

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3	Run 2b DAQ and Trigger Project	\$4,400,199.00	0	0		
1.3.1	Run 2b TDC Project	\$1,463,134.00	0	0		
1.3.1.1	Start Run 2b TDC Project	\$0.00	0	0		
1.3.1.2	Specification & Development	\$172,208.00	0	0		
1.3.1.3	Detailed Design	\$146,744.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	1,248 hrs	0 days	Tue 12/3/02	Thu 7/17/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$68,952.00	\$0.00	\$0.00	\$68,952.00
1.3.1.4	Prototype - V1.0	\$167,204.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	768 hrs	0 days	Fri 7/18/03	Wed 12/3/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$42,432.00	\$0.00	\$0.00	\$42,432.00
1.3.1.5	Preproduction	\$153,871.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	968 hrs	0 days	Thu 12/4/03	Thu 5/27/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$53,482.00	\$0.00	\$0.00	\$53,482.00
1.3.1.6	Production	\$624,480.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	1,480 hrs	0 days	Fri 5/28/04	Thu 2/24/05
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$81,770.00	\$0.00	\$0.00	\$81,770.00
1.3.1.7	Data Concentrator	\$198,627.00	0	0		
1.3.2	Run 2b Level 2 Project	\$233,099.00	0	1		
1.3.2.1	Start of Run 2b Level 2 Project	\$0.00	0	0		
1.3.2.2	Testing and Software work existing L2 Puslar test stand	\$0.00	0	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
4	PhysicistF	150%	960 hrs	0 days	Tue 9/3/02	Mon 1/6/03
5	PostDocF	50%	320 hrs	0 days	Tue 9/3/02	Mon 1/6/03
9	PostDocU	200%	1,280 hrs	0 days	Tue 9/3/02	Mon 1/6/03

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Testing and Software work existing L2 Puslar test stand" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	150%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00

Notes

finish all mezz/Aux cards, Pulsar prototype testing, Rev B if needed
SLINK to PCI software work, teststand software,
additional firmware work for testing ALL basic functionalities of prototypes

1.3.2.3 Commision L2 Puslar for each data path - proof of principle tests \$0.00 0 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	150%	1,668 hrs	0 days	Tue 1/7/03	Wed 7/23/03
5	PostDocF	50%	556 hrs	0 days	Tue 1/7/03	Wed 7/23/03
9	PostDocU	200%	2,224 hrs	0 days	Tue 1/7/03	Wed 7/23/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	150%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00

Notes

commission L2 teststand for each data path and for existing system,
able to both source and sink (to a PC) for each data path,
advanced teststand software/firmware, high speed SLINK to PCI software,
define CDF L2 SLINK format for all data pathes;prove of principle tests

1.3.2.4 Preproduction run of Pulsar L2 system \$70,795.00 0 0

1.3.2.5 Verticle Slice Test \$0.00 0 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	150%	1,188 hrs	0 days	Thu 7/24/03	Fri 12/12/03
5	PostDocF	50%	396 hrs	0 days	Thu 7/24/03	Fri 12/12/03
9	PostDocU	200%	1,584 hrs	0 days	Thu 7/24/03	Fri 12/12/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	150%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00

Notes

use teststand to fine tune receiver firmware for each data path; system integration
at crate level with test stand; L2 code testing for new system.

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.2.6	Production run of Pulsar L2 system	\$162,304.00	0	0		
1.3.2.7	System Integration standalone w/ teststand	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
4	PhysicistF	150%	1,680 hrs	0 days	Tue 2/24/04	Thu 9/9/04
5	PostDocF	50%	560 hrs	0 days	Tue 2/24/04	Thu 9/9/04
9	PostDocU	200%	2,240 hrs	0 days	Tue 2/24/04	Thu 9/9/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
4	PhysicistF	150%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00
<u>Notes</u>						
use teststand to drive the new system in standalone mode, study/optimize the performance, request test runs with actual beam...						
1.3.3	Run 2b XFTII Project	\$1,605,966.00	0	0		
1.3.3.1	Start of XFTII Project	\$0.00	0	0		
1.3.3.2	Finder Boards	\$630,928.00	0	0		
1.3.3.3	Test equipment	\$25,000.00	0.5	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Thu 7/1/04	Thu 7/1/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$25,000.00	\$0.00	\$0.00	\$25,000.00
<u>Notes</u>						
purchase test equipment for production testing of boards						
1.3.3.4	Linker Modules	\$327,576.00	0	0		
<u>Notes</u>						
need 12 boards + 4 spares						
1.3.3.5	Linker Output Module II	\$27,840.00	0	0		
<u>Notes</u>						
need 24 boards + 6 spares						
1.3.3.6	TDC Transition Module	\$29,000.00	0	0		
<u>Notes</u>						
need 54 boards + 6 spares						

