News from TUSG

Jeremy Andrea

Introduction

- Tracker Upgrade Steering Committee :
  - take decisions for the Tracker Upgrade project,
  - chaired by Duccio Abaneo, “funding” aspects managed by Marko Dragicevic,
  - constituted by 1 representative of each “region”,
  - decisions taken in the “if nobody complains” mode.

- Representative for France :
  - Until 01/2018, Sebastien Viret,
  - Since 01/2018, Jeremy Andrea,
  - Nomination procedure and length of the mandate to be discussed.

- Outlook :
  - Status of the production of sensors,
  - Needs for developments of the DB,
  - Status of Core money,
  - Coordination of discussions to/from France.

Status of the sensor procurements: proposal from LHC

				Q1'19	Q2'19	Q3'19	Q4'19	Q1'20	Q2'20	Q3'20	Q4'20	Q1'21	Q2'21	Q3'21	Q4'21	Q1'22	Q2'22	Q3'22	Q4'22	Q1'23	Q2'23		production	proto	sum
ATLAS tender																									
ATLAS order																									
ATLAS Short Barrel	strip	1				106	106	106		0	0	0	0	0	0	0	0	1100	1100	1100	1100		4400	318	4718
ATLAS Long Barrel	strip	1				106	106	106		1038	1038	1038	1038	1038	1038	1038	1034	0	0	0	0		8300	318	8618
ATLAS Ring0	strip	1				15	15	15		75	75	75	75	75	75	75	75	75	75	75	75		900	45	945
ATLAS Ring1	strip	1				15	15	15		75	75	75	75	75	75	75	75	75	75	75	75		900	45	945
ATLAS Ring2	strip	1				15	15	15		75	75	75	75	75	75	75	75	75	75	75	75		900	45	945
ATLAS Ring3	strip	1				30	30	30		150	150	150	150	150	150	150	150	150	150	150	150		1800	90	1890
ATLAS Ring5	strip	1				30	30	30		150	150	150	150	150	150	150	150	150	150	150	150		1800	90	1890
ATLAS Ring6	strip	1				30	30	30		150	150	150	150	150	150	150	150	150	150	150	150		1800	90	1890
sum						347	347	347	0	1713	1713	1713	1713	1713	1713	1713	1709	1775	1775	1775	1775		20800	1041	21841
CMS OT tender																									
CMS OT order																									
CMS OT 2S	strip	1							80	150	250	373	1800	1800	1800	1800	1800	1800	1800	1800	1797		16197	853	17050
CMS OT PS-s	strip	2							39	39	39	39	329	329	329	329	329	329	329	329	329		2961	156	3117
CMS OT PS-p	pixel	2							47	47	47	47	398	398	398	398	398	398	398	398	391		3575	188	3763
sum									166	236	336	459	2527	2527	2527	2527	2527	2527	2527	2527	2517		22733	1197	23930
CMS HGC tender																									
CMS HGC order																									
CMS HGC 300um	PAD	1										375	375	2036	2036	2036	2036	2036	2036	2034			14250	750	15000
CMS HGC 200um	PAD	1										225	225	1221	1221	1221	1221	1221	1221	1224			8550	450	9000
CMS HGC 120um	PAD	1										100	100	543	543	543	543	543	543	542			3800	200	4000
sum												700	700	3800	3800	3800	3800	3800	3800	3800			26600	1400	28000

