



MAUS Status

Durga Rajaram
MICE CM37, RAL
Nov 7th 2013



Overview

- Responsibilities
- Offline
 - Detectors, Batch, CDB, API
- Online
 - Recent EMR run
- Test Coverage
- Step IV
- More detailed reports from others
 - Batch & CDB (Janusz)
 - Geometry (Stefania)
 - Tracker Reconstruction (Adam)
 - Cerenkov (Lucien)
 - Global PID (Celeste)



Who does what?

Project management

Rajaram

Build system

Rajaram

Geometry + fields

Ricciardi/Bayes

TOF

Rajaram

Data unpacking

Karadzhov

Global

Taylor/Lane/Pidcott

QA

Rajaram

GEANT4 Simulation

Rogers/Bayes/Middleton

Tracker

Dobbs/Santos/Heidt

EMR

Asfandiyarov/Karadzhov

Accelerator physics

Rogers/Lane

Documentation

Rajaram

Data flow/API

Rogers

CKov

Cremaldi/Xianyi/Pranava

KL

Bogomilov



MAUS Offline

- Detectors
 - KL online recon debut in EMR run
 - New students @ IIT on Ckov
- Global
 - Tracks, PID
- Data structure, API
 - Modifications to get rid of string->json->cpp conversions by users, allow mappers to accept Json/Cpp (IT)
- Geometry
- CDB
 - Detectors need to start using for calib,maps
- Batch Processing
 - Need to validate the reconstruction
- MC
 - Risk: Missing beam input
 - No digitizer for Ckov, KL, EMR

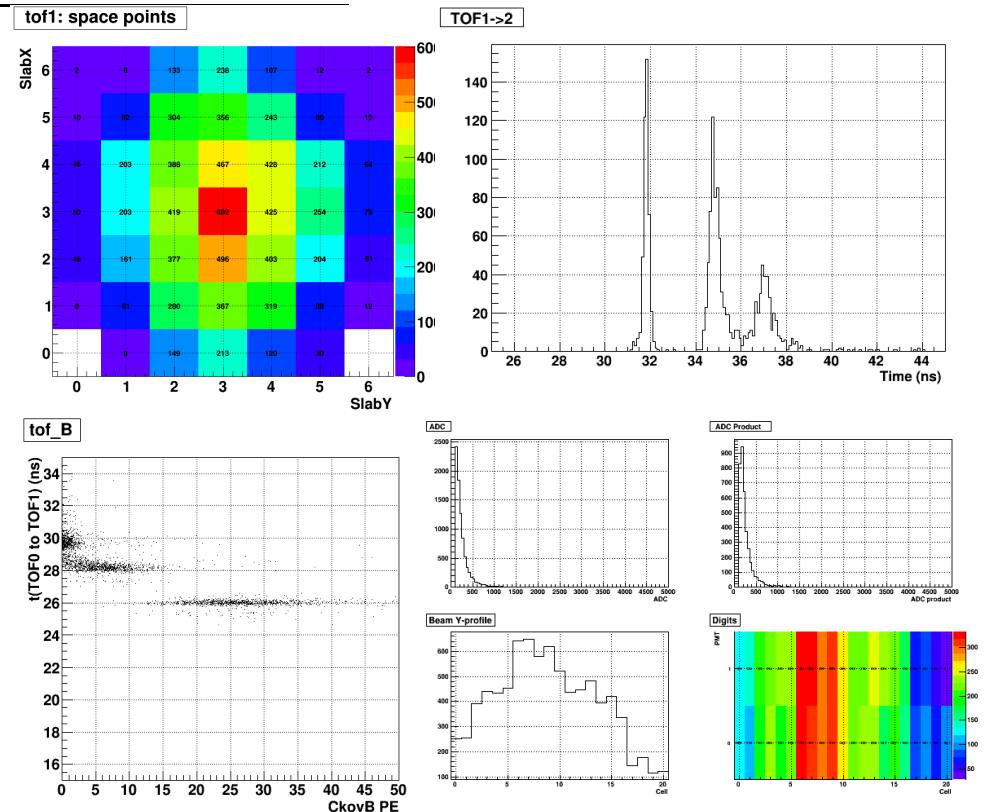
Milestones

Task	Responsible	Due Date
Framework + MC		
Step IV Geometry	Bayes	01 Dec 13
Online interface + lattice validation routines	Rogers	01 December 13
G4Beamline for beam input	Leonova/Nugent	No date
Trigger MC	Bayes	01 Dec 13
Load tests	Rogers	01 Jan 14
TOF		
TOF integration tests	Rajaram	Done 01 Jun 13
TOF documentation	Rajaram	Done 01 Jun 13
TOF Calibration - control room tool	Rajaram	01 Oct 13
TOF Calibration - integration with MAUS	Rajaram	01 Dec 13
Tracker		
Tracker Interface to CDB - Geom	Dobbs/Heidt	01 Jan 14
Tracker Pattern Recognition	Dobbs	01 January 14
Tracker Kalman Fitter	Santos	Done 01 July 13
Tracker Noise	Heidt	01 Jan 14 01 June 13
Tracker Integration Tests	Dobbs	01 Jan 14
Tracker Documentation	Dobbs	01 December 13
Global		
Data structure	Taylor	Done
Global track fitting single tracks - Minuit	Lane	01 Dec 13
Global track fitting interface with geometry	Lane	?
Global track fitting single tracks - Kalman	?	?
Global track fitting decays, pileup	?	?
Global track fitting RF noise	?	?
Apply PID Algorithms construction	Pidcott	01 Dec 13
Hypothesis construction	Taylor	?
Analysis interface	Rogers	?
Online		
Integration testing infrastructure	Rogers	Done



