Carnegie Mellon University

Building the library of the future

18 November 2015

Keith Webster
Dean of University Libraries
Director of Emerging and Integrative Media Initiatives

@cmkeithw

TROPUS
RATIO
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HIEROGRA

What is happening in the world is bypassing university libraries

Peter Murray-Rust
The scientist's view
JISC Libraries of the future debate, April 2009

ultrad.com.br

TODAY's WORLD

BORDERS
BOOKS • MUSIC • MOVIES • CAFE

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CHAPTER ONE
A Secret Origin Story
Eisman entered finance about the time I exited it. He'd grown up in New York City, gone to yeshiva schools, graduated from the University of Pennsylvania magna cum laude, and then with honors from Harvard Law School. In 1991 he was a thirty-year-old corporate lawyer wondering why he ever thought he'd enjoy being a lawyer. "I hated it," he says. "I hated being a lawyer. My parents worked as brokers at Oppenheimer securities. They managed to finagle me a job. It's not pretty but that's what happened."
Oppenheimer was among the last of the old-fashioned Wall Street partnerships and survived on the scraps left behind by Goldman Sachs and Morgan Stanley. It felt less like a corporation than a family business. Lillian and Elliot Eisman had been giving financial advice to individual investors on behalf of Oppenheimer since the early 1960s. (Lillian had created their brokerage business inside of
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EVERYTHING
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EVERYTHING
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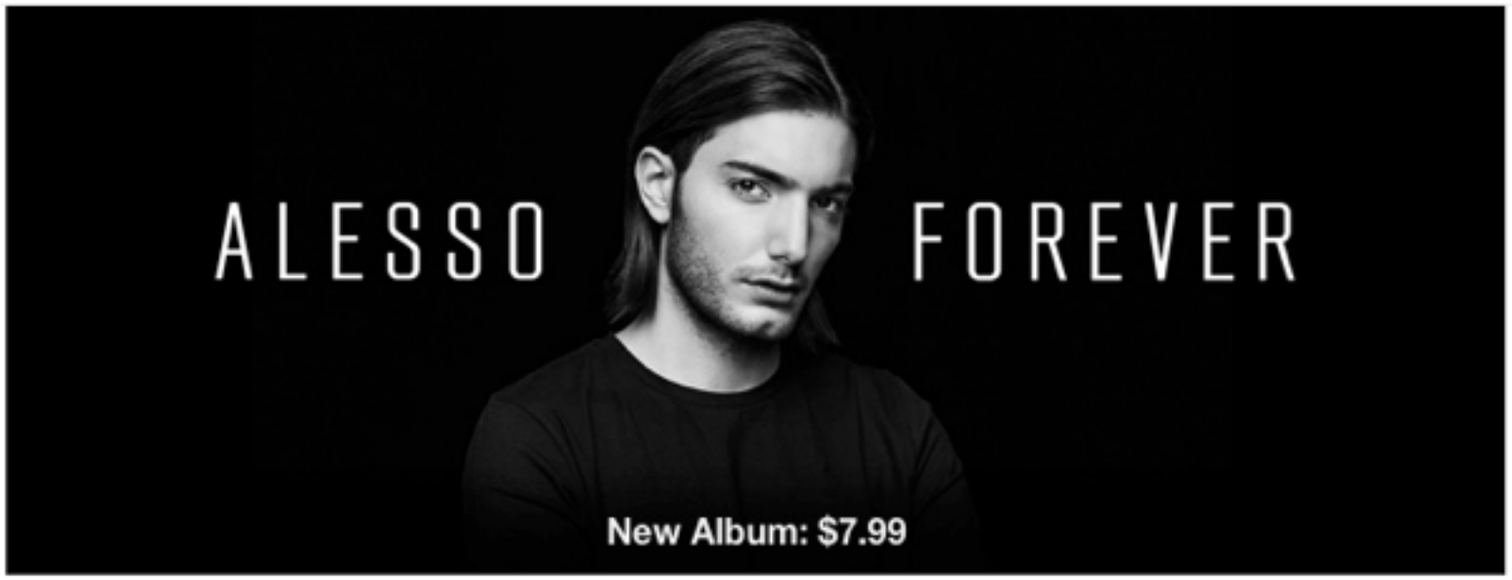
My Music Playlists Match Radio iTunes Store $13.03



New Music

New Music | Recent Releases

See All >

Surf
Donnie Trumpet & The...

Touch Down 2 Cause Hell
Boosie Badazz

Out of the Wasteland (Bonus Track Version)
Lifehouse

Forever
Alesso

Radius
Allen Stone

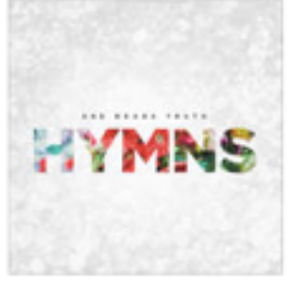
Sylva
Snarky Puppy & Metr...

AT.LONG.LAST.A...
A$AP Rocky

Empires
Hillsong UNITED

The Growing Process
Dizzy Wright

Outlaw In Me
The Lacs



Hymns - EP
She Reads Truth

Old Souls
Make Them Suffer

Music
All Genres

MUSIC QUICK LINKS

Redeem
Account
Send iTunes Gifts
Support

iTunes Radio
iTunes Match
Apple Pay

Purchased
Complete My Album
Recommended For You
My Wish List

New Artists
Indie

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1900

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EVERY DAY
371-5400

Sale

Store
Closing

Biological Abstracts 1933 v. 7 pt. 1

3600. **ARTHUS, MAURICE. Les anavenins. (Sixième mémoire.) Destruction de la toxicité des venins par le chlorure de chaux.** *Jour. Physiol. et Path. Gén.* 29(4): 705-716. 1931.—Paravenins or chlorinated venins were obtained by the action of $CaCl_2$ on venin solutions. By this method cobra venin was deprived of its paralytic, anticoagulant, and proteotoxic properties. Similar results were obtained with other venins. It is suggested that snake bites may be effectively antagonized by local application of $CaCl_2$, although general intravenous administration of the salt is without effect.—*W. R. Fearon.*

3601. **AULER, H. Zum Gewächsproblem. II.** *Zeitschr. Krebsforsch.* 35(1): 63-72. 1931.—As indicated in previous articles, the author is inclined to view the matter of predisposition, or perhaps more properly of liability to cancer, in terms of the Freund-Kaminer phenomenon. Inability of the blood of cancerous individuals to destroy cancer cells, as does the blood of normal individuals, rests, almost without doubt, on the presence in the former of shielding substances, in part produced by the tumor cells themselves. The author is convinced that in part these substances are produced independently of the tumor cells, and that their presence from extra-neoplastic sources constitutes an important element in susceptibility to tumor development. One way of counteracting these protective substances is by the action of occasional bacteria, which destroy them and so permit the normal defensive mechanism to act. A clinical case of apparent subsidence of a cancer in such circumstances is cited. A 2nd way is the re-establishment of normal humoral relations by interference with the physiological processes of cancerous individuals. A number of cases is cited, in which, following establishment of fecal fistulae, there was marked regression of cancerous lesions, lasting as long as there was a discharge of watery, bile-laden stools. Apparently the explanation of such phenomena lies in the fact, as discovered by Freund and Kaminer, that the tumor-shielding substances originate in part from disturbances of digestion.—*H. E. Eggers.*

3602. **BAYNE-JONES, S. Agglutination tests for the diagnosis of undulant fever.** *Amer. Jour. Publ. Health and Nation's Health* 20(12): 1313-1322. 1930.—Account of a cooperative investigation of undulant fever by 17 laboratories in New York State. An antigen composed of a suspension of killed *Brucella abortus* was used and a standard procedure was followed. Reports were made on agglutination tests with sera from 3,716 patients. Of these, 64 gave positive agglutination reactions with the *Br. abortus* antigen; all except 1 patient lived in the State. While the final diagnosis in some cases had not been made, this investigation seemed to indicate that all of these were cases of undulant fever. Agglutination reactions with dilutions less than 1:100 were obtained with 93 specimens of serum. With the possible exception of 2 old recovered cases of undulant fever, diagnosis of undulant fever was not made in these cases. Some degree of agglutination with *abortus* or *melitensis* antigens was obtained with 165 sera. False positives were given with sera containing hemoglobin. No other known false positives occurred among many specimens from patients with a great variety of diseases. Among the patients with positive sera, those between the ages of 15 and 39 yrs. were most numerous (53%). Males occurred in the series twice as often as females. Farming and occupations associated with farming and cattle-raising were most frequently associated with positive agglutinations for undulant fever. While drinking of raw milk and contact with cows in herds having infectious abortion could be established in nearly every case in which a positive agglutination reaction was found, there were some instances in which these factors could not be shown. Contact with swine was infrequent and unimportant. The discovery of cases of undulant fever was made through use of the agglutination test. The experience of this investigation, however, indicates that very few positives will be found from tests with the sera submitted for serological tests for syphilis in the ordinary course of medical practice. On the other hand, valuable and often decisive information will be obtained from routine agglutination tests with sera from patients suffering from obscure and periodical fevers, arthritis, intestinal and abdominal disorders, and with suspected tuberculosis and typhoid fever.—*S. Bayne-Jones.*

3603. **BICKERT, FRIEDRICH-WILHELM. Untersuchungen über den Einfluss gewerblicher Gifte auf die Immunkörperbildung. I. Blei.** *Arch. Hyg. u. Bakt.* 106(5): 271-298. 1931.—Workers in metal industries usually recover from wounds faster than workers in wood industries. This led to the study of antibody production in 230 rabbits treated orally and subcutaneously with various Pb compounds. Formation of hemolysin, agglutinin, and diphtheria antitoxin in treated rabbits was retarded, but the maximum titers exceeded those of the controls. A stimulating effect of Pb is indicated. Precipitin formation was delayed and its titer fell below that of controls.—*W. N. Berg.*

3604. **BOCCIA, DONATO. La reacción hemoclásica de d'Amato en la sífilis. [The hemoclastic reaction of d'Amato in syphilis.]** *Rev. Sud-Amer. Endocrin., Immunol. y Quimioter.* 12(10): 679-687. 1929.—The d'Amato hemoclastic reaction was found to be non-specific, for in 12 non-syphilitic persons there were 25% positive reactions and in 15 syphilitic, 6.5% negative.—*Zozaya.*

3605. **BRAHN, B., und F. SCHIFF. Zur Kenntnis des Shiga-Kruse-Bazillus und seines heterogenetischen Antigens.** *Deutsche Med. Wochenschr.* 56 (29): 1207-1209. 1930.—49 cultures of Shiga-Kruse bacilli were examined for presence of heterogenetic antigen for sheep erythrocytes: 44 gave an intense specific inhibition of hemolysis, showing that they contained the specific heterogenetic antigen; 5 gave negative results, as did 97 other bacterial cultures, including pathogenic and non-pathogenic bacteria and molds. Presence of this substance thus seems to be a specific characteristic of the Shiga-Kruse organism. 9 of the positive cultures gave reduction of Fehling's solution after hydrolysis with HCl; the 5 negative cultures gave no such reduction. There seem to be specific carbohydrate differences between positive and negative cultures. They also differ in that the negative ones show more spontaneous agglutination, agglutinate better with acids, and do not agglutinate with specific anti-Shiga-Kruse sera. Negative cultures are more or less similar to the "rough" forms. As such dissociation may take place in the body and as such inagglutinable cultures are liable to be overlooked in routine bacteriological examinations, they may be important factors in transmitting the disease.—*E. C. L. Miller.*

3606. **BURKY, EARL L., and ALAN C. WOODS. [Lens] extract, its preparation and clinical use.** *Arch. Ophthalmol.* 6(4): 548-553. 1931.—Reactions to lenticular extracts were of the food- or pollen-allergy type, appearing in those with lenticular disease; and of the dermal or tuberculin type, appearing most often in those with phaco-anaphylactic endophthalmitis. No positive reaction was obtained in 75 normal persons; 11 of 64 cataractous patients were positive after, and some before, operation (all but 1 more than 60 yrs. old).

3607. **CANNON, PAUL R., F. L. SULLIVAN, E. F. NECKERMANN. Conditions influencing the appearance of living bacteria from the blood stream.** *Jour. Exp. Med.* 55(1): 121-137. 2 pl. 1932.—Actively immunized and normal rabbits of approximately the same size were given simultaneous intravenous injections of equal quantities of living bacterial suspensions and at intervals cardiac blood was cultured to determine the comparative rates at which the bacteria disappeared from the blood stream. There was a distinctly accelerated rate of removal in the immune animals. The bacteria were removed principally in the liver and spleen, where there was a marked concentration within macrophages of the immune animals. There were evidences of distinct swelling of the bacteria within such organs as early as 2 min. after introduction into the immune animal.

