ch/event/573340/
- Followed-up on questions raised in the review
  - Budget issue resolved with additional support from LIU and CONS
  - Latest data from calibration and operation with beam analysed and presented
- Agreed to go-ahead with mechanics series production
- Minutes at: <a href="https://edms.cern.ch/document/1811259/1">https://edms.cern.ch/document/1811259/1</a>

Meeting with BI and S.Prodon 9/5/17

Agreed on EVM implementation and budget codes





## Implementation in EVM

#### 12 LIU codes

- Compromise between ease of reporting for LIU and for BI
- Each machine has 2 codes for mechanics, 1 for control, 1 for acquisition and cables
- +1 code for CONS (64224)
  - Prioritise for 2017 spending

#### Status

- Codes are created and being used
- Spending profile now finalized for introduction into EVM

LIU-PSB mechanical production and installation	64024	
LIU-PSB acquisition electronics and cables	64026	450
LIU-PSB mechanical commercial components	64028	45%
LIU-PSB control electronics	64027	
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LIU-PS mechanical production and installation	64036	
LIU-PS acquisition electronics and cables	64037	359
LIU-PS mechanical commercial components	64038	337
LIU-PS control electronics	64039	
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LIU-SPS mechanical production and installation	64047	
LIU-SPS acquisition electronics and cables	64048	259
LIU-SPS mechanical commercial components	64049	

64058

**LIU-SPS** control electronics





## **Status of prototypes**

#### SPS

- 'Intermediate' instrument design, installed in LS1
- Currently being used in parasitic beam operations using 'development kit' controller
  - Improvements to acquisition filters have solved signal saturation issue
- Benchmarking beam size measurements with linear scanners

#### **PSB**

- 'Quasi-final' instrument design installed in EYETS 16-17
- Preparations in progress for operations using development kit controller
  - First operations with beam, Summer 2017
- Will make benchmarks with operational scanners
- Laboratory scanner is being used for calibration tests

#### PS

- Production of instrument mechanics in-progress, plan to install YETS 17-18
- Plan to use with final prototype control electronics and low-level software for 2018 operation





## **Procurement status**

#### Vacuum tanks

- Market survey completed, 18 companies expressed and interest, 9 declined, will now proceed with validation process
- Invitation to tender documents written and under review

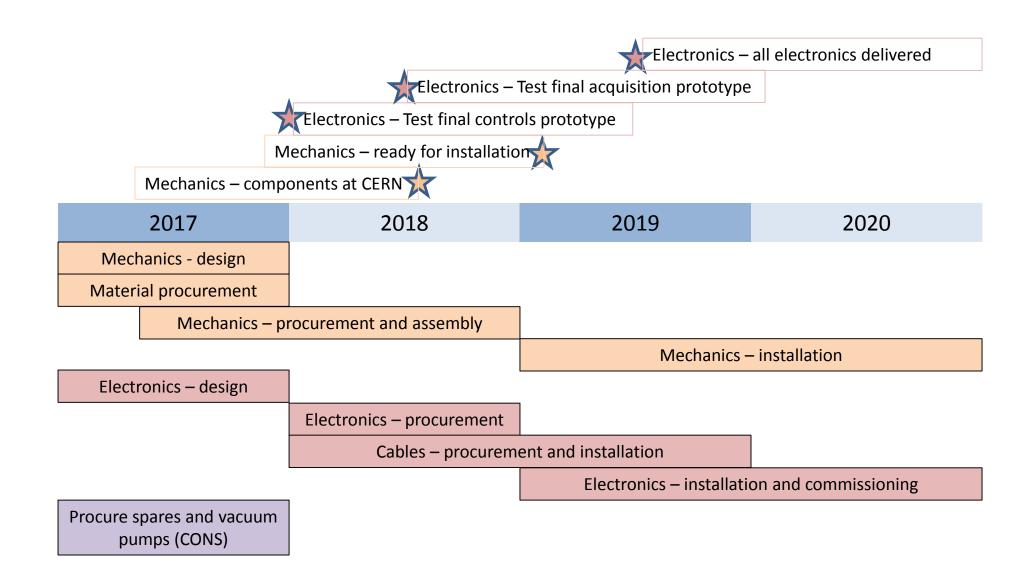
Early procurement items (for CONS) identified

Raw materials already ordered on CONS code



## **Production Schedule Overview**

(Consistent with EVM)





### Project proceeding as scheduled

- Procurement process for mechanics proceeding well
- Testing of prototypes with beam and on the calibration bench producing results consistent with the operational requirements of the LIU machines
  - Exception: Bunch-by-bunch at SPS nominal intensity flat-top with full LHC batch structure

#### Budget issues resolved

- Budget now fully consistent with the latest detailed cost estimates thanks to additional support from LIU and CONS
  - Details of spending profile for EVM being finalised
- Missing funding for Assembly hall renovation and OASIS systems (requested by OP) alternative funding under study





## **LHC Injectors Upgrade**

THANK YOU FOR YOUR ATTENTION!



# **Additional Material**

				ACTIVE	PERIOD		BC					
	RAW MATERIAL SUMMARY		2017	2018	2019	2020	64024	64036	64047	64028	64038	64049
CONS	Raw material for tanks/stepped chambers - 3d blanks	41633					19568	12074	9992			
CONS	Raw material for tanks/stepped chambers - sheets 316LN	41157					19344	11936	9878			
CONS	Raw material for tanks/stepped chambers - flanges	19600					9212	5684	4704			
	PRODUCTION AND ASSEMBLY SUMMARY											
	Production - vacuum tanks (17)	238000					111860	69020	57120			
	Production - stepped chambers/without EBW (19)	160000					75200	46400	38400			
	Stepped chamber EBW	20000					9400	5800	4800			
	Production - mechanical components incl. shafts (19)	186000					87420	53940	44640			
	Special components (forks and optical disks)	68000					31960	19720	16320			
	Auxiliary vacuum pipes	106650					50126	30929	25596			
	Supporting systems + fixation	89000					41830	25810	21360			
	Assembly and installation	32000					15040	9280	7680			
	Commercial components SUMMARY											
CONS	Motors (20)	55000								25850	15950	13200
	Resolvers (20)	15000								7050	4350	3600
	Bearings (20)	18750								8812.5	5437.5	
	Optical system components (22)	22000								10340	6380	5280
	Feedthrough +connectors WD (25)	27500								12925	7975	6600
	Feedthrough (RF diagnostics) (25)	19500								9165	5655	4680
	Viewport CF100 (21)	6300								2961	1827	1512
	Viewport CF16 (21)	9500								4465	2755	2280
	Vacuum fasteners (22)	5500								2585	1595	1320
CONS	Vacuum pumps	132000								62040	38280	31680
	TOTAL Commercial components	311050										
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CONS	PS Prototype 2017	95000										