A Large Ion Collider Experiment

COMPUTING RESOURCES FOR RUN2

ALICE

BIG DATA

REMINDER

"The Funding Agency will provide computing resources (CPU and disk) in a quantity greater than or equal to the fraction of the total resources required, minus the pledged CERN contribution, in proportion to its M&O-A contribution relative to the total ALICE M&O-A minus the CERN M&O-A. The minimal tape contribution required by a T1 is calculated from the fraction of the total tape requirements, minus the pledged CERN contribution. This total is divided in a similar manner to the other computing resources except that the M&O-A contribution of a Funding Agency is normalized to the sum of only the M&O-A contributions of all Funding Agencies, which are hosting a Tier1, again excluding CERN. The Computing Project, based on input from the Physics Coordination, will calculate yearly the total computing resources that are required. The Management Board then endorses this total before it is presented to the Computing Resources Scrutiny Group and the Computing Resource Review Board. The computing shares approved by the Computing RRB will then become the minimal resource requirements for each institution."

2014 REQUIREMENT

2014	(k HEP-SPEC06) CPU	(PB) DISK	(PB) TAPE
T0	135	8.34	12
T1	110	10.10	6
T2	190	12.80	0

ALICE

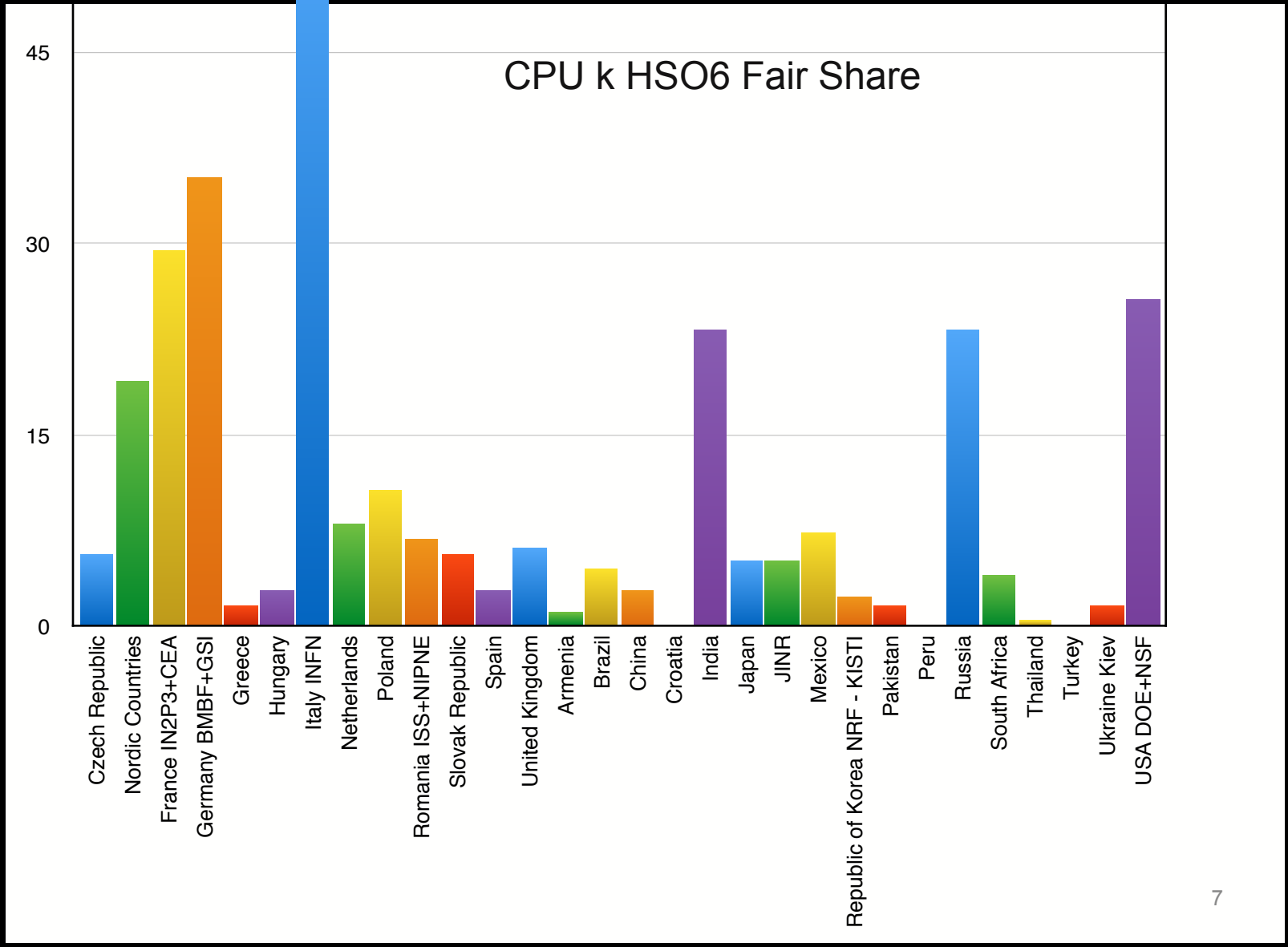
2014 SHARE

2014			
Country	CPU (k HEP-SPEC06)	Disk (PB)	Tape (PB)
Czech Republic	5.7	0.4	–
Nordic Countries	19.3	1.5	0.7
France IN2P3+CEA	29.5	2.3	1.1
Germany BMBF+GSI	35.2	2.7	1.0
Greece	1.7	0.1	–
Hungary	2.8	0.2	–
Italy INFN	56.8	4.3	2.5
Netherlands	8.0	0.6	0.3
Poland	10.8	0.8	–
Romania ISS+NIPNE	6.8	0.5	-
Slovak Republic	5.7	0.4	–
Spain	2.8	0.2	–
United Kingdom	6.3	0.5	0.3
Armenia	1.1	0.1	–
Brazil	4.5	0.3	–
China	2.8	0.2	–
Croatia	0.0	0.0	No existing site

