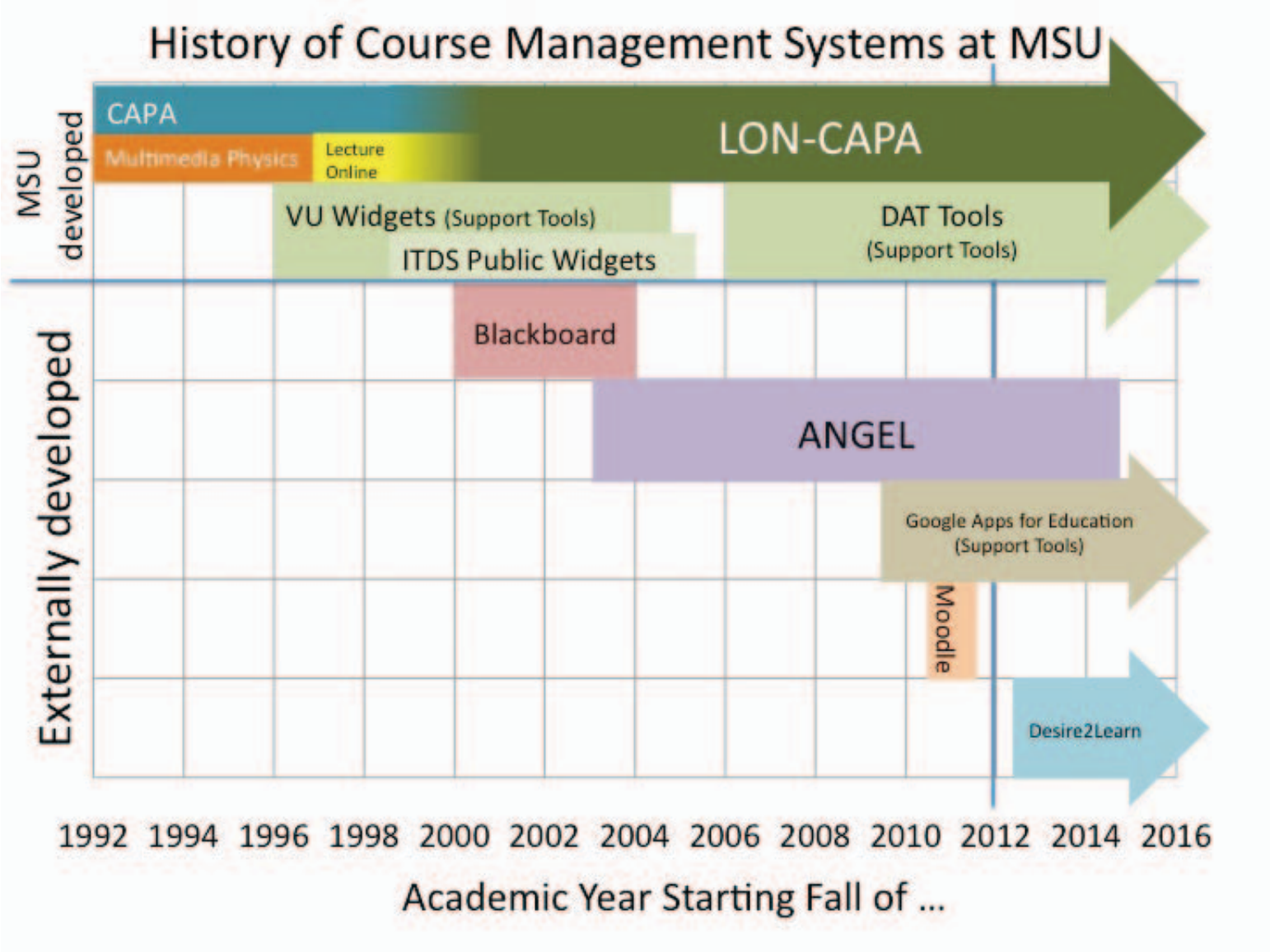
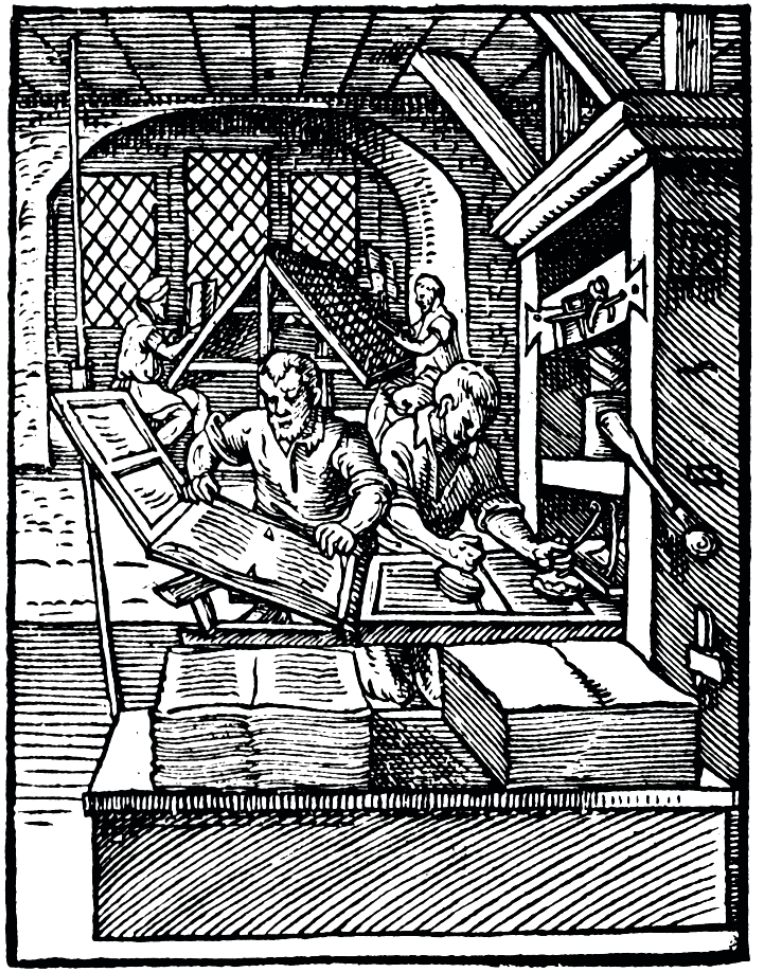
Welcome! Twenty Years of LON-CAPA Reception



Why traditional publishers will be history five years from now

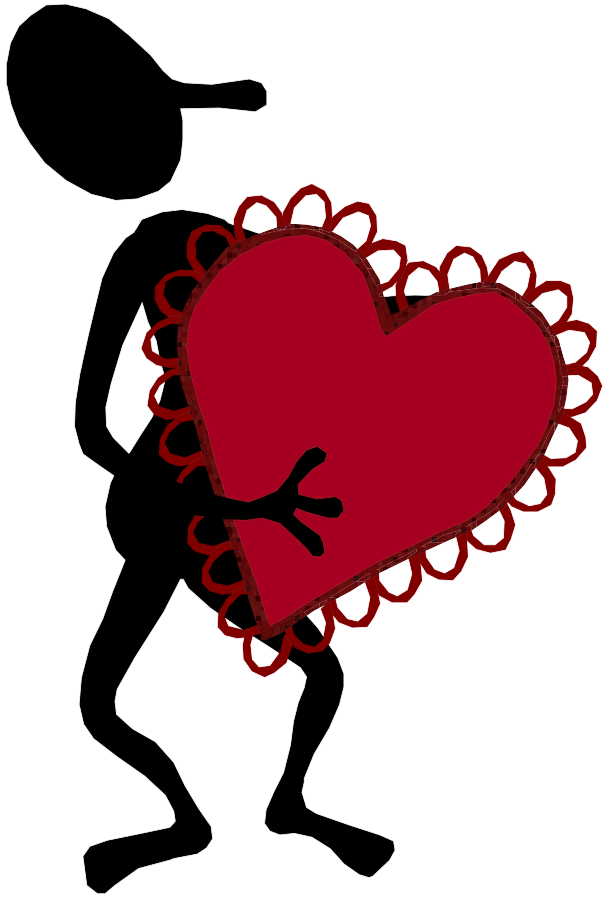
Gerd Kortemeyer

Lyman Briggs



Disclaimer

- Some of my best friends and colleagues wrote textbooks
- Sorry guys!



A Short History of the Textbook

- 14th century
- We had to lecture (read the book), because the students did not have textbooks

A Short History of the Textbook

- 15th century
- Movable letters paved the way toward affordable textbooks
- We could use lectures for other activities …
  - but more often than not miss that opportunity

A Short History of the Textbook

- Earlier 20th century
- Textbooks provided an affordable way to get study materials into the hands of many students
  - No photo copiers
  - No web
- *Required* textbooks largely a US phenomenon

A Short History of the Textbook

- Later 20th century
- The Web was invented
- Impact on textbook publishers: zero for at least a decade

A Short History of the Textbook

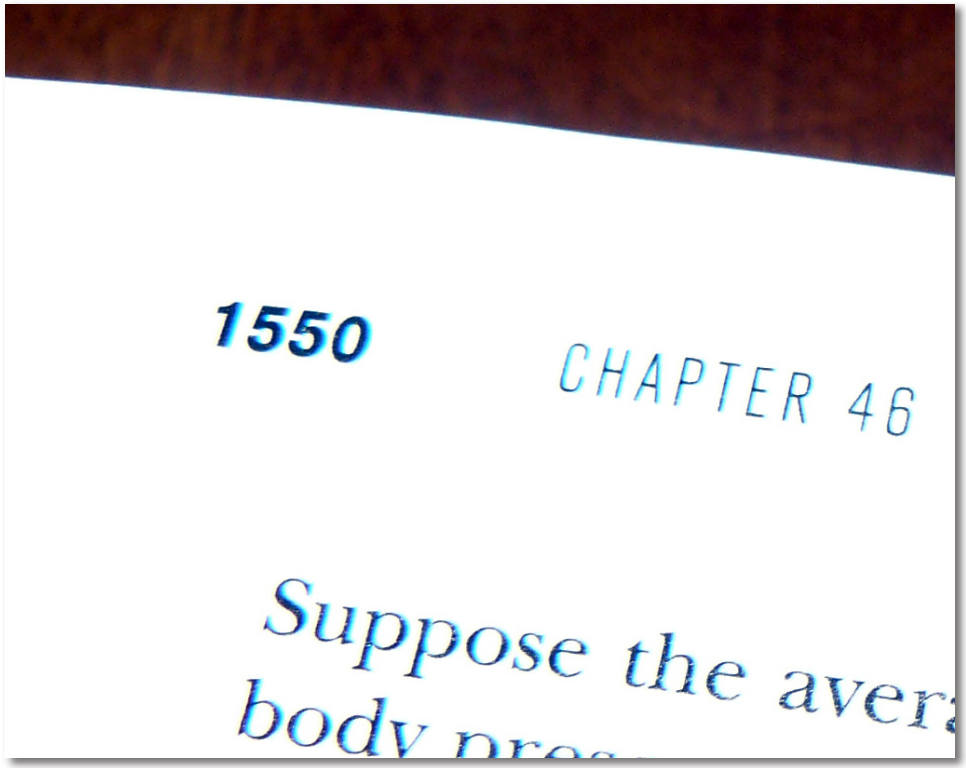
- Turn of the 21st century
- Textbooks drifting toward extinction

