

EIC Detector Planning Process Overview and Current Status

08/30/21

Planning Process Overview

1. Subsystem Teams Populating Planning Sheets – THE TEAMS HAVE BEEN GREAT!

ECE06.10	EIC Detector	Ken Read/Doug Higinbotham	Data Set 1 - July 30, 2021	Data Set 2 - August 13, 2021	Data Set 3 - September 3, 2021
ECE06.10.03	Tracking	Xuan Li/Nilanga Liyanage	X	✓	
ECE06.10.04	PID	Greg Kalicy/Xiaochun He	✓	✓	
ECE06.10.05	Electromagnetic Calorimetry	Friederike Bock/Yongsun Kim/Tanja Horn	✓	✓	
ECE06.10.06	Hadronic Calorimetry	Friederike Bock/Yongsun Kim	X	✓	
ECE06.10.07	Magnets	Paul Brindza/Renuka Rajput-Ghoshal	✓	✓	
ECE06.10.08	Electronics	Chris Cuevas/Martin Purschke	✓	✓	
ECE06.10.09	DAQ / Computing	Chris Cuevas/Martin Purschke	✓	✓	
ECE06.10.10	Detector Infrastructure and Integration	John Haggerty	X	X	
ECE06.10.11	Auxiliary Detectors	Michael Murray/Igor Korover/Yuji Togo	X	✓	
ECE06.10.14	Luminosity Monitor	Michael Murray	X	X	

2. Planning Sheet Reviews and Subsystem Team Meetings

ECE06.10	EIC Detector	Ken Read/Doug Higinbotham	Frequency/Meeting Day/Time	Teams Meeting Link
ECE06.10.03	Tracking	Xuan Li/Nilanga Liyanage	Weekly/Friday/3:00-4:00 EST	Click here to join the meeting
ECE06.10.04	PID	Greg Kalicy/Xiaochun He	Weekly/Wednesday/3:00-3:30 EST	Click here to join the meeting
ECE06.10.05	Electromagnetic Calorimetry	Friederike Bock/Yongsun Kim/Tanja Horn	Bi-Weekly/Thursday/2:00-3:00 EST	Click here to join the meeting
ECE06.10.06	Hadronic Calorimetry	Friederike Bock/Yongsun Kim		
ECE06.10.07	Magnets	Paul Brindza/Renuka Rajput-Ghoshal	Weekly/Thursday/1:30-2:00 EST	Click here to join the meeting
ECE06.10.08	Electronics	Chris Cuevas/Martin Purschke	Weekly/Thursday/3:00-3:30 EST	Click here to join the meeting
ECE06.10.09	DAQ / Computing	Chris Cuevas/Martin Purschke		
ECE06.10.10	Detector Infrastructure and Integration	John Haggerty	Weekly/Wednesday/2:30-3:00 EST	Click here to join the meeting
ECE06.10.11	Auxiliary Detectors	Michael Murray/Igor Korover/Yuji Togo	Weekly/Thursday/4:30-5:00 EST	
ECE06.10.14	Luminosity Monitors	Pending Resolution	TBD – May roll into Auxiliary Detectors	

