CMS: Update on Resource requirements and plans
19.3.2007

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- Resources required
- Plans for 2007: Goals and Milestones

CMS resources required

- **Planning process was performed last September**
  - **Presented to WLCG RRB last October**
  - **Presented to LHCC in LCG session last November**

The new requirements

- LCG is now planning to provide CMS Tier-0 resources at the level of about 80% of the CMS request for 2008. Sizing the Tier0 in line with this implies a maximum HLT rate of ~300Hz (450MB/sec) in 2008. HLT readout may be configured with capacity of 1GB/s, leaving sufficient safety margin.
- We therefore scale the other parts of the computing system accordingly to obtain 2008 requirements.
- For 2007 we foresee resources to be available as ramp up of computing centers to 2008 sizes and keep estimate as simple fractions of 2008 figures as in Computing TDR.
- In 2009 we foresee an HLT rate of 200Hz giving a roughly similar reduction in Tier-0 resources.
- 2010 running converges with C-TDR parameters (Tier0 keeps up with HLT in real time), with a trigger rate of 150 Hz and 10^7sec of LHC running

- Figures may be revised as we know more from new CMSSW and develop a fuller understanding of 2008 CMS running plans

Stefano Belforte *INFN Trieste*   WLCG-LHCC Referee Meeting   13 Nov 2006   6

- **No news: table from Nov. 2006:**

		2007		2008			2009		2010	
		Request	%TDR	Request	%TDR	Pledge	Request	%TDR	Request	%TDR
Tier-0 + CAF	CPU	1.9 + 1.9	82%	3.9 + 3.8	82%	3.9 + 3.8	6.1 + 5.8	84%	10.6 + 11.5	91%
	Disk	0.1 + 0.4	82%	0.3 + 1.3	82%	0.3 + 1.3	0.3 + 2.0	82%	0.5 + 3.3	88%
	Tape	0.8 + 0.4	76%	3.6 + 1.5	76%	3.6 + 1.5	6.7 + 2.7	78%	10.9 + 4.1	87%
Tier-1	CPU	6.2	82%	12.4	82%	12.1	16.9	82%	36.9	91%
	Disk	1.7	81%	5.6	81%	5.8	8.5	81%	13.7	87%
	Tape	3.0	79%	13.1	79%	10.3	23.5	80%	36.6	87%
Tier-2	CPU	7.6	79%	15.2	79%	18.3	25.6	79%	45.2	88%
	Disk	1.3	85%	4.2	85%	4.8	8.4	85%	13.3	90%

Units are MSI2k, PB

CMS goals in 2007

- **Demonstrate Physics Analysis performance using final software with high statistics.**
  - **Major MC production of up to 200M events starting in March**
  - **Analysis starts in May, finishes by September**

- **"Local Data taking": SubDetector – (HLT) Tape – T0 – T1**
  - **Readout tests should start as soon as possible (≥ March)**

- **Global Data Taking: P5 – HLT – TAPE - T0 - T1**
  - **At regular intervals, 3 - 4 days per months, starting May**
  - **Month of October: MTCC3**
  - **Readout of (successively more) components, data will be processed and distributed to T1**

- **Commission the Computing infrastructure**
- **Demonstrate Computing and Analysis at ≥ 50% of 2008 numbers**

Motivations for CSA07

There are two important goals for 2007, the last year of preparations for physics and analysis

