

September 2, 2005

# A Model for Open Sharing

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- III. Outcomes
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# Vision

## Vision — Institutional decision-making

- Fall 1999 — Faculty committee appointed
- Fall 2000 — “OpenCourseWare” concept recommended to MIT President Charles M. Vest
- April 2001 — MIT OCW announced in *The New York Times*

## Vision — Institutional decision-making

*“OpenCourseWare looks counterintuitive in a market-driven world. But it really is consistent with what I believe is the best about MIT. It is innovative. It expresses our belief in the way education can be advanced — by constantly widening access to information and by inspiring others to participate.”*

— Charles M. Vest,  
President Emeritus of MIT



## Vision — What is MIT OCW?

- MIT OpenCourseWare IS NOT:*
- An MIT education
  - Intended to represent the interactive classroom environment
  - Degree-granting

- MIT OpenCourseWare IS:*
- A Web-based publication of virtually all MIT course content
  - Open and available to the world
  - A permanent MIT activity

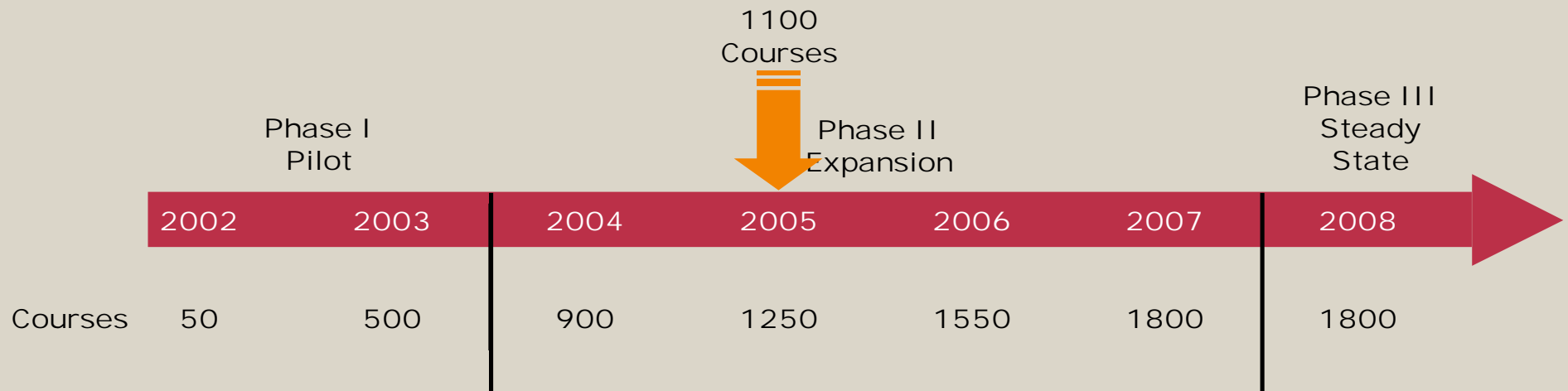
## Vision — Dual mission

- Provide free access to virtually all MIT course materials for educators and learners around the world
- Extend the reach and impact of MIT OCW and the “opencourseware” concept

## Vision — Vision to reality

- June 2001 — Funding partnership with the William and Flora Hewlett Foundation, and the Andrew W. Mellon Foundation
- September 2002 — Proof-of-concept site with 50 courses
- September 2003 — Official pilot launch with 506 courses
- April 2004 — 200 courses, bringing total to 701
- September 2004 — 200 courses, bringing total to 915
- April 2005 — 175 new courses, 25 updated courses, bringing total to 1100