3. Loading Planning Data into Primavera

Activities		Resources	Resource Assignments	Projects	WBS
Layout: EIC Schedule Data Review					
Activity ID	Activity Name	Filter All: WBS	Original Duration	Start	Finish
10 ECCE EIC Detector Project			1708	03-Jan-22	12-Oct-28
10.10 EIC Detector			1708	03-Jan-22	12-Oct-28
10.10.07 Magnets			1708	03-Jan-22	12-Oct-28
10.10.07.01 Refurbish Magnet			1590	03-Jan-22	25-Apr-28
EIC3660 Consultation with engineers			40	03-Jan-22	01-Mar-22
EIC3670 Review of existing drawings and reports			40	03-Jan-22	01-Mar-22
EIC3680 Analysis of new iron			80	03-Jan-22	26-Apr-22
EIC3690 Planning for refurbishment (risk analysis and safety)			40	03-Jan-22	01-Mar-22
EIC3700 New jig and fixture Procurement			80	03-Jan-22	26-Apr-22
EIC3706 New jig and fixture Assembly			80	27-Apr-22	18-Aug-22
EIC3710 Disconnect valve box			40	19-Aug-22	17-Oct-22
EIC3720 Remove coil from jacket and support system			60	18-Oct-22	11-Jan-23
EIC3730 Remove thermal shields			40	12-Jan-23	10-Mar-23
EIC3740 Remove MLI			80	13-Mar-23	03-Jul-23
EIC3750 Inspection Procurement			80	05-Jul-23	26-Oct-23
EIC3754 Inspection Q/A and Testing			200	27-Oct-23	12-Aug-24
EIC3760 Repair Procurement			80	13-Aug-24	06-Dec-24
EIC3766 Repair Assembly			80	09-Dec-24	03-Apr-25
EIC3770 Full Inspection Procurement			80	04-Apr-25	28-Jul-25
EIC3774 Full Inspection Q/A and Testing			80	29-Jul-25	19-Nov-25
EIC3780 Pressure and leak checks cryogenic cooling circuit Procurement			40	20-Nov-25	20-Jan-26
EIC3788 Pressure and leak checks cryogenic cooling circuit Q/A and Testi			40	21-Jan-26	18-Mar-26
EIC3790 Reinsulate coil with MLI Procurement			60	19-Mar-26	11-Jun-26
EIC3798 Reinsulate coil with MLI Q/A and Testing			60	12-Jun-26	04-Sep-26
EIC3800 Assemble thermal shield (pressure check, leak check and re-insu			100	08-Sep-26	02-Feb-27
EIC3810 Assemble back			180	03-Feb-27	19-Oct-27
EIC3820 Leak check			60	20-Oct-27	14-Jan-28
EIC3830 Engineering review and documentation			70	18-Jan-28	25-Apr-28
10.10.07.02 Trim Coil			530	02-Jan-26	10-Feb-28
EIC3840 Trim coil design (EM)			100	02-Jan-26*	26-May-26
EIC3850 Trim coil design (Mechanical)			60	27-May-26	19-Aug-26
EIC3860 Check for projectivity in RICH volume			30	20-Aug-26	01-Oct-26
EIC3870 Effect of trim coil on main magnet			30	02-Oct-26	16-Nov-26
EIC3880 Consultation with sPHENIX team			10	17-Nov-26	01-Dec-26

Planning Process Overview

4. Export Data to Proposal Planning Sheet Format

Resource Assignments

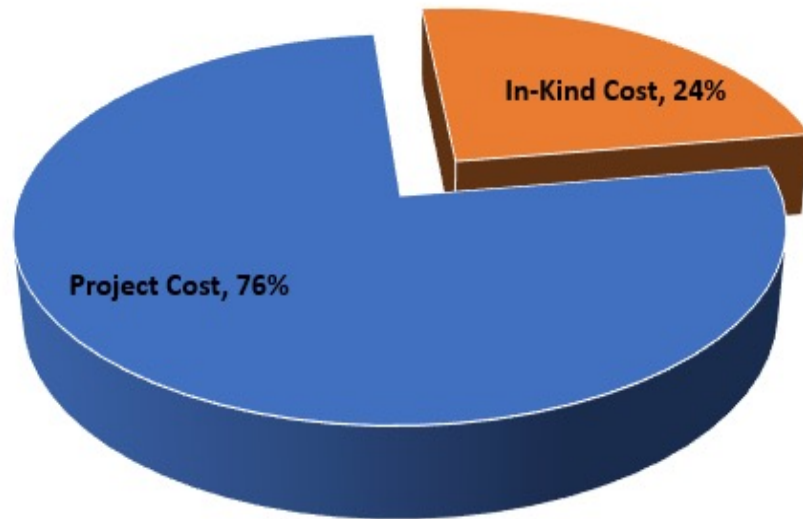
ActivitiesResourcesResource AssignmentsProjectsWBS