Journal of Experimental Medicine

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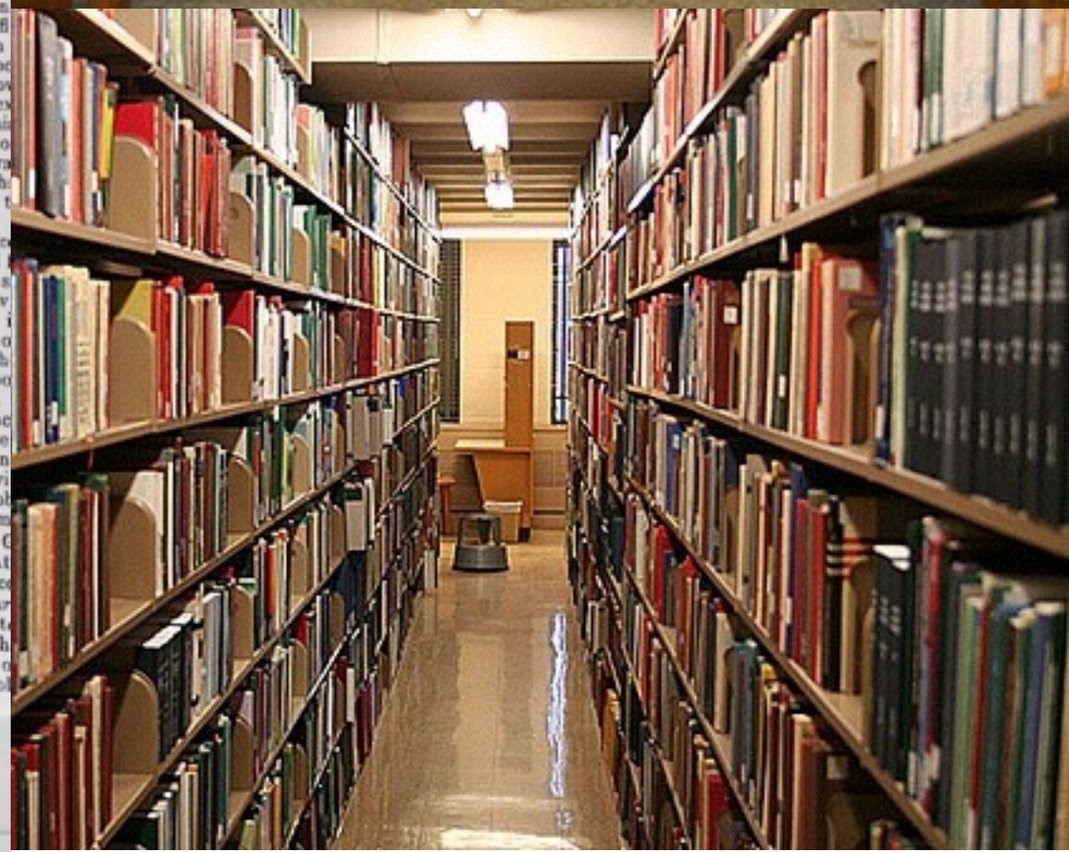


Google

Wikipedia

The Free Encyclopedia

W(h)ither the Library?

Local distribution 1990s

BORDERS

BLOCKBUSTER

hmv

Global digital 2000s

amazon.com

NETFLIX

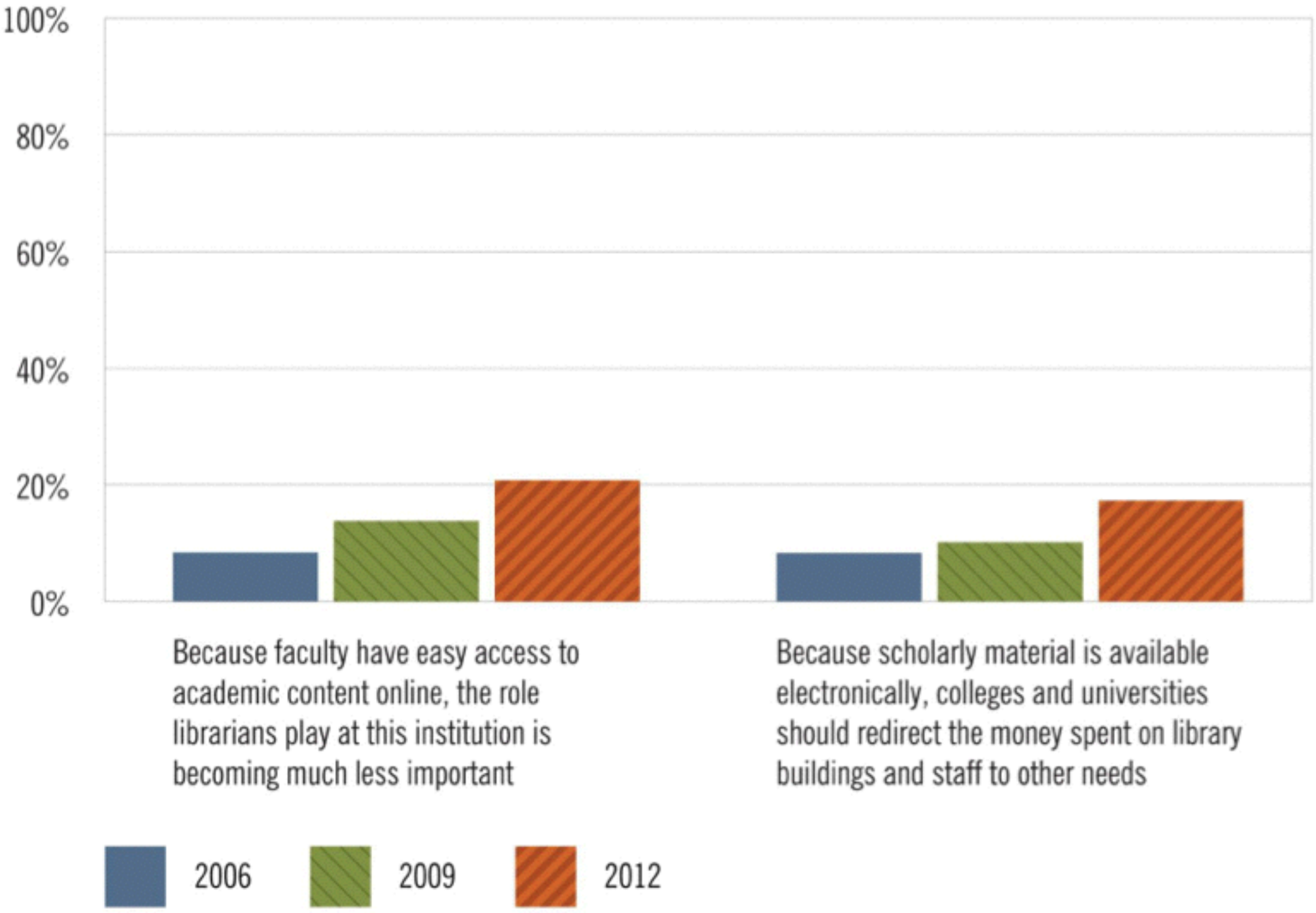
Google

Cloud-based models 2010s

Convergent media services

Adapted from Redefining the Academic Library (Advisory Board Co (2011)

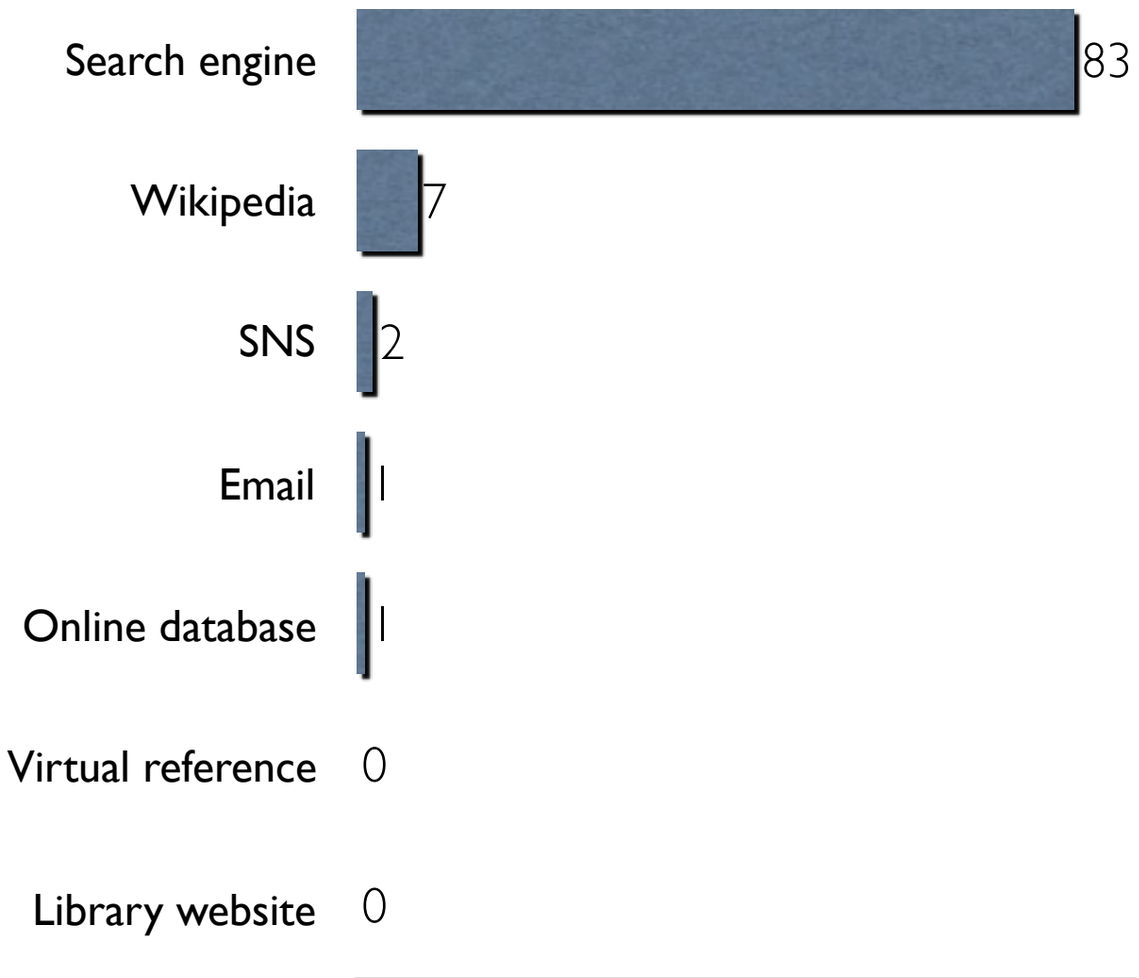
Percent of respondents agreeing strongly with each statement, over time.



Faculty study 2012: key insights for libraries and publishers, Ithaka

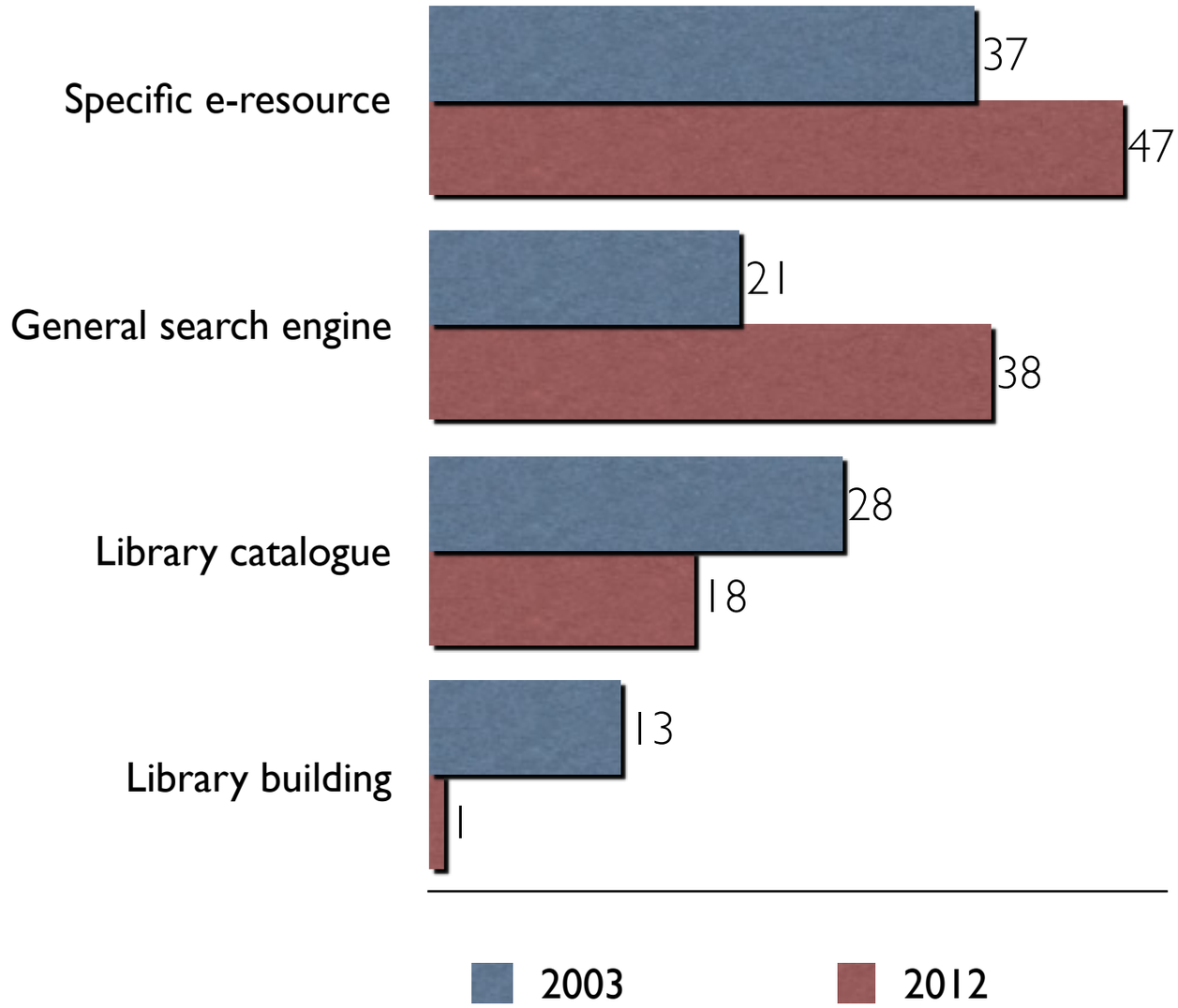
Where do library clients go?

