

Welcome

LON-CAPA
10th Annual Workshop and Conference
2008

Sponsors

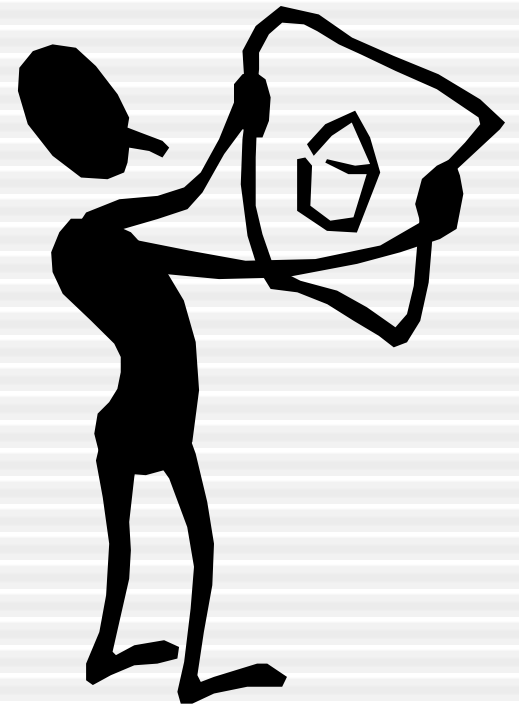
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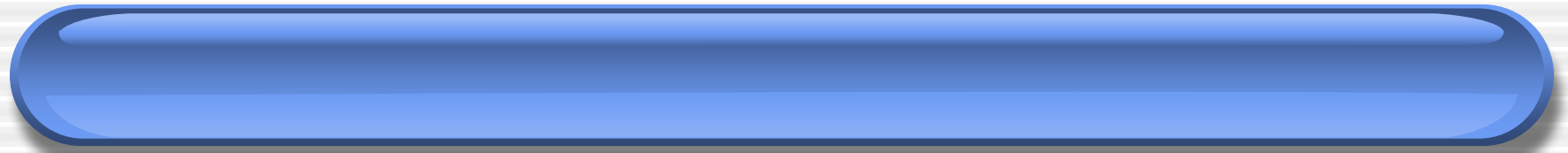
- Simon Fraser University
- Michigan State University
- Dell Computer
- i>clicker



Welcome

- Yesterday: gave short overview of LON-CAPA and its functionality
- Today: the “bigger picture:”
 - History of the system
 - Community aspects of the system
 - Vision of the future





Before LON-CAPA

Ed Kashy, MSU

Long Before LON-CAPA

- Physics Laboratory, 1979
 - Run with Undergraduate TA's
 - Required students to calculate an overall uncertainty based on estimated errors.
 - Graded before the end of the lab period
 - Essentially impossible task for TA's
- Three new Pet Commodores 4032 purchased and placed in the lab)

Long Before LON-CAPA

- D. A. Johnson
 - (Computer Whiz at Cyclotron Lab)
 - Programs specific to each experiment:
 - Students enter data, enter corresponding estimated errors (4-8 datum)
 - Units are specified
 - Pet: Enter your value of g ? (~1.1 tries)
 - Correct / Incorrect (other responses tried)
 - Pet: Enter the uncertainty (!@?!!)

Long Before LON-CAPA

- (!@?!!) Frustration
 - In part because 'Incorrect' required reentry of all the data, also because messy calculations
- Body language, (Gender dependent)
 - Women
 - Men
- Results
 - Neater work
 - High rate of correct calculations
 - Work graded

Before LON-CAPA

- 1991, 'Physics for All' new course as MSU switches to semester system '92
- Proposed 'demonstration' based course
 - Buy computer and Develop system to
 - Check concept understanding
 - Check numerical calculations
- Approved! (8k estimated budget!)

Before LON-CAPA

- With Johnson: What, How, When, ..., Then
 - Much bigger than anticipated
- Don Weinshank call: Comp Assisted Teaching
 - Let's meet
 - David Thaler, Y. (Isaac) Tsai, (detailed notes...)
 - Printing & Latex, etc
- Initial 'CAPA' on-line HW: ~May '92
 - Plain ascii text, telnet, NeXT. +++

Before LON-CAPA

- Fall '92 'Physics for All' ~90 students
 - Initial 'Compte Rendu' of CAPA use:
 - Am. J. Phys. 61 (12), 1993, pp. 1124-1130.
 - Student reaction, HW 1
 - MSU not the first: (UICU engineering...)
- Spring '93: 200 students Chem Class
 - D.J.Morrissey
- Fall '93: Introductory Physics (Bio Seq)
 - M. Thoennesen
- Early adopters:
 - OhioU, FSU, SFU, McGill, Colorado, CSM, SC,...

