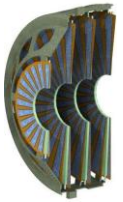
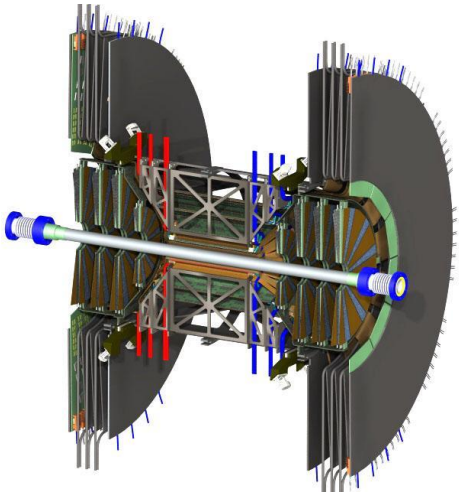
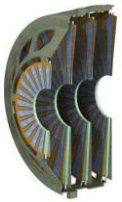
Forward Vertex Detector Cost, Schedule, and Management Plan



- Participating Institutions
- Organizational plan
- Cost Basis
- R&D Costs
- Cost
- Schedule



Participating and Interested Institutions



Los Alamos National Laboratory

LANL coordinate work to procure the silicon sensors, work with FNAL on the development of the PHX chip, with Columbia on development of the interface to PHENIX DAQ, and on the simulation effort with NMSU. Los Alamos is currently leading the mechanical engineering and the integration effort for the barrel detector, VTX, and will continue those efforts for the FVTX.

Columbia University

Columbia University is an acknowledged expert on the PHENIX DAQ system They will work on the interface between the PHX chip and the PHENIX DAQ.

Iowa State University

Iowa State University is currently working on management details with the barrel detector and working on an (funded) SBIR effort for the level one trigger capabilities of the FVTX.

Charles University, Czech Technical University, Institute of Physics, Academy of Sciences, Prague

The Czech groups have been active in the development, testing, assembly, and commissioning of the ATLAS pixel sensors. They will do the same for the FVTX effort and additionally participate in software development.

New Mexico State University

NMSU will work on comprehensive simulations for the FVTX effort and work on the sensor testing.

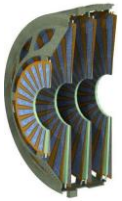
University of New Mexico

UNM has experience in testing, Q/A and a laboratory for characterization of sensors. They are currently working on the barrel strip sensors and will do the same for the FVTX effort. They may also work on the flex cables.

Saclay

Saclay will work on software.

Participating and Interested Institutions



Brookhaven National Laboratory

Brookhaven manages the integration and ancillary systems for the VTX and will do the same for the FVTX. They might also participate in software.

