A Vision of Future eTextBooks

NSF 0836971, *Blended, Multimodal Access to Computational Curricula*

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"If I asked people what they wanted, they would have said "faster horses."  
—Henry Ford

XSEDE2012, July 2012
Plan

1. Why?
2. Demo of model for future eTextBook ($\neq$ faster horse)
3. Conclusions
Who: Landau CP Ed Contributing Group

In Addition to All the Suffering Students

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- Sally Haerer, Saturo S. Kano (consultants, producers)
- Melanie Johnson (Unix Tutorials)
- Hans Kowallik (Computational Physics text, sounds, codes, LAPACK, PVM)
- Matthew Ervin Des Voigne (tutorials)
- Bertrand Laubsch (Java sound, decay simulation)
- Jon J Maestri (vizualizations, animations, quantum wave packets)
- Al Stetz, David McIntyre (First Course)
- Juan Vanegas (OpenDX)
- Connelly Barnes (OOP, PtPlot)
- Phil Carter, Donna Hertel (MPI)
- Zlatko Dimcovic (Wavelets, Java I/O)
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- Brandon Smith, (REU, Sum 97; Chico State/SDSC, CA)
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- Kevin Wolver, (REU, Sum 96; St Ambrose, IA)
Why: Landau’s Computational Physics (CP) Ed Group

20 Years of CP Ed; 15 Years Web Enhancements

\( C^4 \) Continuous Collaborative Computational Cloud

- \( \Delta \) Ph Ed: C > Teaching Tool
- \( \uparrow \) senses \( \uparrow \) learning
- \( \Delta \) learners, \( \Delta \) mental models
- Compute to learn to compute
- No vote: on- vs offline!
- Best: Blended Course
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Why eTextBook?

Premises: Not Monks

- **Book**: machine to think with  
  –I.A. Richards (1924)
- **Education**: activities solve problems in particular situations  

Putting All the Pieces Together

- Multiple senses
- High accessibility potential
- Δ learning approaches
- Students: integrated package
- Vision: MathML → pdf
- Technology catching up
- Lectures (PC, mobile)
- Animations
- Run codes, applets
- Compadre, NSDL (free)
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- Exec files, OS's incompatible
- Very large files
- Validate data & codes?
- Register & track execution?
- No std readers, writers
- ≠ deep subject mastery
- Studying > reading
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- Highly adaptable literary genre
- Changes as education, technology, society changes
- Reading important for Ed (vs. workshop approach)
- PC/Mac/(Linux): only ℋ platform for all needs
- A good book has no ending.

—R.D. Cumming
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