Before LON-CAPA

- CAPA Strength: Conceptual Questions
 - Am. J. Phys. 63 (11), 1995, pp. 1000-1005.
- Succession of developers:
 - Isaac Tsai (to '95), Guy Albertelli (from ~'95 –)
- Succession of 'CAPA Coordinators'
 - Sherry Wolf,
Nancy Davis,
Felicia Berryman
- Key issue = \$'s,
 - On-going since 1992, About to be resolved, 2008???

Before LON-CAPA

- Competition: *LectureOnline!*
 - Gerd Kortemeyer (Demo for Job Interview)
- Support from MSU
 - E-mail to Provost.
 - Dean, Chair,
 - 1student!!
 - 100k\$, (2y, Develop & Support)

Before LON-CAPA

- Collaboration with UIUC leads to External funding for CAPA

- B. Oakley 4/26/95:

Greetings! We are looking forward to the CIC Symposium this weekend. One of the agenda items is inter-institutional cooperation, and I hope that we can propose a project involving our intro physics and chem courses (as well as other courses) and CAPA.

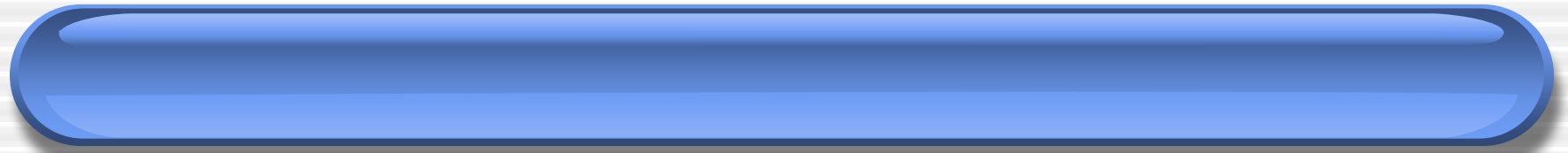
I have just recently starting showing off the CAPA system to some of my colleagues in our Sloan Center. They are VERY excited about it...

Before LON-CAPA

- Support from Foundations:
 - 1995, Invitation at UIUC Illinois, (Burks Oakley, Lanny Arvan)
 - Frank Mayadas, Alfred P. Sloan Foundation
 - 250k, 3 years
 - 1998 Frontiers in Education Meeting, NY
 - Saul Fisher, Andrew W. Mellon Foundation
 - 350k, 3 years

LON-CAPA

- 1999, from MSU Administration
To: Ed and Gerd
“Join or Else”
- Can now do all we could then with CAPA
and LOL, with much less work,
- and much much more!



LON-CAPA Consortium

Gerd Kortemeyer, MSU

LON-CAPA NSF Project

- 2000: Joint project gets NSF Grant: “An Investigation of a Model for Online Resource Creation and Sharing in Educational Settings”
- \$2.1M over five years plus one year no-cost extension



LON-CAPA NSF Project

- An Investigation of a Model for Online Resource Creation and **Sharing** in Educational Settings
- Community aspects:
 - Resources developed by one author at one institution can be used at all participating institutions
 - “Learning Object”