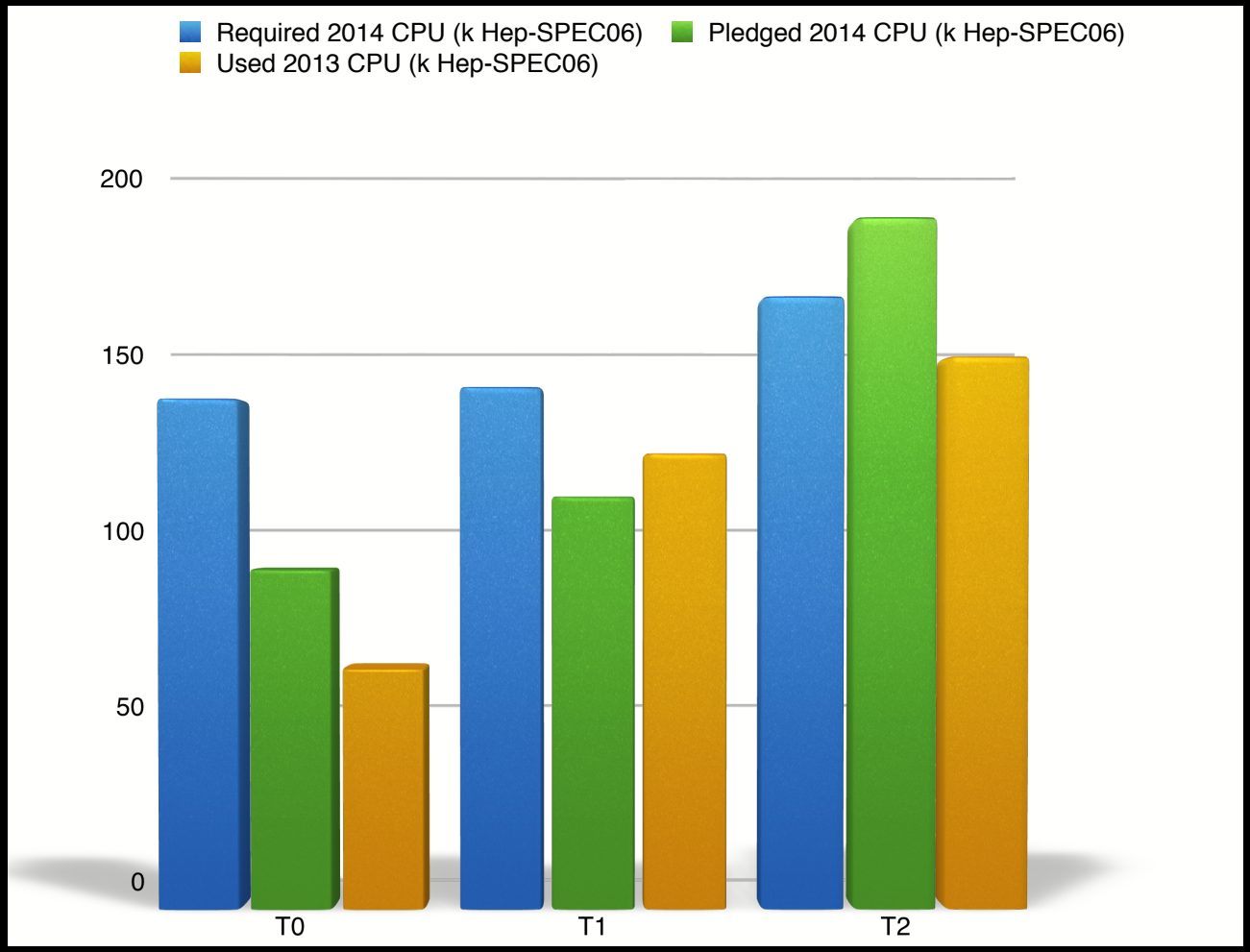
2014 SHARE

2014			
Country	CPU (k HEP-SPEC06)	Disk (PB)	Tape (PB)
India	23.3	1.8	–
Japan	5.1	0.4	–
JINR	5.1	0.4	–
Mexico	7.4	0.6	–
Republic of Korea NRF - KISTI	2.3	0.2	0.1
Pakistan	1.7	0.1	–
Peru	0.0	0.0	No existing site
Russia	23.3	1.8	–
South Africa	4.0	0.3	–
Thailand	0.6	0.0	–
Turkey	0.0	0.0	No existing site
Ukraine Kiev	1.7	0.1	–
USA DOE+NSF	25.6	2.0	-