Where do student start a search?



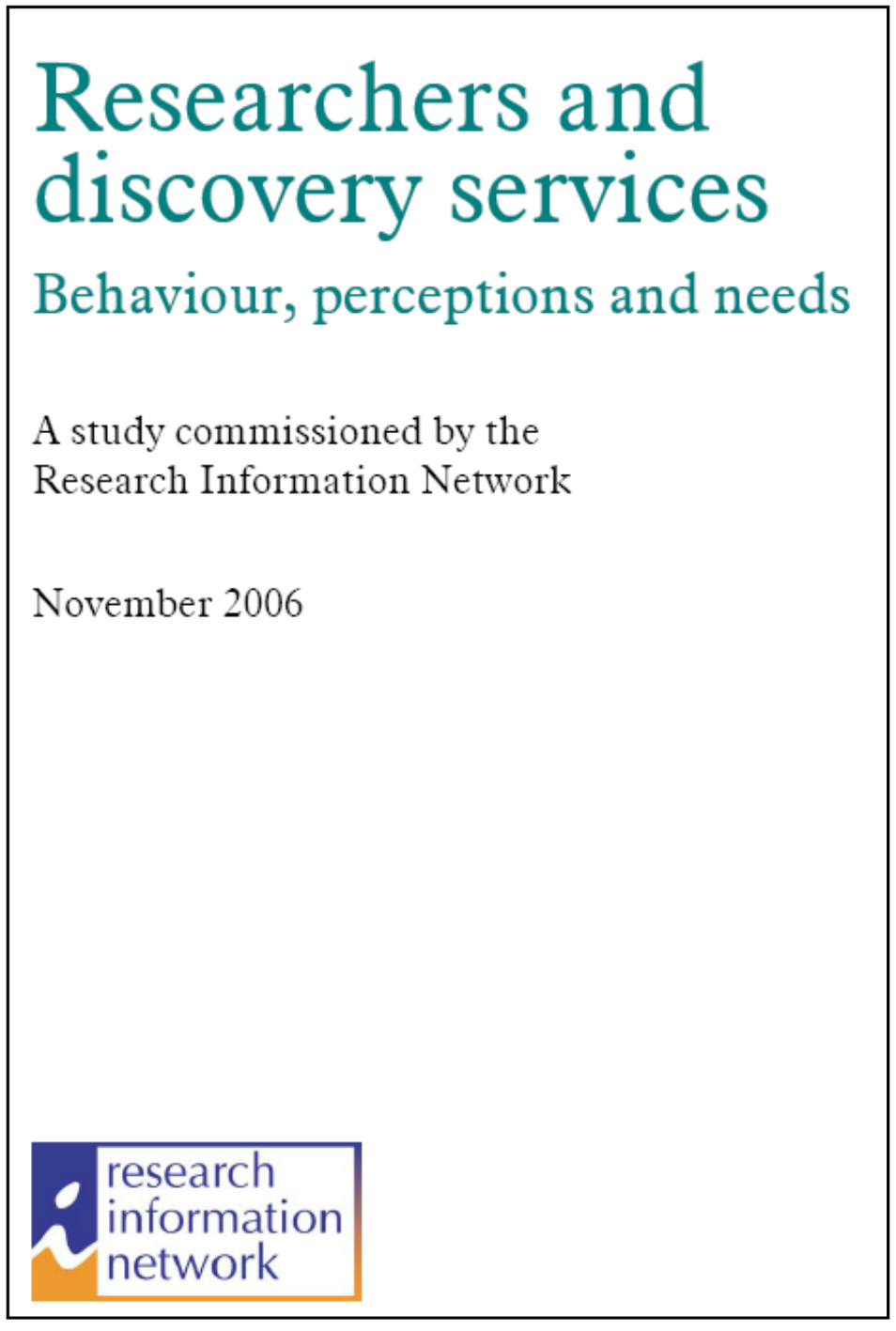
Perceptions of libraries 2010, OCLC

Where do academics begin research?



Faculty study 2012: key insights for libraries and publishers, Ithaka

Students crowd libraries - without using libraries

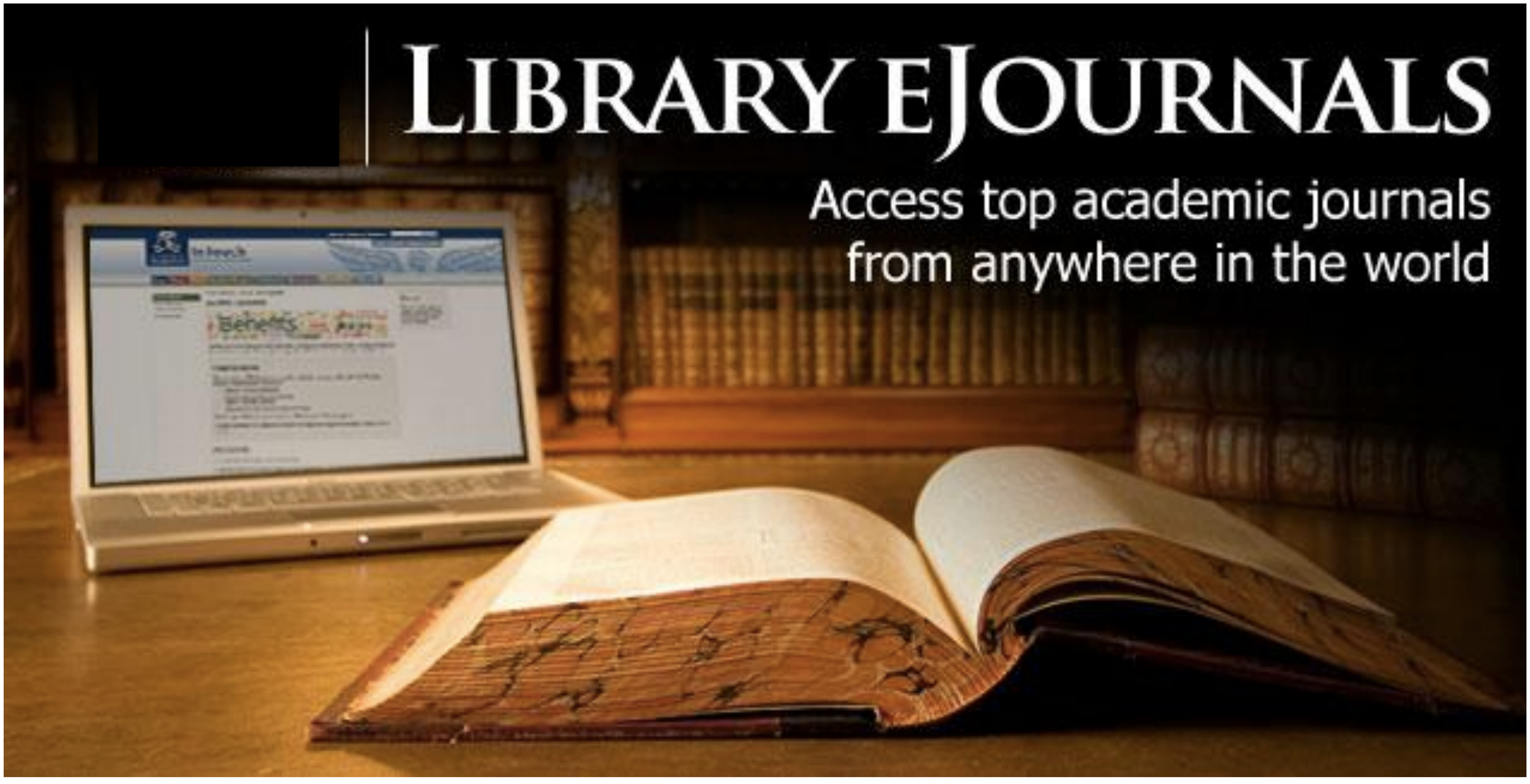


"…contact with librarians and information professionals is rare"

"…researchers are generally confident in their [self-taught] abilities.., librarians see them as..relatively unsophisticated"

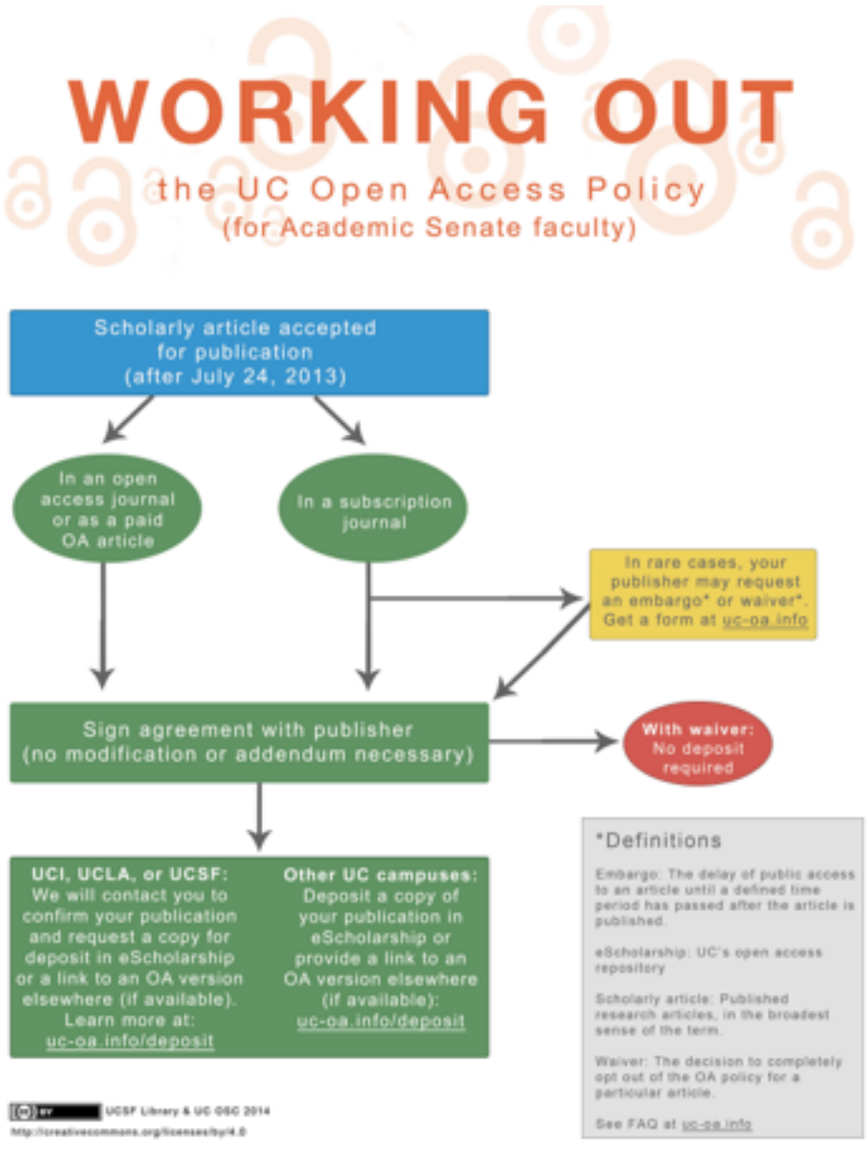
"…librarians see it as a problem that they are not reaching all researchers with formal training, whereas most researchers don't think they need it"