A Short History of the Textbook

- Heavier and heavier
  - Mass of book: 8.5 lbs

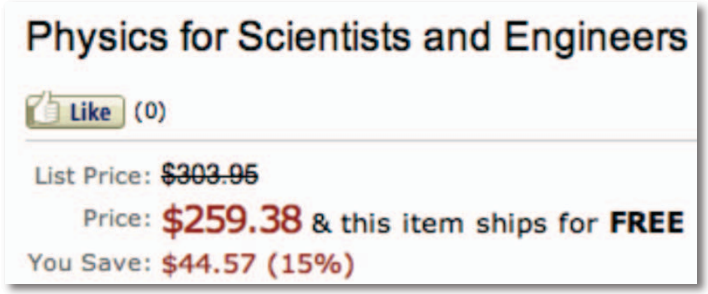
A Short History of the Textbook

- Longer and longer
  - The books contain
    - more than you could possibly teach
    - more than students could possibly read



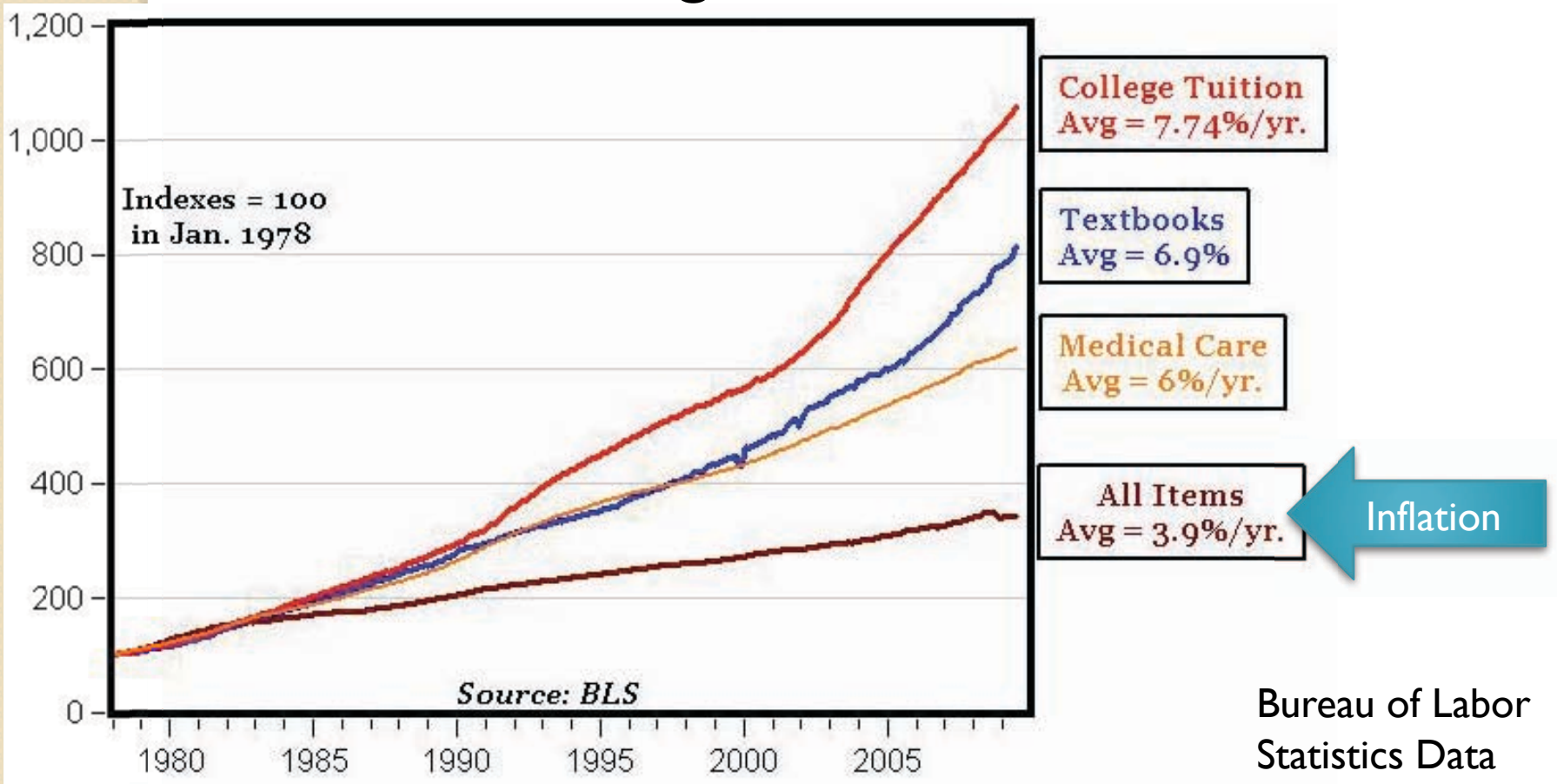
A Short History of the Textbook

- More and more expensive
  - Cost of ancillary materials to distinguish themselves from competitors
    - Market pressure: content material and curriculum almost indistinguishable
  - Frequent new editions to fight used textbook market
    - Cost of writing new problems to make editions intentionally incompatible



A Short History of the Textbook

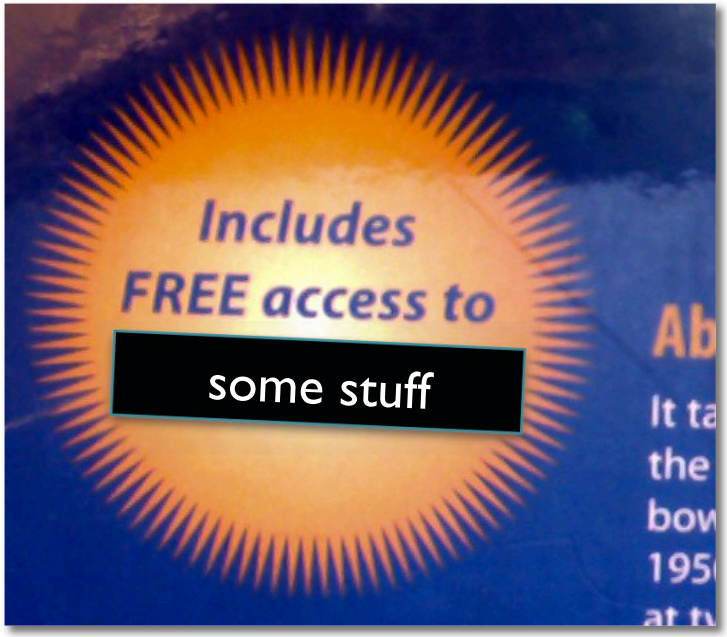
- More and more contributing to the high cost of college education



Bureau of Labor Statistics Data

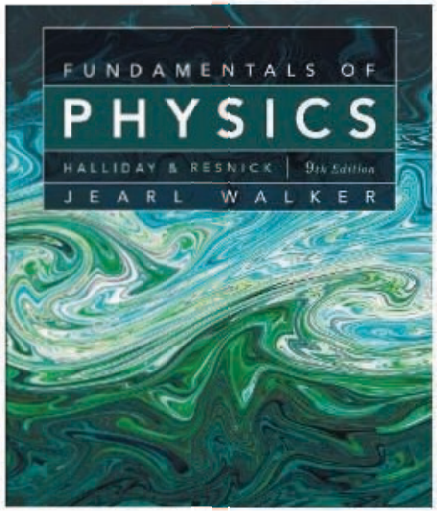
A Short History of the Textbook

- More and more desperate
  - Bundling: one-time limited-time access codes to fight used book market
    - This becomes really problematic when the access code is for homework that the students have to complete to pass the course
  - Feeding back into increasing cost



A Short History of the Textbook

- More and more bizarre
  - Same book, half price in Europe

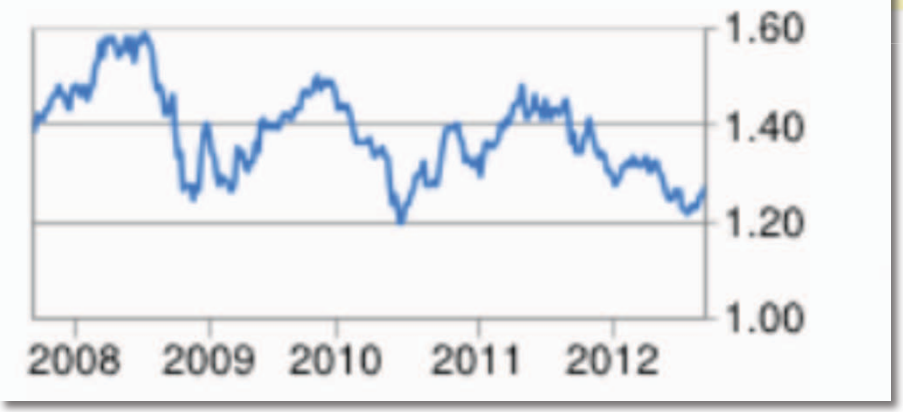


Fundamentals of Physics [Har
David Halliday (Author), Robert Resnick (Aut
(10 customer reviews) | Like
Price: $173.82 & this item ships for F
Special Offers Available
In Stock.
Ships from and sold by Amazon.com. Gift-v
26 new from $173.82 31 used from $14

Halliday Physik [Gebundene Ausga
David Halliday (Autor), Robert Resnick (Au
(25 Kundenrezensionen) Gefällt m
Preis: EUR 69,00 kostenlose Lieferung. Sieh
Alle Preisangaben inkl. MwSt.
Auf Lager.
Verkauf und Versand durch Amazon.de. Gesch
Nur noch 7 Stück auf Lager - jetzt bestellen.
Lieferung bis Donnerstag, 13. September: B
ebraucht ab EUR 4
Amazon-Prei
EUR 69,00
EUR 49,00