1) Scaling

We need to reach 100% of system scale and functionality by spring of 2008

- CSA06 demonstrated between 25% and 50% depending on the metric

2) We need to transition to sustainable operations
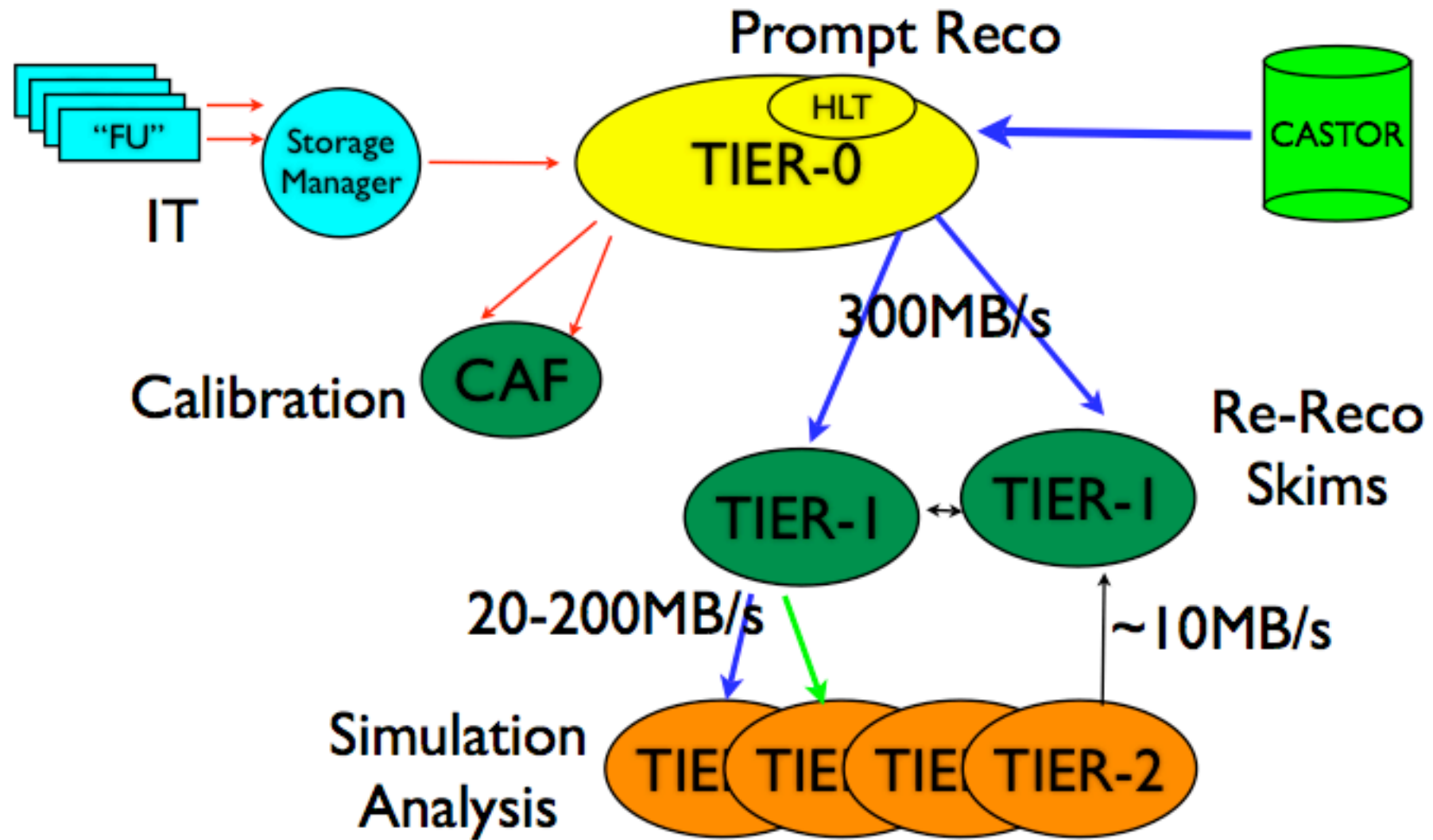
This spans all areas of computing

- Data management
- Job processing
- User Support
- Site configuration and consistency