Bhabha Atomic Research Centre

Involvment still under discussion

University of Jyvaskyla

Involvment still under discussion

Yonsei University, Seoul, Korea

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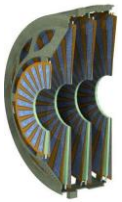
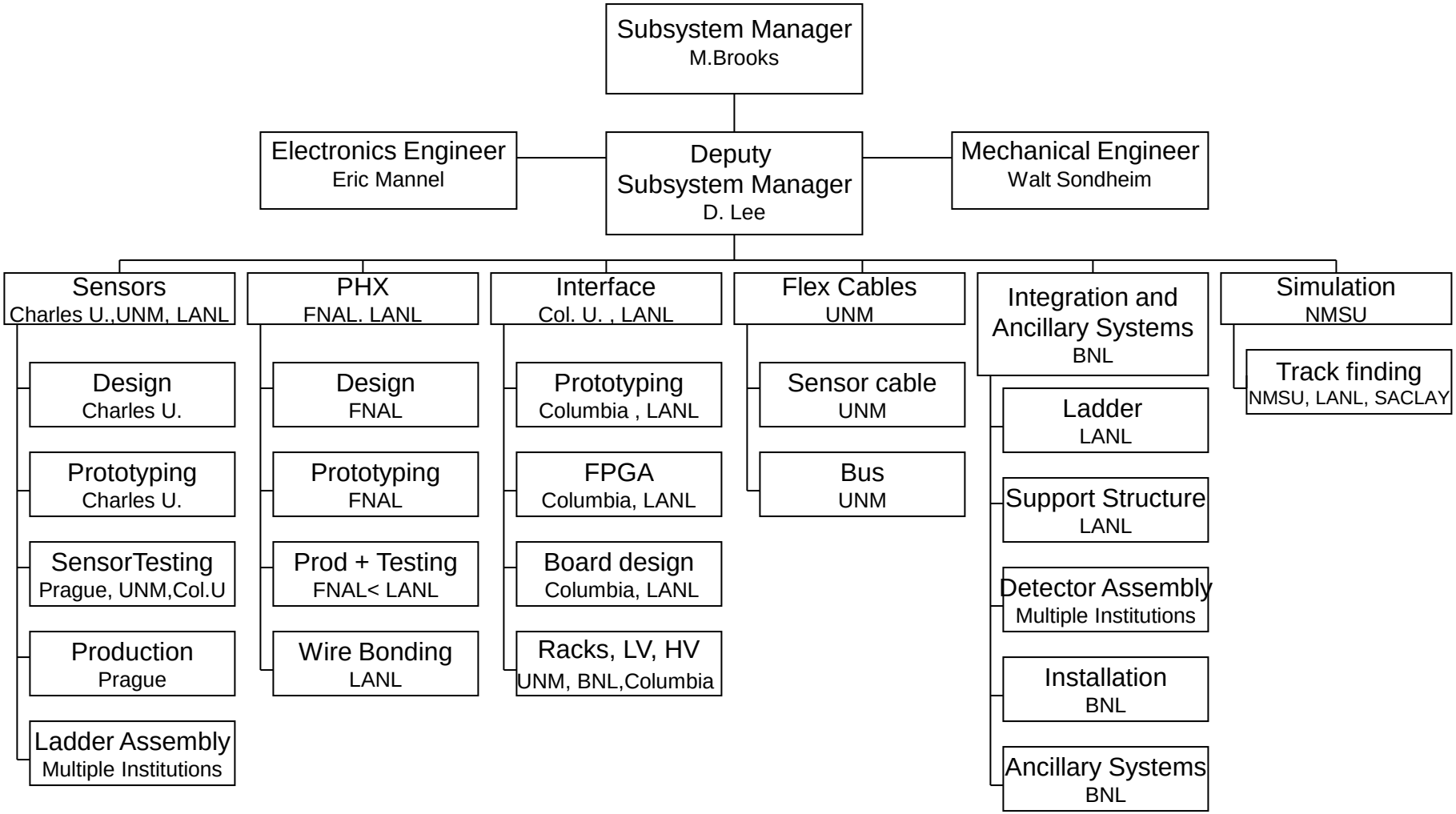
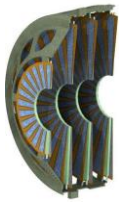