Status of the sensor procurements: proposal from HPK

				Q1'19	Q2'19	Q3'19	Q4'19	Q1'20	Q2'20	Q3'20	Q4'20	Q1'21	Q2'21	Q3'21	Q4'21	Q1'22	Q2'22	Q3'22	Q4'22	Q1'23	Q2'23		production	proto	sum
ATLAS tender																									
ATLAS order																									
ATLAS Short Barrel	strip	1			318		0	0	0	0	0	0	0	0	0	275	825	825	825	825	825		4400	318	4718
ATLAS Long Barrel	strip	1			318	325	825	825	825	825	825	825	825	825	825	550	0	0	0	0	0		8300	318	8618
ATLAS Ring0	strip	1			45		60	60	60	60	60	60	60	60	60	60	60	60	60	60	60		900	45	945
ATLAS Ring1	strip	1			45		60	60	60	60	60	60	60	60	60	60	60	60	60	60	60		900	45	945
ATLAS Ring2	strip	1			45		60	60	60	60	60	60	60	60	60	60	60	60	60	60	60		900	45	945
ATLAS Ring3	strip	1			90		120	120	120	120	120	120	120	120	120	120	120	120	120	120	120		1800	90	1890
ATLAS Ring5	strip	1			90		120	120	120	120	120	120	120	120	120	120	120	120	120	120	120		1800	90	1890
ATLAS Ring6	strip	1			90		120	120	120	120	120	120	120	120	120	120	120	120	120	120	120		1800	90	1890
sum					1041	325	1365	1365	1365	1365	1365	1365	1365	1365	1365	1365	1365	1365	1365	1365	1365		20800	1041	21841
CMS OT tender																									
CMS OT order																									
CMS OT 2S	strip	1				853	237	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140		16197	853	17050
CMS OT PS-s	strip	2				156	49	208	208	208	208	208	208	208	208	208	208	208	208	208	208		2961	156	3117
CMS OT PS-p	pixel	2				188	75	250	250	250	250	250	250	250	250	250	250	250	250	250	250		3575	188	3763
sum						1197	361	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598		22733	1197	23930
CMS HGC tender																									
CMS HGC order																									
CMS HGC 300um	PAD	1						750	1154	1154	1154	1154	1154	1154	1154	1154	1154	1154	1154	1154	402		14250	750	15000
CMS HGC 200um	PAD	1						450	692	692	692	692	692	692	692	692	692	692	692	692	246		8550	450	9000
CMS HGC 120um	PAD	1						200	308	308	308	308	308	308	308	308	308	308	308	308	104		3800	200	4000
sum								1400	2154	2154	2154	2154	2154	2154	2154	2154	2154	2154	2154	2154	752		26600	1400	28000

Tentative production schedule

	Q1'19	Q2'19	Q3'19	Q4'19	Q1'20	Q2'20	Q3'20	Q4'20	Q1'21	Q2'21	Q3'21	Q4'21	Q1'22	Q2'22	Q3'22	Q4'22	Q1'23	Q2'23	Q3'23	Q4'23	Target	Total	Pre	Pre/Tot
CMS Tracker																								
Call for Tender																								
Orders placed																								
						172	**348**	**550**	**1980**	**1980**	**1980**	**1980**	**1980**	**1980**	**1980**	**1980**	**1980**	**1980**	**1880**	**1179**	**23929**	**23929**	**1070**	**0,04**
CMS OT 2S						80	200	370	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1000	17050	17050	650	0,04
CMS OT PS-s						42	65	80	250	250	250	250	250	250	250	250	250	250	250	180	3117	3117	187	0,06
CMS OT PS-p						50	83	100	330	330	330	330	330	330	330	330	330	330	230		3763	3763	233	0,0619
6" wafers / quarter	**0**	**521**	**521**	**0**	**1501**	**1673**	**1849**	**2051**	**3481**	**3481**	**3481**	**3481**	**3481**	**3439**	**3439**	**3439**	**3439**	**3439**	**1880**	**1179**	**45770**			

- This is the new proposal from the Tracker to HPK
  - Starts as planned in Q2'20
  - Keeps slow ramp up during pre-production but only for 3 quarters instead of 4
  - Production extended by two quarters
  - Production rate for Tracker down from 2500 wafers/Q to 2000 wafers/Q
- Impact on Tracker production
  - Module production will start much later
  - Requires storage of several 1000 wafers waiting for module production
  - No immediate qualification of sensors on modules
- We now wait for feedback from HPK on our new proposals

Schedule

	ATLAS Strip sensors	CMS Strip sensors	CMS HGCAL
Submission of draft IT documents to procurement office (MS results memo, spec and all annexes INCLUDING DELIVERY SCHEDULE, risk matrix, technical questionnaire- if needed)	15 January 2019	15 January 2019	15 January 2019
Finalisation of draft IT documents (by both Procurement and Technical officers)	31 January 2019	31 January 2019	31 January 2019
Specification Committee date	14 February 2019	14 February 2019	14 February 2019
Dispatch of IT documents	18 February 2019	18 February 2019	18 February 2019
Bidder's conference	NO	NO	NO
Submission deadline	18 March 2019	18 March 2019	18 March 2019
Date of FC meeting	Not applicable	Mid June 2019	Mid June 2019
Frame contract start date	End April 2019	July 2019	July 2019
Delivery of pre-production and mass production	Still to be agreed	Still to be agreed	Still to be agreed

- Issue IT at same time and similar format for all three projects
  - Will still be three separate IT!
- Placement of contract earlier than planed (Q3 → July 2019)
- Will be a "Frame Contract" with open options like material or quantities
  - The actual order can be placed later (tbd.)
- Also need to schedule a PRR in June (pre or post FC?)
- Approval from TUSG then TFB

Contributions to DB

- **Development done by the Vilnius group satisfactory**
  - **2 students x 4 months supported by CERN group**
  - **Supervision from Valdas Rapsevicious**
- **Estimate that 1 FTE student would be needed in long term to support our needs**
  - **Provided that Valdas remains available**
- **Seems an excellent cost-effective solution**
- **Suggest to try and consolidate – establish a funding model**

- Request related to a lack of person-power for this task.
  - Long term ensure by the present of Valdas,
  - Working force completed by the technical students.
- Funding model : contribution from each group (~1keuros per group) to finance the student. Potentially taken from CORE (logistics).
- Request was made to agree to investigate the possibilities.