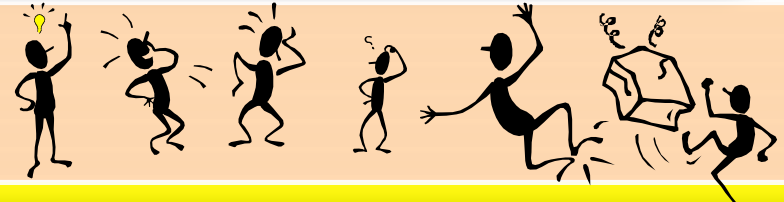
LON-CAPA Architecture



Course Management

Campus A

Resource Assembly



Course Management

Campus B

Resource Assembly

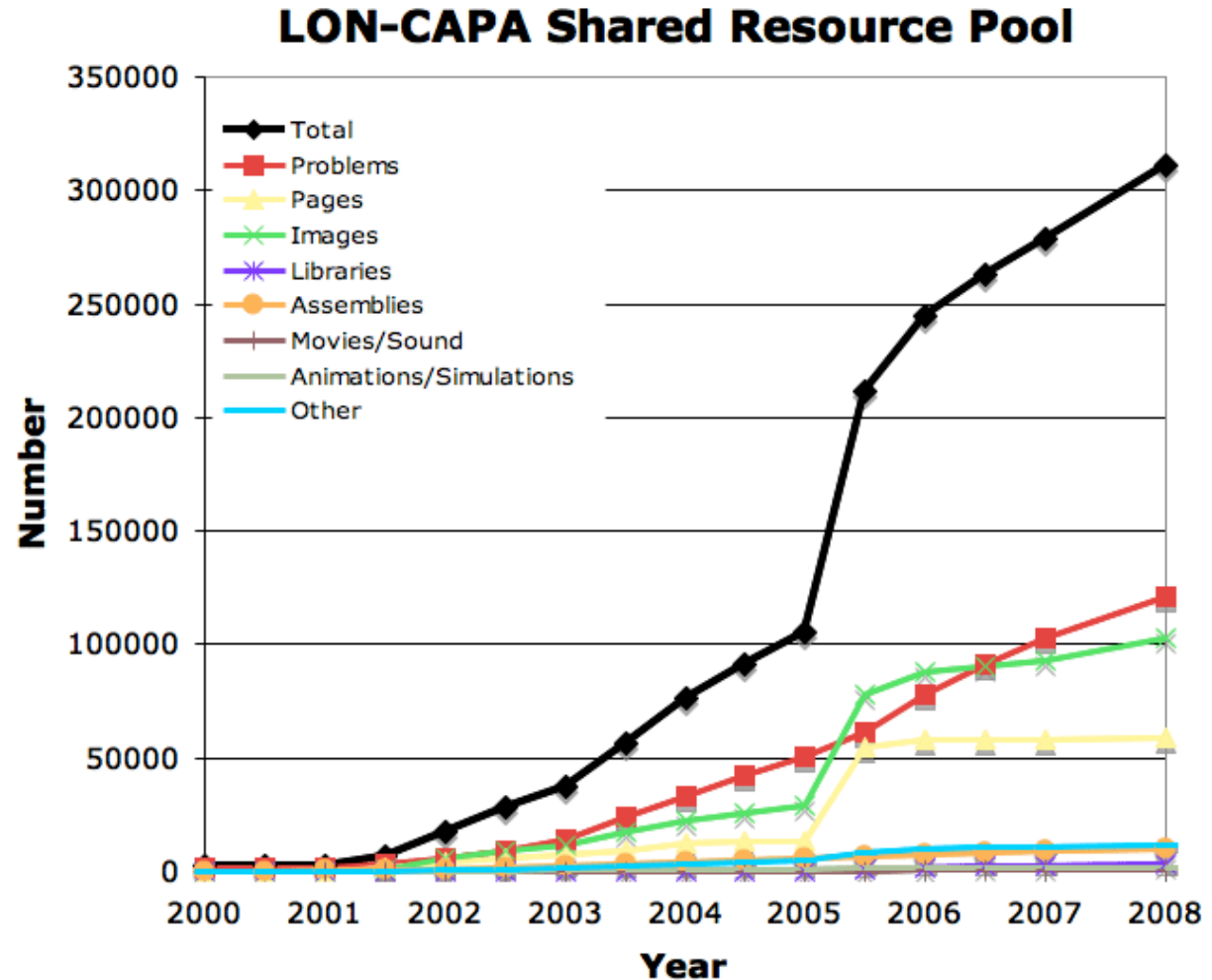
Shared Cross-Institutional Resource Library

The LON-CAPA Community

- Did it work?
- 2006 study at Fern-Uni Hagen: Largest **coherent single repository** of reusable learning objects on the planet
- Compare:
 - Collection of collections, e.g., NSDL
 - Collection of links to distributed learning resources, e.g., Merlot
- In LON-CAPA: All learning objects immediately ready for use in courses