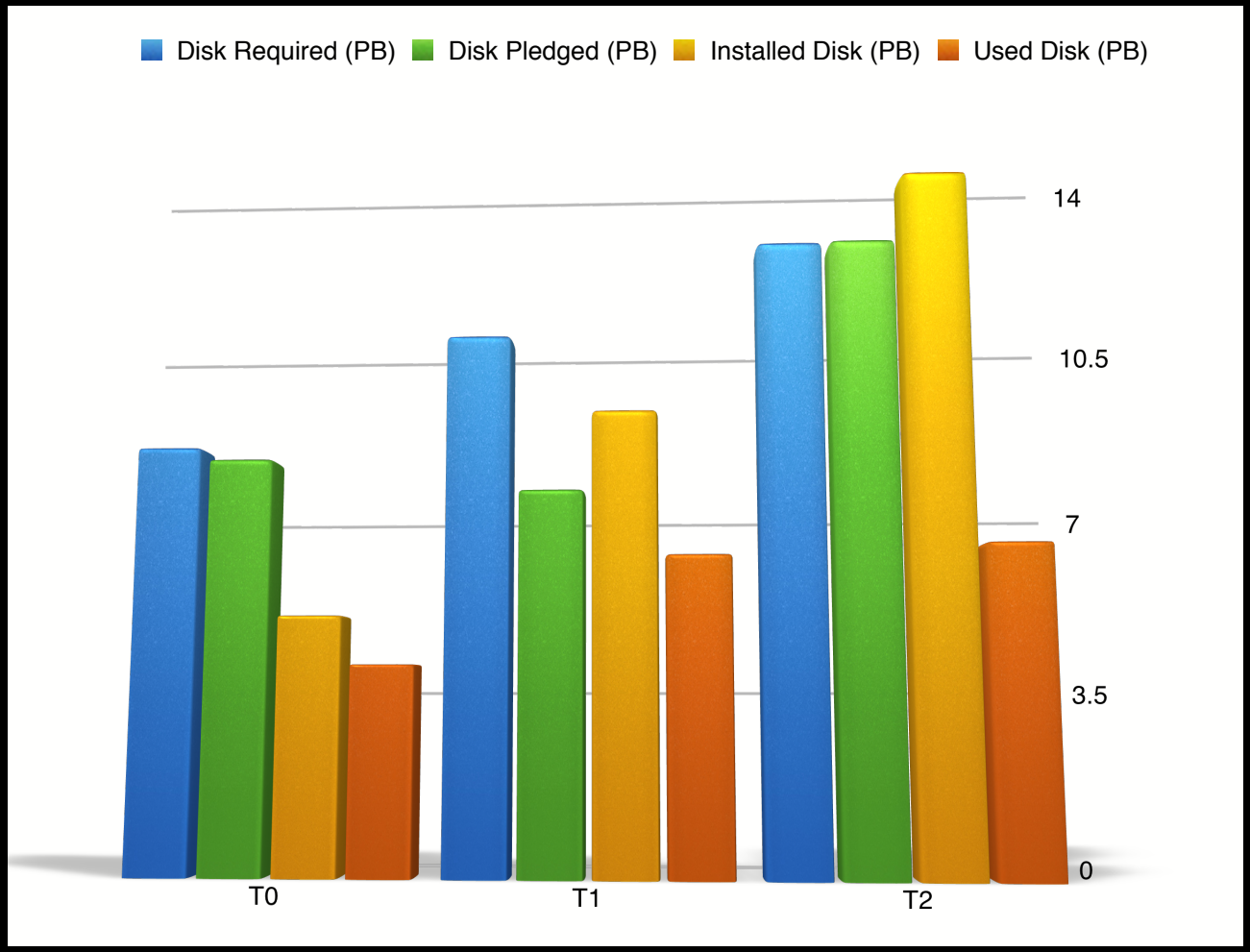
STATUS 2014


CPU k HSO6 Fair Share
45
30
15
0
Czech Republic
Nordic Countries
France IN2P3+CEA
Germany BMBF+GSI
Greece
Hungary
Italy INFN
Netherlands
Poland
Romania ISS+NIPNE
Slovak Republic
Spain
United Kingdom
Armenia
Brazil
China
Croatia
India
Japan
JINR
Mexico
Republic of Korea NRF - KISTI
Pakistan
Peru
Russia
South Africa
Thailand
Turkey
Ukraine Kiev
USA DOE+NSF

