# Software Update & Schedule

**HPS** Collaboration Meeting

June 18, 2014

DAQ and Software readiness review after coffee break.

Can't go over time this session.

Software Work Days: Thursday (19th) and Friday (20th)

F228 for morning sessions (8am to noon)

- \* F226 for afternoons (1pm to 5pm) of June 19th and 20th
- Some participants have indicated what they would like to do. If you haven't yet, email me or Norman.
- Yes, you can "just show up".
- No formal presentations planned, this is one-on-one problem solving time.

# Update

#### Since the January Software Workshop:

- A number of new people up to speed with the software.
- Much better use of the JIRA tool.
- Tasks completed:
  - ECAL Clustering using "Jlab" algorithm.
  - ECAL Single event display integrated with Monitoring App
  - Updated Monitoring App, strip chart option added, many other features.
  - ECAL Histograms for Monitoring App defined.
  - Conditions System implemented
  - Trigger code updated to reflect FPGA, tests started.
  - Tracking updates
  - DST/LCIO output debugging

So much is done, I probably failed to mention a bunch.

# Update 2 - Progress

- Tasks with lots of progress:
  - Determine the sampling fraction & cluster position dependence in ECAL
  - Cosmics calibration
  - Single beam energy e- calibration
  - Data Quality Monitoring
  - Mock Data Challenge
  - Alignment code
  - Trigger Studies
  - Full B-field integration
  - Conditions Database integration
  - Data Catalog
  - \* ...
- Tasks that need attention:
  - ECAL Pi-0 calibration
  - ECAL Track based calibration
- Tasks upcoming:
  - SVT latency determination
  - Tracker monitoring update & single event display
  - Use timing in tracking, tuning tracking

#### Tracker Schedule, previous

Several tasks falling behind originally planned schedule.

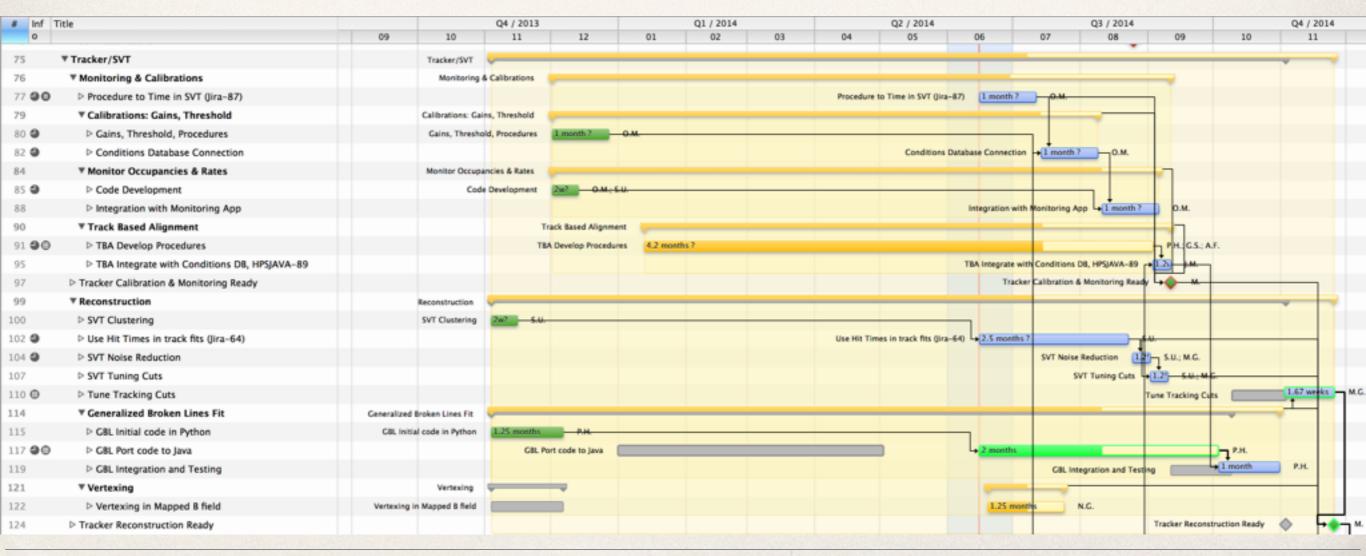
- Hardware development takes precedence, same people.
- Track finding using single layers is de-scoped, postponed for later.
  - Note essential, but would give small tracking efficiency improvement.

