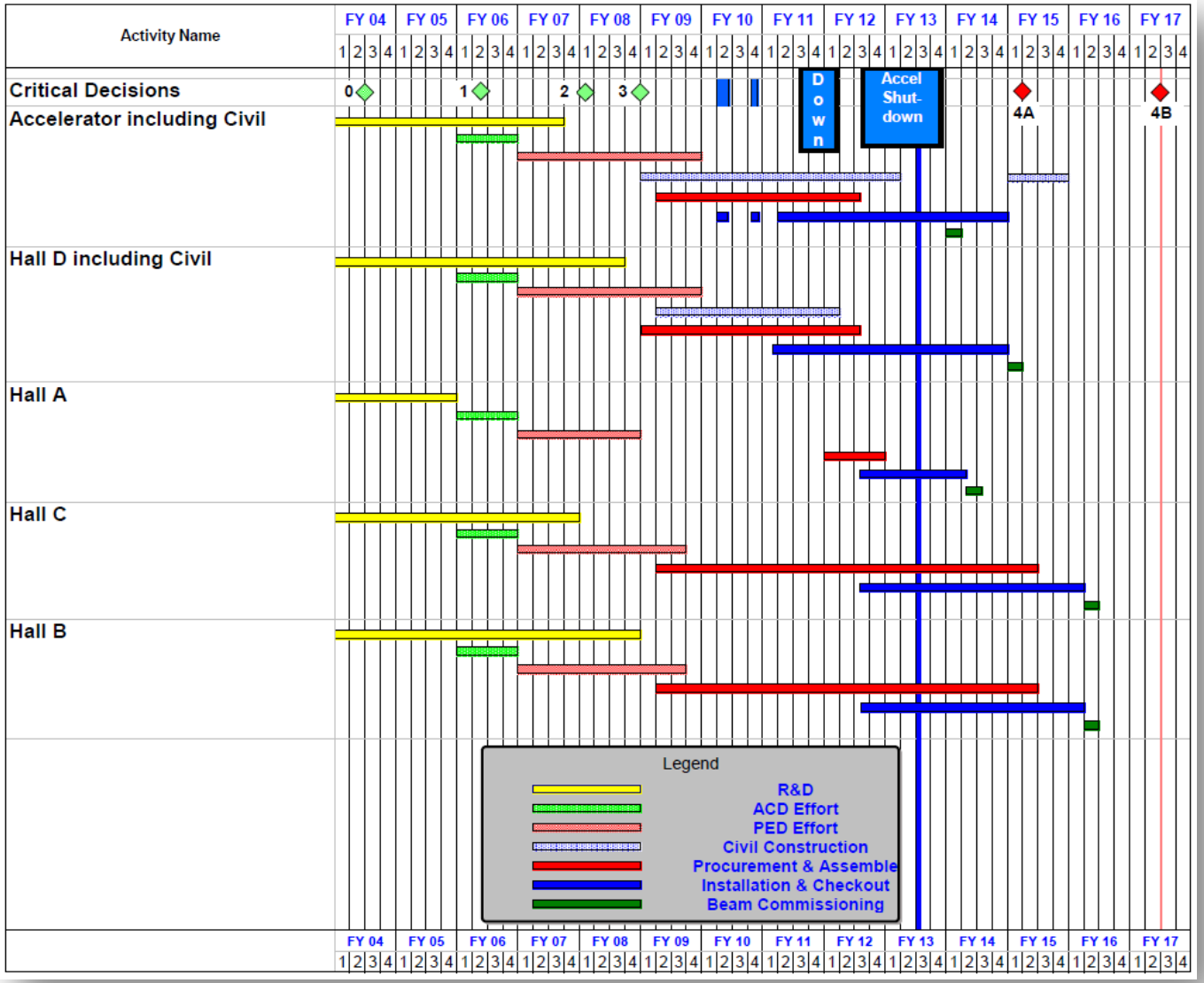
RICH Construction & Operation Plans

Contalbrigo Marco
INFN Ferrara

Rich Technical Review, 27th June 2013

12 GeV Upgrade Project Schedule



FY12: reduction of $16M
FY13: Pres Request – no restoration

Present expectation (subject to rebaseline approval in August):