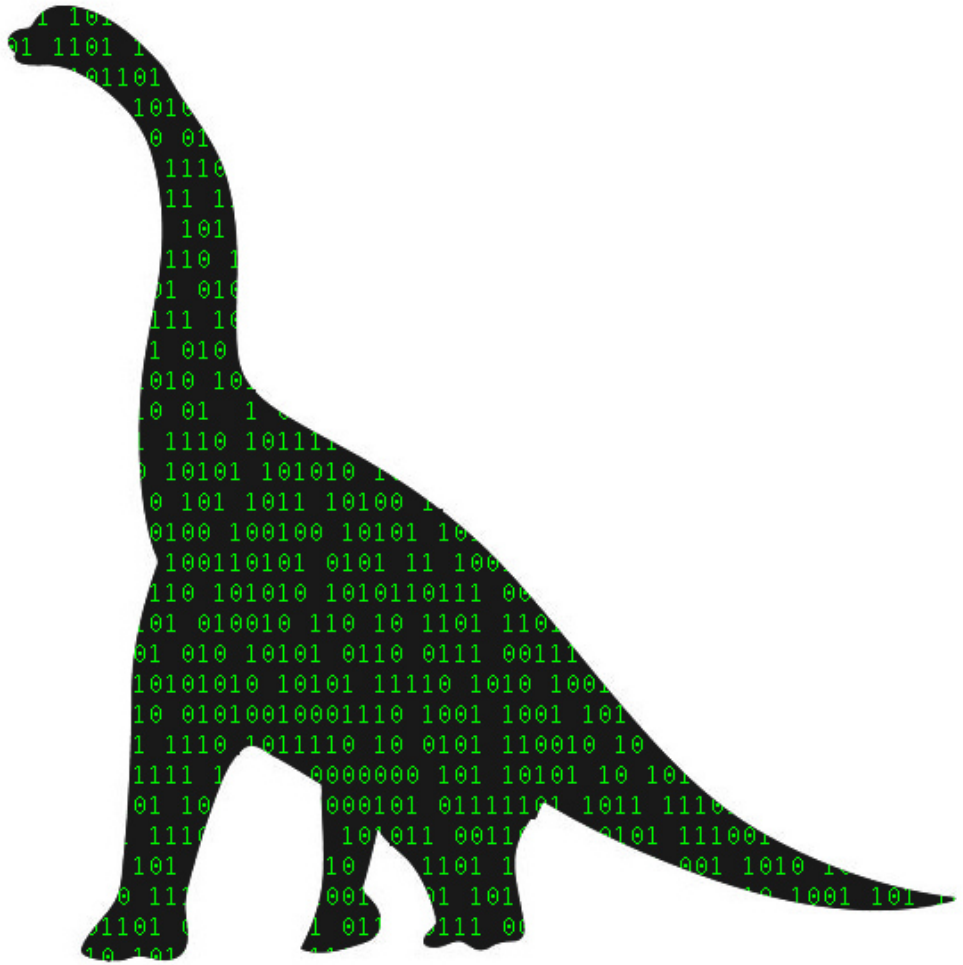
FREE TWO-DAY SHIPPING F
Learn more

69 euros = 89.1894 US dollars



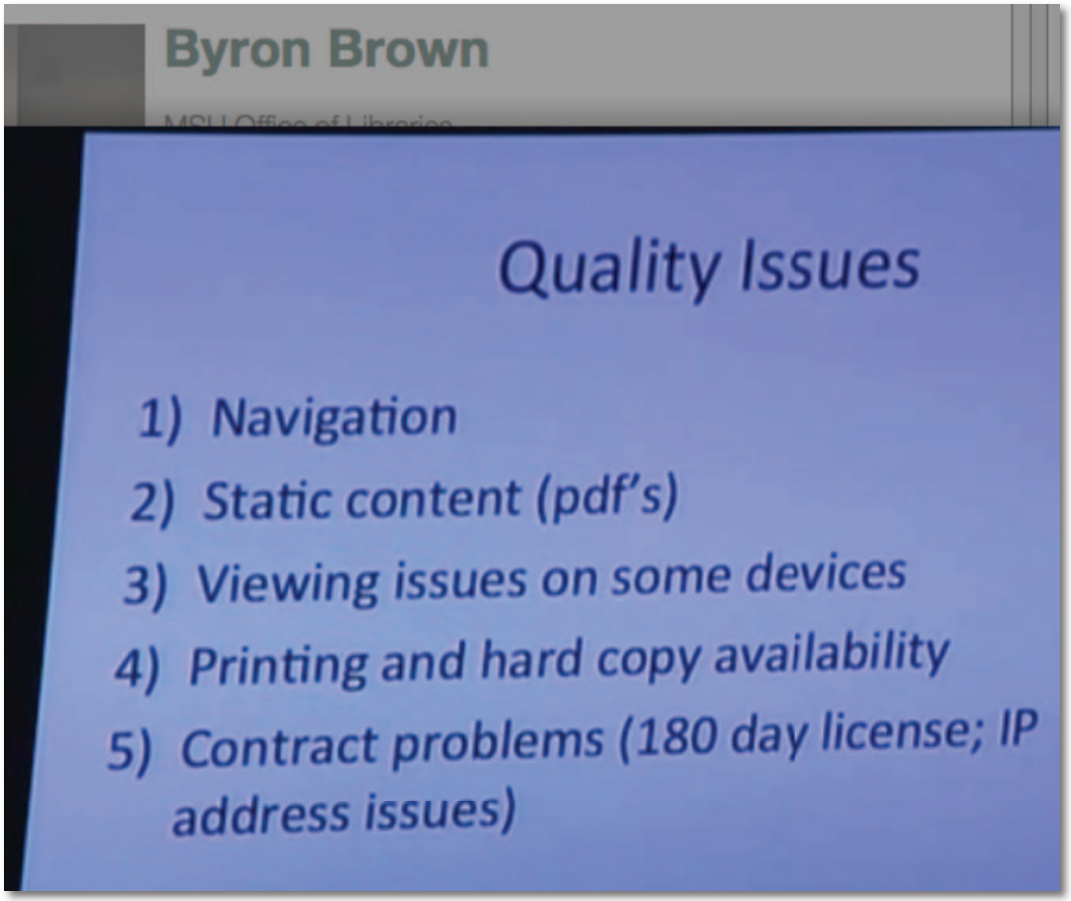
A Short History of the Textbook

- Welcome to the 21st century!
- ebooks!
- Unfortunately: digitizing the dinosaur
  - PDFs in some reader with restrictive licenses



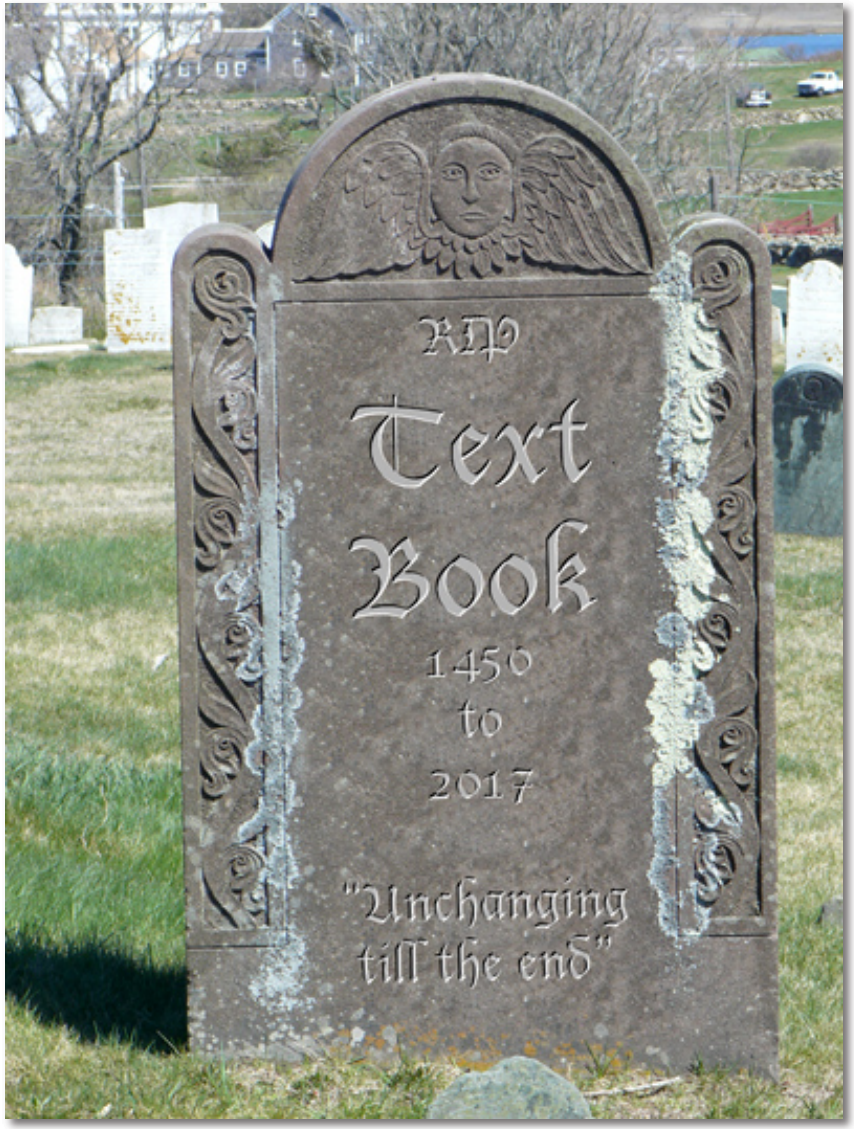
A Short History of the Textbook

- Shortcomings of the current publisher ebooks: talk by Byron last week
  - No need to repeat
  - Talk available online



