



ZEUS Computing Board Report

**Zeus Executive Meeting
June 28, 2006**

**Wesley H. Smith, *University of Wisconsin*
on behalf of the ZEUS Computing Board:**

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Notes from Meetings on June 27 and April 6

This talk is available on:

http://www.hep.wisc.edu/wsmith/zeus/smith_compute_jun06.pdf



ZCB Mandate

ZCB will normally meet 3 times a year to coincide with the ZEUS collaboration meetings.

ZCB is charged with the following:

- **Review the current status and short term planning of ZEUS offline. Recommend changes and new initiatives where necessary.**
- **Review the progress of the medium term planning as outlined in ZEUS-note 03-024 (ZEUS Computing Strategy: an update for years 2004-2007). Recommend changes and new initiatives where necessary.**
- **Towards the end of 2006, formulate a plan for computing beyond 2007.**

ZCB Chair reports to ZEUS executive session at the ZEUS collaboration meetings.



Recommendations

Do not double the HERA-II MDSTs.

- The cost is 30K€.
- This does not provide additional data security, but only saves time if recovery is needed.

Files need to be stored in chronological order when they are (re) compacted.

- The IT division has been told that it is a requirement that the loss of a single tape does not effect more than a few days of data.

2006 data reprocessing should start as early as possible.

- Need all necessary calibration constants
- Reconstruction package needs well-tested and improved software, in particular for combined tracking including STT.



Input to Computing Model

LER has little impact on estimate

Calculation of analysis volume includes HERA I MC as well as HERA II

All MC is generated one year after the data.

The reprocessing schedule is assumed to follow as it has in the past.

All analyses will have converted to the common Root “n-tuple” scheme by 2010

- Beyond 2011, all that remains for analysis will be these common Root “n-tuples”**
- We need to implement the plan for actually doing this for all physics groups (may be that MDSTs will still be used).**



Lessons from recent experience

For 131 days of 2006 running, average ZEUS gated lumi $0.47 \text{ pb}^{-1}/\text{day}$.
 61 pb^{-1} from 4.5 months of 10.5 months with 200 pb^{-1} expected in 2006.
Now estimate ZEUS gets $2/3$ of the original estimate or $\sim 130 \text{ pb}^{-1}$ for 2006.

Estimated increase in data volume of 10% from 2005 value of $.051 \text{ TB}/\text{pb}^{-1}$.
Data volume incl. STT & tracking tables increased to $.063 \text{ TB}/\text{pb}^{-1}$ (24%)
Anticipated volume of the 2006 data now 80% of that expected.

- Some of additional volume may be caused by poor background conditions.
- MC file volume only scales with luminosity.

Have additional contingency in estimates of 2006 data volume.

Do not reduce resources, but keep potential extra volume for added MC.