Critical issue of the month: hybrid stiffeners

- **Module mechanical parts so far procured by CERN or FNAL to support R&D activities**
  - Module spacers ordered from NovaPack with single source orders from CERN
    - Only works for small quantities
    - Does not project towards production
  - Hybrid stiffeners provided by CERN and FNAL with home-made laminates
    - Not viable for large quantities
    - Significant quality problems
  - Such model will fail for both in long term
  - It will fail in short term for hybrid stiffeners
- **Need to switch to industrial production ASAP**
- **Must find groups taking responsibility**

CORE money

Arranged by System		Proposed Fund Sharing																				
Item number	Item name	Austria	Belgium-FNRS	Belgium-FWO	Brazil/Fapesp	CERN	Finland	France	Germany-BMBF	Germany-HGF	Greece	Hungary	India	Italy	Pakistan	Spain	Switzerland	UK	USA-DOE	USA-NSF	Total Proposed Funding	Estimated Cost *(by System)*	Balance of Funding vs. Cost
1.1.1	8224 2S modules	700	2.915	3.030		3.450		1.200	5.651		1.300		1.850		500			500	5.965		27.061	26.990	71
	2S Sensors	650	1.560	1.630		2.430			3.273		680		1.072		290				4.071		15.655	15.633	22
	2S Hybrids	10	1.000	1.050		940		1.200	1.957		540		641		173			500	1.370		9.380	9.346	35
	2S Mechanics	40	355	350		80			421		80		138		37				524		2.025	2.012	13
1.1.2	5332 PS modules	0	1.565	1.635				1.000		4.835	0			5.450					6.310		20.795	20.780	15
	PS Sensors		435	450						1.564				1.800					1.315		5.564	5.562	2
	MaPSA assembly																		2.103		2.103	2.103	0
	PS Hybrids		1.030	1.080				1.000		2.980				3.417					2.314		11.821	11.817	4
	PS Mechanics		100	105						291				233					578		1.307	1.298	9
1.1.3	Mechanics		0	0		1.500		1.800		1.120					1.050				1.064		6.534	6.493	41
	TB2S							600							1.050						1.650	1.648	2
	TBPS					1.500													1.064		2.564	2.517	47
	TEDD							1.200		1.120											2.320	2.328	-8
1.1.4	Services					4.500			697					700							5.897	5.877	20
1.1.5	Infrastructure	100	100	105		400			302	550	100		150	350	50				352		2.559	2.546	13
1,1	**Outer Tracker**	**800**	**4.580**	**4.770**	**0**	**9.850**	**0**	**4.000**	**6.650**	**6.505**	**1.400**	**0**	**2.000**	**6.500**	**1.600**	**0**	**0**	**500**	**13.691**	**0**	**62.846**	**62.687**	**159**

- TEDD mechanics are 1.5 MCHF overfunded, TBPS underfunded at the same level
- Institutes involved in TEDD construction:
  - Germany (DESY)
  - France, Belgium
- Mitigation
  - move funds from TEDD mechanics to TEDD (2S) modules
  - Move funds from modules to TBPS (CERN)
- France indicated to move 200 kCHF from TEDD mechanics to 2S modules
  - Motivated by a re-estimation of TEDD mechanic costs made by Lyon
  - No impact on cost book!
- With CERN help move funds to TBPS

CORE Money summary

En kCHF

	IPNL	IPHC	Total
2S modules		800	800
PS modules	1400		1400
Meca TEDD	1200		1200
Meca TB2S		600	600
DAQ		600	600
total	2600	2000	4600

TUSG and interactions with us

- Do we need to define a mandate for the TUSG-France representative ?
- I will try to give regular feedbacks (minutes) of the TUSG to the upgrade responsible in institutes.
- To anticipate potential discussions at the TUSG, please keep me inform of potential difficulties.
- If you have issues or questions you would like to rise to the TUSG, please let me know.

Thanks To Lyon team and Nicolas !

for welcoming us and for the nice preparation.

Very nice presentations and discussions ! We should have another workshop !

We would be happy to welcome you at IPHC next time !