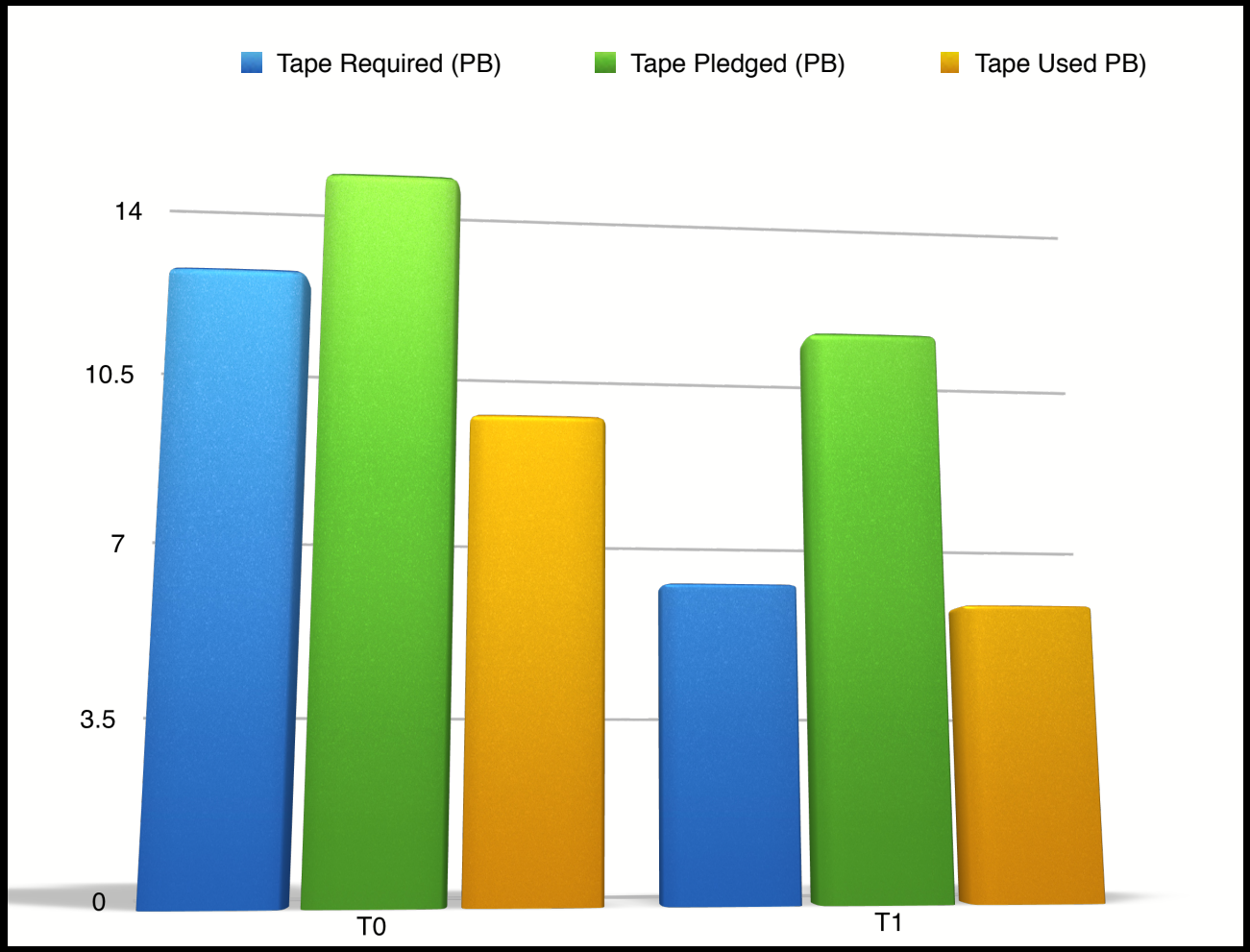
2014 STATUS CPU



2014 STATUS DISK



2014 STATUS TAPE



RUN1

ALICE has been collecting data since 2010