✤ GBL code is working in C++, port to Java is delayed.

# Inf Title Q4 / 201		Q4 / 2013	Q1 / 2014				Q2 / 2014			Q3 / 2014					
0		11	12	01	02	03	04	05	06	07	08	09			
75	* Tracker/SVT								_						
76	▼ Monitoring & Calibrations	g & Calibrations	-												
77 90	Procedure to Time in SVT (Jira-87)						Procedur	re to Time in SVT (Jira-87)	2 months ?		0.M.				
79	* Calibrations: Gains, Threshold	lains, Threshold													
80 4	Gains, Threshold, Procedures	hold, Procedures	1 month 7	х. <del>м.</del>											
82 😫	Conditions Database Connection								0	onditions Database Connection	month? 0.M.				
84	▼ Monitor Occupancies & Rates	pancies & Rates													
85 4	Code Development	de Development	2 weeks 2 O.M.; S.U.												
88	Integration with Monitoring App									Integration v	with Monitoring App	2 0			
90	* Track Based Alignment		Track Based Align	ment											
91 9 🛈	TBA Develop Procedures		TBA Develop Proces	dures 2.2 months ?			_	P.H.: G.S.: /	A.F.						
95	TBA Integrate with Conditions DB, HPSJAV/					TBA Integr	ate with Conditions DB, HPS	SJAVA-89 [+1.2w] J.M.							
97	Tracker Calibration & Monitoring Ready										Tracker Calibration & Monitori	ng Ready			
99	▼ Reconstruction				_						-				
100	SVT Clustering	eks ? S.U.			7										
102 4	Use Hit Times in track fits (Jira-64)		Use Hit Ti	imes in track fits (Jira-64	0 3.75 months ?			- F-U							
104	SVT Noise Reduction						SVT Noi	se Reduction 1.250	S.U.; M.G.						
107	SVT Tuning Cuts							SVT Tuning Cuts +1	25w 5.0.; Mgc.						
110	▼ Initial Track Finding		Initial Tr	ack Finding											
111	Use Single Layers for Tracking (Jira-1)		Use Single Layers for Trac	king (Jira-1) 7.45 m	onths ?						N.G.				
113	Use Hit Time in Tracking					Use H	t Time in Tracking 1.23	months	5.U.						
115 🕲	Tune Tracking Cuts							Tune	Tracking Cuts	1.67 weeks M.G+S.U+	P.H				
119	▼ Generalized Broken Lines Fit					_			-	7					
120	GBL Initial code in Python	months	P.H.												
122 🕘 🔘	GBL Port code to Java		CBL Port code to Java	2.2 months				<u></u>							
124	GBL Integration and Testing						GBL Integra	tion and Testing + 1 mon	th	Р.Н.					
126	▼ Vertexing								Vertexing						
127	Vertexing in Mapped B field							Vertexing in I	Mapped B field	1.25 months N	c.				
129	Tracker Reconstruction Ready									Tracker Reconstruction	on Ready				

#### Tracker Schedule, updated

- \* Using hit times in tracking, GBL to Java, are delayed.
- Tracker calibration and monitoring ready stays at mid September.
- Tracker reconstruction ready moves from Sept 19 to November 25.
  - Biggest contribution to shift is GBL port.



### Calorimeter Schedule, original

- Schedule was too optimistic about completion dates for calibrations.
- January Software workshop got a number of new people up to speed.



### Calorimeter Schedule, updated

- Several tasks take longer or are started later.
- Calorimeter software ready moves from Aug 25 to Oct 16th.