Layout: EIC Input Sheet

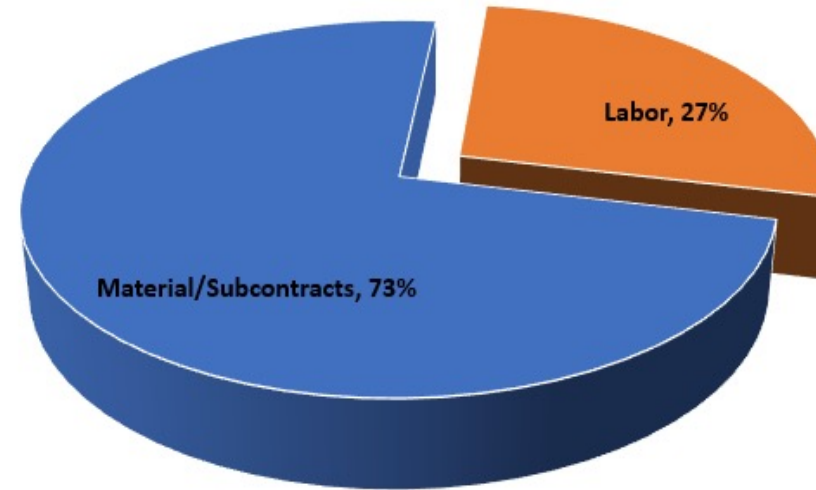
WBS		WBS Name	Activity Name	Material Units	Material Unit Pricing	Basis of Estimate	Labor Hours	Resource Name	Funding Source	% of Cost to Project	% of Cost In-kind	Total Material Cost	Total Labor Cost	Budgeted Cost	nal Duration	Start	Finish	
		10.10.03.01.01	Silicon Barrel	Sensor Q/A, testing and rework	16600.00	\$10.00	Historical Cost	Material	Project	100.00	0.00	\$166,000.00		\$166,000.00	50	18-Oct-22	28-Dec-22	
		10.10.03.01.01	Silicon Barrel	Sensor Q/A, testing and rework			Historical Cost	1040.00	Electrical Engineer	Project/In-Kind	50.00	50.00	\$159,296.80	\$159,296.80	50	18-Oct-22	28-Dec-22	
		10.10.03.01.01	Silicon Barrel	Module design			Historical Cost	520.00	Mechanical Designer	Project	100.00	0.00	\$60,372.00	\$60,372.00	50	29-Dec-22	10-Mar-23	
		10.10.03.01.01	Silicon Barrel	Module Unit assembly			Engineering Estimate	1040.00	PostDoc	Project/In-Kind	50.00	50.00	\$73,829.60	\$73,829.60	25	13-Mar-23	14-Apr-23	
		10.10.03.01.01	Silicon Barrel	Stave/Unit design				1040.00	Electrical Designer	Project	100.00	0.00	\$120,744.00	\$120,744.00	25	22-May-23	26-Jun-23	
		10.10.03.01.01	Silicon Barrel	Stave/Unit assembly			Historical Costs	2080.00	PostDoc	Project/In-kind	25.00	75.00	\$147,659.20	\$147,659.20	25	27-Jun-23	01-Aug-23	
		10.10.03.01.01	Silicon Barrel	Stave/Unit assembly			Historical Costs	1040.00	Mechanical Engineer	Project/In-kind	50.00	50.00	\$159,296.80	\$159,296.80	25	27-Jun-23	01-Aug-23	
		10.10.03.01.01	Silicon Barrel	Stave/Unit assembly			Historical Costs	2080.00	PhD Student	Project/In-kind	25.00	75.00	\$41,600.00	\$41,600.00	25	27-Jun-23	01-Aug-23	
		10.10.03.01.01	Silicon Barrel	Stave tooling, design and fabrication			Historical Costs	520.00	Mechanical Engineer	Project/In-Kind	50.00	50.00	\$79,648.40	\$79,648.40	25	02-Aug-23	06-Sep-23	
		10.10.03.01.01	Silicon Barrel	Stave/Unit Q/A, testing and rework			Historical Costs	520.00	Electrical Engineer	Project	100.00	0.00	\$79,648.40	\$79,648.40	25	07-Sep-23	12-Oct-23	
		10.10.03.01.01	Silicon Barrel	Stave/Unit Q/A, testing and rework			Historical Costs	520.00	PostDoc	Project	100.00	0.00	\$36,914.80	\$36,914.80	25	07-Sep-23	12-Oct-23	
		10.10.03.01.01	Silicon Barrel	Prototype readout unit design	20.00	\$2,000.00	Engineering Estimate	Material	Project	100.00	0.00	\$40,000.00		\$40,000.00	25	13-Oct-23	16-Nov-23	
		10.10.03.01.01	Silicon Barrel	Prototype readout unit design			Historical Cost	1040.00	Electrical Engineer	Project	100.00	0.00	\$159,296.80	\$159,296.80	25	13-Oct-23	16-Nov-23	
		10.10.03.01.01	Silicon Barrel	Prototype readout unit R&D and testing				1040.00	Electrical Engineer	Project	100.00	0.00	\$159,296.80	\$159,296.80	25	17-Nov-23	22-Dec-23	