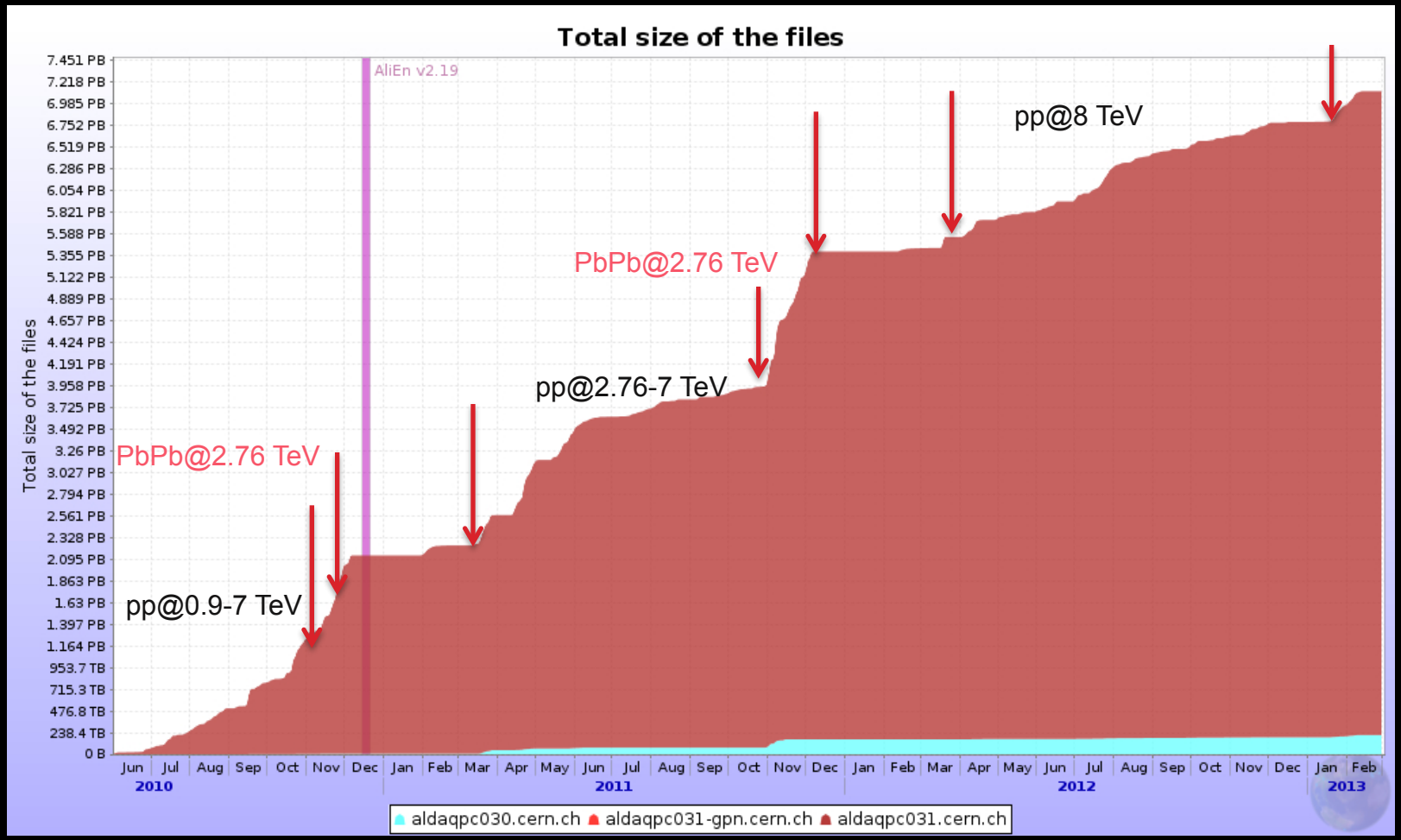
- 2010: pp @ 0.9 – 7 TeV

  Pb-Pb @ 2. 76 TeV (MB); L_{int} = 3 μb^{-1}
- 2011: pp @ 2.76 – 7 TeV (MB & rare)