The success of e-journals has driven the researcher from the library

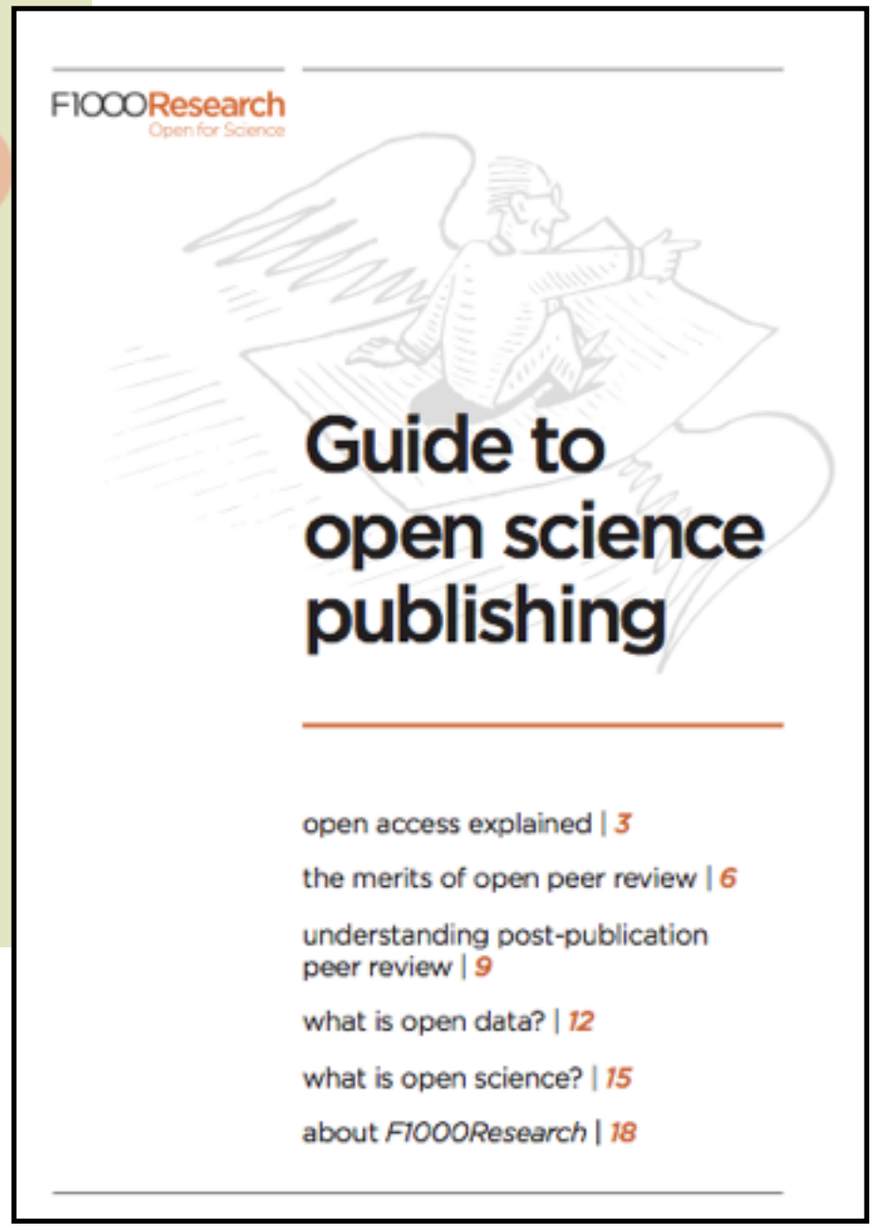


Open access is shaping policy agenda

COAPI Coalition of Open Access Policy Institutions



Open Science will change everything



Growth of web-based knowledge and research tools - often outside the institution

Library budgets under pressure

Challenges for academic libraries in difficult economic times

A guide for senior institutional managers and policy makers

March 2010

research information network

www.rin.ac.uk

In association with SCONUL

JISC

Assessing the Impact of the Economic Downturn

On university library and IT services

Briefing paper — September 2009

New research conducted by Ipsos MORI on behalf of JISC, SCONUL and UCISA shows that, although university library and Information Technology (IT) services may not yet be fully feeling the 'pinch' of the recession, given the likelihood of deeper financial cuts being imposed in 2010/2011, it is clear that they will be impacted unavoidably in a number of ways, such as reduced opening hours, decreased opportunity for developing staff skills, and limitations in procuring and providing resources. Such impacts, certainly for libraries, are likely to be compounded by the decreasing value of sterling in an international market for acquisitions, and the ever-changing demands of students and academic staff on their services.

The impact of any cuts is likely to have wider implications on institutions' delivery of their overall strategic aims, such as enhancing the student experience. However, it is not clear what impact this will have on these services and universities in the longer term, five or more years from now. Thus, a number of questions remain unanswered: for

Methodology

A total of 40 in-depth interviews were conducted in 36 Higher Education Institutions (HEIs) across the United Kingdom. All were conducted with head librarians and directors of IT services or their equivalent. In institutions where the two services are converged, a director of Information Services was interviewed.

	Library	IT	Converged	Total
1994 Group	3	3		6
GuildHE	3	1	2	6
Million+	2	1	3	6
Russell Group	5	4		9
Unclassified	6	3	4	13
Total	19	12	9	40

Table 1: Number of interviews achieved

ASSOCIATION OF RESEARCH LIBRARIES

ARL Statement to Scholarly Publishers on the Global Economic Crisis

February 19, 2009

ACRL 2009 Strategic Thinking Guide for Academic Librarians in the New Economy

UCL

Charleston Conference 2009

ebrary

BAKER & TAYLOR

Libraries and the economic downturn

THE ECONOMIC DOWNTURN AND LIBRARIES

Survey findings

It seems to me that libraries will become more important during these days of cutbacks and efficiency/effectiveness measures, not less so

[Small high school library, USA]

CIBER
University College London, December 2009

A global survey of the world's libraries in challenging times

Paradox I

We love digital but we are still attached, at least emotionally and sentimentally, to print.

Paradox 2

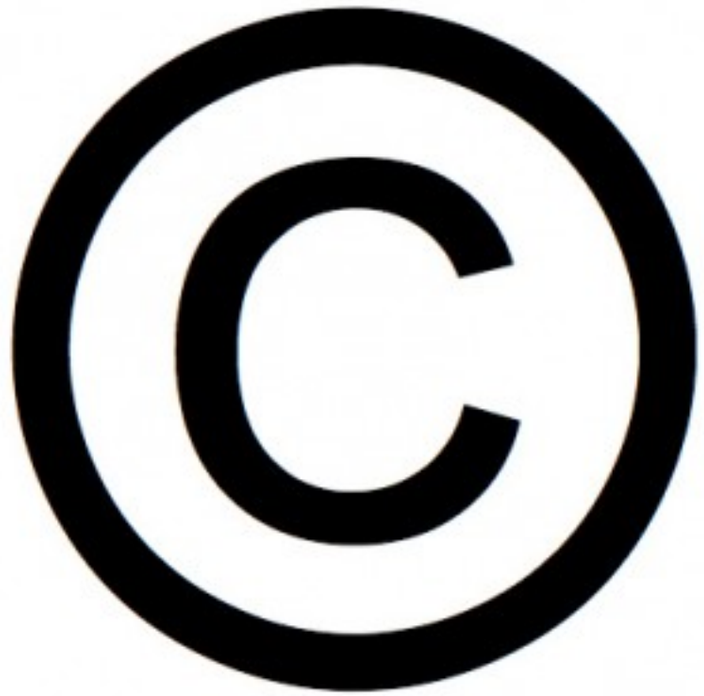
We are all web residents but there's nothing like face to face

Paradox 3

Today's students are technology savvy but not digitally literate

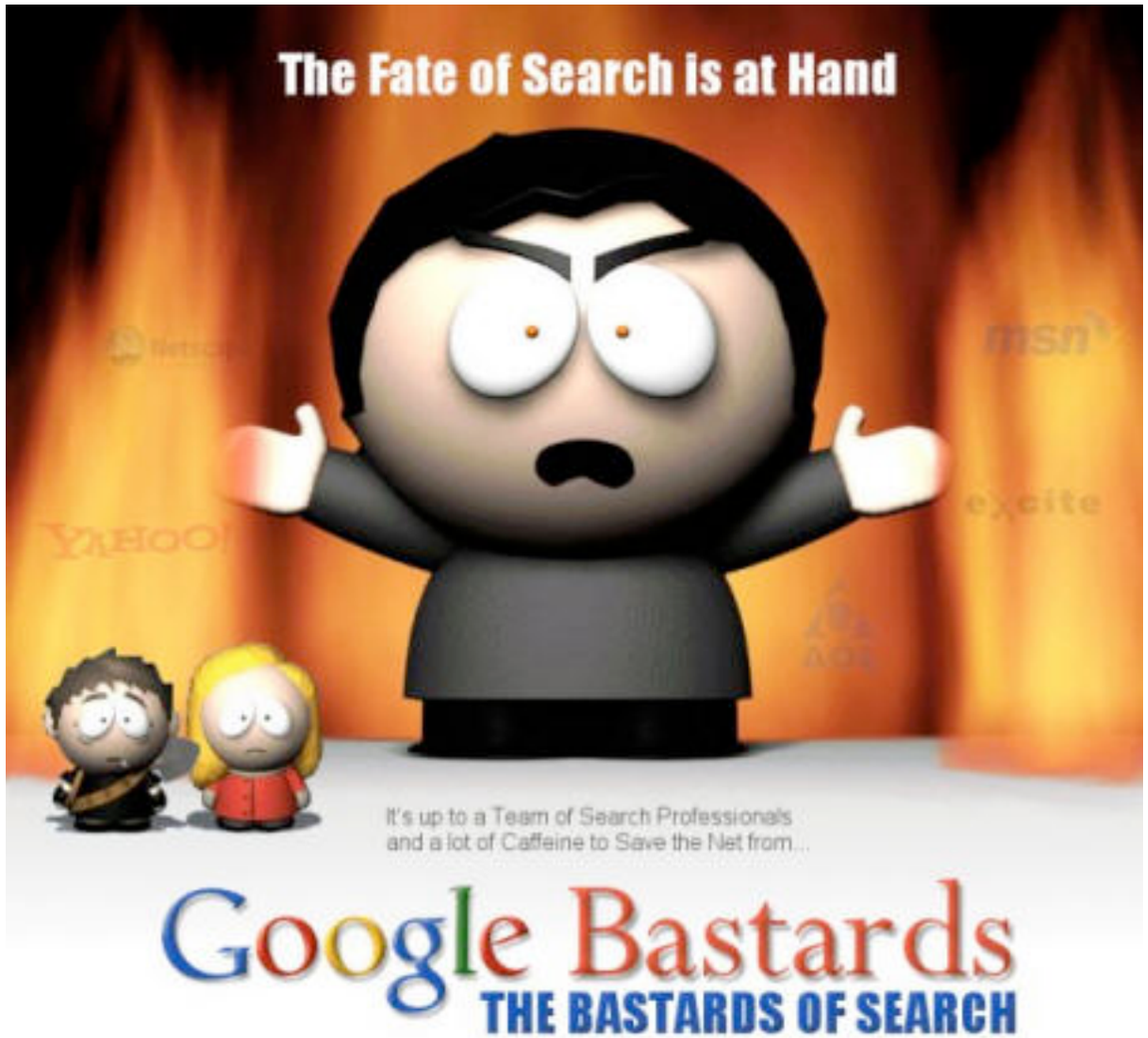
Paradox 4

We are all pursuing openness - open access, open source, open content. But what about my rights? How are they going to be protected? Who will pay for open?



Paradox 5

I ♥ Google™


The Fate of Search is at Hand
It's up to a Team of Search Professionals
and a lot of Caffeine to Save the Net from...
Google Bastards
THE BASTARDS OF SEARCH

The transformed library of the future will be at the core of teaching, learning and scholarship

- partnering with academic departments to create learning activities and environments