		10.10.03.01.01	Silicon Barrel	Prototype readout unit R&D and testing				1040.00	PostDoc	Project/n-Kind	50.00	50.00	\$73,829.60	\$73,829.60	25	17-Nov-23	22-Dec-23	
		10.10.03.01.01	Silicon Barrel	Readout unit component purchase	1660.00	\$1,200.00	Historical Costs	Material	Project	100.00	0.00	\$1,992,000.00		\$1,992,000.00	25	26-Dec-23	31-Jan-24	
		10.10.03.01.01	Silicon Barrel	Readout unit component purchase			Historical Costs	40.00	Electrical Engineer	Project	100.00	0.00	\$6,126.80	\$6,126.80	25	26-Dec-23	31-Jan-24	
		10.10.03.01.01	Silicon Barrel	Readout unit production				1040.00	Electrical Engineer	Project	100.00	0.00	\$159,296.80	\$159,296.80	50	01-Feb-24	11-Apr-24	
		10.10.03.01.01	Silicon Barrel	Readout unit Q/A and testing				520.00	Electrical Engineer	Project	100.00	0.00	\$79,648.40	\$79,648.40	50	12-Apr-24	21-Jun-24	
		10.10.03.01.01	Silicon Barrel	Readout colck/trigger/interface			Historical Costs	300.00	Electrical Engineer	Project/In-Kind	50.00	50.00	\$45,951.00	\$45,951.00	50	24-Jun-24	03-Sep-24	
		10.10.03.01.01	Silicon Barrel	Mechanical support structure design			Historical Costs	1040.00	Mechanical Designer	Project	100.00	0.00	\$120,744.00	\$120,744.00	50	04-Sep-24	14-Nov-24	
		10.10.03.01.01	Silicon Barrel	Support structure compoent purchase	1.00	\$350,000.00	Historical Costs	Material	Project	100.00	0.00	\$350,000.00		\$350,000.00	50	15-Nov-24	29-Jan-25	
		10.10.03.01.01	Silicon Barrel	Support structure compoent purchase			Historical Costs	40.00	Mechanical Engineer	Project	100.00	0.00	\$6,126.80	\$6,126.80	50	15-Nov-24	29-Jan-25	
		10.10.03.01.01	Silicon Barrel	Mechanical support structure assembly			Historical Costs	520.00	Mechanical Engineer	Project	100.00	0.00	\$79,648.40	\$79,648.40	50	30-Jan-25	10-Apr-25	
		10.10.03.01.01	Silicon Barrel	Power and cooling design			Historical Costs	520.00	Electrical Designer	Project/In-Kind	50.00	50.00	\$60,372.00	\$60,372.00	50	11-Apr-25	20-Jun-25	
		10.10.03.01.01	Silicon Barrel	Power and cooling compoent purchase	20.00	\$20,000.00	Historical Costs	Material	Project	100.00	0.00	\$400,000.00		\$400,000.00	50	23-Jun-25	02-Sep-25	
		10.10.03.01.01	Silicon Barrel	Power and cooling compoent purchase			Historical Costs	40.00	Electrical Engineer	Project	100.00	0.00	\$6,126.80	\$6,126.80	50	23-Jun-25	02-Sep-25	
		10.10.03.01.01	Silicon Barrel	Power and cooling assembly			Historical Costs	1040.00	PostDoc	Project	100.00	0.00	\$73,829.60	\$73,829.60	50	03-Sep-25	12-Nov-25	
		10.10.03.01.01	Silicon Barrel	Power and cooling testing			Historical Costs	520.00	Mechanical Tech	Project/In-Kind	20.00	80.00	\$52,525.20	\$52,525.20	50	13-Nov-25	27-Jan-26	
		10.10.03.01.01	Silicon Barrel	Slow controls			Historical Costs	520.00	PostDoc	Project/In-Kind	20.00	80.00	\$36,914.80	\$36,914.80	50	28-Jan-26	08-Apr-26	