# Vision — Where we are



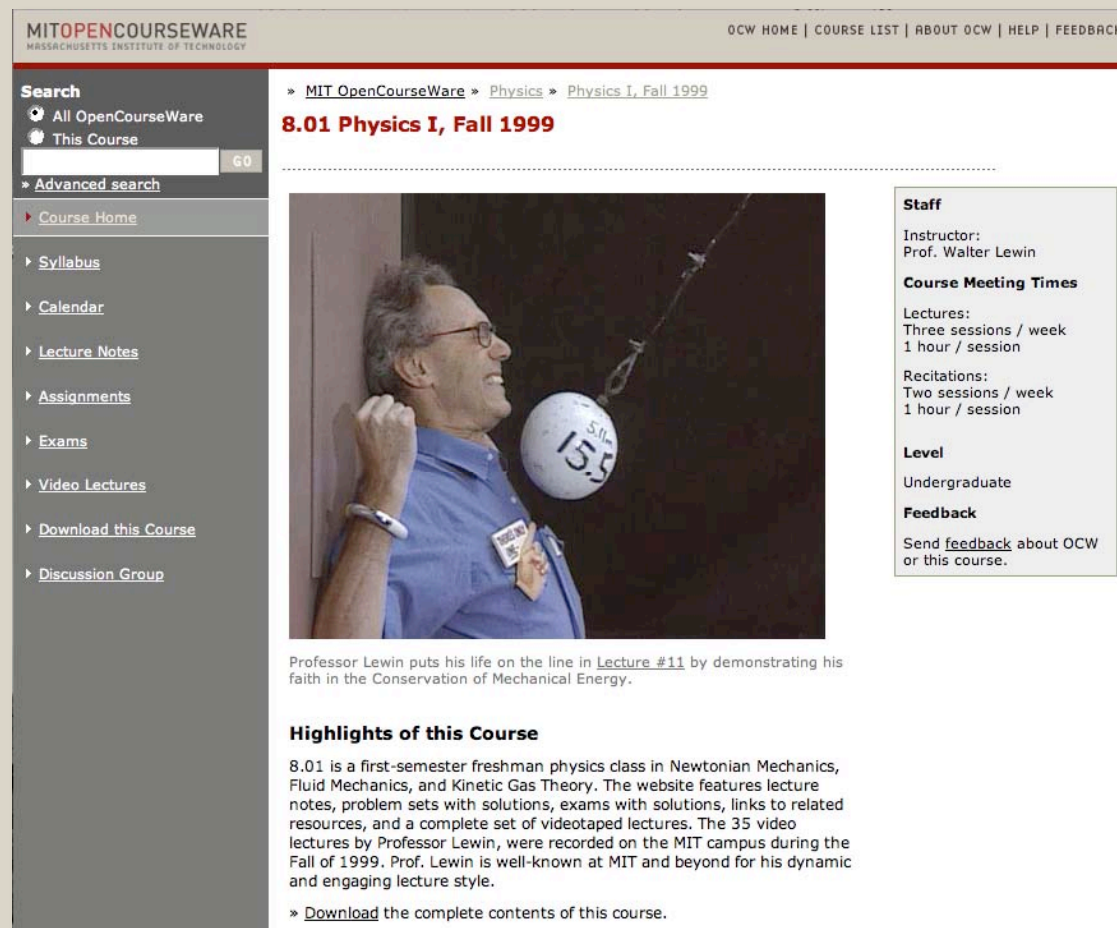


# Implementation

# Implementation — 1100 courses available

## Site Highlights

- Syllabus
- Course Calendar
- Lecture Notes
- Exams
- Problem/Solution Sets
- Labs and Projects
- Video Lectures



The screenshot shows the MIT OpenCourseWare website interface. At the top, the MIT OpenCourseWare logo and navigation links (OCW HOME, COURSE LIST, ABOUT OCW, HELP, FEEDBACK) are visible. A search bar is on the left, and a breadcrumb trail indicates the current page: MIT OpenCourseWare > Physics > Physics I, Fall 1999. The main content area is titled "8.01 Physics I, Fall 1999". On the left, a sidebar menu lists various course resources: Course Home, Syllabus, Calendar, Lecture Notes, Assignments, Exams, Video Lectures, Download this Course, and Discussion Group. The main content features a photograph of Professor Walter Lewin, a man in a blue shirt, holding a white ball with "8.01" written on it. To the right of the photo is a box containing course details: Staff (Instructor: Prof. Walter Lewin), Course Meeting Times (Lectures: Three sessions / week, 1 hour / session; Recitations: Two sessions / week, 1 hour / session), Level (Undergraduate), and Feedback (Send feedback about OCW or this course.). Below the photo is a caption: "Professor Lewin puts his life on the line in Lecture #11 by demonstrating his faith in the Conservation of Mechanical Energy." Underneath that is a section titled "Highlights of this Course" which describes the course as a first-semester freshman physics class in Newtonian Mechanics, Fluid Mechanics, and Kinetic Gas Theory. It mentions that the website features lecture notes, problem sets with solutions, exams with solutions, links to related resources, and a complete set of videotaped lectures. The 35 video lectures by Professor Lewin were recorded on the MIT campus during the Fall of 1999. Prof. Lewin is well-known at MIT and beyond for his dynamic and engaging lecture style. At the bottom of the page, there is a link to "Download the complete contents of this course."

## Implementation — Funding

- Funding currently comes largely from Hewlett and Mellon, with MIT assuming increasing portions of cost each year
  - Conduct extensive evaluation
  - Assist others in implementing OpenCourseWare
  - Participate in larger open educational resources movement
  
- Steady state cost estimated at \$5 M per year; some level of external funding need anticipated

## Implementation — Intellectual property

- Course materials available under a Creative Commons license that:
  - Grants users the right to use, distribute, and modify
- Obliges users to meet three use requirements:
  - Use must be non-commercial
  - Materials must be attributed to MIT and original author or contributor
  - Publication or distribution of original or derivative materials must be offered freely under identical terms "share alike"

## Implementation — Intellectual property

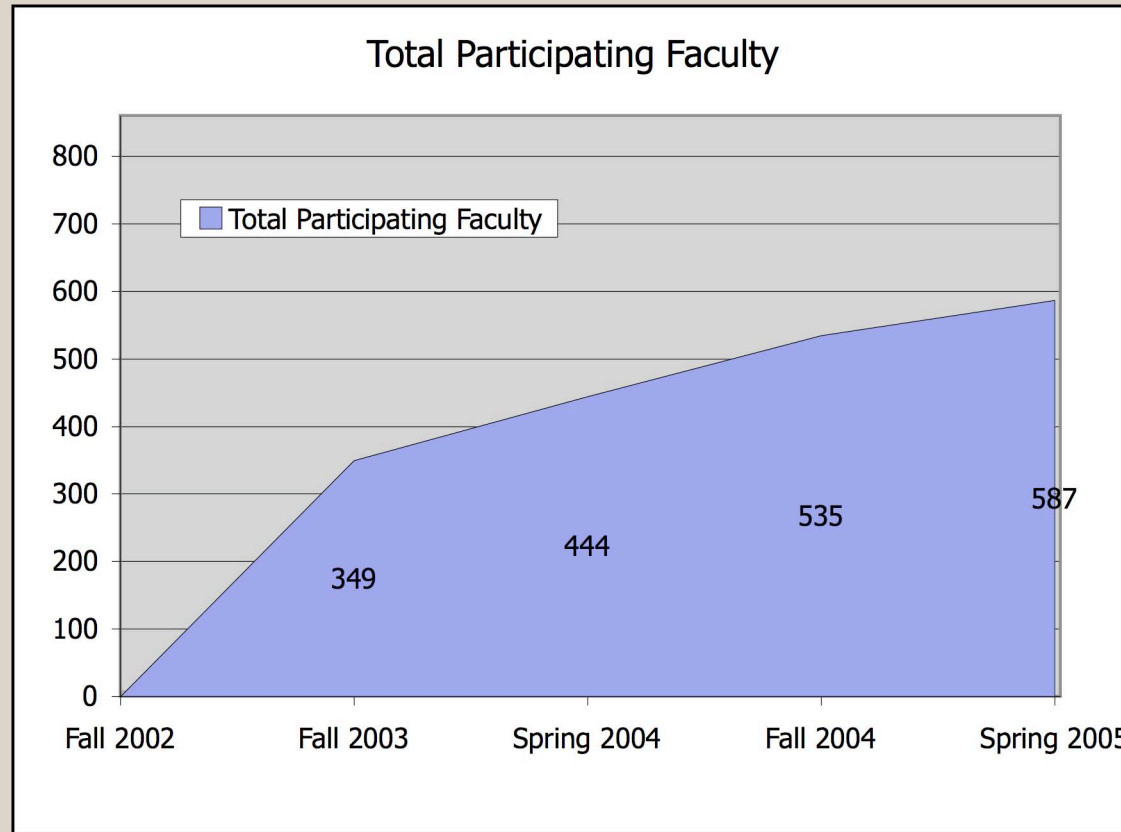
- Intellectual property experiment vs. educational technology project
- Major IP unknowns at the start:
  - Would a large % of MIT faculty “give away” their materials?
  - Could we obtain permission to publish enough third-party content under our license to make site materials useful?