- helping to build an infrastructure for learning

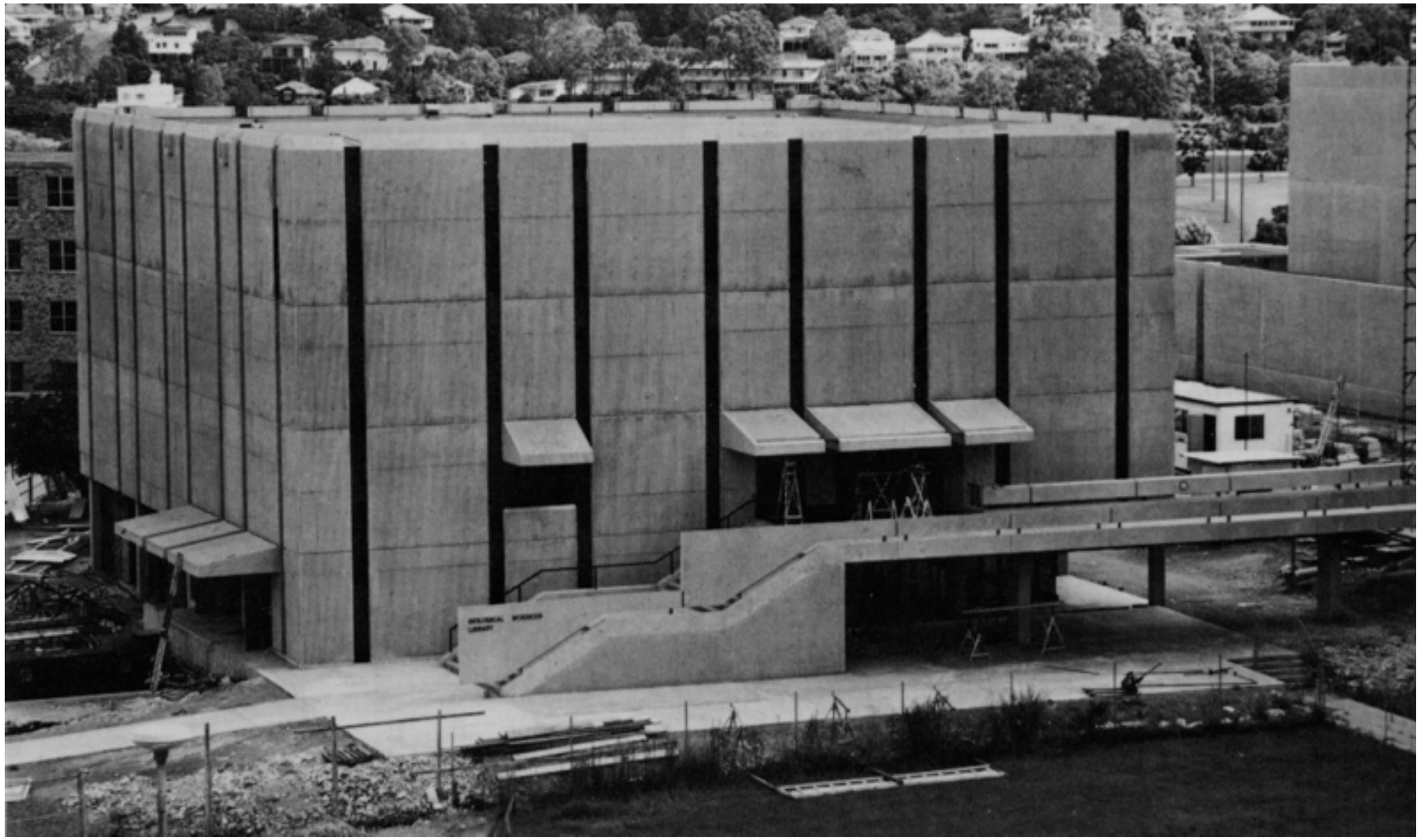
- creating an intellectual commons for the community

Guskin, Project on the Future of Higher Education

http://mystory.gale.com/watch/

WHERE HAVE WE COME FROM?

Collection-centric - 1st generation



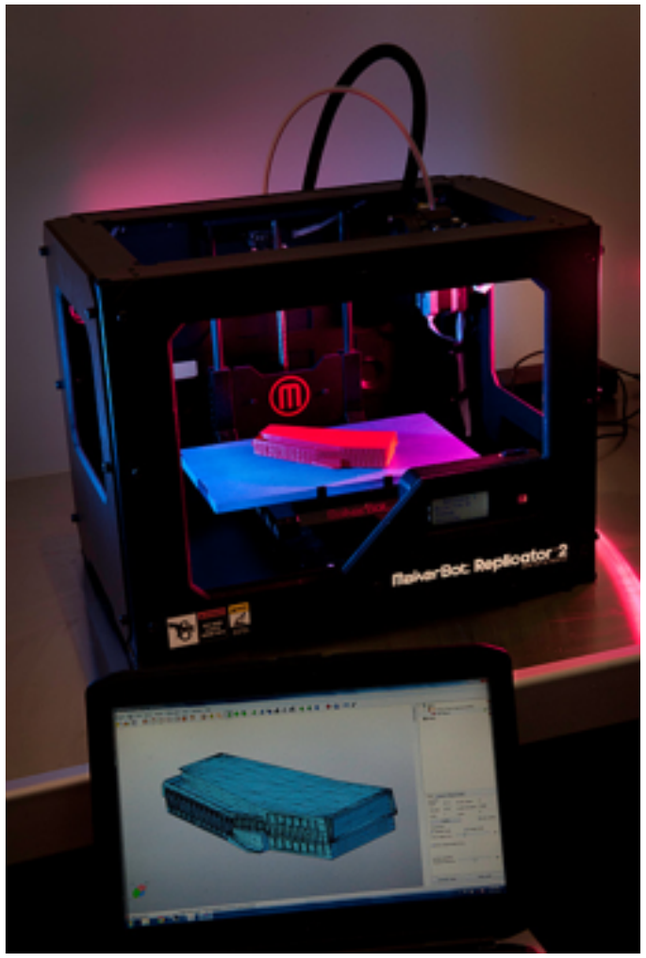
Client-focused - 2nd generation

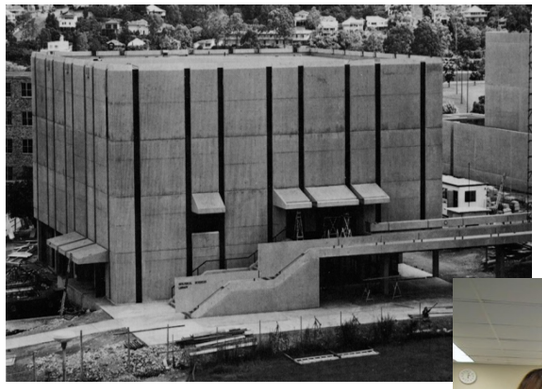
Experience-centered - 3rd generation

Connected Learning Experiences - 4th generation

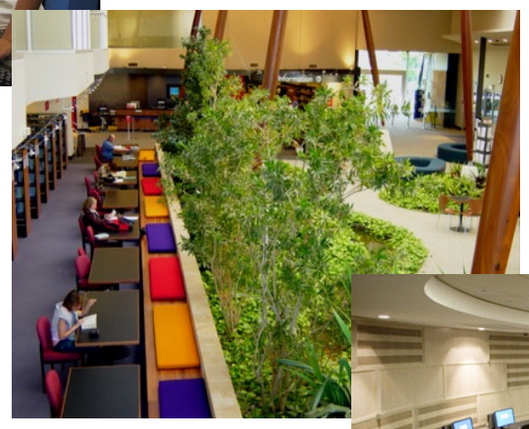
Collaborative knowledge, media and fabrication facilities - 5th generation

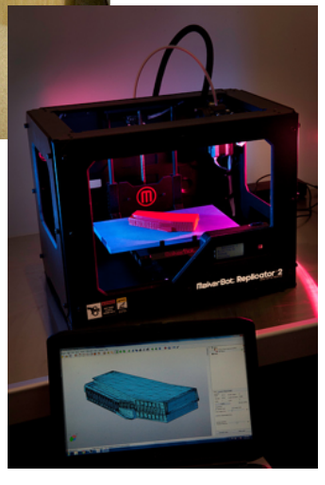
Top and bottom right photos by Kevin Hanegan, Bottom left photo courtesy of Detroit Public Library