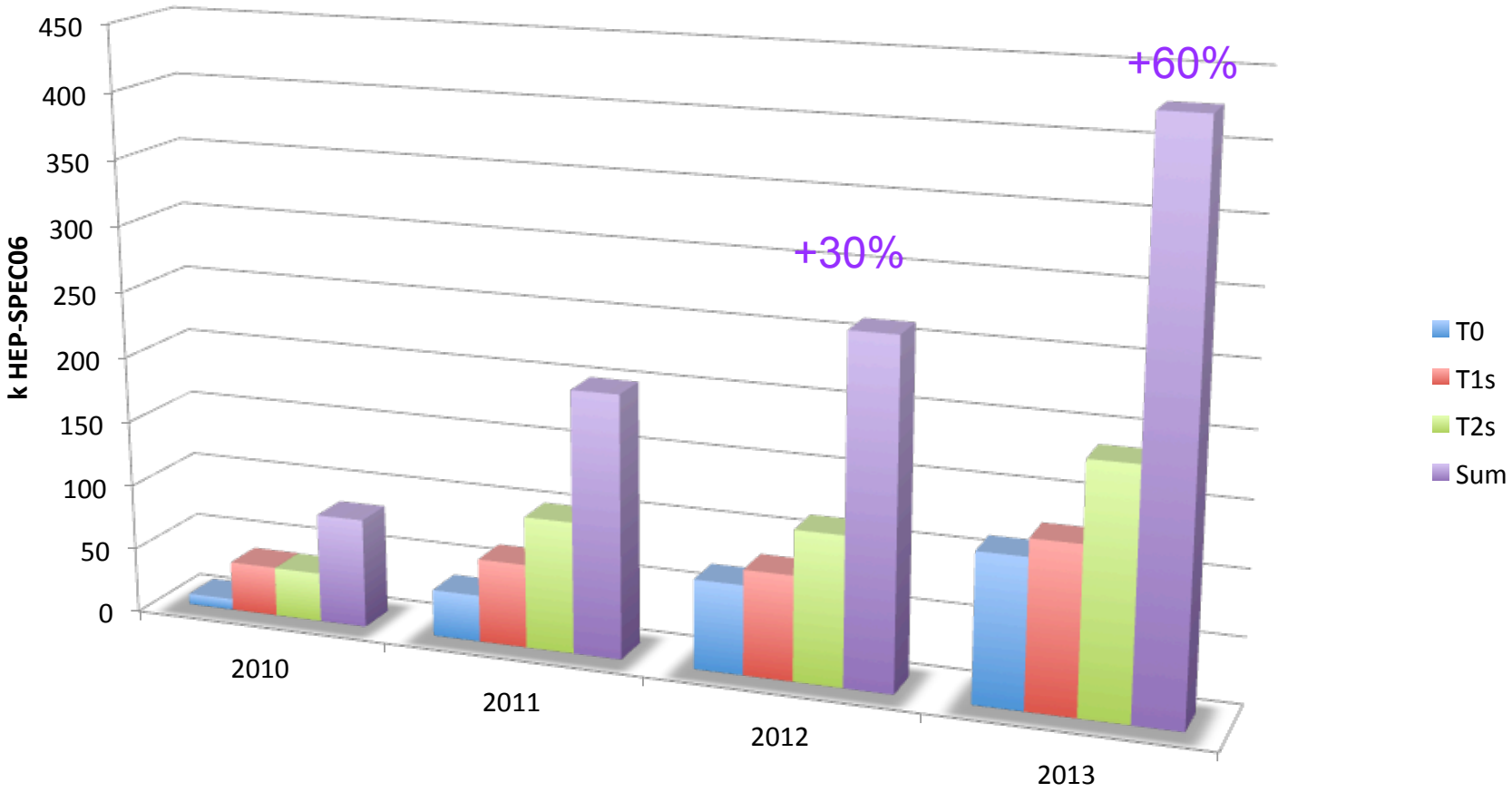
  PbPb @ 2.76 TeV (MB & rare); L_{int} = 80 μb^{-1}
- 2012: pp @ 8 TeV (rare)

  p-Pb @ 5.02 TeV (MB & rare); L_{int} = 30 nb^{-1}

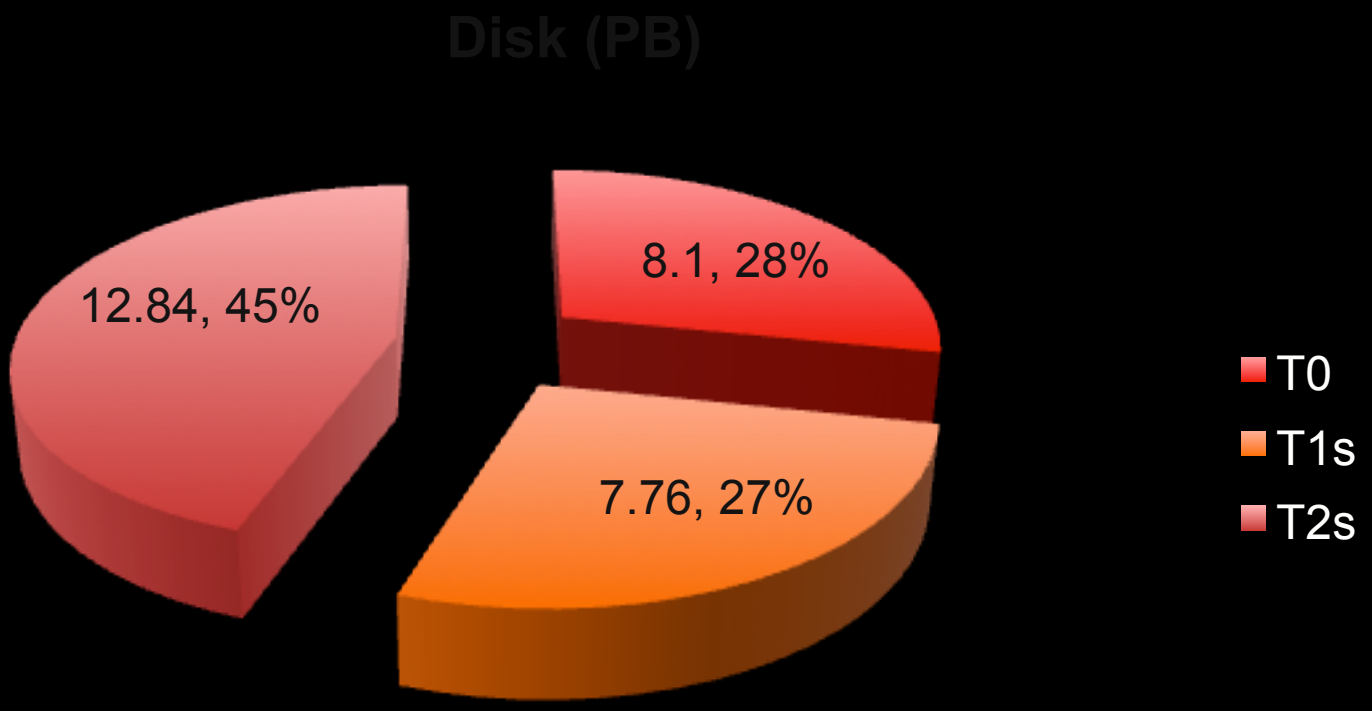
RUN1: 7 PB OF RAW DATA + 16 PB DERIVED DATA