MAUS Online

- Several issues during 1st weekend of EMR run
 - DAQ, EMR in MAUS data-structure, onrec01 overload
- Online reconstruction ran fine since then.
 - Two releases of MAUS to merge back MLCR fixes, upgrades
- Issues & Fixes:
 - Heavy load on Onrec01/02
 - Fix/replace task queue, get onrec03 going
 - Slow histogram updates
 - Use ROOT objects instead of image
 - No versioning of DAQ maps for reconstruction
 - Load maps to/from CDB
 - Documentation
 - EMR integration with MAUS





Test Coverage (Python)

Module	Coverage
MapPyScalersDump	45%
MapPyTOFPlot	12%
ReducePyCkovPlot	61%
ReducePyKLPlot	54%
ReducePyTOFPlot	2%
ReducePyTofCalib	54%
calibration.get_tof_cabling	73%
docstore.DocumentStore	69%
framework.input_transform	36%
framework.merge_output	65%
framework.utilities	79%
geometry.GDMLtoMAUSModule	17%

- Overall line coverage: 70%



Test Coverage (C++)

Module	Coverage
common_cpp/API	55%
common_cpp/DataSet	25%
common_cpp/DetModel/SciFi	62%
common_cpp/JsonCppStreamer	57%
common_cpp/Utils	69%
input/InputCppDAQData	62%
input/InputCppDAQOfflineData	69%
input/InputCppDAQOnlineData	2%
map/MapCppTrackerDigits	68%
map/MapCppTrackerRecon	79%
py_cpp	74%
reduce/ReduceCppPatternRecognition	67%

- Overall line coverage: 67%



Preparing for Step IV

- What is the minimum we need?
 - SciFi Tracking
 - Particle ID
 - TOF (+Ckov + KL + EMR)
 - Global Tracks + PID
 - MC simulation (Step IV Geometry)
 - Obviously dependent on the above, but should think about developing analysis tools
- A straight-through run in 2014 would be a good test



Project Plan

- Detailed breakdown of tasks and estimates based on resources
- Better handle on tracking progress and milestones;
- Identify resource deficits and risks

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
						Person (Last name)	Time Required On Job (Hours)	Proportion Done	Person Occupancy	Modifier	Estimated Task Time (Days)	Actual Time Taken	Notes			
1																
2																
3	MAUS	TOF	Space Points			Rajaram	0	100.00%	0.50	1	0.00					
4			MC			Rajaram	16	0.00%	0.50	1	4.00		better trigger-pixel-finding			
5			MC Dig			Rajaram	0	100.00%	0.50	1	0.00		excludes truth matching			
6			DAQ Dig			Rajaram	0	100.00%	0.50	1	0.00					
7			Slab Hits			Rajaram	8	0.00%	0.50	1	2.00		Do not discard PMT hits			
8			Cal Interface			Rajaram	40		0.50	1	10.00		Load calibrations by run, Position calibration, Integrate w			
9																
10																
11																
12																
13																
14																
15		Online														
16			GUI Test Script			Rogers	8	0.00%	0.3	1	3.33					
17			Doc			Rogers	16	50.00%	0.3	1	3.33					
18			Optics Tool			Rogers	16	0.00%	0.3	1	6.67		issue #847			
19						Rogers	40	0.00%	0.3	1	16.67		issue #847			
20			Doc Store			Rogers	40	0.00%	0.3	1	16.67		Setting up multiprocessing across multiple nodes (apache			
21			Multiprocessi			Rogers	0	100.00%	0.3	1	0.00					
22						Rogers	0	100.00%	0.3	1	0.00					
23						Rogers	32	0.00%	0.3	1	13.33		Debug and fix celery – if I really can't fix, means rebuild fr			
24			Reducer GUI			Rogers	16	0.00%	0.3	1	6.67		This is time estimate for system redesign using a ROOT GU			
25						Rogers	32	0.00%	0.3	1	13.33		This is time estimate for system redesign using a ROOT GU			
26						Rogers	16	0.00%	0.3	1	6.67		This is time estimate for system redesign using a ROOT GU			
27						Rogers	40	0.00%	0.3	1	16.67		This is time estimate for system redesign using a ROOT GU			
28																
29		Tracker							0.00	1	0.00					

- Aim to have this ready before the next CM