WBS	Name	Cost	M&S Cont.	Labor Cont.
1.3.3.7	Finder Transition Module	\$20,000.00	0	0
	<u>Notes</u> need 18 boards + 2 spares			
1.3.3.8	Finder3D Tester Board	\$11,680.00	0	0
	<u>Notes</u> need 1 board			
1.3.3.9	Cables	\$8,960.00	0	0
1.3.3.10	Stereo Association Modules	\$259,086.00	0	0
	<u>Notes</u> need 12 boards + 4 spares			
1.3.3.11	Stereo Association Module Custom Backplane	\$48,816.00	0	0
	<u>Notes</u> needs 2 boards + 1 spare			
1.3.3.12	Stereo Association Module Tester Board	\$111,832.00	0	0
	<u>Notes</u> require 2 boards + 1 spare			
1.3.3.13	Stereo Association Module Transition Module	\$24,400.00	0	0
	<u>Notes</u> need 12 boards + 4 spares			
1.3.3.14	Stereo Association Module Clock and Control Board	\$30,928.00	0	0
	<u>Notes</u> This board uses an existing design for the XTRP Clock and Control Board need 1 board + 2 spares			
1.3.3.15	Level 2 Interface Board	\$49,920.00	0	0
	<u>Notes</u> need 1 + 2 spare boards			
1.3.3.16	XFT Ready for Installation at CDF	\$0.00	0	0
1.3.4	Event-Builder Upgrade	\$414,000.00	0	0
	<u>Notes</u> The Event Builder upgrade is based on the same technology as the first one except for increased bandwidth. This path has been chosen since the increase in throughput and rate a mild and using the same technology minimizes the effort needed for the upgrade.			

The details of the purchase and all parts are assumed to be equal to the purchase of the present Event Builder hardware. According to somewhat outdated quotes the hardware

WBS	Name	Cost	M&S Cont.	Labor Cont.
"Event-Builder Upgrade" continued				
	<u>Notes</u>			
	costs about 500k.			
	Contingency is included in the sense that these are old quotes and the hardware will only become cheaper, although not by much.			
	Further Details on the Hardware from a quote from December 2001			
	Raw cost			
	32 port ASX 4000 (Marconi)	\$215k		
	16 OC12 PCI cards (ForeRunnerHE 622)	\$30k		
	15 OC-12 PMC carss (Cyclonwe PMC59)	\$60k		
	Total	\$305k		
	Spares			
	1 Spare switch backbone	\$51k		
	1 Spare switch module	\$40k		
	3 Spare PCI cards	\$6k		
	3 Spare ATM cards	\$12k		
	Total	\$109k		
	Total including spares	\$414k		
	Including 30% contingency	\$538k		
1.3.4.1	upgrade software	\$0.00	0	0
	<u>Notes</u>			
	One postdoc/researcher type is needed 100% of the time to work on this project. Probably a second person will split the work with this person and both work 50% of their time.			
1.3.4.2	construct prototype	\$103,500.00	0	0
	<u>Notes</u>			
	Installation and commissioning of the prototype system will be done by two students using 50% of their time supervised by a postdoc/researcher type.			
1.3.4.3	construct full size system	\$310,500.00	0	0
	<u>Notes</u>			
	Similar to the construction of the prototype two students with 50% of their time supervised by a postdoc/researcher type.			
1.3.5	Computer for Level3 PC Farm / DAQ	\$390,000.00	0	0
	<u>Notes</u>			
	Computer purchase is part of the operations but the cost is listed here for convenient tracking. We work with the assumption that every three years PCs become obsolete and have to be replaced.			
	The assumption is that a computer costs about \$1500. This number is probably going to be smaller since in the last years the computers have only gotten cheaper. Some farms group have bought computers recently for this price.			

WBS	Name	Cost	M&S Cont.	Labor Cont.
"Computer for Level3 PC Farm / DAQ" continued				
<u>Notes</u>				
It is not useful to get a more detailed quote at this point since the prices are going to vary.				
In terms of the human resources this project is rather light weight. The preparation work on the prototype takes 50% of the postdoc/researcher type plus 50% of one student. It takes two students 50% of their time supervised by a postdoc/researcher type to complete the installation and commissioning.				
1.3.5.1	replace 70/15 PCs (2003)	\$130,000.00	0	0
1.3.5.2	replace 70/15 PCs (2004)	\$130,000.00	0	0
1.3.5.3	replace 70/15 PCs (2005)	\$130,000.00	0	0
1.3.6	SVT upgrade	\$294,000.00	0	0
<u>Notes</u>				
The SVT is part of the trigger system for CDF. The upgrade consists in making more of boards already existing and/or modifying existing boards. University of Chicago and INFN-Pisa are providing engineering time, labor and equipment for these parts.				
1.3.6.1	Start of SVT upgrade	\$0.00	0	0
1.3.6.2	trackfitter boards	\$210,000.00	0	0
1.3.6.3	Merger boards	\$84,000.00	0	0