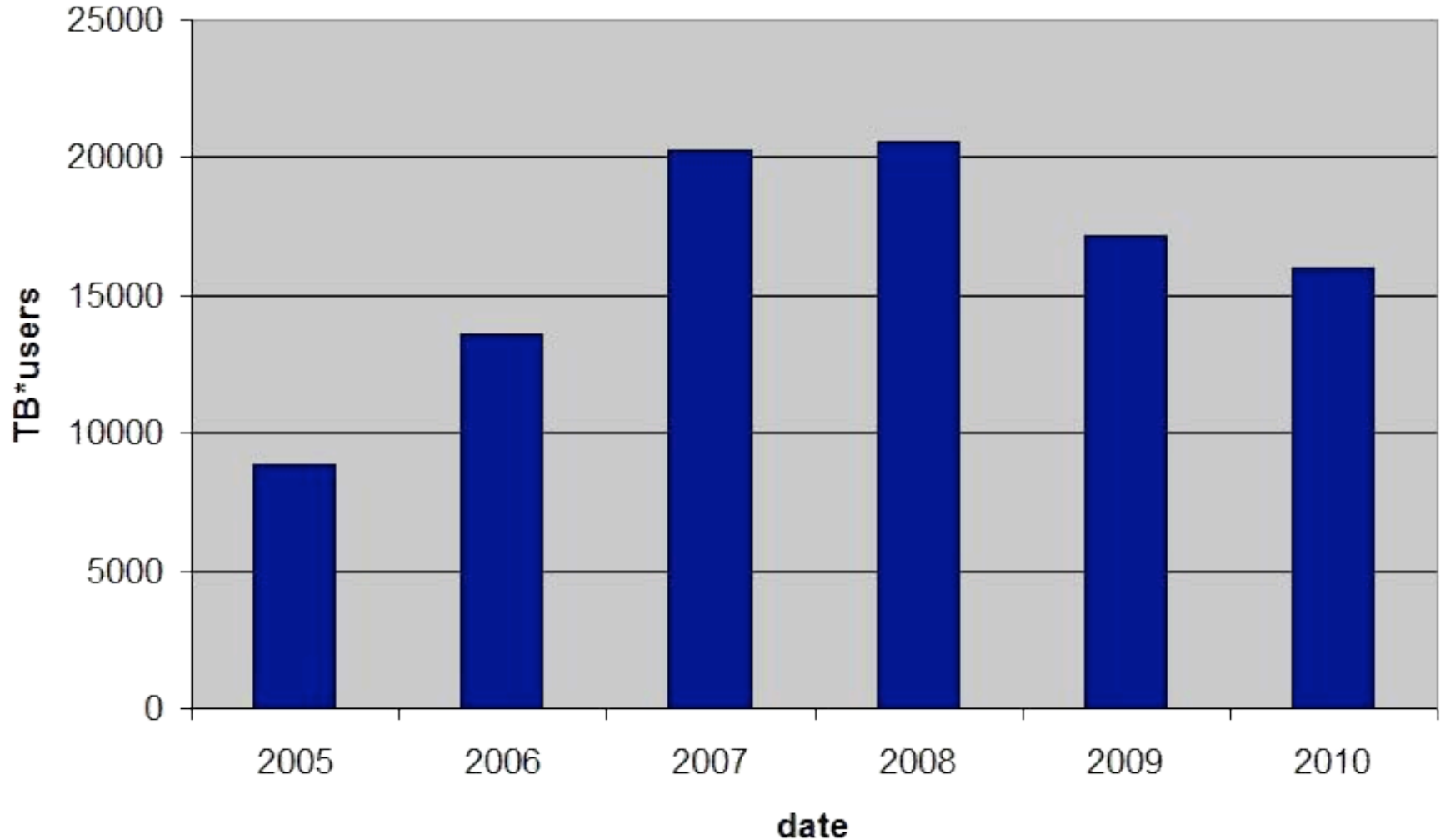
High, Average & Low Lumi TLT cross sections of 0.795 , 0.841 & $1.052 \mu\text{b}$
higher than target Low Lumi value of $0.75 \mu\text{b}$, but due to 2006 luminosity
experience, do not change trigger, since trigger stability is a priority.



Computing Model

(Krzysztof Wrona)

Total analysis volume (TB*users)





Results from Computing Model

Preliminary validation of R. Mankel's estimated computing upgrade costs of 230/220/190/150 K€/year for 2008/9/10/11

- Then add annual manpower cost of 125 K€/year until 2011**

While this is a preliminary result, it is now referred to the ZEUS Executive to evaluate whether this is consistent with funding level expectations.



Appendix: Input numbers

(Krzysztof Wrona)

For 2005, 2006 use numbers from mass storage, for 2007 the short term plans:

HERA-II MC

2005 5 TB
2006 30 TB
2007 105 TB
2008 180 TB
2009 255 TB
2010 330 TB

HERA-I MC

2005 - 50 TB (2006 value minus production in 2005 (~20TB))
2006 - 70 TB (from Achim calculations)
2007+ - 70 TB

The numbers for HERA-II 2005 and 2006 are taken from mass storage system as of the beginning of each year respectively. For 2007 we agreed that the production in 2006 will be limited to 75 TB, which in total gives the number 105 TB for the beginning of 2007. For the next years assume 75 TB per year.