Organizational Chart

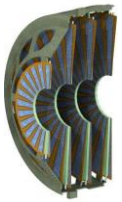




FVTX Cost Estimate

Forward Endcap Cost Estimate - FVTX									
FY2007 dollars									
					total	Cost with			
2 endcaps	R&D	R&D	Construction(k$)	comments	contin	Contingency	2008	2009	2010
	BNL(k$)	LANL(K$)							
Mechanical ladder and support structure	50	100	416	HYTEC Estimate	0.26	524.16		507.52	
Alignment and Assembly jigs			72	engineering estimate	0.22	87.84		85.4	
Silicon Sensor		50							
purchase			410	CIS and ON quotes, 10% spare, 80% yi	0.26	516.60	516.6		
setup and masks		30		CIS and ON quotes					
sensor Q/A and testing			50	University students + engineer	0.16	58.00	58		
PHX chip, tested	295								
engineering run			240	FNAL estimate	0.36	326.40	326.4		
testing			50	FNAL tech	0.16	58.00	58		
attach HDI to backplane			30	engineering estimate	0.22	36.60		36.6	
attach sensor			30	engineering estimate	0.22	36.60		36.6	
wire bond assembly		55	188	Promex quote	0.26	236.88		236.9	
test wedge assembly			40	engineering estimate	0.22	48.80		48.8	
ROC electronics		193							
preproduction proto			73.3	engineering estimate	0.36	99.69	99.7		
production			443.2	engineering estimate	0.36	602.97		602.5	
Q/A			20	engineering estimate	0.14	22.80			
FEM electronics		196							
preproduction			93.1	engineering estimate	0.36	126.62		126.5	
production			323.2	engineering estimate	0.36	439.55		439.3	
Q/A			20	engineering estimate	0.14	22.80		22.8	
Racks,LV,HV,DCM,install			81	existing designs	0.12	91.04			90.72
slow controls			5	existing designs	0.12	5.60			5.6
calibration system		22							
Assemble endcap			90	techs and students	0.26	113.40			113.4
Electronics Integration			250	Engineer	0.14	285.00	95	95	95
Mechanical Integration			250	Engineer	0.14	285.00	95	95	95
HDI bus		40	111.4	422 HDI, 10% spares, $250 ea.	0.25	139.03	132.5		
flex cables, sensor to ROC		25	51.2	784 flex, 2% spares, $42 ea.	0.13	57.65		57.43	
fibercables, ROC-FEM		3	31.2	56ea. -12 and 8 channel units	0.15	35.82		35.6	
lab equipment			100	probe, test equipment	0.1	110.00	110		
Management			200		0.14	228.00	76	76	76
total	345	714	3668.6			4594.85	1567.2	2501.95	475.72
				Inflation adjusted(.035 per year)		4829.21	1622.052	2679.588	527.5735
BNL overhead 18%									
LANL overhead and GRT 19.5%									
All labor fully burdened									

Participating and Interested Institutions



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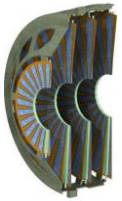

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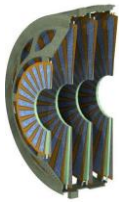
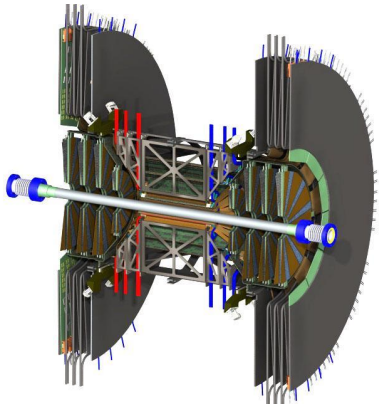


Summary

- No exotic or state-of-the-art R&D necessary
- LANL LDRD funds very important with BNL R&D funds
- Mechanical design concept mature
- FPHX ready for prototyping
- Will design bus and flex cables with conventional line width
- Management Plan is taking shape
- Cost Basis is in good shape
- Construction Schedule points to FY 2011 as data run



Management Plan
for the
Forward Silicon Vertex Trackers (FVTX)
for PHENIX

at
Brookhaven National Laboratory

For the U.S. Department of Energy
Office of Science
Office of Nuclear Physics

Major Task Areas

TOPIC	Effort to Date	Interested Institutions	Manager
Sensor	LANL, Czech	LANL,Czech, Columbia, UNM	
HDI	UNM, LANL		
FPHX	LANL		
DAQ	LANL,Columbia	LANL, Columbia	
Mechanics	LANL,HYTEC	LANL, HYTEC	Pak
Flex Cables	UNM, LANL	UNM	
Wedge Assembly	HYTEC, LANL	Columbia	
Ancillary	LANL, UNM, NMSU		
Calibration	LANL	LANL	done

Major Task Areas

TOPIC	Effort to Date	Interested Institutions	Manager
Disk and Cage Assembly	LANL, HYTEC		
Sensor QA			
FPHX QA			
System Test			
Mechanical Engineer	LANL, Walt		Walt
Electrical Engineer	Columbia, Eric		Eric