16-month installation
May 2012 - Sept 2013

Accelerator commissioning start
Oct 2013

Hall A commissioning start
Feb 2014

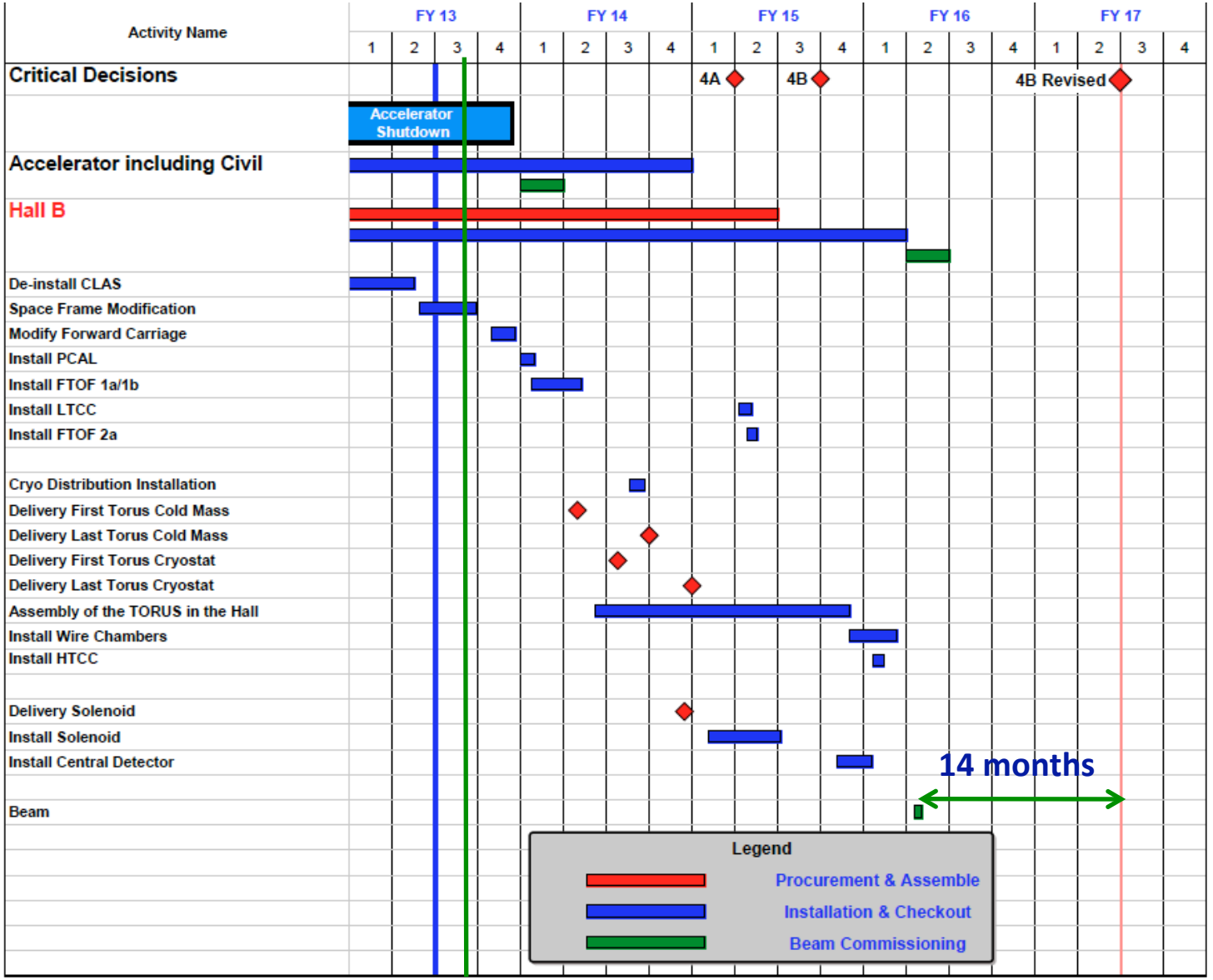
Hall D commissioning start
Oct 2014

Halls B & C commissioning start
Jan/Feb 2016

Project Completion
March 2017

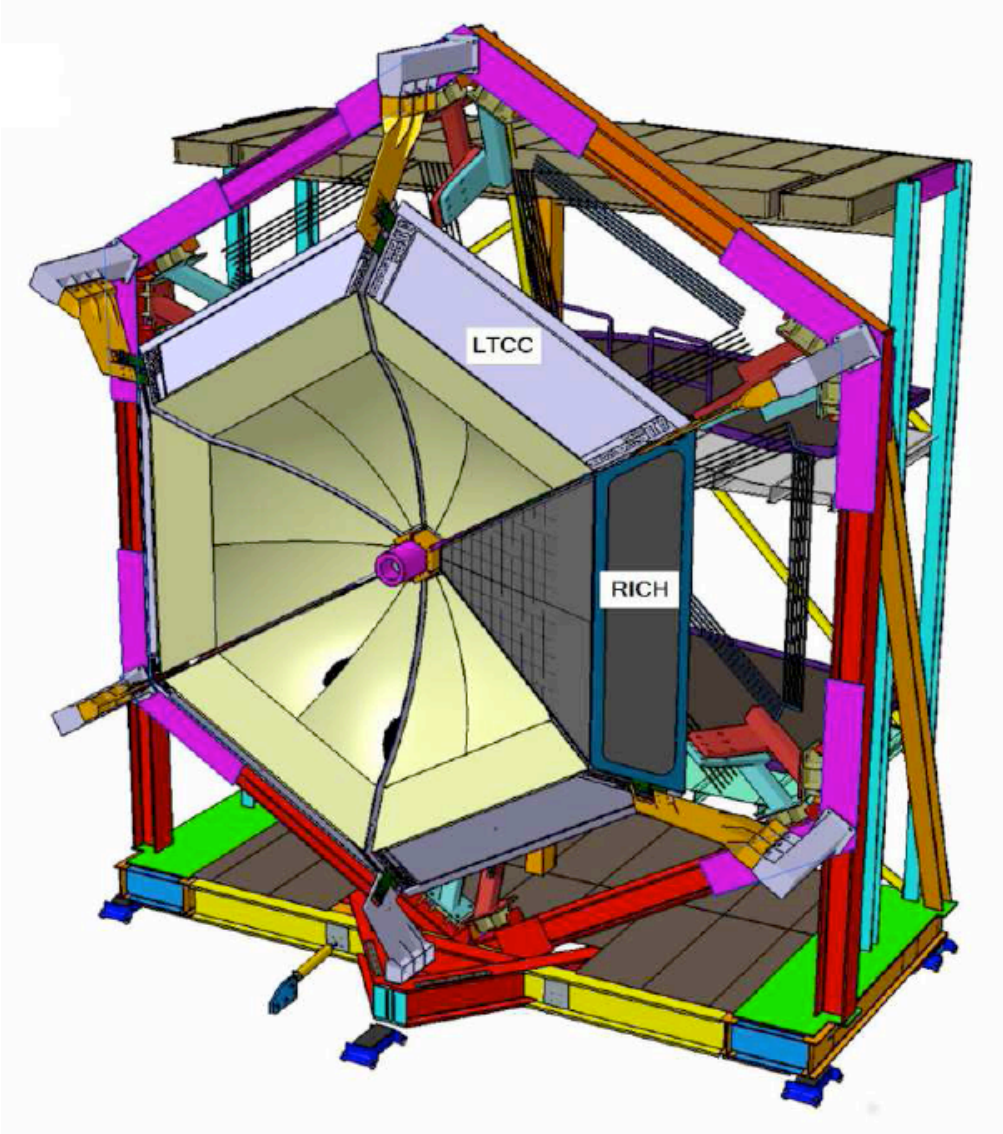
Information based on DOE Project Review May 7-9, 2013

Hall B Upgrade Baseline Schedule



RICH Project Goal

1st sector ready for physics run in 2016



1st RICH Sector Time Schedule

TASK	2013 1st h	2013 2nd h	2014 1st h	2014 2nd h	2015 1st h	2015 2nd h	2016 1st h
Prototype test	X	X					
Simulations & recon. software	X	X	X	X	X		
TDR	X	X					
Procurement and test aerogel		X	X	X	X	X	X
R&D electronics	X	X	X	X			
Procurement & test electronics			X	X	X	X	
Procurement & test MA-PMTs		X	X	X	X	X	
Mechanics			X	X	X	X	
R&D Mirrors	X	X	X				
Mirrors				X	X	X	X
Services (gas system, slow control, ..)			X	X	X	X	
RICH assembly						X	X

Commissioning & Calibration

Use Electron Signals for comission and calibration:

Mimic pion signal (almost saturated at 4-5 GeV/c)
Alignment (i.e. with drift-chambers and among mirrors)
Aerogel refractive index map
Mirror aberration corrections
Tune of the patter-recognition and reconstruction algorithms
Efficiency and mis-identification probability

Use meson and hyperon decays to validate RICH performances:

K_S for pions
ϕ for kaons
Λ for protons

Use no-track events:

Dark counts
Pedestal calibration & Common noise subtraction

Operation

Gas system:

- Dry atmosphere for the hydrophilic aerogel preservation

Slow Control:

- HV and LV power supply monitor
- RICH stability monitor (i.e. on pedestals, occupancy, basic signals like high-energy electrons)

Computer farm:

- Off-line event reconstruction

Conclusions

Interference with CLAS12:

- Designed to fit into the LTCC clearance
- No impact on the downstream detector performances

RICH Operation:

- Use physics triggers for commissioning and calibration
- Use well-known maximum-likelihood methods to reconstruct the not-trivial Cherenkov signal pattern

Project Schedule:

- 2 ½ years is a challenging time anyway feasible within the 14 months contingency