## Implementation — Ensuring faculty participation

- Process—Individual license grants from participating faculty:
  - Each faculty member signs release for each course
  - OCW participation is voluntary
  
- Organization—Layers of communication:
  - President and provost support
  - Faculty advisory committee
  - Layers of communication within OCW staff

# Overcoming barriers — Faculty participation

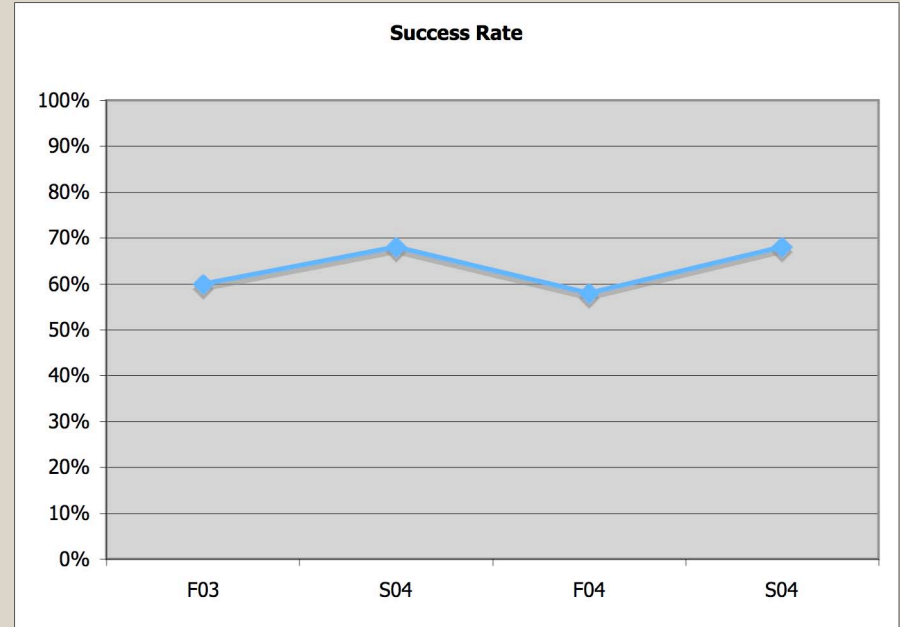
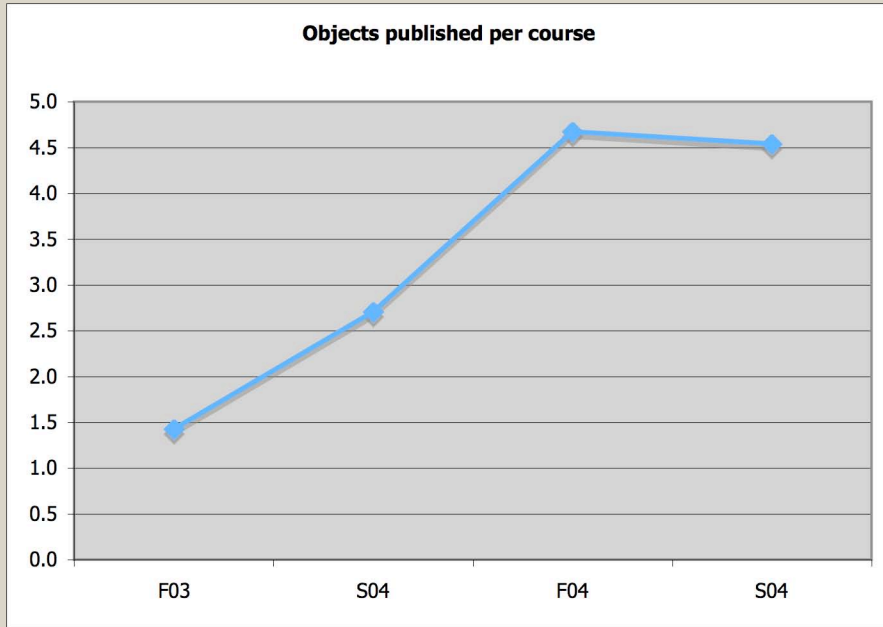
MIT has approximately 860 tenure-track faculty actively teaching.



## Implementation — Including 3rd-party content

- Process—Inclusion of third-party content:
  - Charts, graphs and illustrations not owned by faculty all go through a permissioning process
  - Third-party materials are removed and cited, permission is requested, or a replacement is sought or commissioned
- Organization—Distributed workforce/IP decision-making:
  - 9 department liaisons housed in departments
  - Locates IP decision-making close to subject experts

# Overcoming barriers — 3rd party content



> No infringement claims to date

## Implementation — Considerations

License has remained stable since project start.