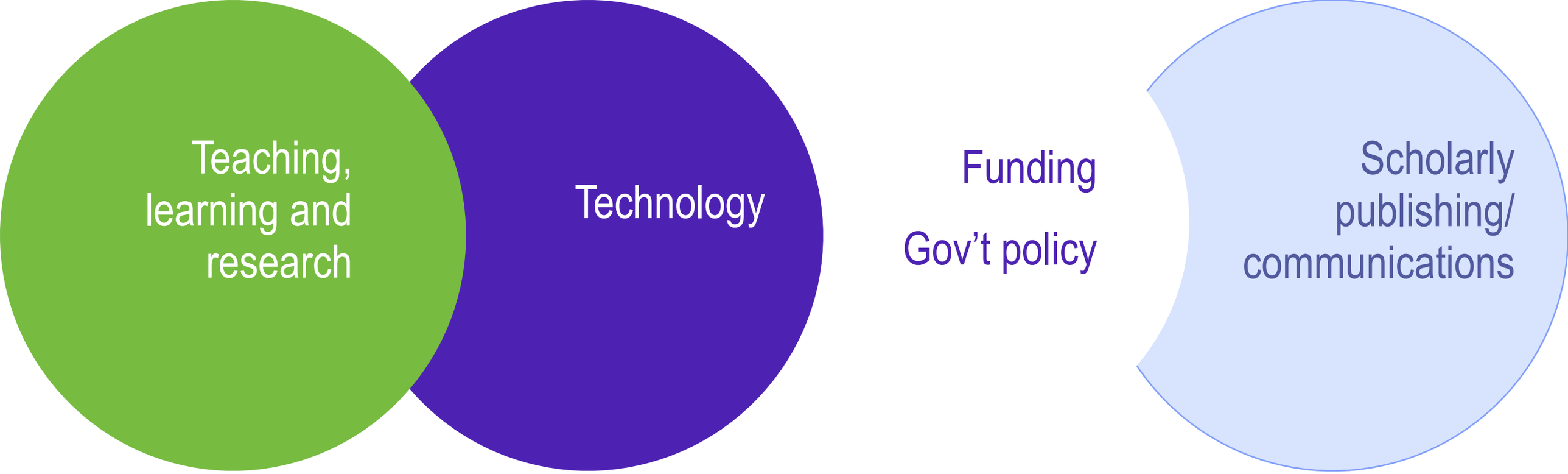




Architecture and Music Library




MakerBot Replicator 2



LIBRARY

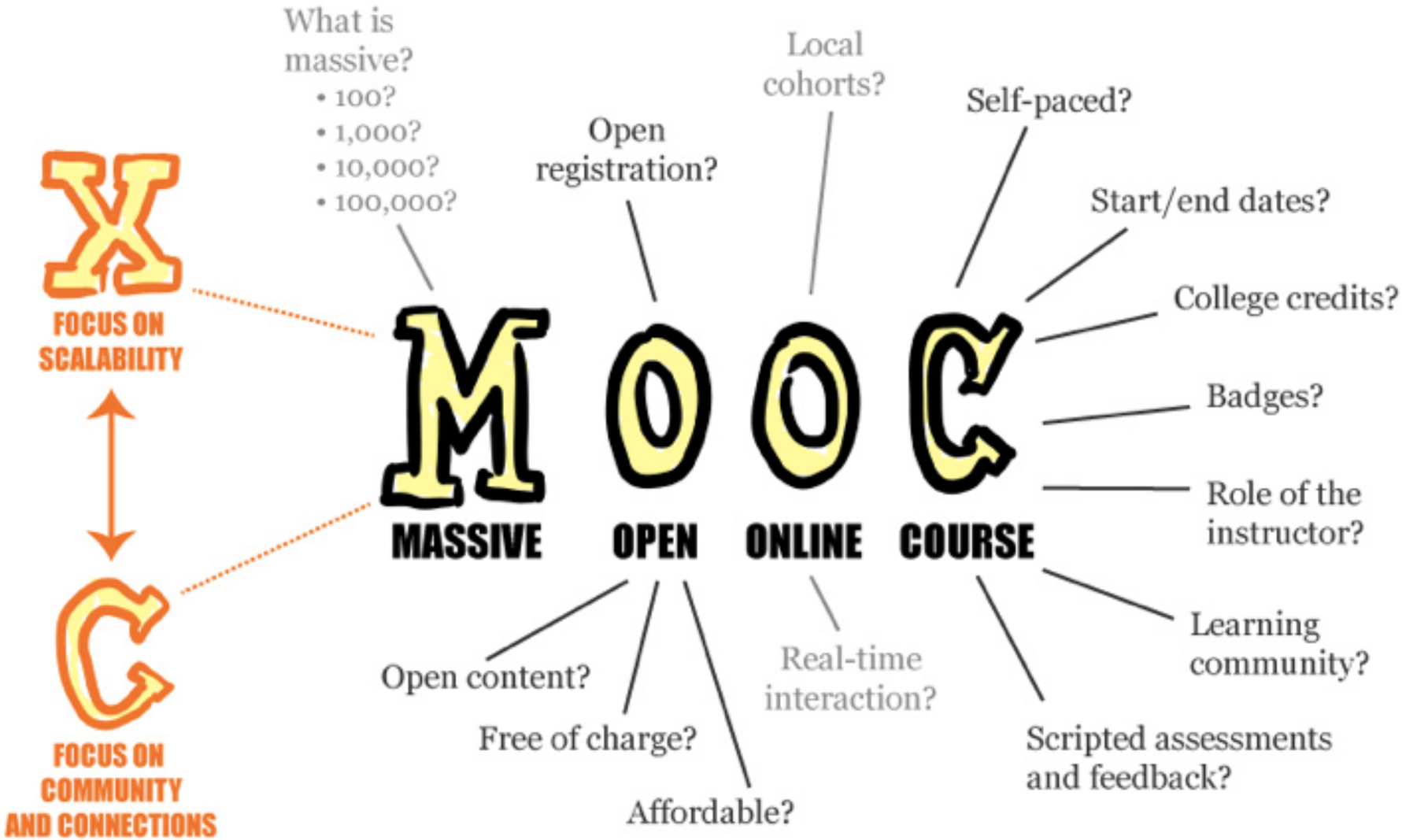
Mission

Values

Internal management

Infrastructure

TEACHING, LEARNING, RESEARCH



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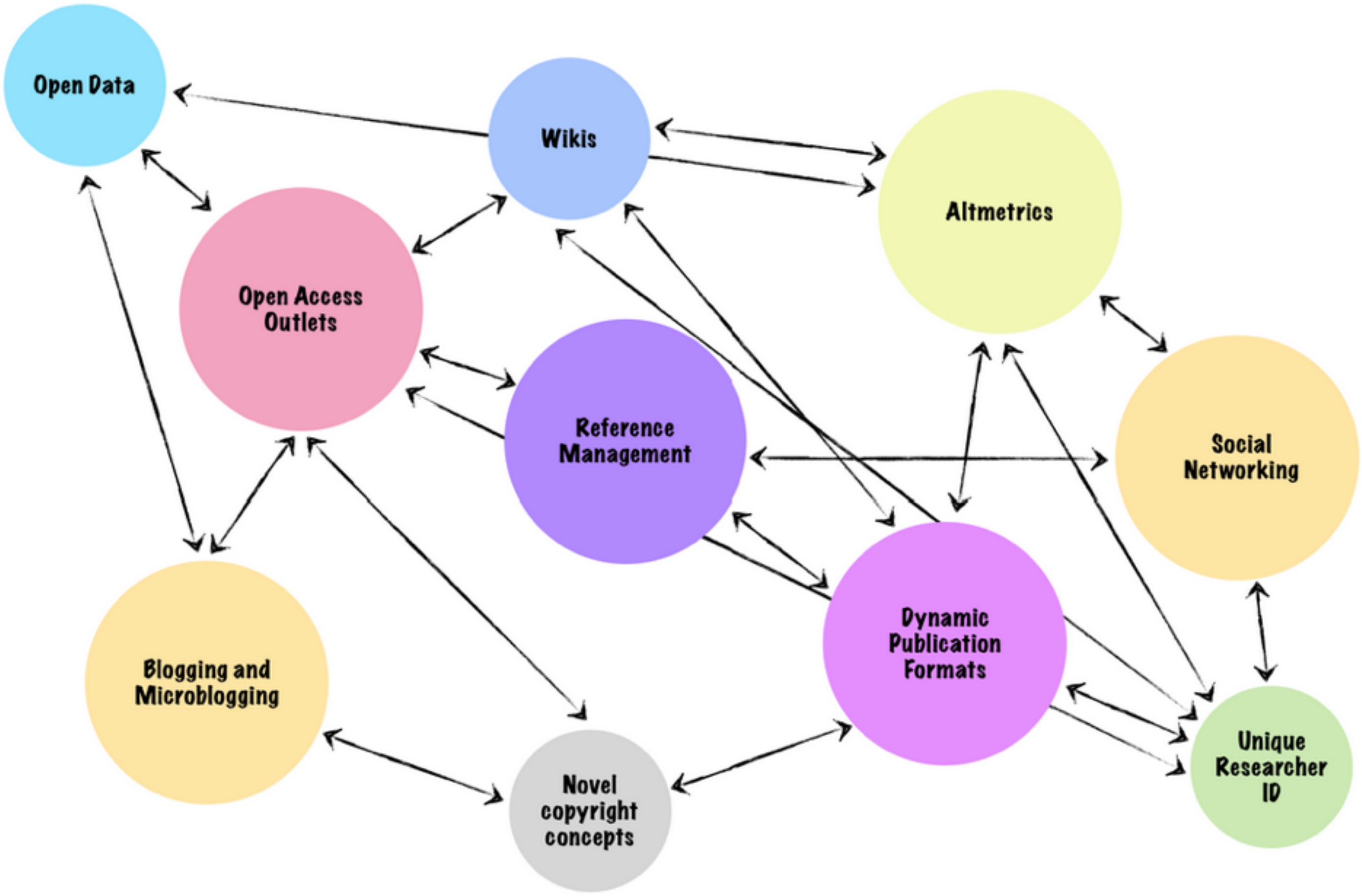
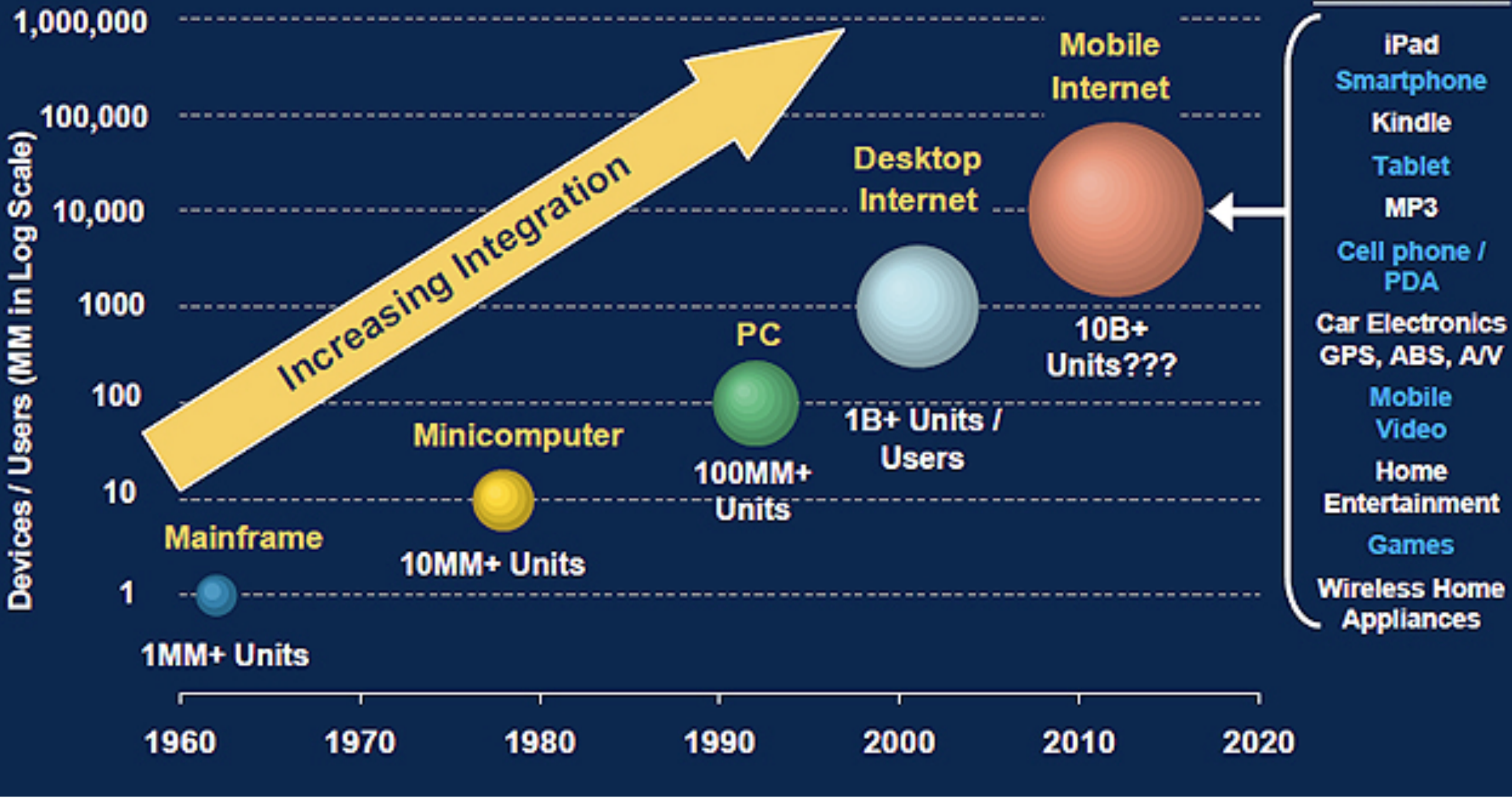