A Short History of the Textbook

- If things don't change: textbooks will be history in five years

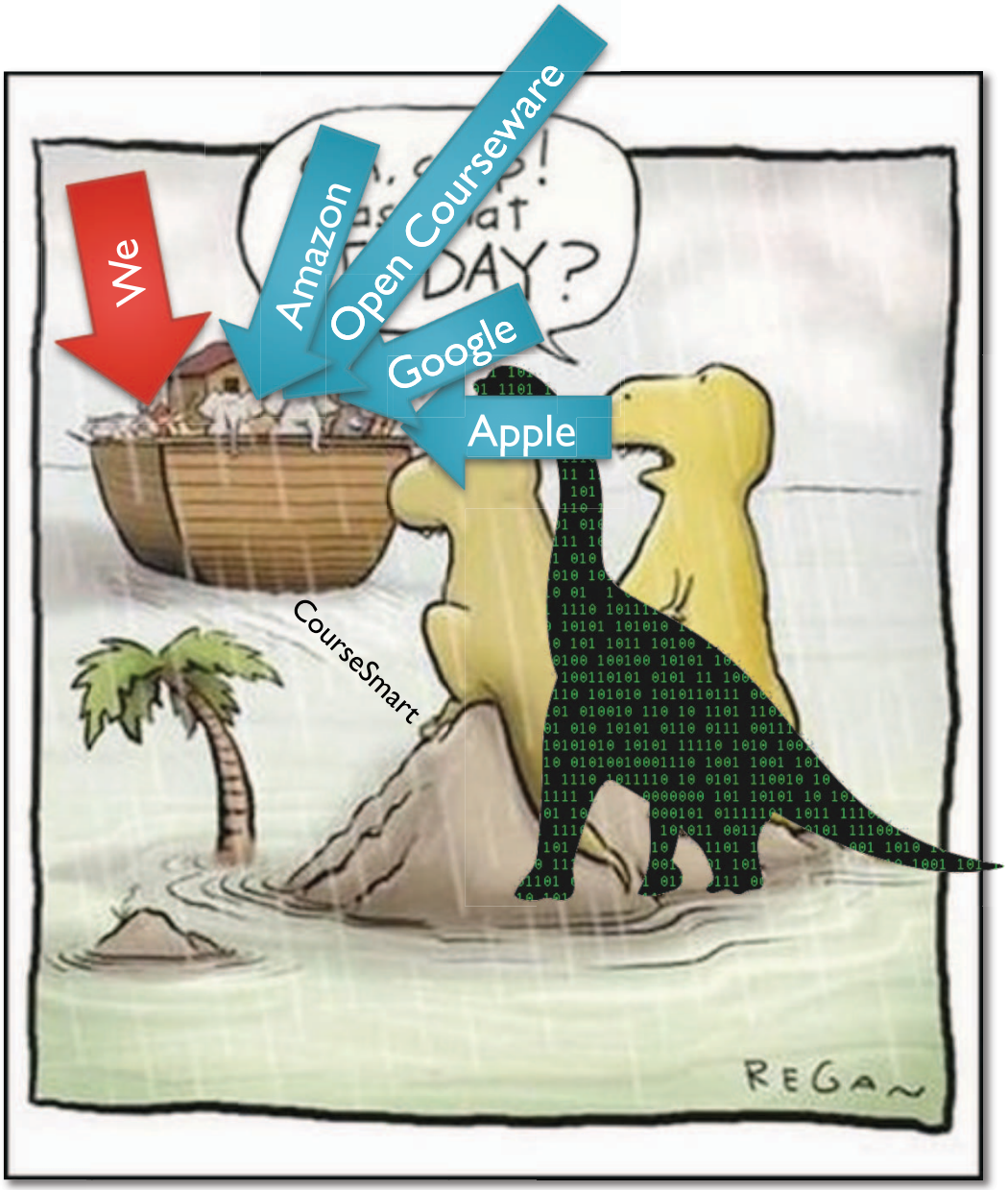


Let's Change Focus

Let's look at these!

In the Boat

- We believe that LON-CAPA is a model for who will be in the boat
- I will discuss the idea behind the current LON-CAPA and give an outlook toward the CourseWeaver project



Sharing of Materials

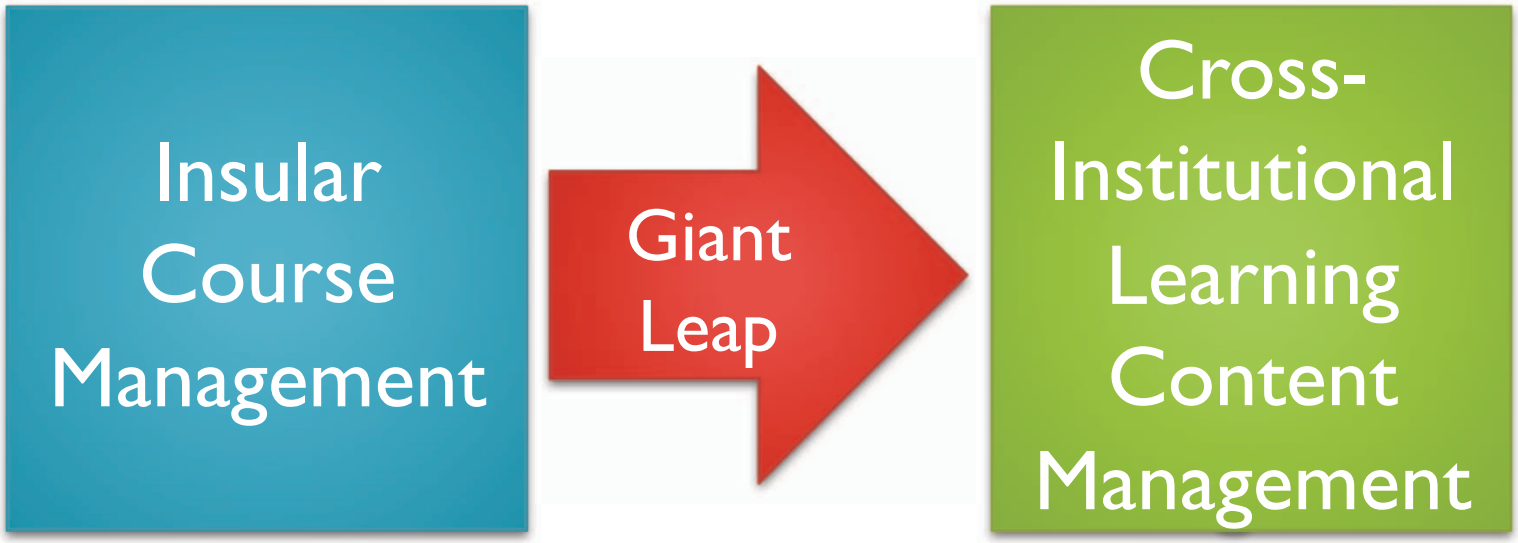
- There is a large amount of good, free educational material available
- How can these be turned into interactive etexts?
- What is usually missing is a way to:
  - catalog and verify the materials
  - get recommendations
  - sequence the materials
  - integrate the materials into a course
  - embed assessment
  - have associated peer teaching
  - control access to exam-relevant materials

Sharing of Materials

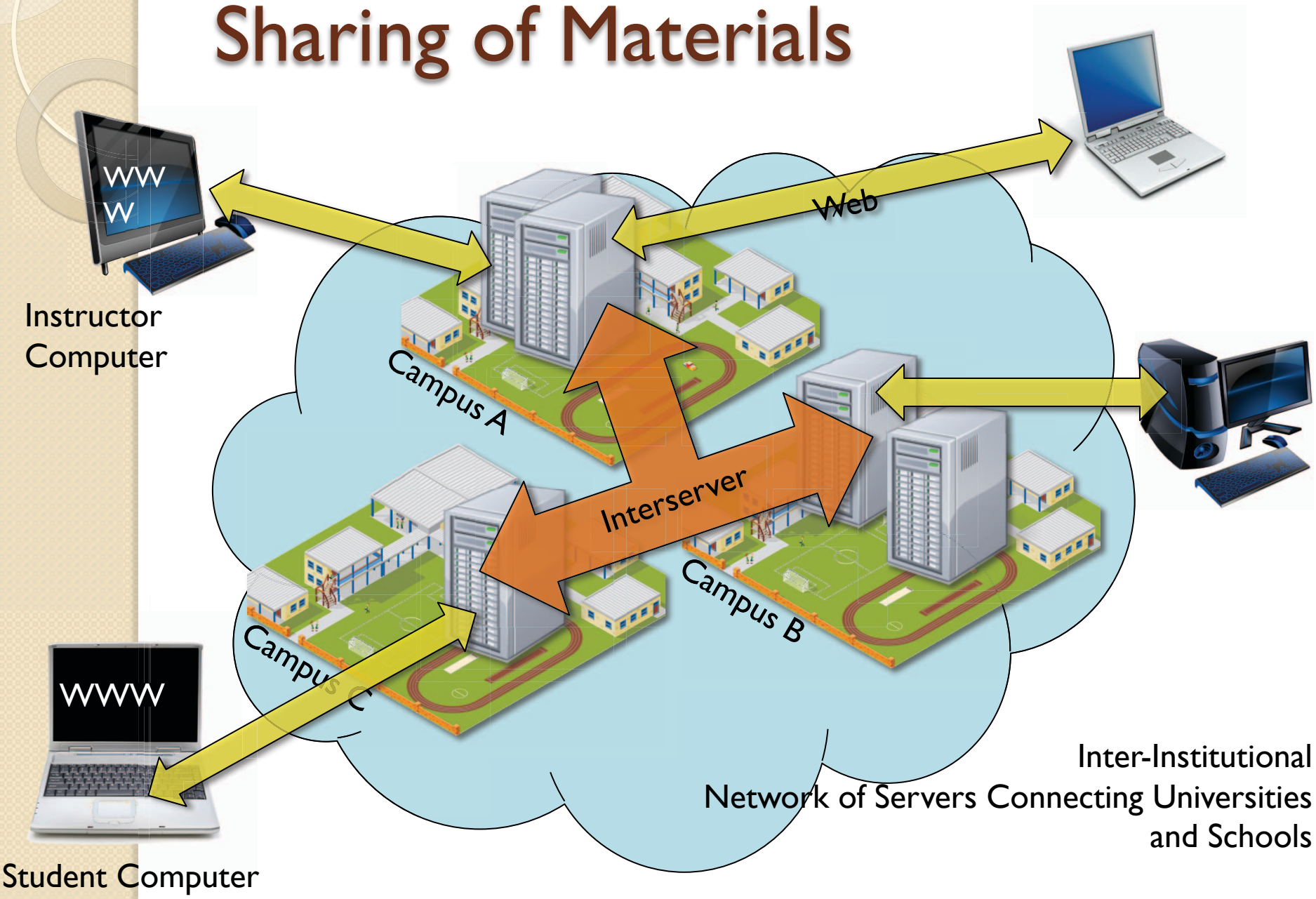
- The big leap:

Sharing of Materials

- But one institution alone will not have critical content mass to build a comprehensive portfolio of etexts