Considerations:

- Non-commercial restriction
- Moral rights, especially integrity of translation

# Implementation — Other dissemination barriers

- › Interoperability

- › Manual process of moving content from MIT LMS's or web servers into OCW production environment
- › Significant portions of OCW publication in PDF

- › Export controls

- › Faculty act as gatekeepers



# Outcomes

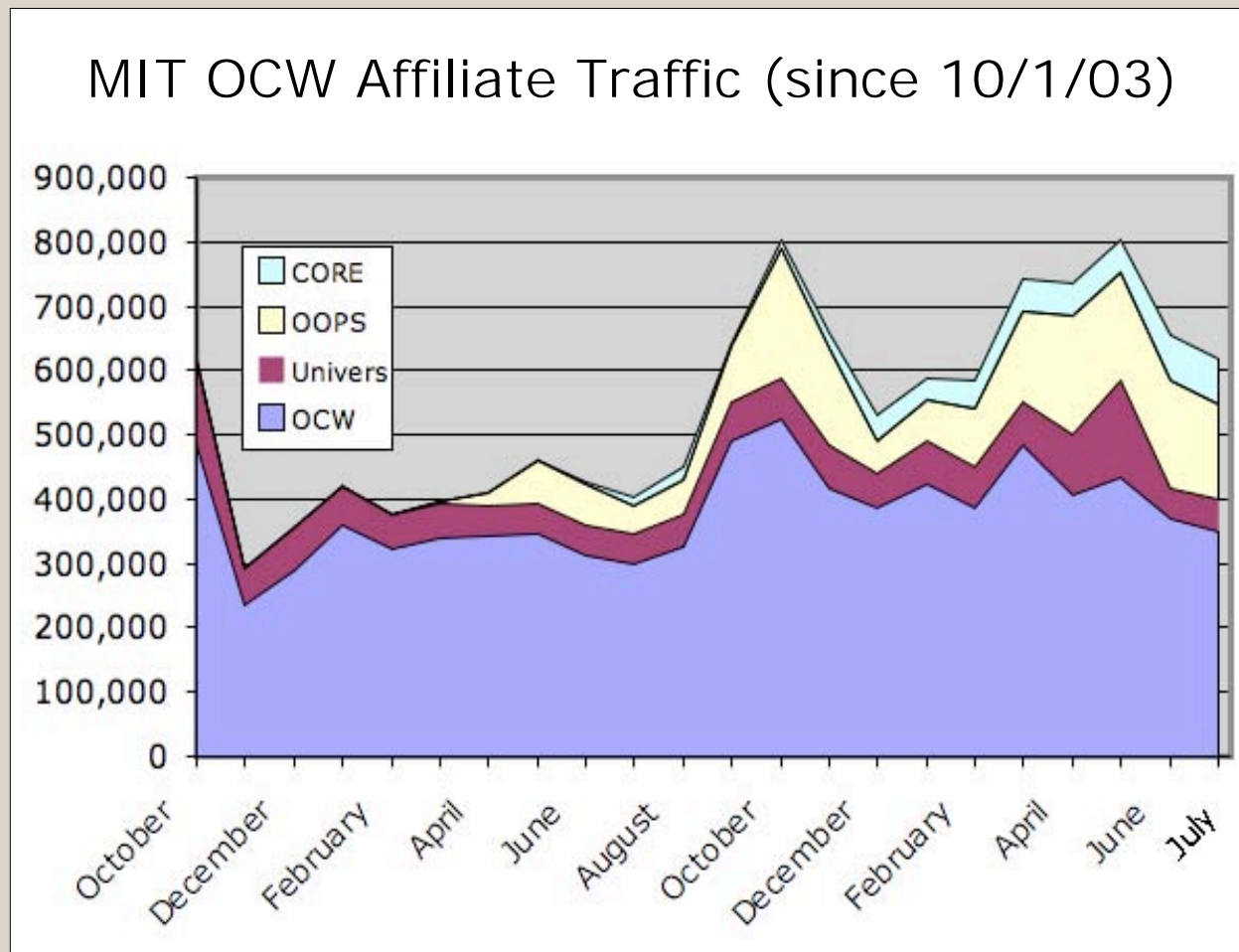
## Outcomes — Obtaining user feedback

- Feedback e-mail - over 6,800 e-mails in under two years, with replies provided to each
- Web metrics tracking - Over 8 million visits to the site since 10/03; 4 million visits to translations
- User intercept surveys - 1,220 users surveyed 10/03; 5,000 users surveyed in 10/04
- Extensive evaluation report available at:  
<http://ocw.mit.edu/OcwWeb/Global/AboutOCW/evaluation.htm>