opening science

Computing Growth Drivers Over Time, 1960 – 2020E



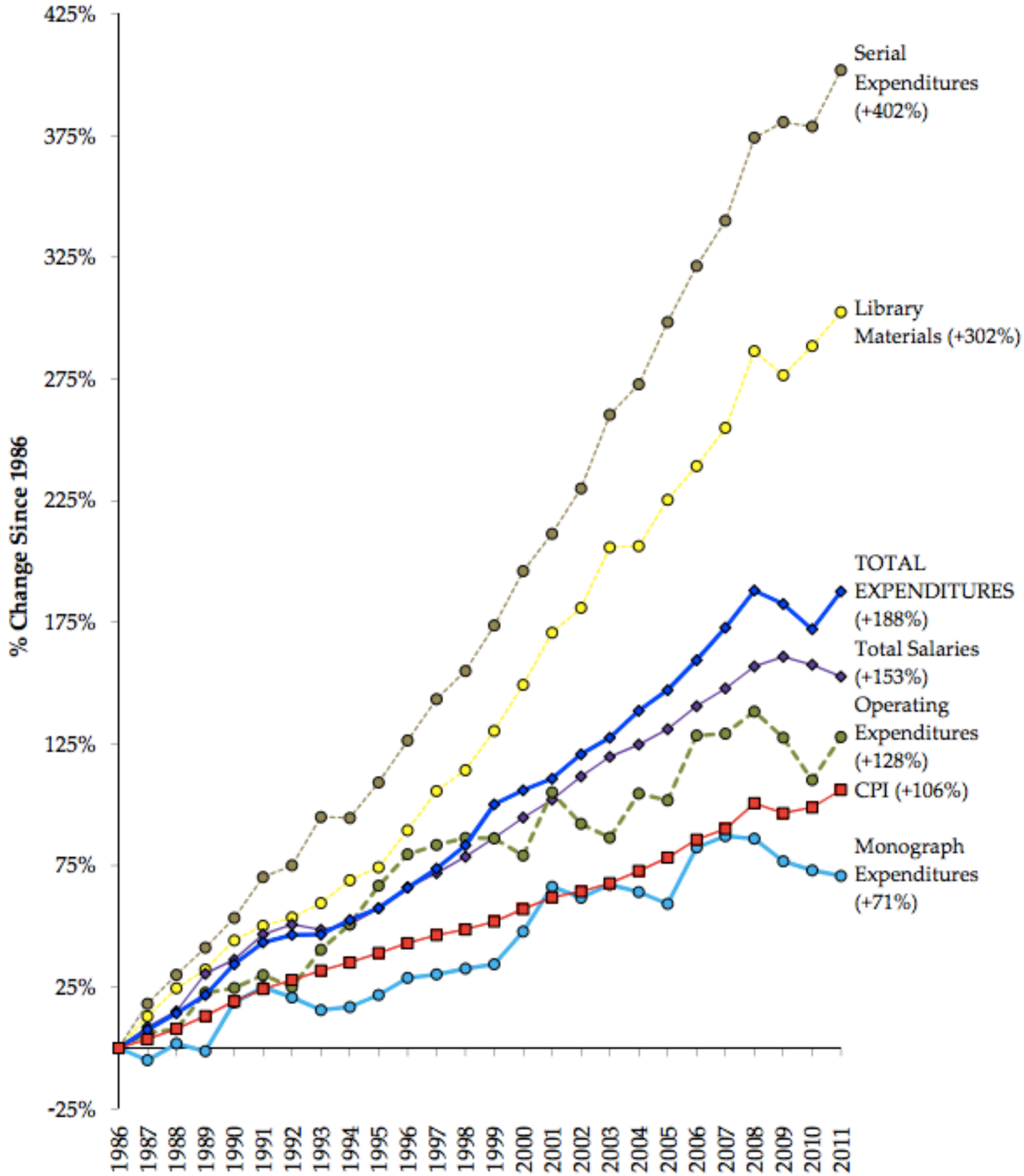
2G 3G 3GS 4 4S 5 5c 5s 6 6+

iPhone 10

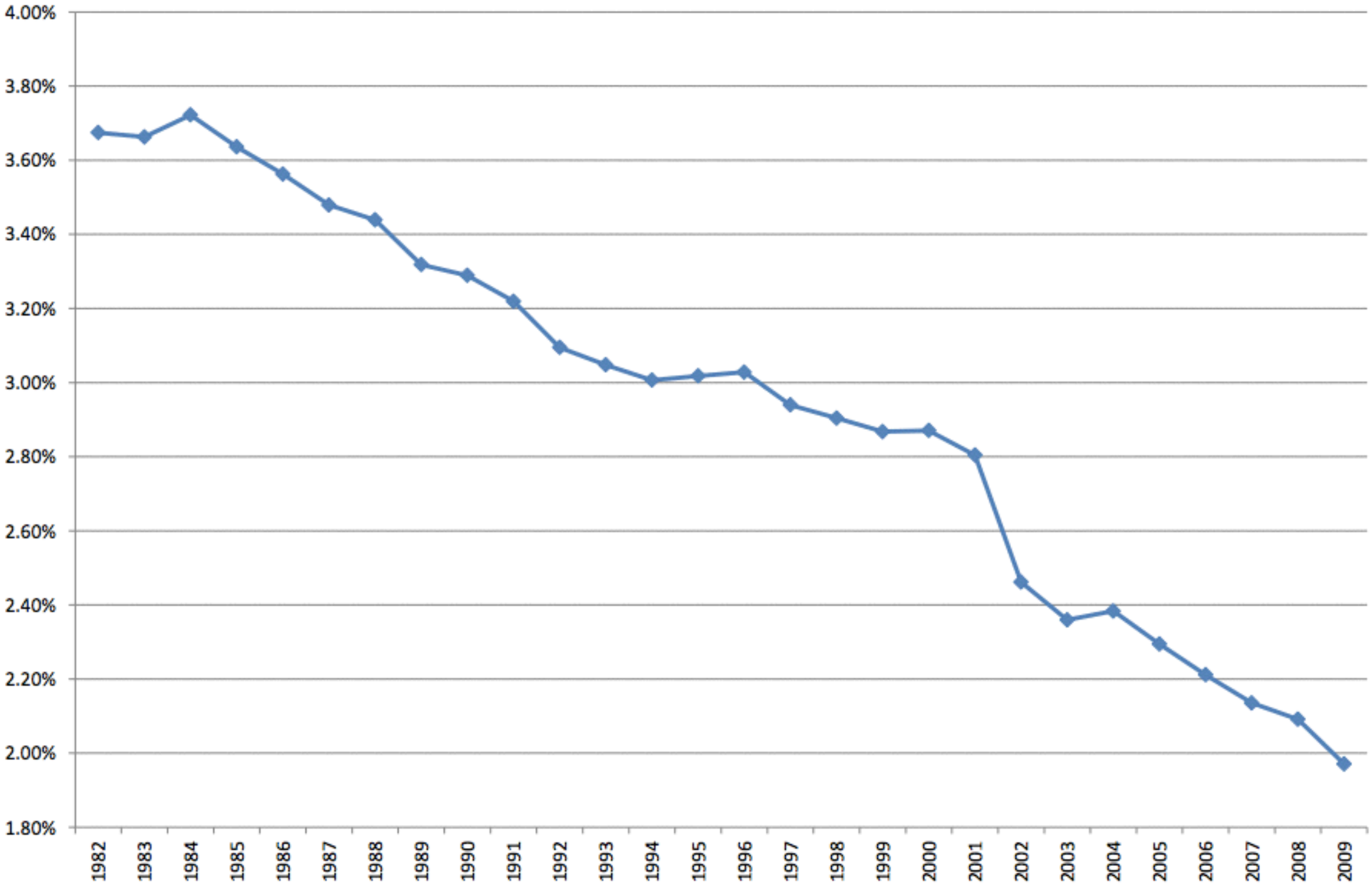
The tallest iPhone yet.

FUNDING

Expenditure Trends in ARL Libraries, 1986-2011



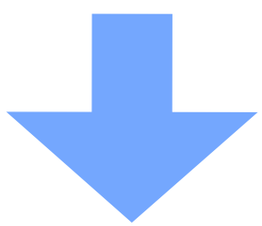
Library Expenditure as % of Total University Expenditure
(Average of 40 US Institutions Reporting Since 1982)



Two sides of the argument

Librarians complain about pricing

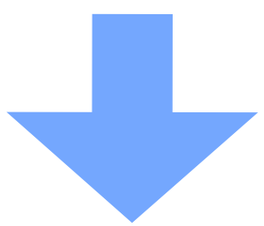
- Price increases greater than budget uplift
- Big deals limit ability to cancel titles
- Books are sacrificed for journals
- Costs would be lower in a not-for-profit model
- ‘Our academics did the work - why should we pay (so much)?’



Support open access

Publishers point to explosion in output and value they add

- Great increase in number of articles
- Cost per download decreasing
- Big deals offer wider access at discount
- e-journal transition required massive investment
- ‘We will try open access if we can cover costs’



Find new sources of funds

SCHOLARLY COMMUNICATION

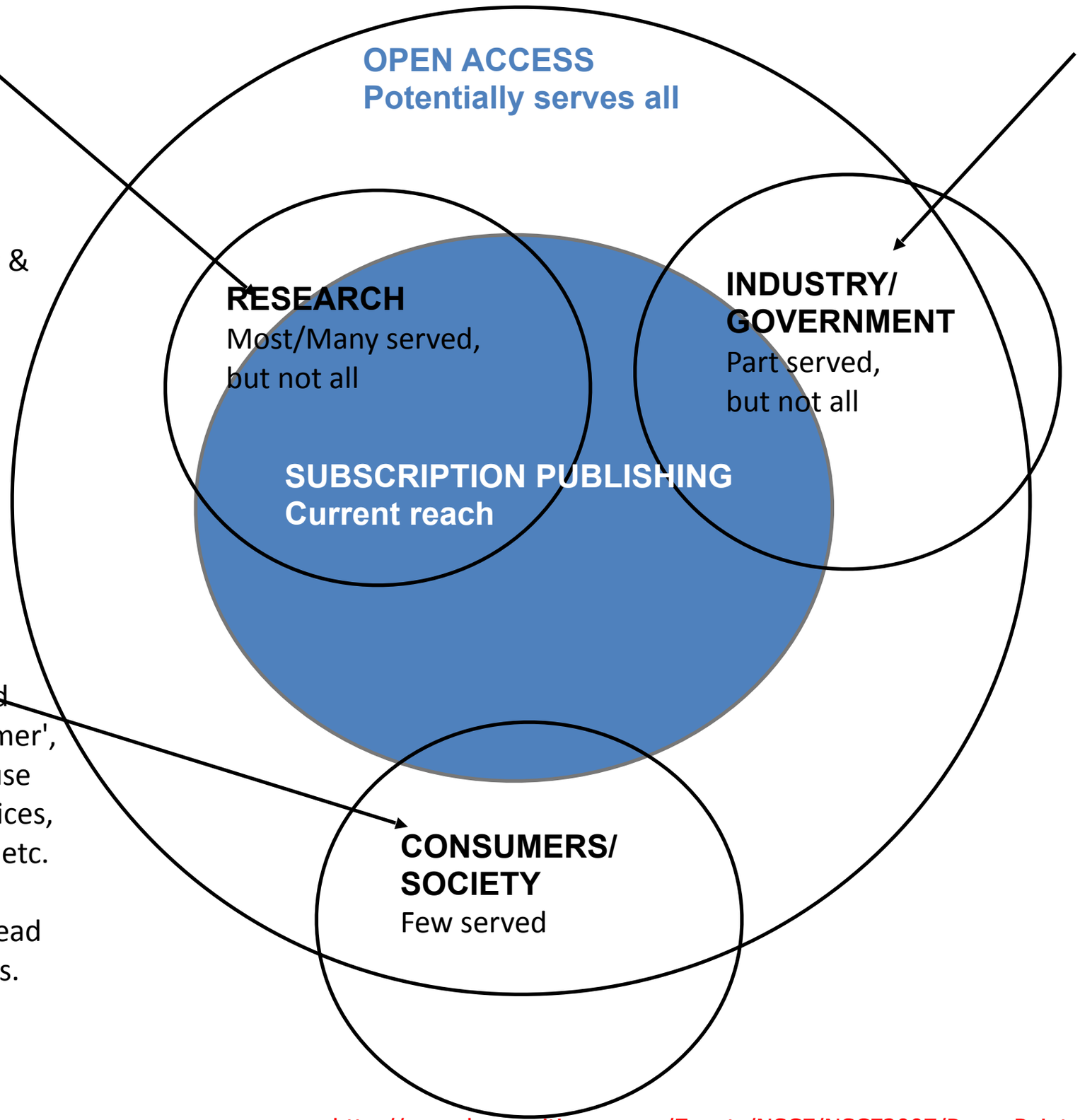
An Impacts Framework

RESEARCH
Access for all, research participation based on merit, not means.

Potential benefits:
Speeding up discovery.
Reduction of duplicative research.
Fewer blind alleys.
New research possibilities.
Better educational outcomes & enhanced research capabilities.

SOCIETY
Access as needed, informed consumers (*e.g.* health and education).

Potential benefits:
Contribution to the 'informed citizen' and 'informed consumer', with implications for better use of health and education services, better consumption choices, etc. leading to greater welfare benefits, which in turn may lead to productivity improvements.



INDUSTRY
(1) Access as needed, more informed producers & policy.

(2) New businesses add value to content (*e.g.* Weather Derivatives).

Potential benefits:
Accelerate and widen opportunities for collaboration, commercialisation & adoption.
The potential for much wider access for GPs/ nurses, teachers/ students, and small firms in consulting, engineering, ICT, nanotechnology, biotechnology, etc.

The potential for the emergence of new industries based upon the open access content.

http://www.humanities.org.au/Events/NSCF/NSCF2007/PowerPoints/NSCF2007-Houghton.ppt

Accessibility, sustainability, excellence: how to expand access to research publications

Report of the Working Group on Expanding Access to Published Research Findings

March 2014/07
Policy development
Statement of policy

Institutions are advised to comply with this policy

This document sets o
requirement that eligi
should be made open
submission to the pos
Excellence Framewor
requirement will apply
conference proceedin
publication after 1 Ap

Policy for open access in the post-2014 Research Excellence Framework

Scottish Funding Council
hefcw
Department for Employment and Learning
hefce

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theguardian
Winner of the Pulitzer prize
US world opinion sports soccer tech arts lifestyle fashion business money travel environment all
home

Higher Education Network Blog

Willetts' open access reforms: what will it mean for academics? - open thread

How will plans to make all publicly-funded research freely available by 2014 impact on academic freedom and diversity?

House of Commons

Business, Innovation and Skills Committee

Open Access

Fifth Report of Session 2013–14

Volume I: Report, together with formal minutes, oral and written evidence

Additional written evidence is contained in Volume II, available on the Committee website at www.parliament.uk/bis

Ordered by the House of Commons to be printed 3 September 2013

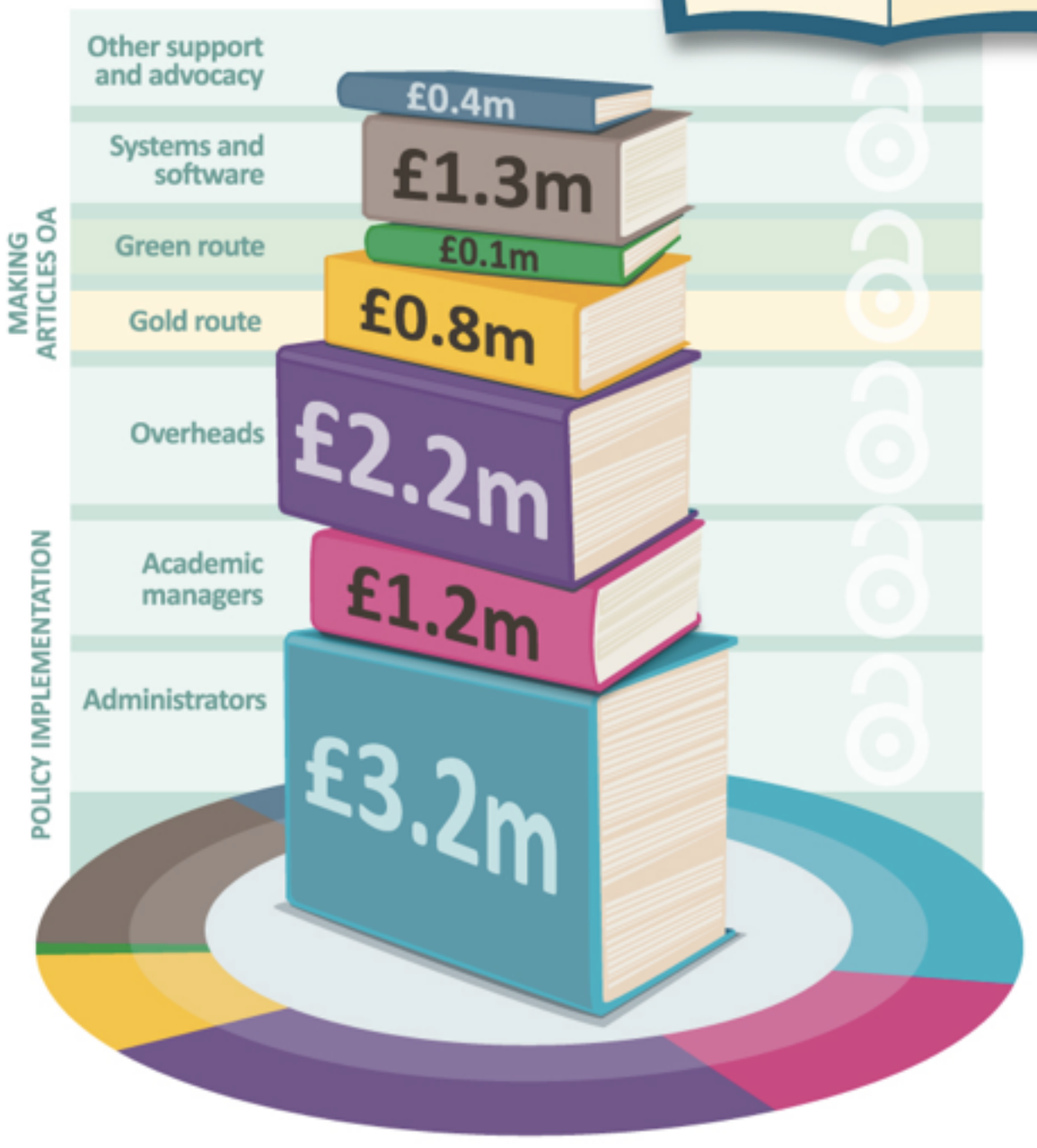
RCUK announces block grants for universities to aid drives to open access to research outputs