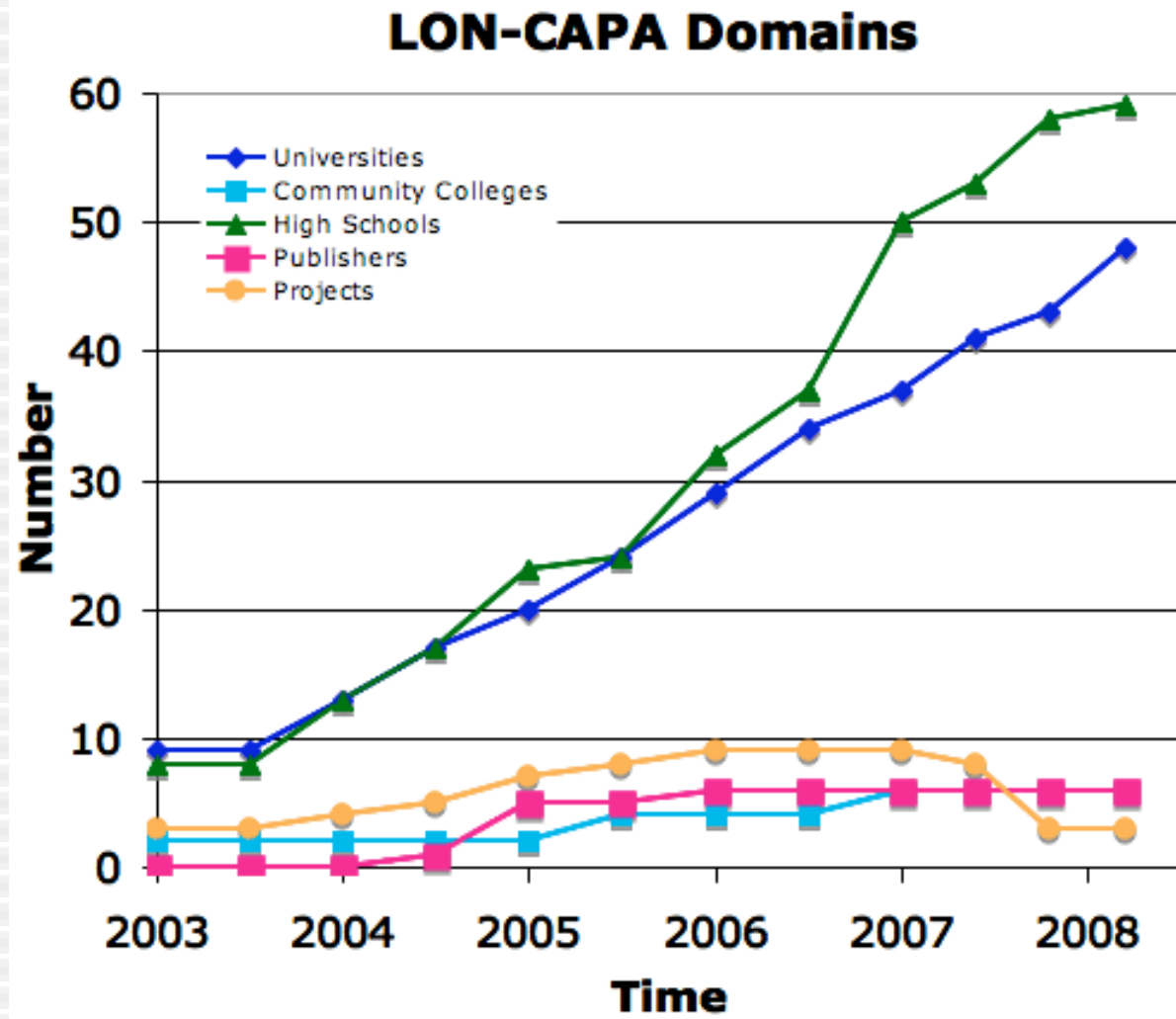
The LON-CAPA Community

- Shared content repository with over 300,000 resources



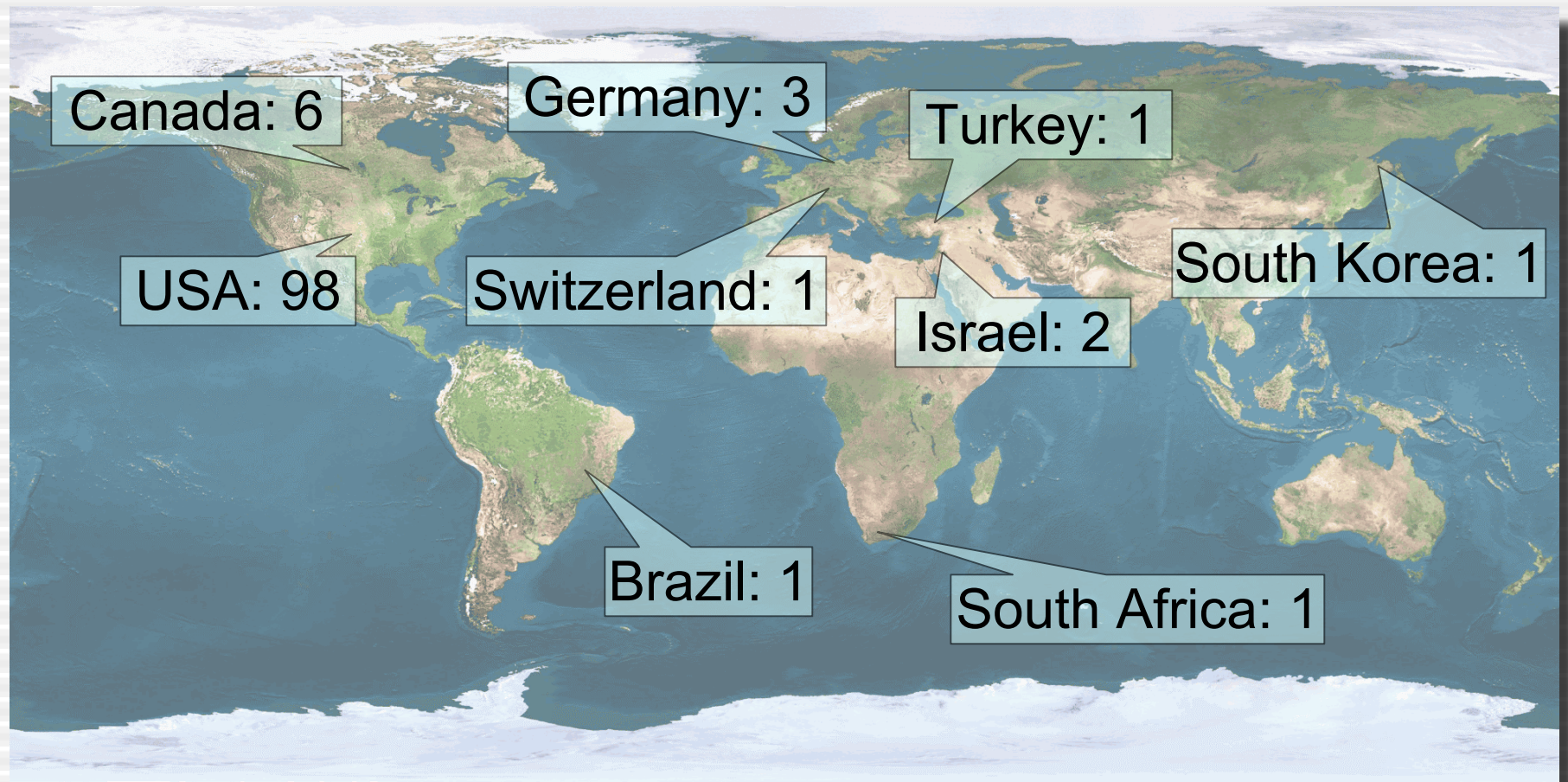
