TENTATIVE CDF ITALY BUDGET FOR ANALYSIS AT FNAL 2002-3-4 and CNAF 2005-6-7-8 ***6/20/2002 11:24***

now: complete existing 8 TB with 34 more duals to reach target 1GHz/100GB

also buy everything for up to the first fb ^-1, long lead time, no disk update until end 2003, concentrate on CNAF

total 19 TB = 9 file servers + 79 duals vs. 4+10 bought with January 2002 funds

2003: buy and install hw for 2 fb^-1

2004: buy and install hw for 3.5 fb^-1

etc.

expect 2005 and following to go to almost 0 (only maint) as/if CR@CNAF delivers promises

COMPUTE AS: needs scale with people and luminosity. Size disk needs as fraction of CDF planned disk and scale CPU to disk

so to make sure we get have on disk data we need up to large (O(TB)) ntuples, and hopefully can also do at FNAL

what most US sites will do at home/FNAL (MIT,PENN,LBL,UCHI..)

assume price of hardware stays constant per-piece, but performance increase with Moore

keep in mind CPU speed increases smootly, disk doubles every now and then

NUMERIC CONSTANTS

k$ dual	2.5	CDF global estimate of disk/fb^-1 (TB)	125	additional CPU for batch root		10%	
k$ fserver	12	Size of italian group (fraction of CDF)	15%	Euro/$	1.1		

disk = round to FS boundary. cpu = disk*1GHz/100GB+root. adjust Ltarget to mid ground between current and next year

year	Lint	Lint next y	Ladj	int disk TB	disk to add (TB)	FS size TB	FS to buy	tot disk adj TB	intCPU GHz	CPU to add (GHz)	CPU pow GHz	dual to buy	tot duals	tot CPU adj GHz	cost disk Keu	cost CPU Keu	total Keu	integrated Keu
present	0.06							**8.8**			1.26		10	**25.2**				80
2002	0.3	1.2	**1.0**	18.8	**10.0**	2.2	5	**19.8**	217.8	**192.6**	1.4	79	69	**121.8**	**66**	**190**	**256**	336
2003	1.2	2.5	**2.0**	37.5	**17.7**	2.2	8	**37.4**	411.4	**289.6**	2.5	58	137	**266.8**	**106**	**160**	**266**	602
2004	2.5	4.1	**3.5**	65.6	**28.2**	3.5	8	**65.4**	719.4	**452.6**	3.5	65	202	**494.3**	**106**	**179**	**285**	887
2005	4.1	7.6	**6.0**	112.5	**47.1**	5.5	9	**114.9**	1263.9	**769.6**	5	77	279	**879.3**	119	212	**331**	1218
2006	7.6	11.3	**9.5**	178.1	**63.2**	8.7	7	**175.8**	1933.8	**1054.5**	7	75	354	**1404.3**	92	206	**298**	1516
2007	11.3	15	**13.5**	253.1	**77.3**	8.7	9	**254.1**	2795.1	**1390.8**	9	77	431	**2097.3**	119	212	**331**	1847
2008	15	20	**18.0**	337.5	**83.4**	10	8	**334.1**	3675.1	**1577.8**	12	66	497	**2889.3**	106	182	**288**	2135

versione sinottica

year	Lint	Ltarget	TB	GHZ	add FS	add Dual	**KEuro**	Finanz.	cont.40%	**total Keu**	**Keu integ**
2001							**43**	84ML spent in 2001	0	**43**	**43**
present					4	10	**80**	already spent	0	**80**	**123**
2002	0.3	1.0	19.8	121.8	5	69	**256**	120sblocco + 136new (NOTE 1)	0	**256**	**379**
2003	1.2	2.0	37.4	266.8	8	58	**266**	req 2003 (NOTE 2-3-5-6)	106	**372**	**751**
2004	2.5	3.5	65.4	494.3	8	65	**285**	req 2004 (NOTE 4-5-6)	114	**399**	**1150**
2005	4.1	6.0	114.9	879.3	9	77	**331**	NOTE 7	132	**463**	**1613**
2006	7.6	9.5	175.8	1404.3	7	75	**298**	NOTE 7	119	**417**	**2030**
2007	11.3	13.5	254.1	2097.3	9	77	**331**	NOTE 7	132	**463**	**2493**
2008	15	18.0	334.1	2889.3	8	66	**288**	NOTE 7	115	**403**	**2896**

NOTE 1: 279+80 spent = 359KEuro for 2002 total vs. 300 requested in September 2001

NOTE 2: 2003 disks can be bought now (no size step until next summer) = Keuro 106

NOTE 3: all 2003 purchases could be started as bids in 2002 = KEuro 266

NOTE 4: 2004 disks can bought at end 2003 on bids that start in 2002 = KEuro 106

NOTE 5: total possible advance to 2002 = NOTE3 + NOTE4 = KEuro 372

NOTE 6: 2003/4 requests will also include contingency for MC and/or route changes

NOTE 7: 2005-7 is only for example, is outside Run2a budget and we hope to move to CNAF by then

SLIDE: N.B. TB AND CPU NUMBERS ARE ROUNDED TO MULTIPLE OF 10 !!

year	Luminosity		ANALYSIS FARM			contingency 40% (Keuro)	Requested per year (Keuro)	
	Planned (Church)	Target (adjusted)	disk (TB)	CPU (duals)	cost/y (Keuro)			
2001	commissioning		0.6	0			43	
2002	0.3	1.0	20	80	336	0	336	
2003	1.2	2.0	40	140	266	106	372	
2004	2.5	3.5	70	200	285	114	399	
TOTAL cost Analysis Farm at FNAL + 40% conting. for Run2a expanded to 3.5 fb-1								1150
2005	4.1	6.0	110	280	331	132	463	
2006	7.6	9.5	180	350	298	119	417	
2007	11.3	13.5	250	430	331	132	463	
2008	15	18.0	330	500	288	115	403	
TOTAL cost for Analysis Farm at CNAF + 40% coting. for Run2b (15 fb-1)								1746
TOTAL BUDGET CENTRALIZED COMPUTING FOR ANALYSIS 2001-2008								2896