## Outcomes — Cost-effectiveness

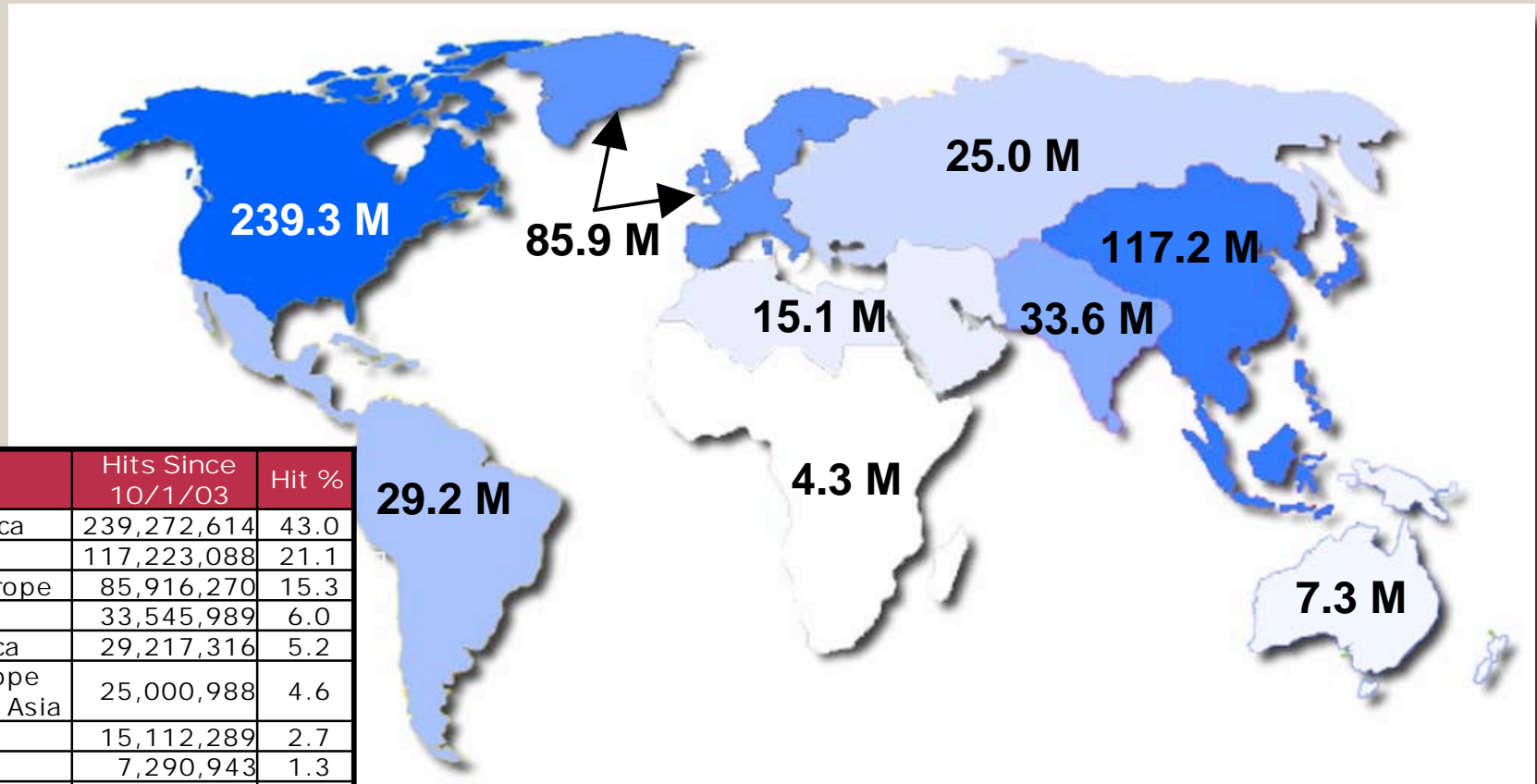
- Costs are closely tracked and benchmarked against prior performance
- MIT OCW remains a proof-of-concept unique in scope, scale and pace; other emerging OpenCourseWares are developing less costly models
- External benefits are primary measure, both for funders and for MIT; internal benefits are crucial to sustainability

# Outcomes — Access



# Outcomes — Access

Traffic by Geographic Region (in Web hits, since 10/1/03)



Region	Hits Since 10/1/03	Hit %
North America	239,272,614	43.0
East Asia	117,223,088	21.1
Western Europe	85,916,270	15.3
South Asia	33,545,989	6.0
Latin America	29,217,316	5.2
Eastern Europe and Central Asia	25,000,988	4.6
MENA	15,112,289	2.7
Pacific	7,290,943	1.3
Sub-Saharan Africa	4,262,452	0.8
TOTAL HITS	556,841,949	

## Outcomes – Use

Use Scenario		% of Use
Educators	Planning, developing or teaching a course	36%
	Enhancing personal knowledge	22%
	Planning curriculum	10%
	Other	32%
Students	Complementing a subject currently taking	43%
	Enhancing personal knowledge	40%
	Planning future course of study	10%
	Other	7%
Self-learners	Enhancing personal knowledge	81%
	Learning subject matter—course not available for study	9%
	Planning future course of study	8%
	Other	2%

# Outcomes — Impact

Statement	Strongly Agree/ Agree	Neutral	Disagree/ Strongly Disagree
Helped me be more productive and effective	81.1%	18.3%	0.5%
Helped me learn	88.0%	11.6%	0.5%
Improved my courses using OCW (Educators)	84.5%	12.9%	2.7%
Increased my motivation and interest in learning	80.2%	19.0%	0.8%
I would recommend OCW to others	92.5%	7.1%	0.5%

*Source: 2004 Intercept Survey*

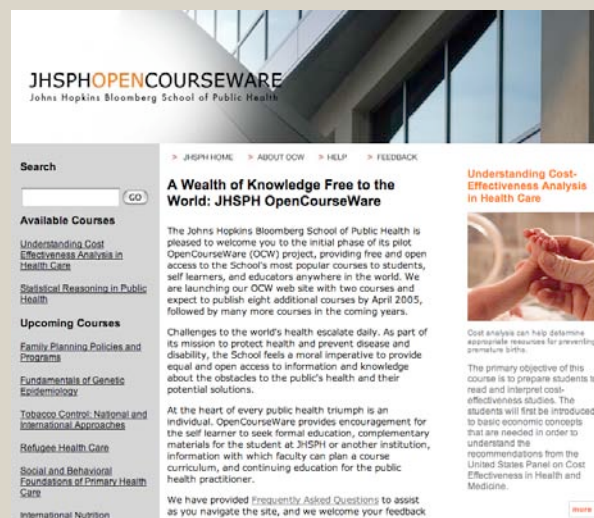
# Outcomes — Spread of the concept

## ➤ Facilitate the implementation of other “opencoursewares”

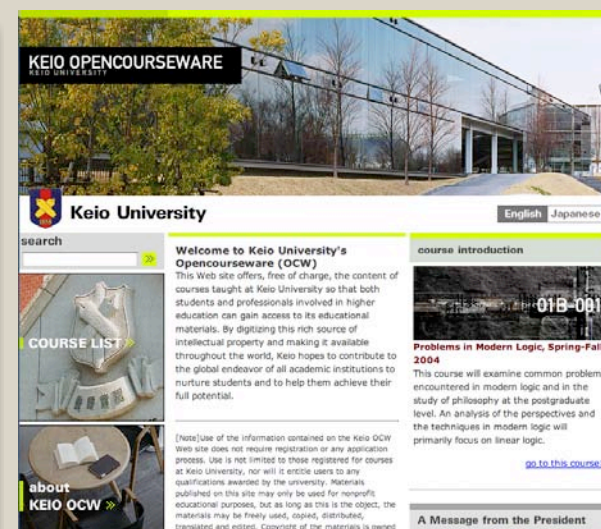
- 12 live OCW sites
- 40 OCW projects underway
- 20 other OCW projects under consideration