The LON-CAPA Community

- 120 institutions in total



The LON-CAPA Community

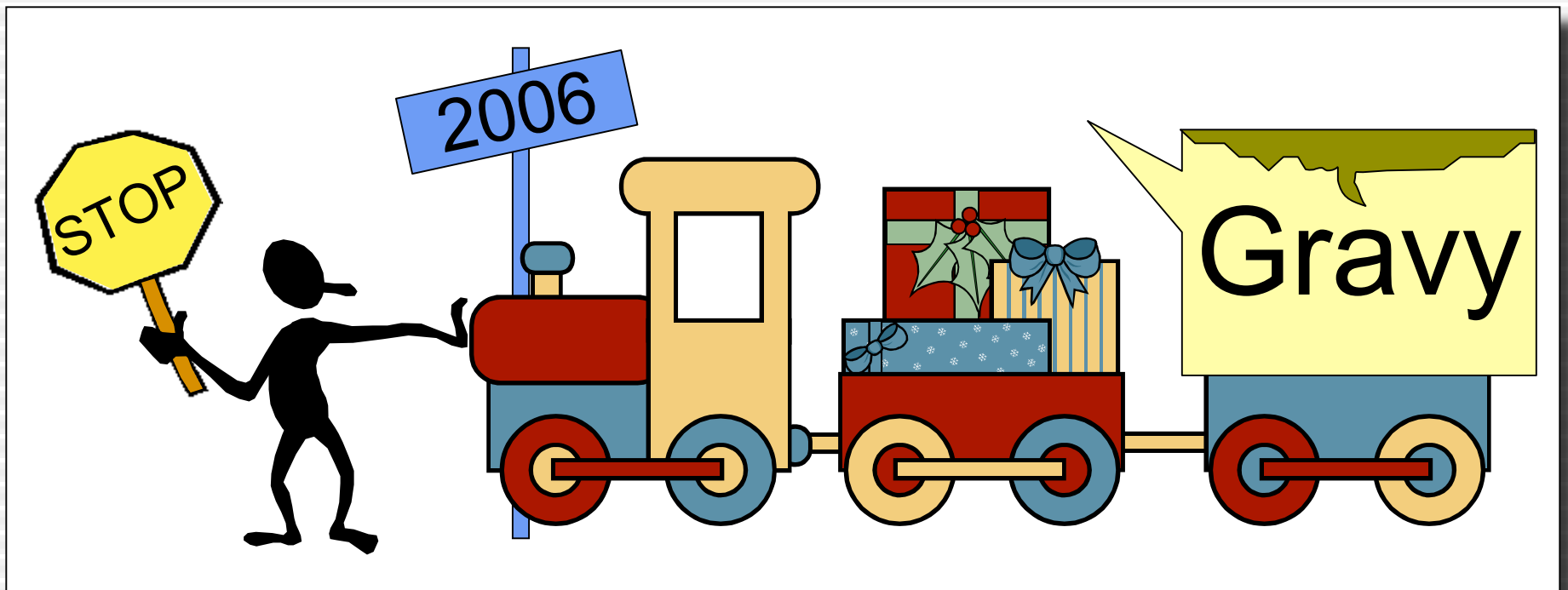
High Schools, Colleges, and Universities