In the past functionality was valued higher than the operations load

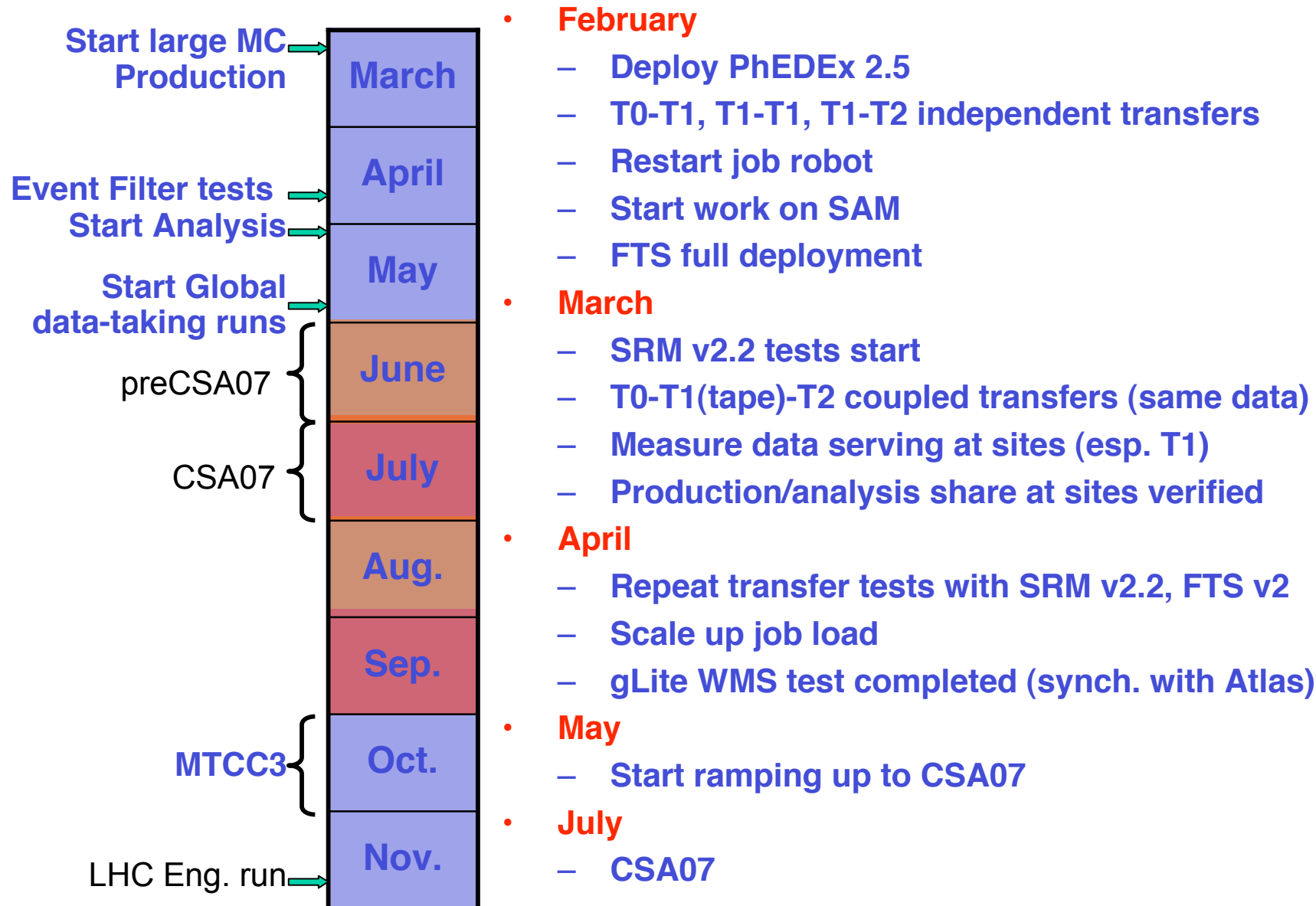- As we prepare for long term support this emphasis needs to change

Commissioning Plan until CSA07

Timeline	
Start large MC Production →	**March**
	April
Event Filter tests → **Start Analysis** →	**May**
Start Global data-taking runs →	**June** (preCSA07)
	July (CSA07)
	Aug.
	Sep.
MTCC3	**Oct.**
LHC Eng. run →	**Nov.**

- **February**
  - **Deploy PhEDEx 2.5**
  - **T0-T1, T1-T1, T1-T2 independent transfers**
  - **Restart job robot**
  - **Start work on SAM**
  - **FTS full deployment**
- **March**
  - **SRM v2.2 tests start**
  - **T0-T1(tape)-T2 coupled transfers (same data)**
  - **Measure data serving at sites (esp. T1)**
  - **Production/analysis share at sites verified**
- **April**
  - **Repeat transfer tests with SRM v2.2, FTS v2**
  - **Scale up job load**
  - **gLite WMS test completed (synch. with Atlas)**
- **May**
  - **Start ramping up to CSA07**
- **July**
  - **CSA07**

CMS Summary

- **CMS resource requirements are in line with current pledges**
  - **CMS will review resources in summer 2007**

- **2007 will be a very busy year for Computing and Offline**

- **Commissioning, Integration remains major task in 2007**
  - **To balance the needs for physics, computing, detector will be a logistics challenge**

- **Transition to Operations has started:
  operations groups formed for Data- and facility operations**
    - Since X-Mas 60M Monte Carlo events produced

- **Facilities will be ramping up resources to be ready for pilot run and the 2008 physics run**
  - **CSA07 at ≥ 50% of 2008 numbers is major milestone**