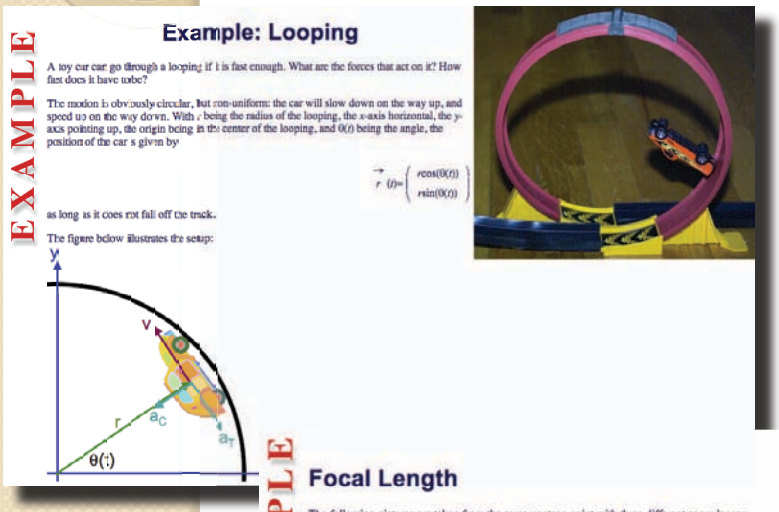


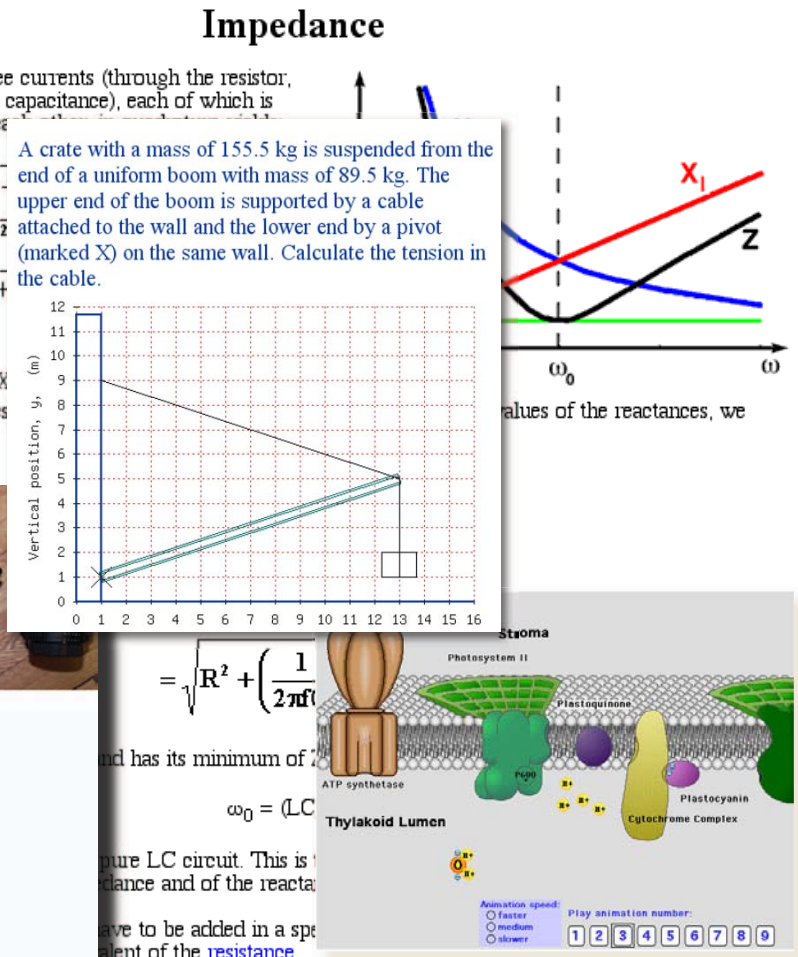
Sharing of Materials



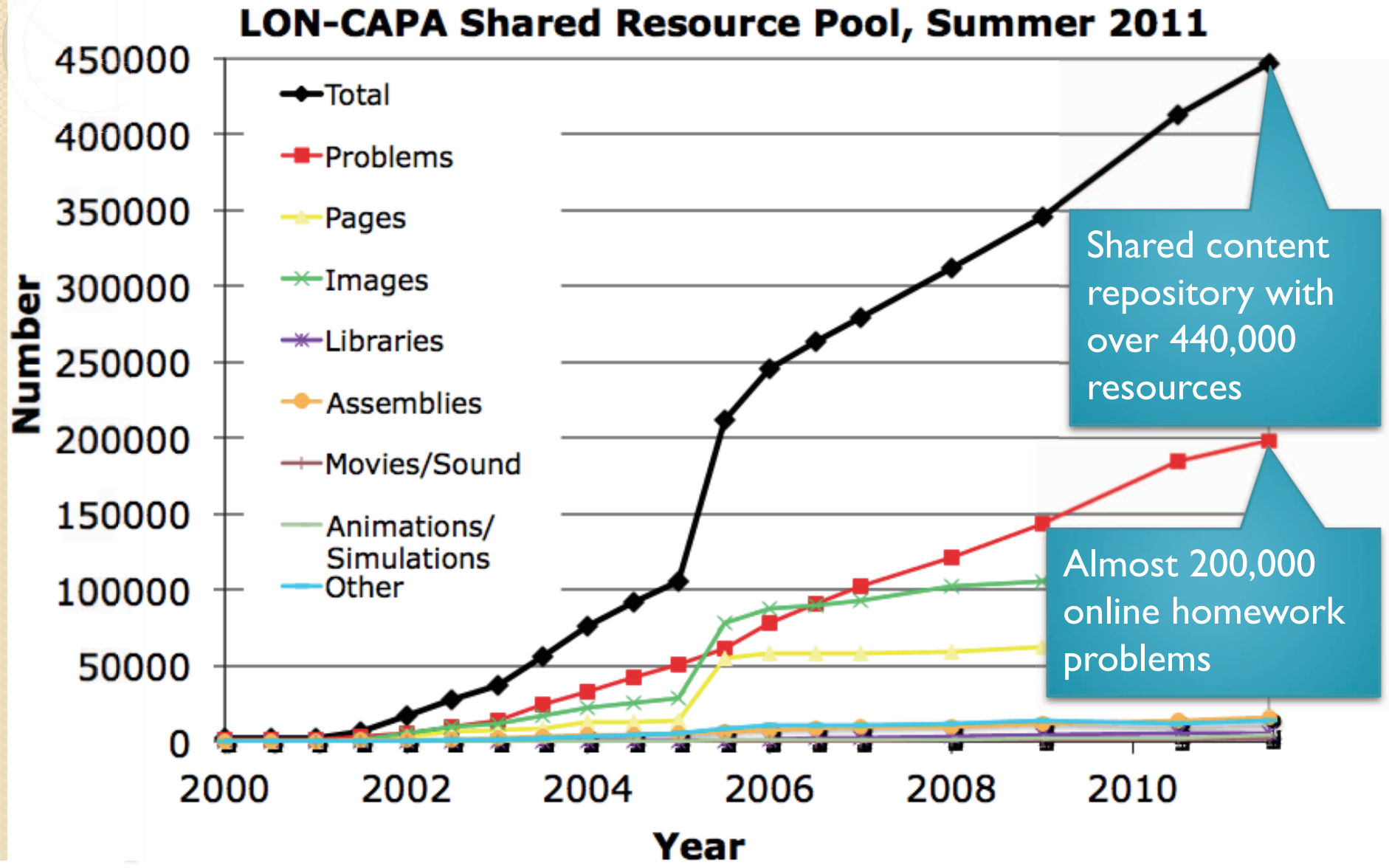
Sharing of Materials

- Pages, movies, homework, ..

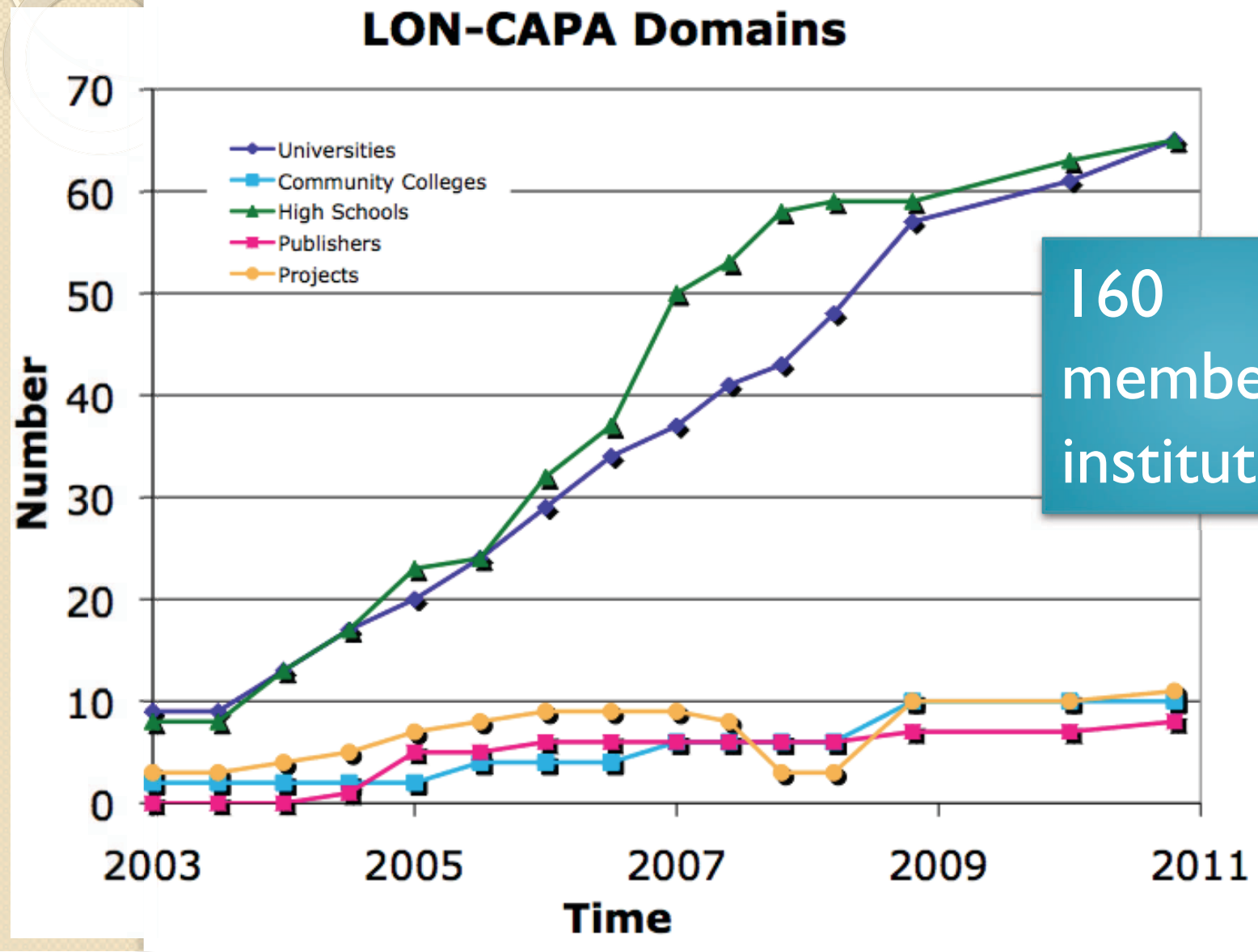




Sharing of Materials



Sharing of Materials



160 member institutions

Sharing of Materials

- Cross-institutional use

old data!

		U01	U04	PR01	U06	U17	U05	U03	HS20	U12	PR06	U11	U08	U
	Available	144418	17545	10809	8799	7635	7037	5120	4439	4066	3750	3283	2989	27
	Used	38245	7596	340	4821	2908	4880	3411	3842	2811	1502	1231	2102	3
	Used externally	17099	1804	339	974	276	3507	1735	1035	1997	1502	415	62	3
	Using													
U01	38855	34790	301	105	17	49	1621	294	74	102	298	137	3	
U05	11668	4881	23	14	3	33	4357	866	29	500	328	5	3	
U04	10343	2393	6969		10		207	374	8	128	2	18		
U06	10089	2261	64	13	4755		305	1001	8	10	2	72	2	2
U03	9973	4053	58	27	5	84	1213	3173	7	728	14	166		
U08	8578	2014	1078	6	2	2	720	5					2097	
HS20	6465	2138	1	47			40	350	3767	21	70	4		
CC04	6356	1156	25		2	31	1586	789	197	1522		64	7	
U17	6270	2689	4	7		2813	188	205	94	140	4		2	
HS40	5251	3899	22	5		40	65	293	388	70	27	16	1	
U14	5135	1682	213	42	12	1	665	42		3	7	114		
U09	4246	3409	7		1			15		1		1		
U12	3768	184					136	760		2684				
HS39	3467	2101	19	20	5	2	68	26	29	1	808	71		

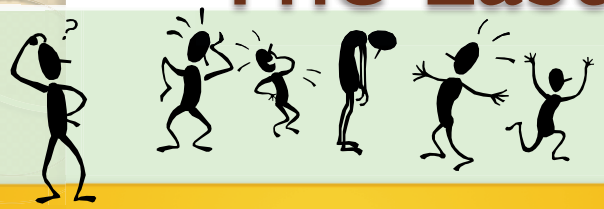
Sharing of Materials

- But wait: didn't we try that before?

etc.