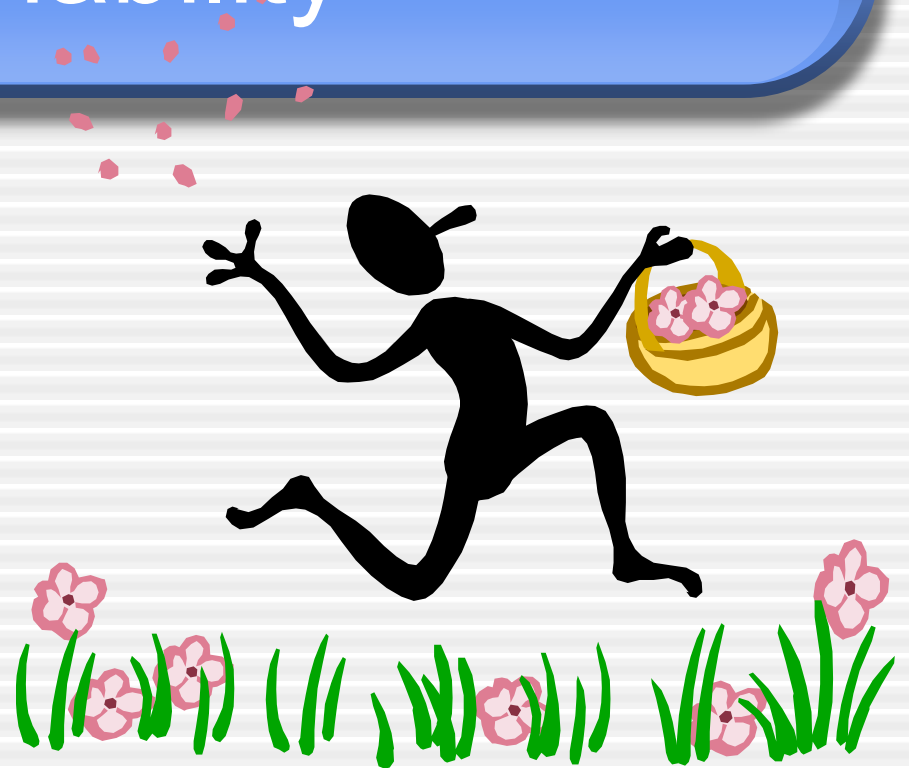
... plus grant projects and publishing companies.

The LON-CAPA Community

- Nice, but ...
- ... the grant is over!



Sustainability



LON-CAPA is free!

- The LON-CAPA platform is covered by the GNU General Public License
- According to GNU's website:
Free software is a matter of liberty, not price. To understand the concept, you should think of free as in free speech, not as in free beer.
- Free:
 - “Free beer”: no licensing fees
 - “Free speech”: source code, Bugzilla, mailing lists, research results, all out in the open



LON-CAPA is free!

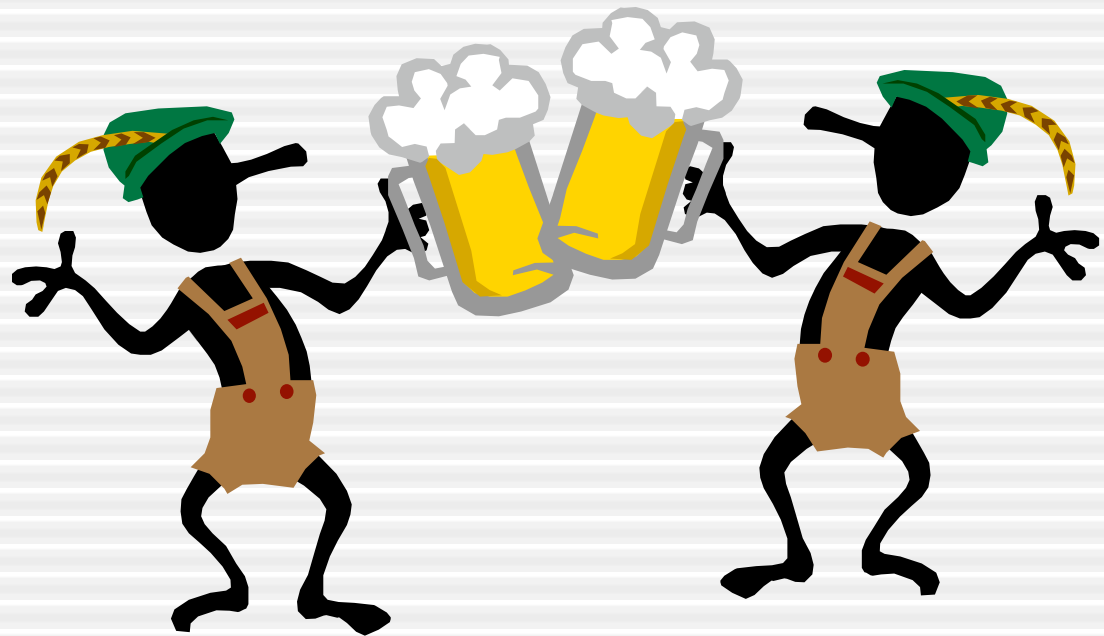
- Open-source: you can read, modify, improve, adapt, etc, the original code of the system

```
while ($line=<IN>) {  
  chomp($line);  
  $line=~s/\s+$/s;  
  $line=~s/"/g;  
  $line=~tr/A-Z/a-z/;  
  @entries=split(/\/,$line);  
  $username=$entries[4];  
  _
```

- BUT: derivative must be distributed under same license, i.e., GNU General Public License
- Best of course: make improvements available to us. (CVS system)

Free!