RUN1 CPU USAGE



RUN1 DISK USAGE (16PB)



RUN2

Preliminary running scenario

- 2015: pp @ 13-14 TeV (MB & rare)

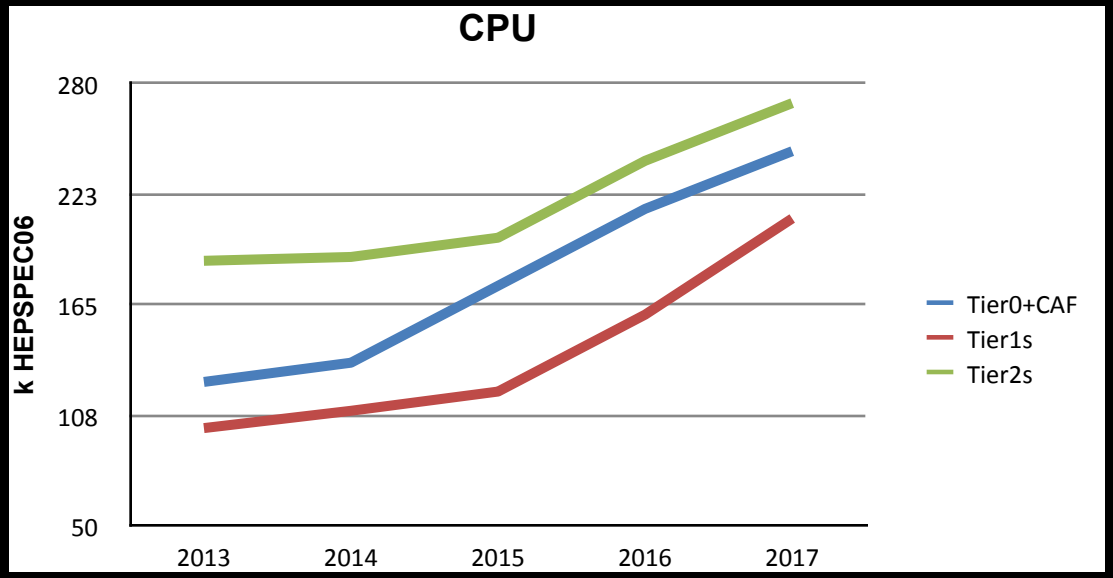
  Pb-Pb @ 5.1-5.5 TeV (MB & rare); L_{int} = 0.5 nb^{-1}
- 2016: pp @ 13-14 TeV (MB & rare)

  PbPb @ 5.1-5.5 TeV (MB & rare); L_{int} = 0.5 nb^{-1}
- 2017: pp @ 8 TeV (MB & rare)