Fulbright Economics Teaching Program in Vietnam



Johns Hopkins School of Public Health



Keio University in Japan

# Outcomes — Emerging “OCWs”

## United States

- Harvard Law School  
Berkman Center
- Johns Hopkins  
School of Public Health
- Tufts University
- University of Michigan  
School of Information
- University of Notre Dame
- Utah State University

## China (CORE)

- Peking University
- Tsinghua University
- Beijing Jiaotong University
- Dalian Univ. of Technology
- Central South University
- Xi'an Jiaotong University
- Central Radio & TV Univ.
- Sichuan University
- Zhejiang University
- Beijing Normal University

## France

- Telecom Paris
- Ecole Polytechnique
- Techniques Avancées
- Ponts et Chaussées
- Ecole des Mines de Paris
- Chimie Paris
- Physique-Chimie
- Agronomie
- Statistiques et Economie
- Eaux et Forêts
- Arts et Métiers

## Japan

- Keio University
- Kyoto University
- Osaka University
- Tokyo Institute of  
Technology
- University of Tokyo
- Waseda University

## Spain

- U. Politécnica de Madrid
- U. Santiago de Compostela
- U. Barcelona
- U. Islas Baleares
- U. Rovira i Virgili
- U. Jaume I
- U. Murcia
- U. Alicante
- U. Politécnica de Valencia
- U. Autónoma de Madrid
- U. Complutense de Madrid
- U. Sevilla

## Portugal

- U. Aveiro

## Vietnam

- FETP OpenCourseWare

## India

- Rai University
- Somaiya Vidyavihar



# Conclusions

# Conclusions — Strengths and weaknesses

## > Strengths

- > World-wide impact on teaching and learning
- > Global adoption of opencourseware sharing model
- > Emerging internal benefits to institution

## > Weaknesses

- > IP limits richness of content
- > Access limited in developing regions
- > MIT's scope and scale beyond capacity of some institutions

# Conclusions — Opportunities and threats

## > Opportunities

- > Economies of scale among open courseware projects
- > Collaboration with other open content projects

## > Threats

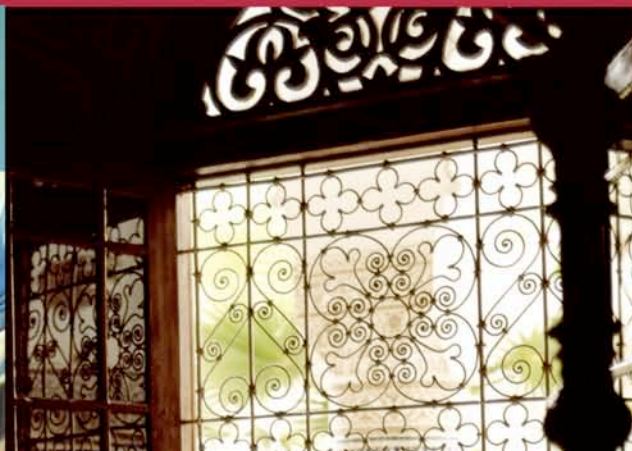
- > Sustainability—resources and passion



Thank You! Scarson@mit.edu

Visit MIT OpenCourseWare online at  
<http://ocw.mit.edu>

Visit the "Opencourseware How To" site on the Web at  
<http://ocw.mit.edu/OcwWeb/HowTo/index.htm>



# Unique Value — Educator case study

James, affiliate instructor at the University of Idaho

- Adopted both course material and site structure of an MIT Sloan Course
- Added his own material and modified the MIT OCW site
- *"I will probably differ in that I will introduce the concept of Value Engineering and I have a lecture prepared on FMEA. I haven't seen these topics discussed in the MIT curriculum. But... OpenCourseWare gives me a fast start on the design of the course."*

MITOPEN COURSEWARE  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

University of Idaho

OCW HOME | COURSE LIST | ABOUT OCW | HELP | FEEDBACK

MIT OpenCourseWare > Sloan School of Management > PTTE 404/504 Product Design and Development

University of Idaho - Idaho Falls, ID  
PTTE 404/504 - Product Design and Development, Fall 2004

Search  
 All OpenCourseWare  
 This Course  
GO

Advanced search

Course Home

Syllabus

Calendar

Readings

Lecture Notes

Projects

Marker refill station - a project example from a previous class. (Photo courtesy of instructors of MIT OpenCourseWare Product Design and Development.)

**Staff**

**MIT Instructors:**  
Prof. Steven Eppinger  
Dr. Daniel Whitney  
Mr. Matt Kressy of Rhode Island School of Design  
Prof. Thomas Roemer  
Dr. Clifford Whitcomb  
Dr. Ali Yassine

**U of I Instructor:**  
James R. Wixson, CVS, CMfgE  
e-mail: [wix@srv.net](mailto:wix@srv.net) Phone: (208) 526-7784

**U of I Course Meeting Times**  
Tues. evenings  
7:00 - 9:40 PM UPHEC 305

**Level**  
Joint Listed PTTE 404/504 Undergraduate/Graduate

**Note:** U of I course content is displayed in magenta colored text.

Feedback  
Send [feedback](#) about this course.