- Conclusion:
 - Free speech
 - Free beer
 - Free ride?



Free Ride?

- Free beer \Rightarrow hangover
- Free software: you still have to support it
 - Hardware
 - User support
 - Training
 - Maintenance
 - Conferences
 - **Continued software development**
- ~~Free Ride~~



Strategy

- Sustainability strategy:
 - Commercial spin-off
 - Additional grants
 - LON-CAPA Consortium

Commercial Spin-Off

- Can you make money with free beer?
- See Redhat Enterprise model
- Provide:
 - Installation and integration services
 - Coding and hosting of problems for publishers
 - Hosting of LON-CAPA for institutions that are unable or unwilling to host their own installation

Commercial Spin-Off

- eduCog, LLC
- Founded 2005
- Hosting LON-CAPA for
 - 3 Universities
 - 34 Schools
 - 6 Publishing Companies
- Makes a profit already if you neglect the time we pour into it ...
- Basically operating at cost

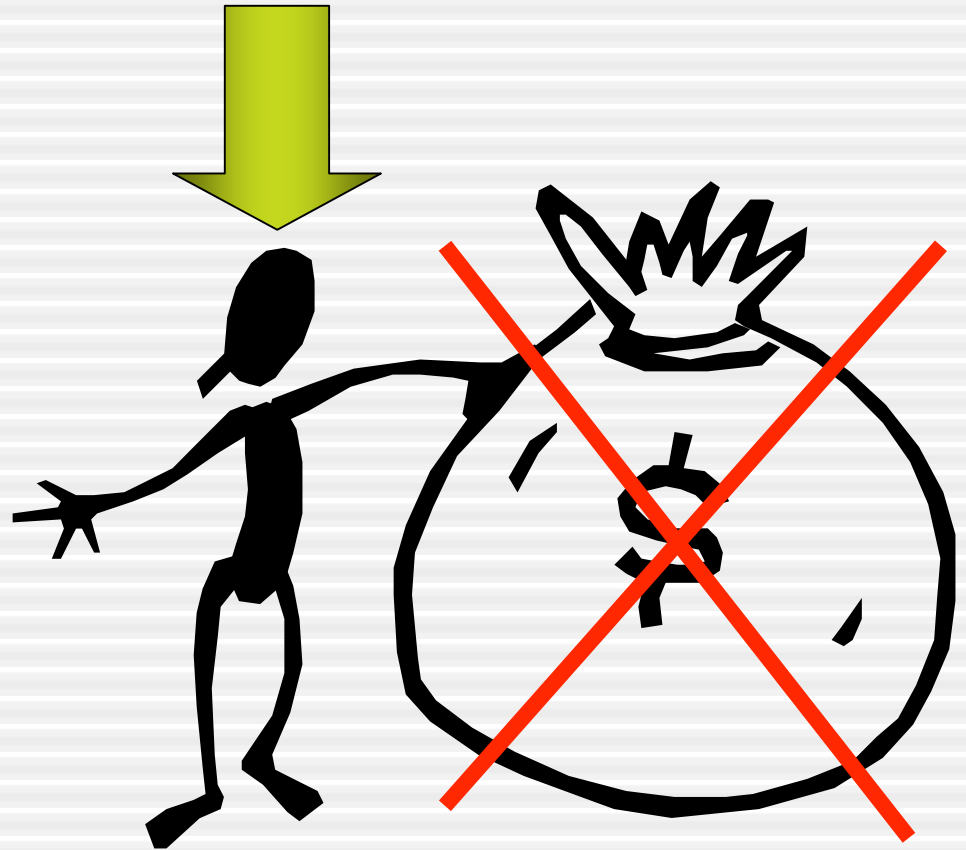


New Grant

- EUR 200,000 (approx. \$265,000) from the German state of Lower Saxony for the further development of LON-CAPA mathematics functionality and content
- Collaboration between the universities of applied science Braunschweig/Wolfenbüttel, Emden, Hannover, and Wilhelmshaven, with the LON-CAPA group

Consortium

- Sustainability through community
- We want you, not your money!
- Invest your money locally to support the project globally