- Yes, and those are great, but we are missing the "last mile:"
  - Fine-granular content immediately ready for use
  - Aid in selecting and sequencing materials
  - Full integration into the course venue

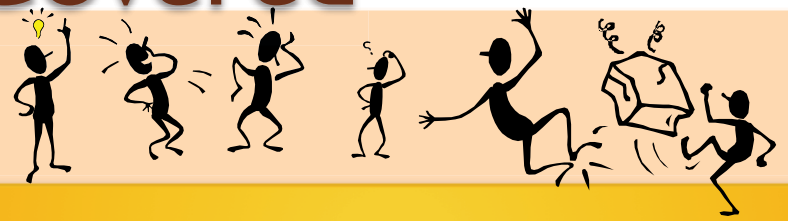
The Last Mile Covered



Course Management

Campus A

Resource Assembly



Course Management

Campus B

Resource Assembly

Shared Cross-Institutional
Digital Resource Library

Resource Assembly

- Take shopping cart to the "supermarket"

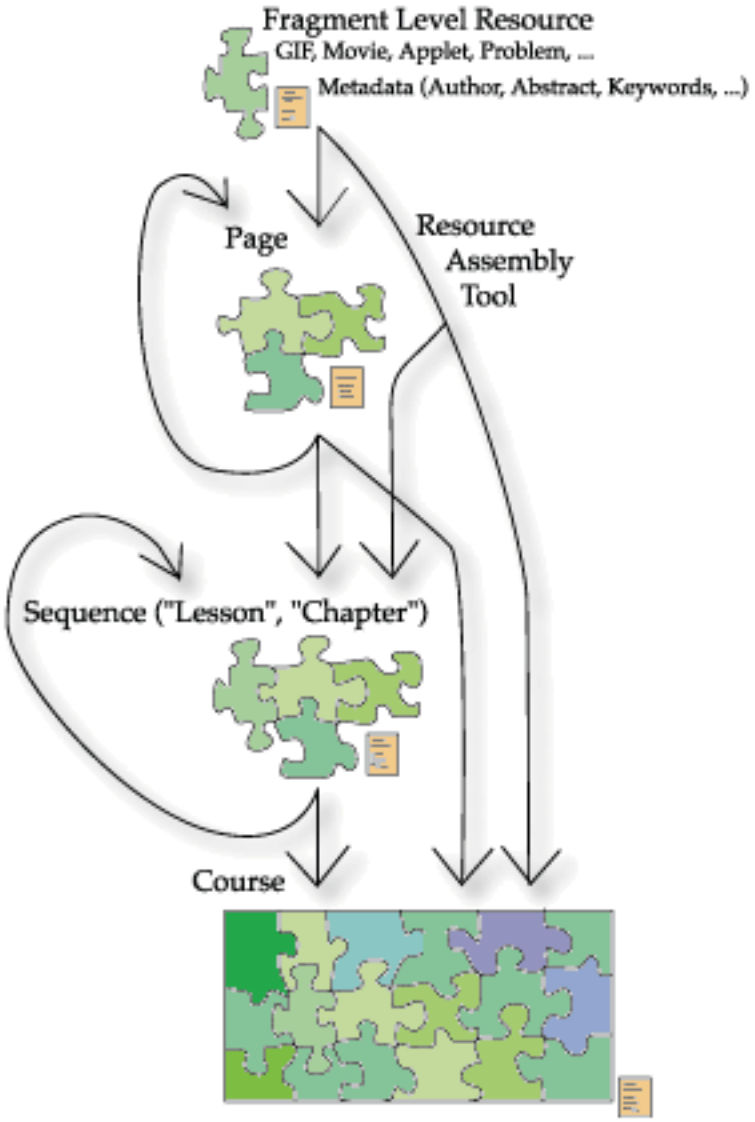
- Domain - sc (University of South Carolina)
- Domain - sfu (Simon Fraser University)
  - batchelo
  - chem281
  - exafs
  - hanlan
  - mxchen
  - slavieri
  - vjungic
- Domain - sunysb (SUNY Stony Brook)
- Domain - tmcc (Truckee Meadows Community College)
  - jensen
  - mbauer
  - souza
    - Greenberg
      - default.sequence (metadata)
    - samples
  - testuser1
- Domain - ucf (University of Central Florida)

Resource Assembly

- The key to re-usability is to create course-context free resources
- In other words, same resource can be used in different contexts
- This means:
  - No button "next resource"
  - No button "back to course menu"
  - No wording such as "as we have previously seen"
  - etc

Resource Assembly

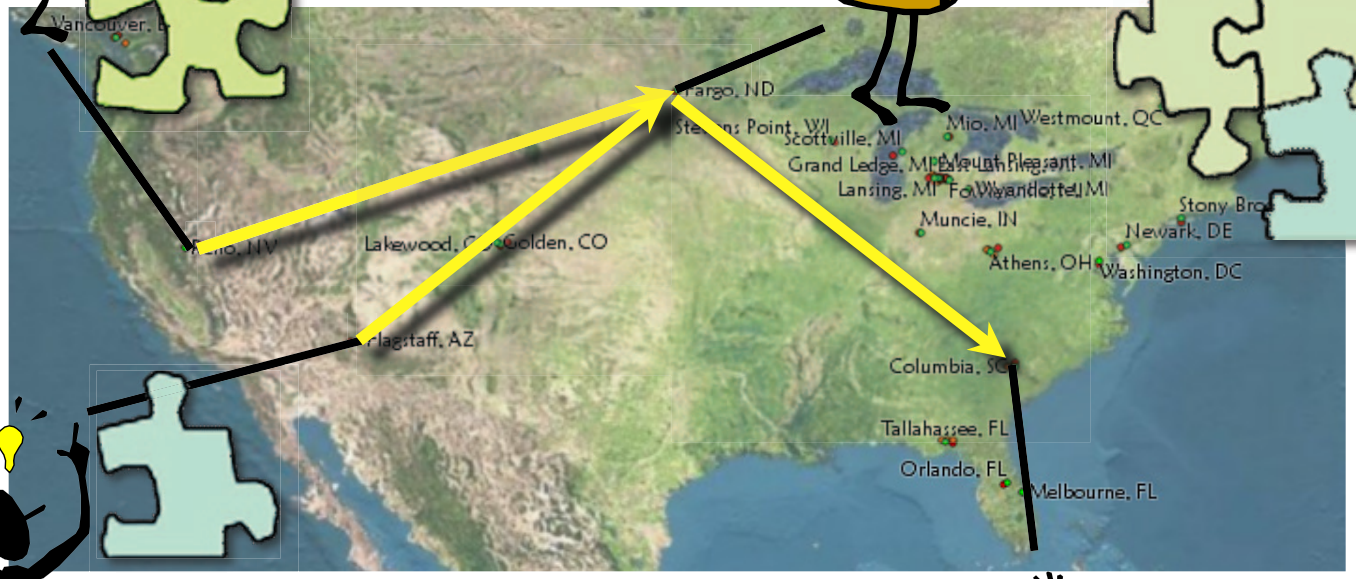
- Nested Assemblies
- No pre-defined levels of granularity („module“, „chapter“, etc)
  - People can never agree what those terms mean
- Re-use possible on any level
  - Customize your table of contents



Resource Assembly

Writes module about energy conservation

Compiles module about conservation laws



Writes module about momentum conservation

Uses whole assembly in his course

Resource Assembly

- Recommender

Search

accounting (640) advertising (2,000) astronomy (6,000) biochemistry (2,200) biology (50,000) botany (89,000) chemistry (36,000) computerscience (1,200) design (450) ecology (1,700) engineering (2,200) finance (1,600) geology (2,400) geometry (550) history (260) languages (13) mathematics (12,000) medicine (5,100) nursing (8) nutrition (590) philosophy (10) physics (110,000) psychology (530) statistics (3,100) zoology (220)

Filter Lists: Problems

Checkout

Your cart (8 item(s))