# Inf T	itle			Q4 / 2013			Q1 / 2014			Q2 / 2014		0000000000	Q3 / 2014	auseda	
0		09	10	11	12	01	02	03	04	05	06	07	08	0	9 10
126	▼ Calorimeter		Calorimeter	-											
127	▼ Low Level Monitors	Low	Level Monitors	-	_						-		1		
128 🗶 🕲	ECAL Low Level Monitoring HPSJAVA-67					ECAL Low Lev	vel Monitoring HPS/	AVA-67	months ?	_	A.C.	<u>+</u>			
130	▼ Light Monitoring System HPSJAVA-171	fonitoring System	HPSJAVA-171		_						-		-		
131 🗶 🖨	ECAL Light Monitoring System Firmware	ECAL Lig	ght Monitoring Sy	stem Firmware	1.19 months ?	A.C.						$\left  \right $			
133 4	ECAL Light Monitoring Incorporate with EPICS					ECA	L Light Monitoring In	ncorporate with	EPICS	+ 2.5 mont	ths ?		K.L.		
135 00	ECAL Light Monitoring Integrate with Conditions DB H	with Conditions D	8 HPSJAVA-1								1.74 months		A.C.		
137	▼ Signal Level Monitoring				Signal Le	vel Monitoring	-	_	_	_					
138 4	ECAL Monitor, Occupancy & Rates				ECAL Monitor, Occ	upancy & Rates	3.56 months			S.F.; K.I	M	$\left  \right $			
141	▼ Low Level Calibrations	Low Lev	el Calibrations										-		
142	▼ Gains and Thresholds	Gains a	nd Thresholds												
143	ECAL Gains & Thresholds, Basic Code	Gains & Thresho	lds, Basic Code	2w 5.0.											
145 4	ECAL Timing T0 HPSJAVA-105								ECAL T	ming TO HPSJAVA	-105 4 2.5 months			S.F.	
147	ECAL Low Level & Signal Monitors Ready								ECAL Low Level	Signal Monitors	Ready 🧄	G	•		
149	▼ Reconstruction				Rec	onstruction								-	
150	▼ Clustering					Clustering									
151	Testing Cluster Algorithms				Testing Cluste	r Algorithms	1.94 months ?		к.м.						
153 4	Implement Jlab Cluster Algorithms			Im	plement Jlab Cluste	r Algorithms	1.31 months	H.V.; D.S.;	км.						
157	Cluster position corrections HPSJAVA-111				Cluster	position correct	ions HPSJAVA-111			L,	1.17 months ?	H.V.			
159 🗳	Cluster Timing (Jira-105)									Cluster Tim	ning (lira-105) +2.5	months?			5.F.
161	Cluster Matching with Tracks						Cluster Ma	tching with Trac	ks		1	month ?	S.F.		
163 4	ECAL, Evaluate Sampling Fraction (Jira-108)					ECAL,	Evaluate Sampling F	raction (Jira-108	) 43.17 months			S.F.; H.V.			
166 4	ECAL Reconstruction, readout to use Conditions DB. Hi	P				ECA	L Reconstruction, re	adout to use Cor	nditions DB. HPSJAV	A-9 3.33 m	ionths ?		G.	¢	
168	* High Level Calibrations			н	igh Level Calibration	15									-
169	▼ Cosmic Calibration (Jira-107)			Cosmic	Calibration (Jira-10	70						-			
170 4	Cosmics Trigger				Cosmics Trig	ger 2.81 mo	onths ?		ריי ב <sup>א</sup> ר.						
172	Cosmics Calibration						Cosmi	ics Calibration	4.17 months ?				н.v.		
174	Track based Energy Calibration							Track based	Energy Calibration				1.5 months		S.F.; L.C.
180 4	▶ Pi0 Energy Calibration HPSJAVA-112								PIO Energ	Calibration HPSJ	AVA-112 4.16 mg	eths ?			
187	▶ Single Electron Scattering							Single E	lectron Scattering	3.5 months			L.C.		
192	ECAL Reconstruction Ready											ECAL Re	construction Ready		M.
194	ECAL High Level Calibrations Ready												ECAL High Le	rel Calibra	tions Ready 🛶
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### Accelerating the Schedule

- \* We can realistically do better on this schedule!
- Bottlenecks for readiness are:
  - GBL to Java port.
    - This is not essential for alignment, the C++ code works.
    - With some (real) effort, could be finished by early September.
  - Tracker alignment codes
    - We have a working system, but would like something better, easier to use.
    - Could be finished by early September.
  - Pi-0 & Tracking based calibration of Ecal.
    - We really do want this component.
    - It is not trivial, but development can be accelerated: finish early September.
    - Already, more people are contributing to this task.
    - We also have track based ECAL calibration.

#### Software can be ready on October 1st.

And then we keep improving on it...

#### Conclusions

The Software team is working quite well

- Productive meetings, usually.
- Lot of progress.
- We cannot let up on the pace yet
  - Lots more to do
  - A lot of desirable, but not critical, tasks

#### ✤ USE JIRA!!!

#### COMMENT YOUR CODE!!!

- REPORT PROGRESS AT SOFTWARE MEETING!!!
- ASK QUESTIONS TO SOFTWARE LIST!!!

And join us on Thursday and Friday for the software workshop.