Consortia

- Commercial systems: traditional vendor supports software
- Open-source: best served by a consortium of universities:
 - Broader commitment
 - Distributed cost
 - No “single point of failure”
- With that in place, open-source can be more stable than commercial systems
- Example: folding of WebCT

Consortium

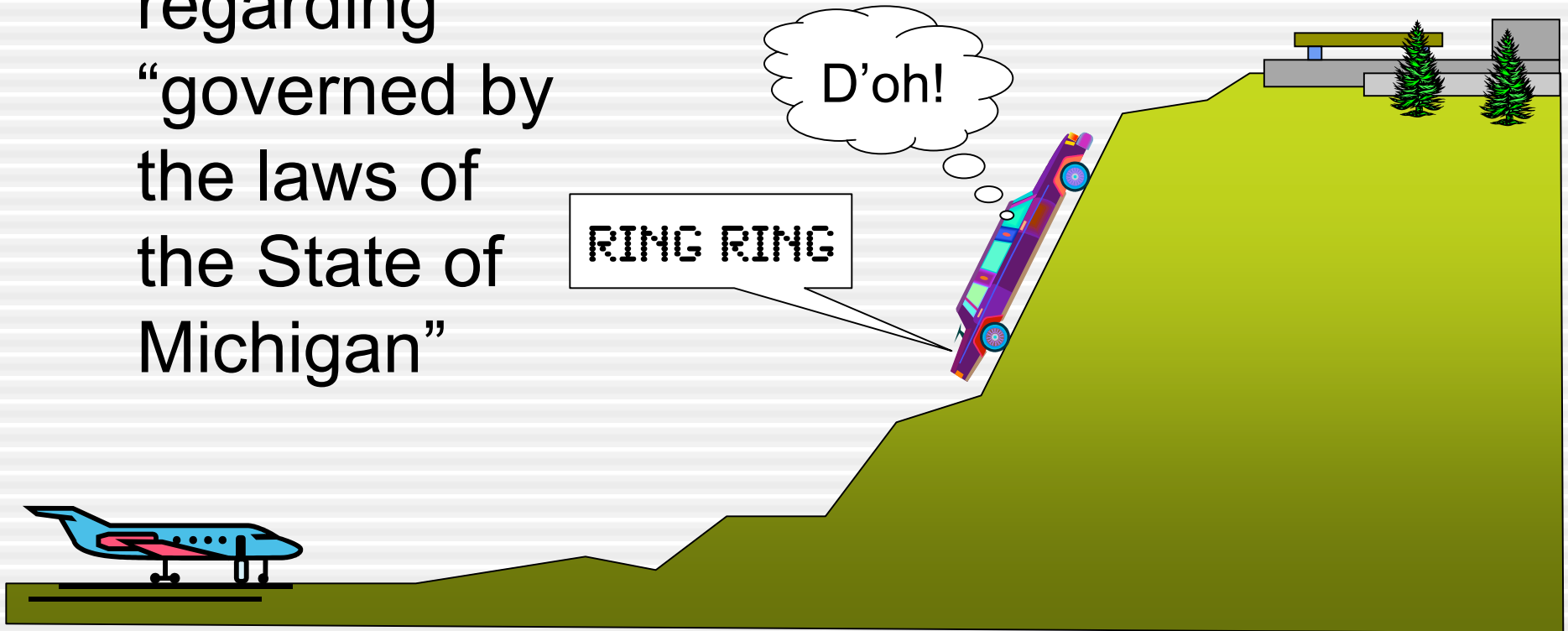
- What you or your institution can do:
 - Develop new content
 - Apply for grants
 - Provide programmers for the project
 - Provide localization files
 - Write documentation
 - Help other users on mailing lists
 - Actively participate in testing and debugging
 - Do public relations
 -

Consortium

- You can do that informally, or you can formalize your commitments
- Formalized commitments: pledging dollar amounts to be invested locally over several years
- Took some time to get this off the ground through the legal departments of the member institutions

Consortium

- But: just in time!
- Call from MSU's General Council regarding "governed by the laws of the State of Michigan"



Academic Consortium

- Founding members:
Michigan State University
and University of Illinois at
Urbana-Champaign
- Associate Member: Simon
Fraser University
- Total commitments of
\$2.15M over the next five
years



MICHIGAN STATE
UNIVERSITY



SIMON
FRASER
UNIVERSITY

Board

- Consortium Board:
 - Determines development priorities
 - Decides on cluster membership
 - Decides on policy questions
 - Evaluates membership contributions
 - Represents the network
 - Technical director reports to it

You can be a member, too

- Core Member:
 - \$200k/year for 5 years
 - at least one fulltime programmer
 - 4 votes on board
- Sustaining Member:
 - \$125k/year for 5 years
 - 2 votes on board
- Associate Member
 - \$50k/year for 3 years
 - 1 vote on board
- Again: money does not need to leave your campus!

Conclusion

- In summary: we love our users
- Thank you!