  p-Pb @ ? TeV (MB & rare); L_{int} × 10

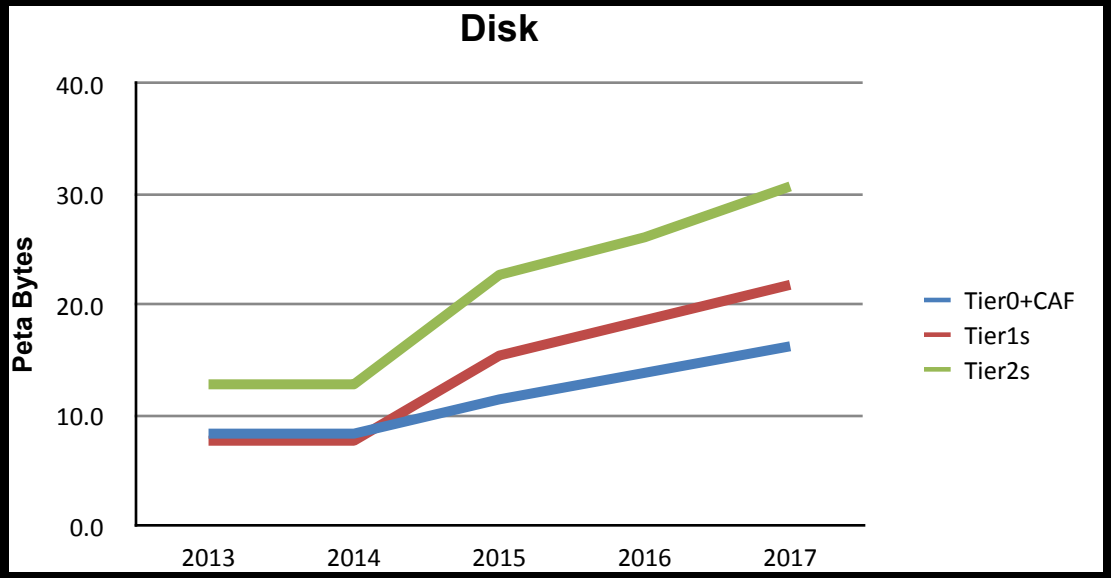
RUN2 REQUIREMENTS CPU

	CPU (kHEPSPEC06)			
	Tier0	CAF	Tier1s	Tier2s
2015	130	45.0	120	200
2016	170	45.0	160	240
2017	200	45.0	210	270



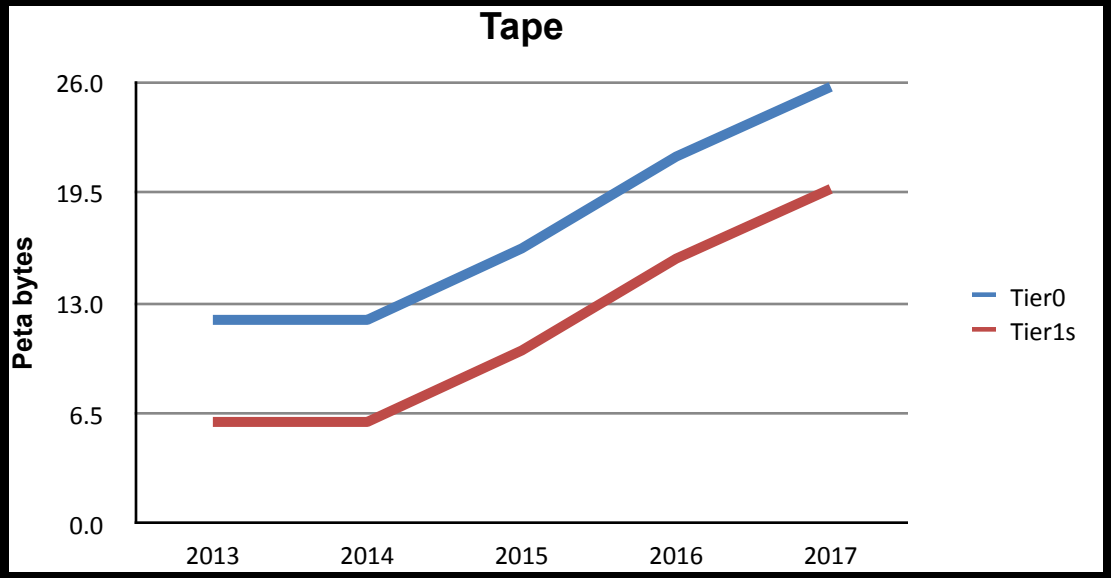
RUN2 REQUIREMENTS DISK

	Disk (PB)			
	Tier0	CAF	Tier1s	Tier2s
2015	11.1	0.34	15.4	22.7
2016	13.4	0.44	18.6	26.1
2017	15.7	0.54	21.8	30.7



RUN2 REQUIREMENTS TAPE

	Tape (PB)	
	Tier0	Tier1
2015	16.2	10.2
2016	21.6	15.6
2017	25.7	19.7



RUN3

ALICE will collect data beyond 2020: upgrade & HL

- > 2020: pp @ 14 TeV (MB & rare)

  Pb-Pb @ 5.5 TeV (MB & rare); L_{int} = 10 nb^{-1}

  p-Pb or AA or pp @ ? TeV (MB & rare); L_{int} × 10


HOW'S THE BIG DATA PROJECT COMING ALONG,
Predrag ?
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