Recommendations

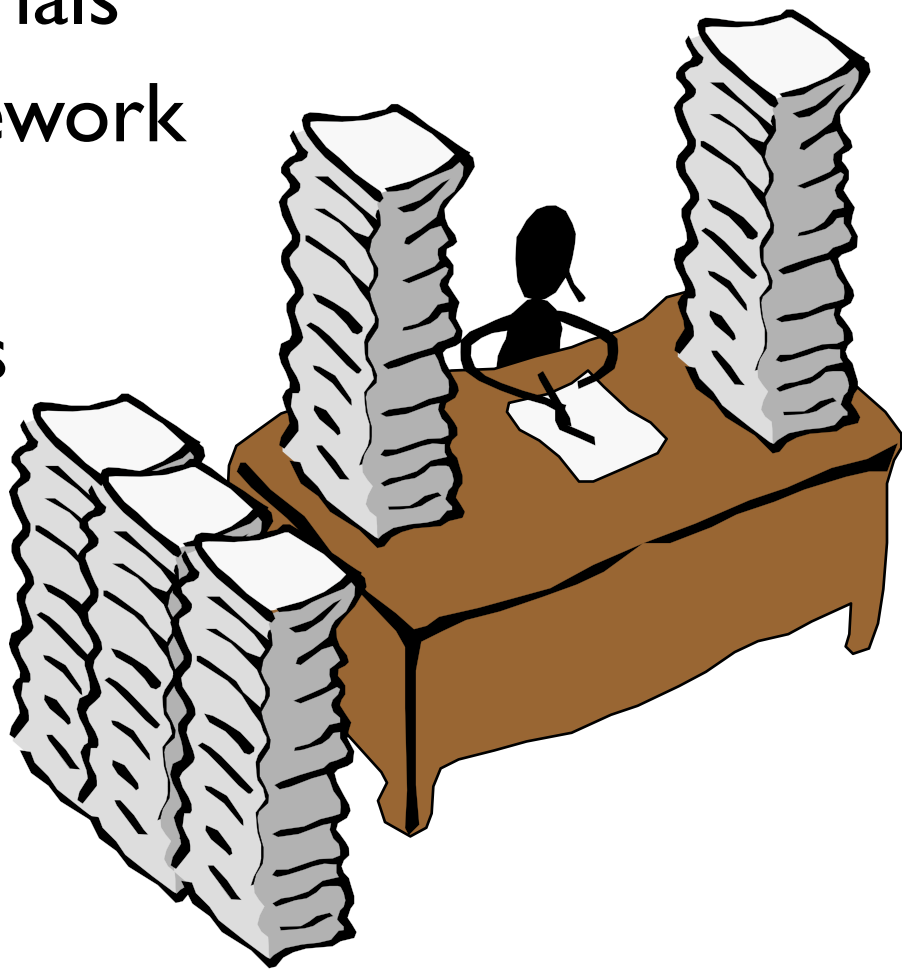
Next

Add	msu-prob16.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 05_1D_Motion / msu-prob16.problem
Add	msu-prob54.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 05_1D_Motion / msu-prob54.problem
Add	msu-prob55.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 05_1D_Motion / msu-prob55.problem
Add	msu-prob38.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 08_2D_Motion_and_Motion_in_a_Circle / msu-prob38.problem
Add	msu-prob40.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 05_1D_Motion / msu-prob40.problem
Add	msu-prob38.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 05_1D_Motion / msu-prob38.problem
Add	msu-prob53.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 05_1D_Motion / msu-prob53.problem
Add	msu-prob01.problem	physics:introduction:mathematics	/ msu / physicslib / msuphysicslib / 07_Vector_Calculus / msu-prob01.problem
Add	msu-prob10.problem	physics:mechanics	/ msu / physicslib / msuphysicslib / 06_Vectors_Scalars / msu-prob10.problem
Add	msu-prob09.problem	physics	/ msu / physicslib / msuphysicslib / 01_Math_1 / msu-prob09.problem
Add	msu-prob33.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 05_1D_Motion / msu-prob33.problem
Add	SpeedTimeHist.problem	physics:mechanics:linearkinematics	/ msu / kashy / physicsLib02 / 05_1D_Motion / SpeedTimeHist.problem
Add	msu-prob16.problem	physics:mechanics	/ msu / physicslib / msuphysicslib / 03_Units_Scaling / msu-prob16.problem
Add	msu-prob46.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 05_1D_Motion / msu-prob46.problem
Add	msu-prob11.problem	physics:mechanics:linearmomentum	/ msu / physicslib / msuphysicslib / 16_Momentum / msu-prob11.problem
Add	msu-prob03.problem	physics:mechanics:lineardynamics	/ msu / physicslib / msuphysicslib / 09_Force_and_Motion / msu-prob03.problem
Add	msu-prob43.problem	physics:mechanics:linearkinematics	/ msu / physicslib / msuphysicslib / 08_2D_Motion_and_Motion_in_a_Circle / msu-prob43.problem
Add	AccelerationHist.problem	physics:mechanics:linearkinematics	/ msu / kashy / physicsLib02 / 05_1D_Motion / AccelerationHist.problem
Add	msu-prob44.problem	physics:mechanics	/ msu / physicslib / msuphysicslib / 08_2D_Motion_and_Motion_in_a_Circle / msu-prob44.problem
Add	msu-prob08.problem	physics	/ msu / physicslib / msuphysicslib / 07_Vector_Calculus / msu-prob08.problem

Next

Course Management

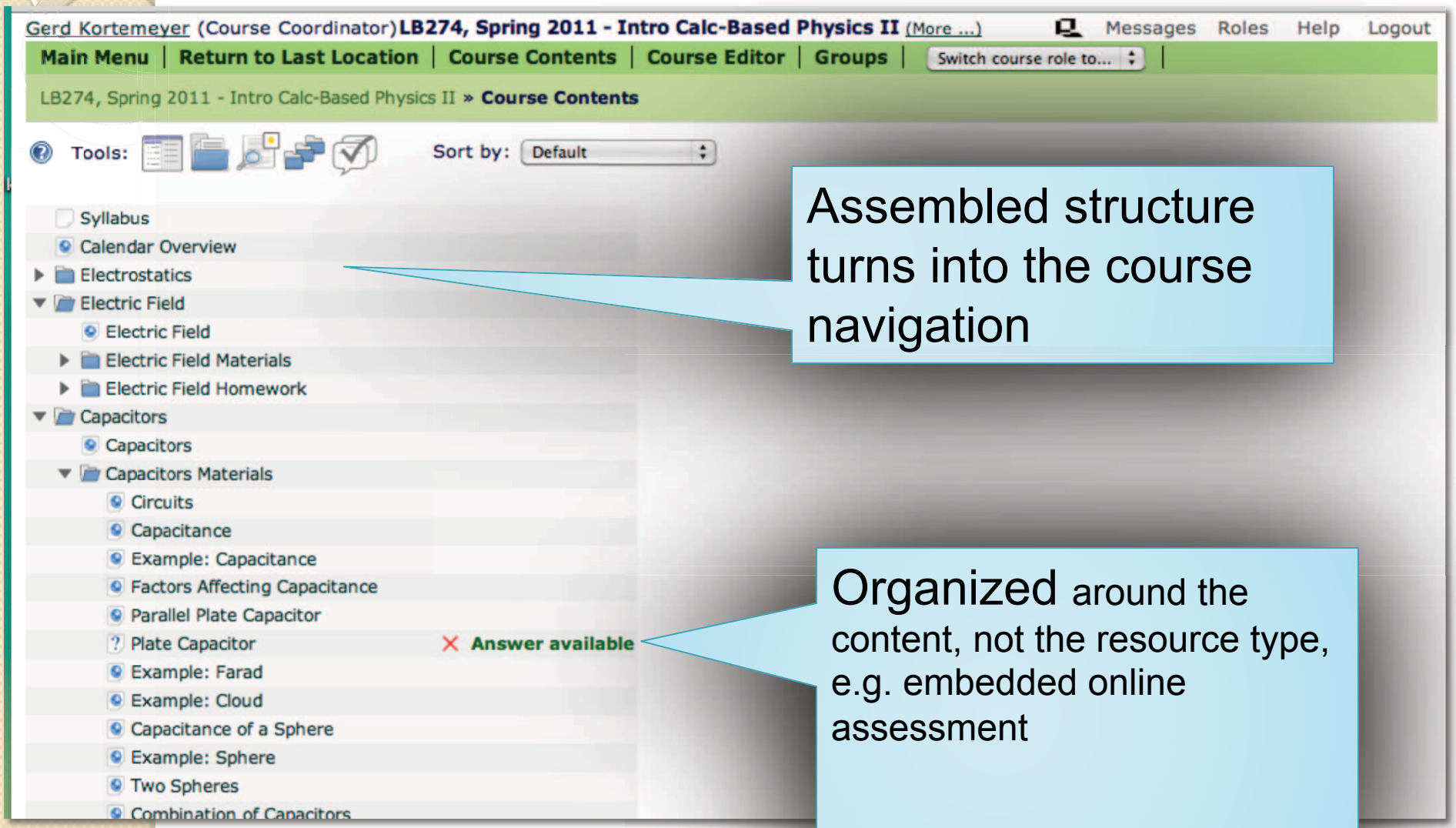
- Posting of materials
- Posting of homework
- Discussions
- Announcements
- Portfolios
- Scheduling
- Gradebook
- …



Course Management

- How do you use context-free re-usable resources in the context of a course?
- The system **dynamically** generates context for context-free resources:
  - Navigation (no getting lost!)
  - Contextual community functions
  - Feedback to instructors and authors
  - Gradebook integration of embedded assessment

Course Management



Assembled structure turns into the course navigation

Organized around the content, not the resource type, e.g. embedded online assessment

Course Manage-ment

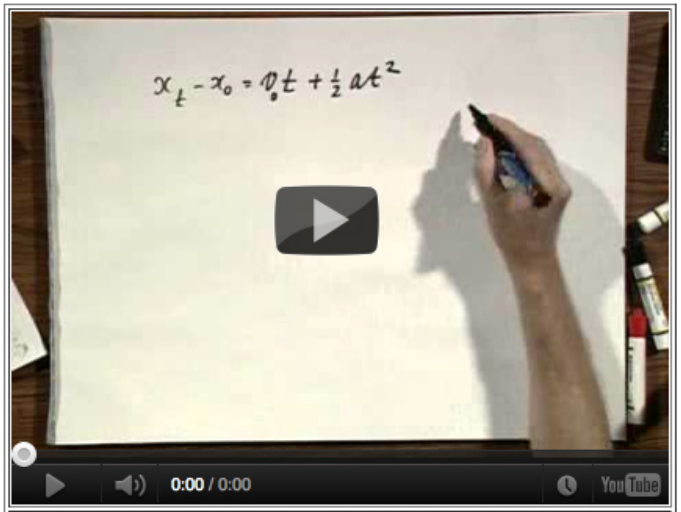
- Materials, assessment, discussion

e) Where is the particle at the instance when it is momentarily at rest?

$x =$ **6.6250 m**

Tries 0/7

f) Check out Professor's Walter Lewin's explanation:



This movie is part of the Learning Activities, Help Session 2, in the Module One Dimensional Kinematics and Free Fall, MIT OCW.

Threaded View Chronological View Sorting/Filtering options Export? Preferences on what is marked as NEW Mark NEW posts no longer new

NEW **Units** [redacted] Hide Delete Reply Submissions (Sun Mar 11 09:37:40 pm 2012 (EDT))

The units required are not mentioned in the problem setting, but it's expecting meters and seconds.

NEW **x(0)** [redacted] Hide Delete Reply Submissions (Sun Mar 11 09:43:13 pm 2012 (EDT))