**Highlights of this Course**  
"Product Design & Development" is a project-based course, which challenges students to design a new product and to produce a prototype version of it. This OCW site includes Lecture Notes in PDF format, [Project Examples and Guidelines for Projects](#). The textbook, *Product Design and Development*, was co-written by Professor Steven Eppinger (see <http://www.ulrich-eppinger.net/> for more information). We are also using Value Engineering: A Plan for Invention by Richard Park.

**Course Description**  
Covers modern tools and methods for product design and development. The cornerstone is a project in which teams of management, engineering, and industrial design students conceive, design, and prototype a physical product. Class sessions are conducted in workshop mode and employ cases and hands-on exercises to reinforce the key ideas. Topics include identifying customer needs, concept generation, product architecture, industrial design, Quality Function Deployment, Value Engineering, TRIZ (The Theory of Invention), Failure Modes and Effects Analysis and design-for-manufacturing.

MIT

University of Idaho

## Unique Value — Institute-level case study

- › Department of Computer Science at the University of Ghana in Legon
- › Faculty and department head, Professor Jacob Aryeetey, are using MIT OCW materials to update curriculum and accelerate the Ministry of Education's accreditation process



*"OCW reflects current trends and thus provides an immediate bridge of the digital divide that would otherwise take five years to cross... Other sources for curriculum review include so much hassle and bureaucracy that by the time the review is made the material is easily years old... OCW bypasses all of that by connecting everyone in real-time to MIT's most up-to-date material."*

— Professor Jacob Aryeetey,  
head of Computer Science Dept.

## Unique Value — Self-learner case study

Samuel, a software developer in Legon, Ghana

- Used the site to improve knowledge of network security and TCP/IP while developing software for banks
- Working on a Twi (the native Ghana language) version of Linux at <http://www.twinux.org>
- Has printed 2 reams, about 1,000 sheets, of paper with MIT-OCW content (so far)

**TWINUX**  
Ghana's open source domain



## Outcomes — Benefits for MIT

### > Institute-level benefits

- Advances MIT's institutional mission
- Enhances MIT's image around the world
- Generates community pride (alumni)
- Stimulates collaboration among faculty

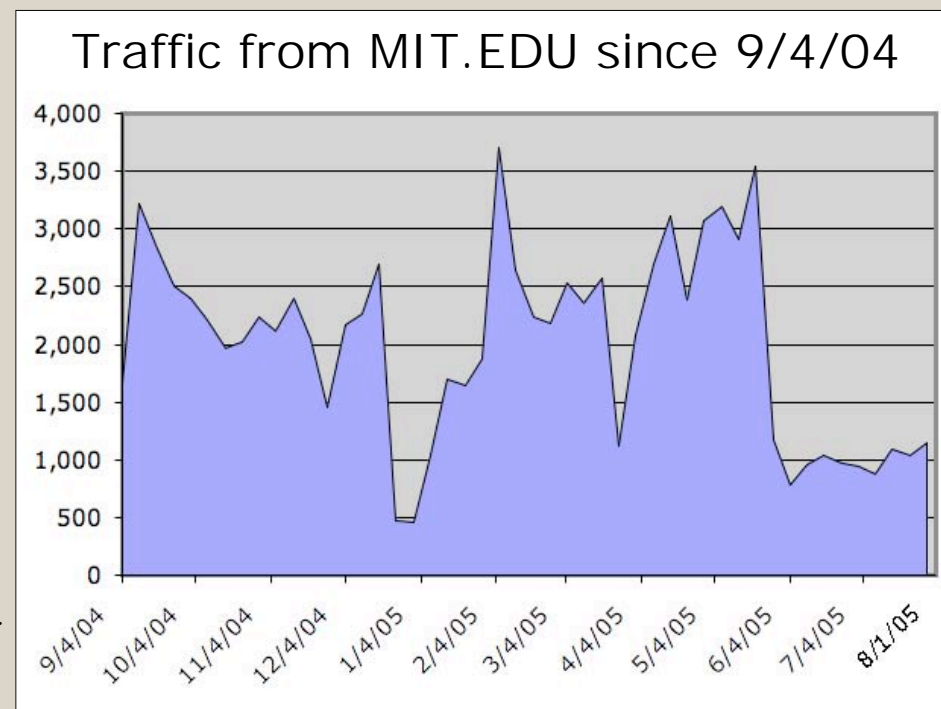
### > Department-level benefits

- Showcases individual departments and their curricula
- Enhances faculty and student recruitment efforts
- Accelerates adoption of the Web

## Outcomes — MIT student use

### Students

- More than 140,000 visits from MIT.EDU since 11/1/03
- 68% of MIT students use the site (excludes freshmen)
- 95% report positive impact on student experience
- 53% of freshman are aware of the site
- 16% of freshmen (who knew of the site) say it influenced their decision to come to MIT



## Outcomes — MIT student use

"... OCW was one of the main reasons why I decided to come [to MIT] ... it was simply no risk at all: I knew the contents of the courses, had a look to the materials, and a good understanding of what I was going to get ... that's the reason why I ended [up] here, and not in Stanford or Columbia."  
— *MIT graduate student*

"By putting all of the course material online, MIT has shown that the information and problems sets themselves do not constitute an MIT education, and for a student here, that is tremendously enlightening."  
— *MIT undergraduate student*

"I think it's good to get this information out there for... prospective students, current students, and people who perhaps don't have ready access to a top-notch education — and I think this altruism is what makes OCW worthwhile and meaningful to me."  
— *MIT undergraduate student*

## Outcomes — MIT student use

“I do use OpenCourseWare on an at least a weekly basis. This has helped me to understand subject matter better. Furthermore, I’m spending the year abroad on the CMI exchange, and OCW allows me to consult notes and problem sets from classes I’ve previously taken without bringing them all with me.”  
— *MIT undergraduate student*