Planning Status

5. Snap-Shot Analysis (Based on the Preliminary data currently in Primavera)



Note: Does not yet include in-kind contribution of BaBar re-use.



Planning Status

6. Data Completeness and Maturity

Activities	Resources	Resource Assignments	Projects	WBS
Layout:WBS				
WBS Code	WBS Name	UDF-WBS Manager	Total Activities	
10	ECCE EIC Detector Project	Ken Read/Doug Higinbotham	903	
10.10	EIC Detector	Ken Read/Doug Higinbotham	903	
10.10.03	Tracking	Xuan Li/Nilanga Liyanage	98	
10.10.04	PID	Greg Kalicy/Xiaochun He	59	
10.10.05	Electromagnetic Calorimetry	Friederike Bock/Yongsun Kim/Tanja Horn	82	
10.10.06	Hadronic Calorimetry	Friederike Bock/Yongsun Kim/Tanja Horn	103	
10.10.07	Magnets	Paul Brindza/Renuka Rajput-Ghoshal	47	
10.10.08	Electronics	Chris Cuevas/Martin Purschke	409	
10.10.09	DAQ/Computing	Chris Cuevas/Martin Purschke	47	
10.10.10	Infrastructure and Integration	John Haggerty	0	
10.10.11	Auxiliary Detectors	Igor Korover/Michael Murray/Yuji Goto	58	
10.10.14	Luminosity Monitor	Michael Murray	0	

ECE06.10	EIC Detector	Subsystem Team	Data Maturity Assessment/Issues/Impacts
ECE06.10.03	Tracking	Xuan Li/Nilanga Liyanage	Technology (ITS-3) in design stage. Stave/module design, assembly module distribution cost awaiting reference from ITS-2. Need coordination with Cal and PID on dimensions. Most parts are in a good state, however, several items associated with detector assembly are not.
ECE06.10.04	PID	Greg Kalicy/Xiaochun He	Very mature overall. dRICH planning will be informed by ATHENA. The team is resolving TOF planning.
ECE06.10.05	Electromagnetic Calorimetry	Friederike Bock/Yongsun Kim/Tanja Horn	In good shape overall. The team is still working the EECCal piece.
ECE06.10.06	Hadronic Calorimetry	Friederike Bock/Yongsun Kim	In good shape overall. The team is still working the EEHCal piece.
ECE06.10.07	Magnets	Paul Brindza/Renuka Rajput-Ghoshal	Planning pieces are very mature. Data currently being revised and finalized.
ECE06.10.08	Electronics	Chris Cuevas/Martin Purschke	Lots of coordination needed. Rough planning complete. Final planning underway.
ECE06.10.09	DAQ / Computing	Chris Cuevas/Martin Purschke	Lots of coordination needed. Rough electronics planning complete. Final planning underway. DAQ planning at a decent state.
ECE06.10.10	Detector Infrastructure and Integration	John Haggerty	Planning in progress, but solid information available to inform the data.
ECE06.10.11	Auxiliary Detectors	Michael Murray/Igor Korover/Yuji Togo	First cut planning received. Team working to pull together complete data set.
ECE06.10.14	Luminosity Monitor	Michael Murray	Team working to pull together complete data set.

Planning Status

7. What's Needed?

- WBS color coded detector drawing showing the subsystems – Would be super helpful!
- More subsystem team coordination and cross pollination needed
- Subsystem TRL assessment
- Risk log inputs – Issued to the teams
- Assumption's log inputs – Issued to the teams
- “Light” Execution Narrative/Plan – Standard formats would be helpful

8. Upcoming Work and Deadlines

- Final Planning Data -- Due Friday, September 3, 2021
- Primavera Planning Data Reviews -- Begin Week of September 6, 2021
- Schedule Development Meetings -- Begin Week of September 6, 2021
- Informal Independent Planning Review(s) -- Mid to End September
- Formal Proposal Reviews -- Early to Mid October