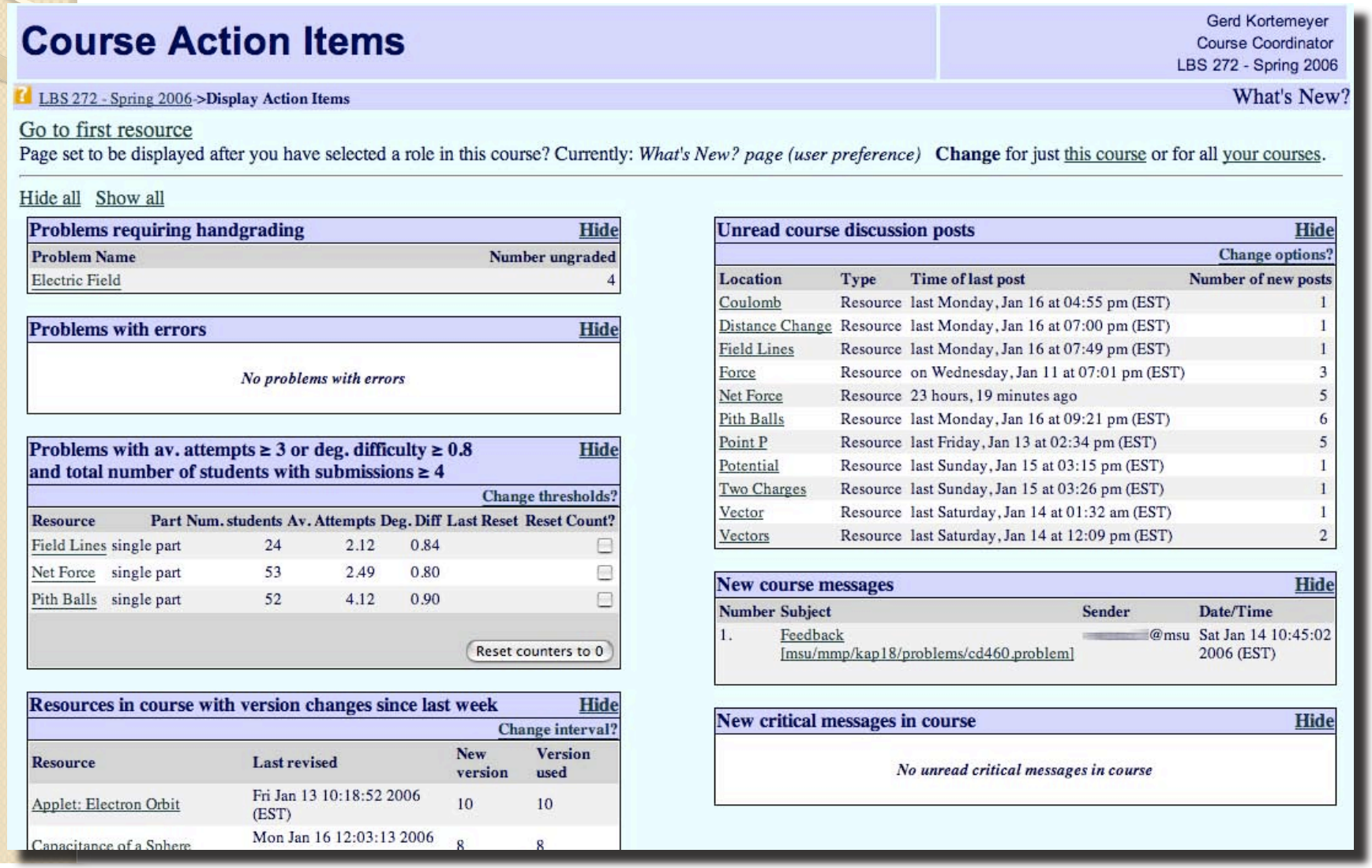
x(0) = 0

NEW [redacted] Hide Delete Reply Submissions (Mon Mar 12 02:17:02 pm 2012 (EDT))

Thanks for the heads-up, Chris. One of the major points that students need to understand in interpreting velocity-time graphs is that they DO NOT convey position information. You can get "displacement", which will tell you how far, and in what direction, an object moves, but if you don't know where it WAS (or any other position info.), you CANNOT determine where it IS.

Course Management

- Course overview/dashboard



Course Action Items

Gerd Kortemeyer
Course Coordinator
LBS 272 - Spring 2006

LBS 272 - Spring 2006 >Display Action Items — What's New?

Go to first resource

Page set to be displayed after you have selected a role in this course? Currently: *What's New? page (user preference)* **Change** for just this course or for all your courses.

Hide all Show all

Problems requiring handgrading — Hide

Problem Name	Number ungraded
Electric Field	4

Problems with errors — Hide

No problems with errors

Problems with av. attempts ≥ 3 or deg. difficulty ≥ 0.8 and total number of students with submissions ≥ 4 — Hide

Change thresholds?

Resource	Part	Num. students	Av. Attempts	Deg. Diff	Last Reset	Reset Count?
Field Lines	single part	24	2.12	0.84		
Net Force	single part	53	2.49	0.80		
Pith Balls	single part	52	4.12	0.90		

Reset counters to 0

Resources in course with version changes since last week — Hide

Change interval?

Resource	Last revised	New version	Version used
Applet: Electron Orbit	Fri Jan 13 10:18:52 2006 (EST)	10	10
Capacitance of a Sphere	Mon Jan 16 12:03:13 2006	8	8

Unread course discussion posts — Hide

Change options?

Location	Type	Time of last post	Number of new posts
Coulomb	Resource	last Monday, Jan 16 at 04:55 pm (EST)	1
Distance Change	Resource	last Monday, Jan 16 at 07:00 pm (EST)	1
Field Lines	Resource	last Monday, Jan 16 at 07:49 pm (EST)	1
Force	Resource	on Wednesday, Jan 11 at 07:01 pm (EST)	3
Net Force	Resource	23 hours, 19 minutes ago	5
Pith Balls	Resource	last Monday, Jan 16 at 09:21 pm (EST)	6
Point P	Resource	last Friday, Jan 13 at 02:34 pm (EST)	5
Potential	Resource	last Sunday, Jan 15 at 03:15 pm (EST)	1
Two Charges	Resource	last Sunday, Jan 15 at 03:26 pm (EST)	1
Vector	Resource	last Saturday, Jan 14 at 01:32 am (EST)	1
Vectors	Resource	last Saturday, Jan 14 at 12:09 pm (EST)	2

New course messages — Hide

Number	Subject	Sender	Date/Time
1.	Feedback [msu/mmp/kap18/problems/cd460.problem]	[redacted]@msu	Sat Jan 14 10:45:02 2006 (EST)

New critical messages in course — Hide

No unread critical messages in course

CourseWeaver

- Our next generation: CourseWeaver
- Building on LON-CAPA concept
- Learning Content Management for Open Educational Content (OER)
- Launched at LON-CAPA Conference at UIUC in June

CourseWeaver

Course•Weav•er /kōrs-wē'vər/ *n.* **1.** A system for combining modular educational content from various sources into a unit of curriculum. **2 a.** A repository for open, shared, and licensed educational content. **b.** A system for publishing and managing such content. **3 a.** A system for integrated formative and summative assessment. **b.** A system for assessing educational content. **4.** A system to manage a course. **5.** The right thing to do.

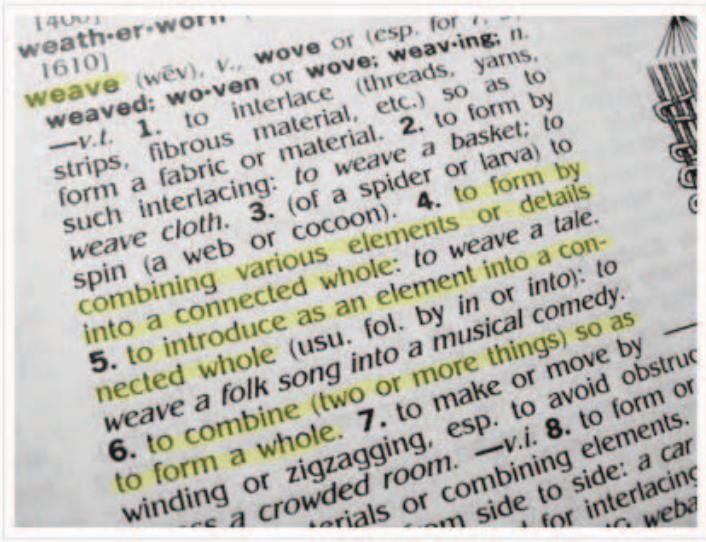
court /kôrt/ *n.* **1.** The residence of a sovereign or dignitary. **2.** A manor or large building surrounded by

Home Concept Content Users Course Management System About Search

Welcome to CourseWeaver!

Next Generation Free Open-Source Learning Content and Course Management

We are ready to build the next generation learning content management: a sustainable economy for online educational content, which will enable institutions to



COURSEWEAVER

Next Generation Learning Content Management

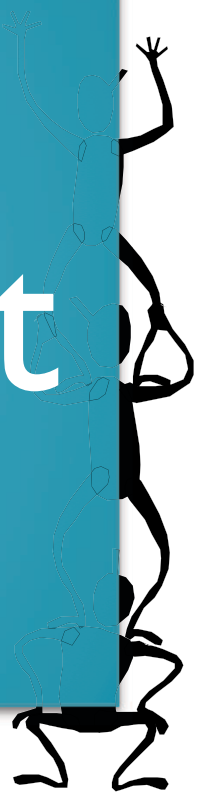
WHAT WE ARE ABOUT

analytics architecture assessment authors blended cloud collaboration **content** course course management crowd-sourcing data mining deployment discussions enterprise **experience** expertise formative **free** granularity higher education innovation instructors integration learners learning machine room management massively

CourseWeaver

- Preliminary list of potential partners:
  - … yes, careful, careful … only three months into it

Not official yet



CourseWeaver

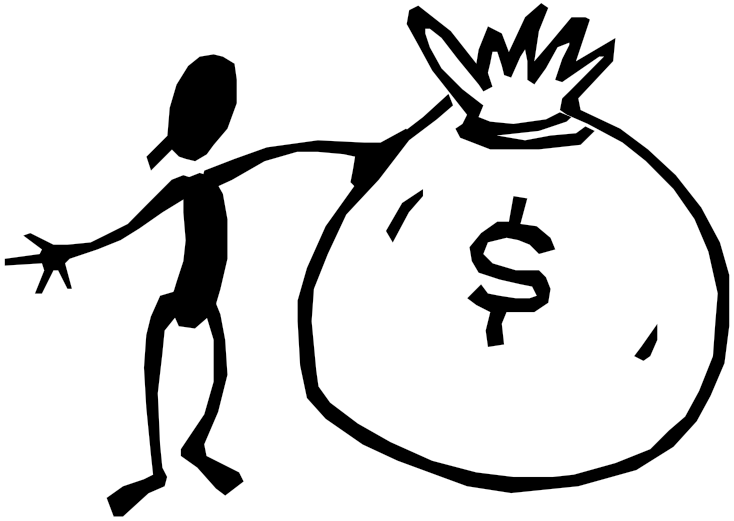
- Updated infrastructure
  - Dynamic cloud
- Better rights management
- Better information flow for dynamic metadata
- Cleanup, cleanup, …
- Commercial content?
- Interface changes

CourseWeaver

CourseWeaver

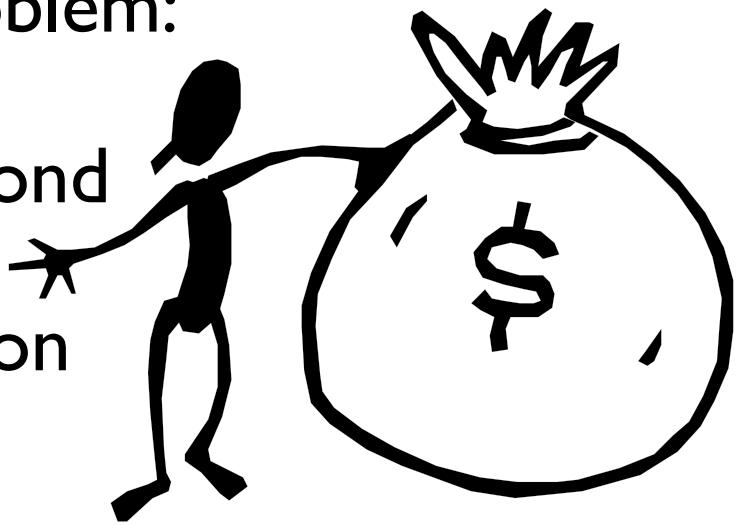
CourseWeaver

- Estimates:
  - Four years
  - Four million dollars



CourseWeaver

- There is only one problem: sustainability
- Where do we go beyond initial grant funding?
- Are we just parasitic on traditional higher education?
  - Or is this maybe (just maybe) part of our core business?
- But: we have done this for 20 years!



CourseWeaver

- Are we going to assume some leadership?
- Or are we just followers?