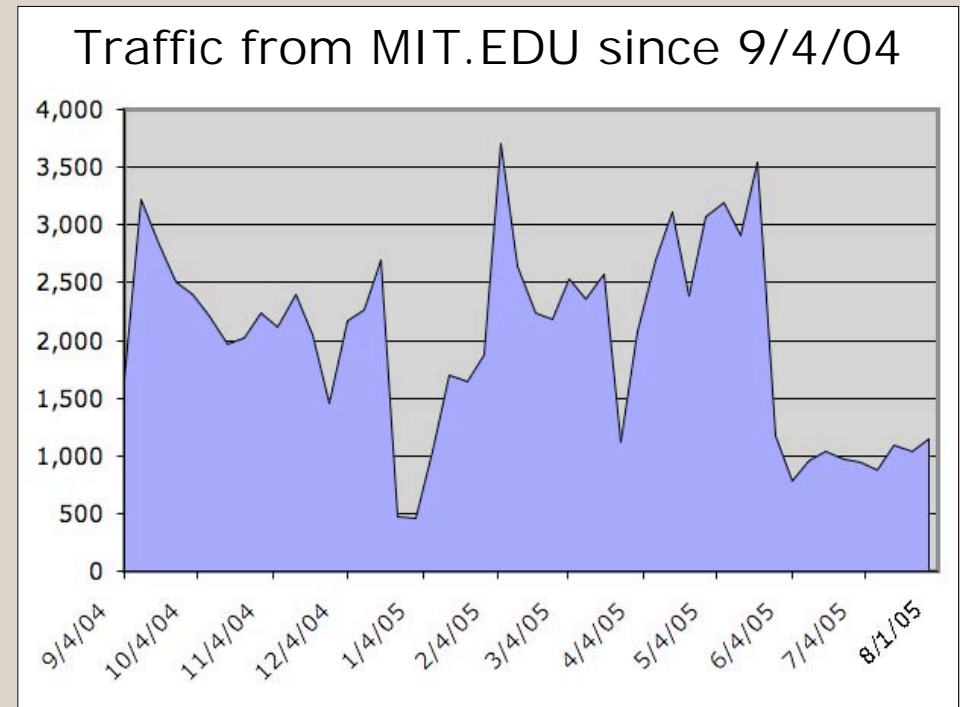
“Being able to access the course material has dramatically helped my research. There is not enough time in a graduate career to take all of the courses one needs to... Also, I’ve found that it makes each individual course better also. It forces the instructors and students to carefully document their work so that it can be published.”  
— *MIT graduate student*

“It means a lot to me to be associated with a university that treats knowledge as something to be shared with the world. I take great pride in this fact when speaking with friends, colleagues and family about the Institute. It has already allowed me to think about what kind of academic instructor I would like to be... just surveying what a well-prepared course look like was incredibly important.”  
— *MIT graduate student*

## Outcomes — MIT faculty use

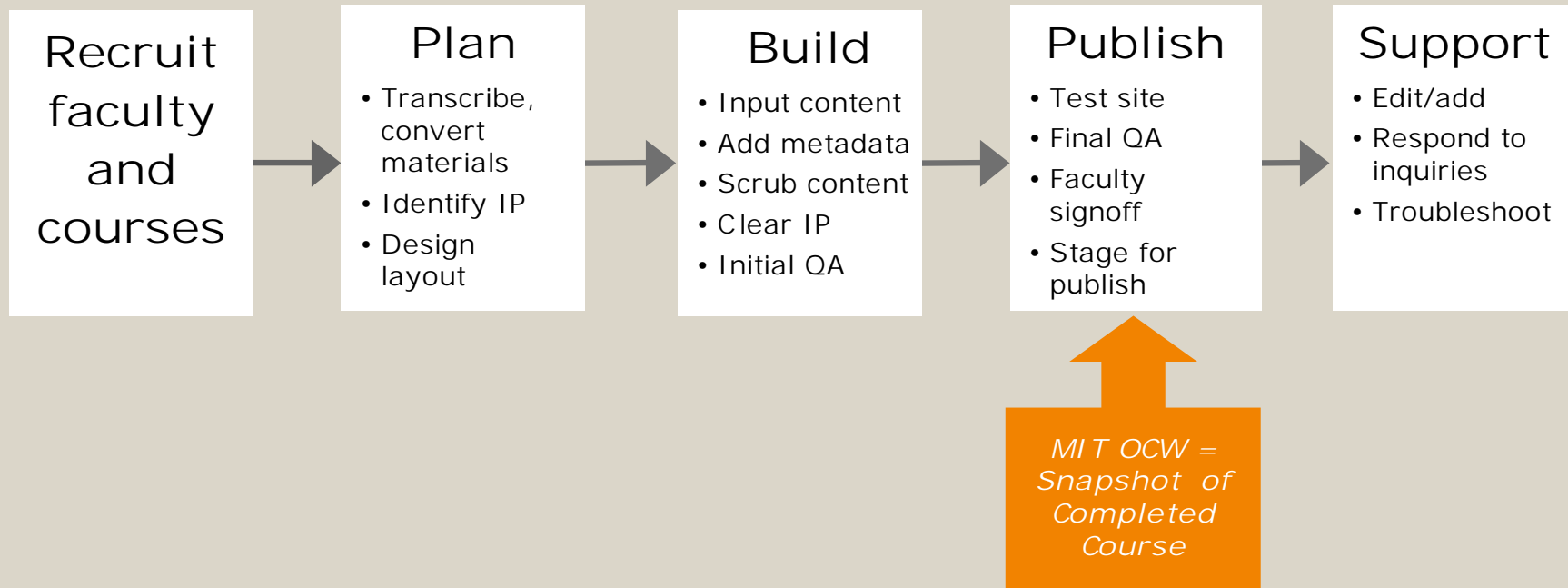
### Faculty

- 1 in 5 courses on OCW (175) had no prior Web site
- More than 50 subjects transcribed lecture notes; more than 2,500 open images
- 32% of MIT faculty report using the site for teaching, advising, research



# Implementation — Publication process

Managing a course through the MIT OCW process



# Implementation — Technology