	Year-1	Year-2	Year-3	Year-4	Year-5
RCUK APC fund	£17m	£20m	To be determined	To be determined	To be determined
Expected % of papers in Gold OA	45%	53%	60%	67%	75%

Compliance Cost of the RCUK Open Access Policy

£9.2 MILLION

A Snapshot of Costs to UK Research Organisations in 2013/14



Research Consulting

www.researchconsulting.co.uk

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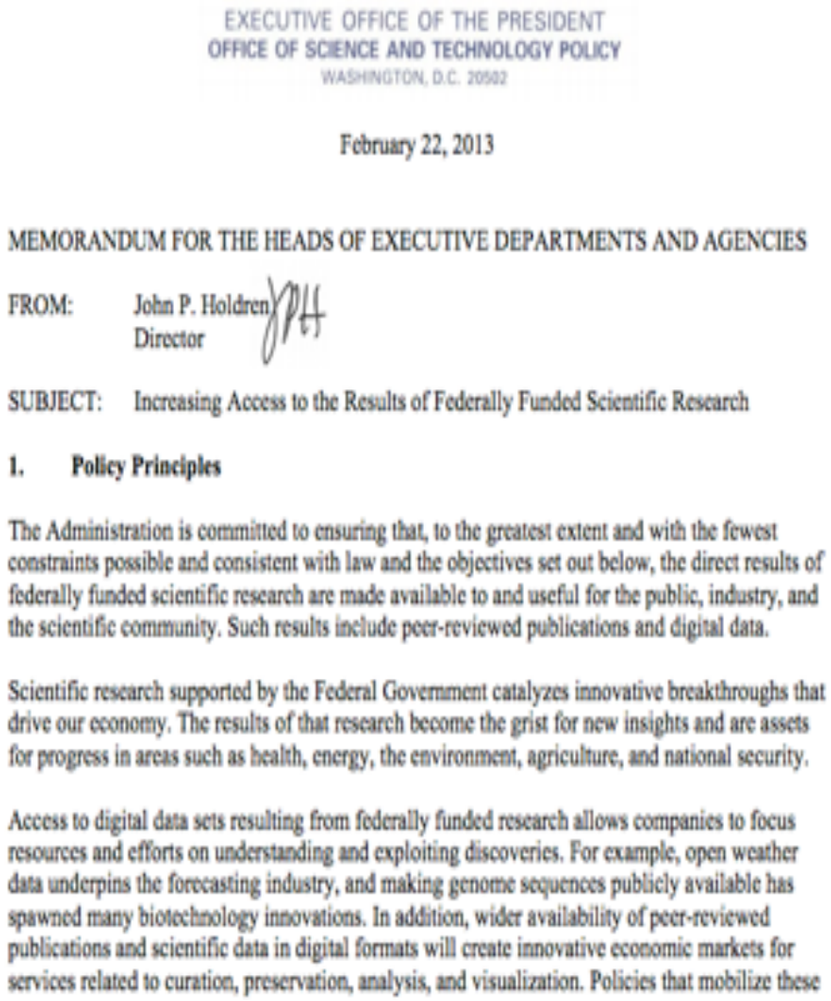
“The Holdren Memo”

To achieve the Administration’s commitment to increase access to federally funded published research and digital scientific data, Federal agencies investing in research and development must have **clear and coordinated policies for increasing such access.**

Memo on Increasing Access to the Results of Federally Funded Scientific Research
White House Office of Science and Technology Policy
February 22, 2013



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20502

February 22, 2013

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: John P. Holdren
Director

SUBJECT: Increasing Access to the Results of Federally Funded Scientific Research

1. Policy Principles

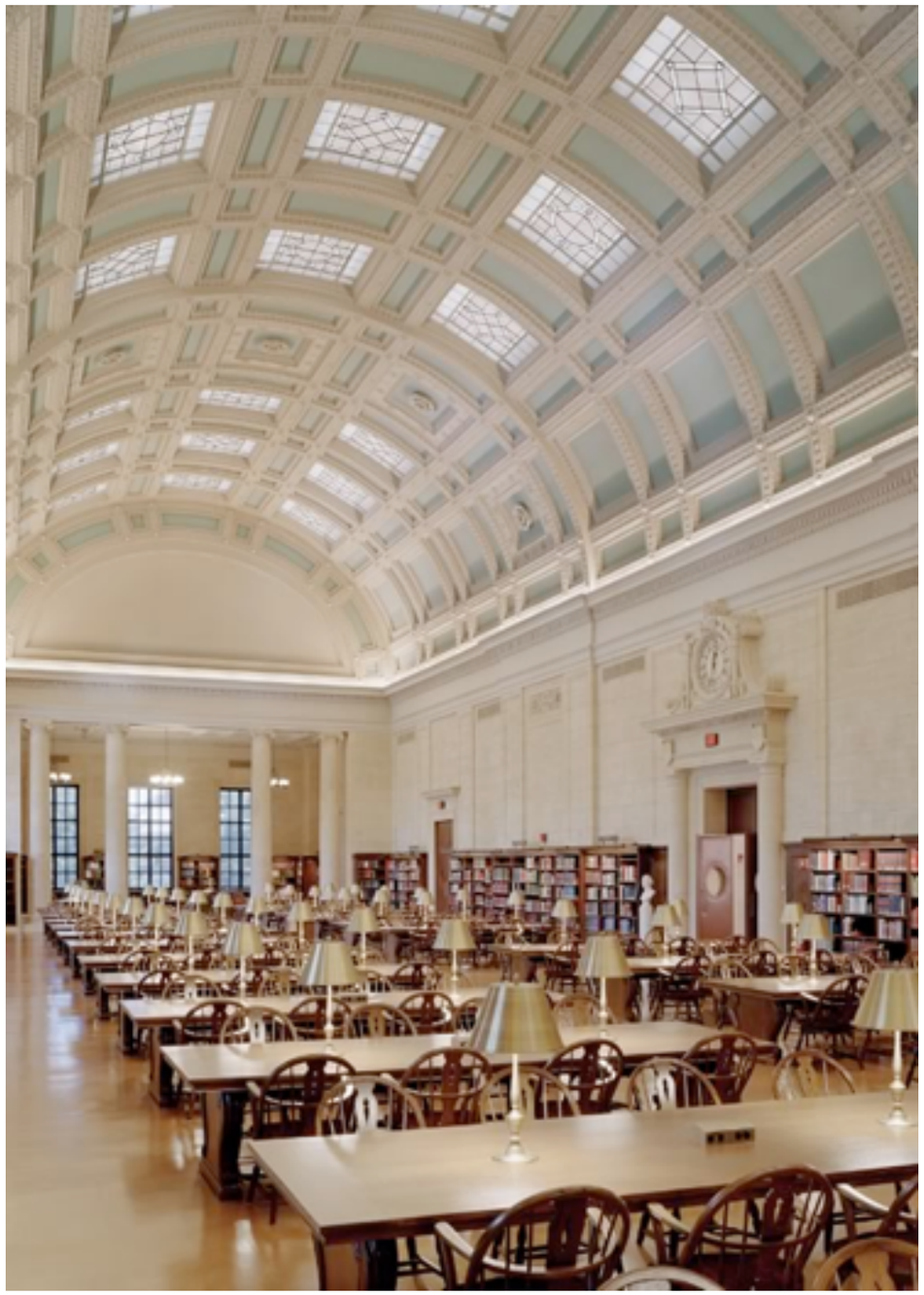
The Administration is committed to ensuring that, to the greatest extent and with the fewest constraints possible and consistent with law and the objectives set out below, the direct results of federally funded scientific research are made available to and useful for the public, industry, and the scientific community. Such results include peer-reviewed publications and digital data.

Scientific research supported by the Federal Government catalyzes innovative breakthroughs that drive our economy. The results of that research become the grist for new insights and are assets for progress in areas such as health, energy, the environment, agriculture, and national security.

Access to digital data sets resulting from federally funded research allows companies to focus resources and efforts on understanding and exploiting discoveries. For example, open weather data underpins the forecasting industry, and making genome sequences publicly available has spawned many biotechnology innovations. In addition, wider availability of peer-reviewed publications and scientific data in digital formats will create innovative economic markets for services related to curation, preservation, analysis, and visualization. Policies that mobilize these

In the print library

- Local access costs low - saved time allowed for research productivity
- Library costs high - acquisitions, maintenance, curation, buildings
- Correspondence between library reputation and research quality
- Great libraries attracted great scholars
- Great scholars attracted great funding

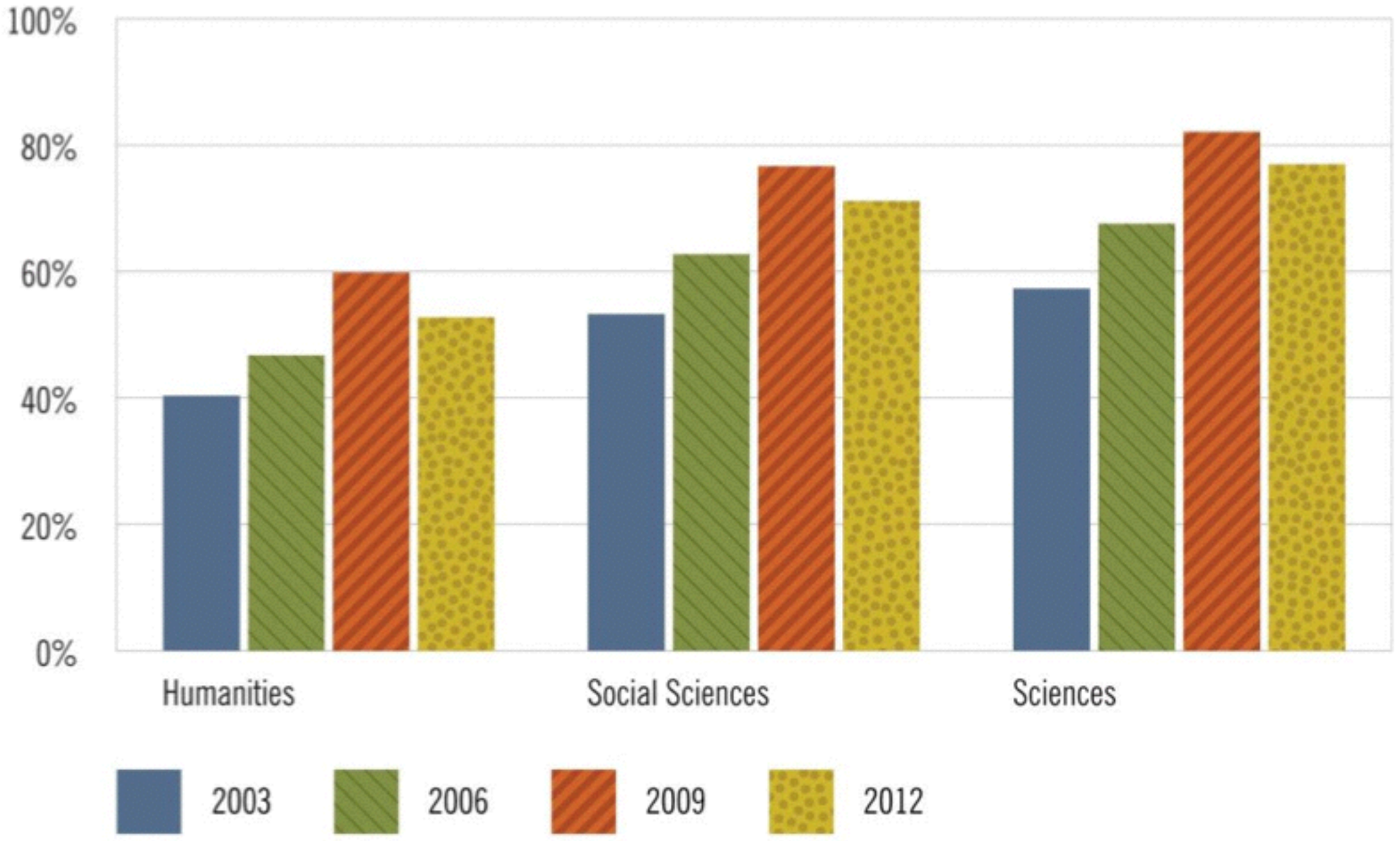


- Technology reduces costs of production and distribution - big deal
- Demand from academy is chiefly for online content
- Almost all new content born digital
- Large swathe of scholarly print material now digitised - books and journals

What might this mean?

- Ongoing acquisitions will require increasingly less space
- Substantial parts of existing collections can be relocated off-site and replaced with digital versions
- Tremendous growth in access to older materials not previously available locally
- As services like Google books mature these trends will accelerate (subject to statutory provisions)
- This will provide new space opportunities for universities and their libraries

Libraries can cease collecting print versions



Faculty study 2012: key insights for libraries and publishers, Ithaka

Today: tradition unsustainable, digital not quite ready

Migration issues

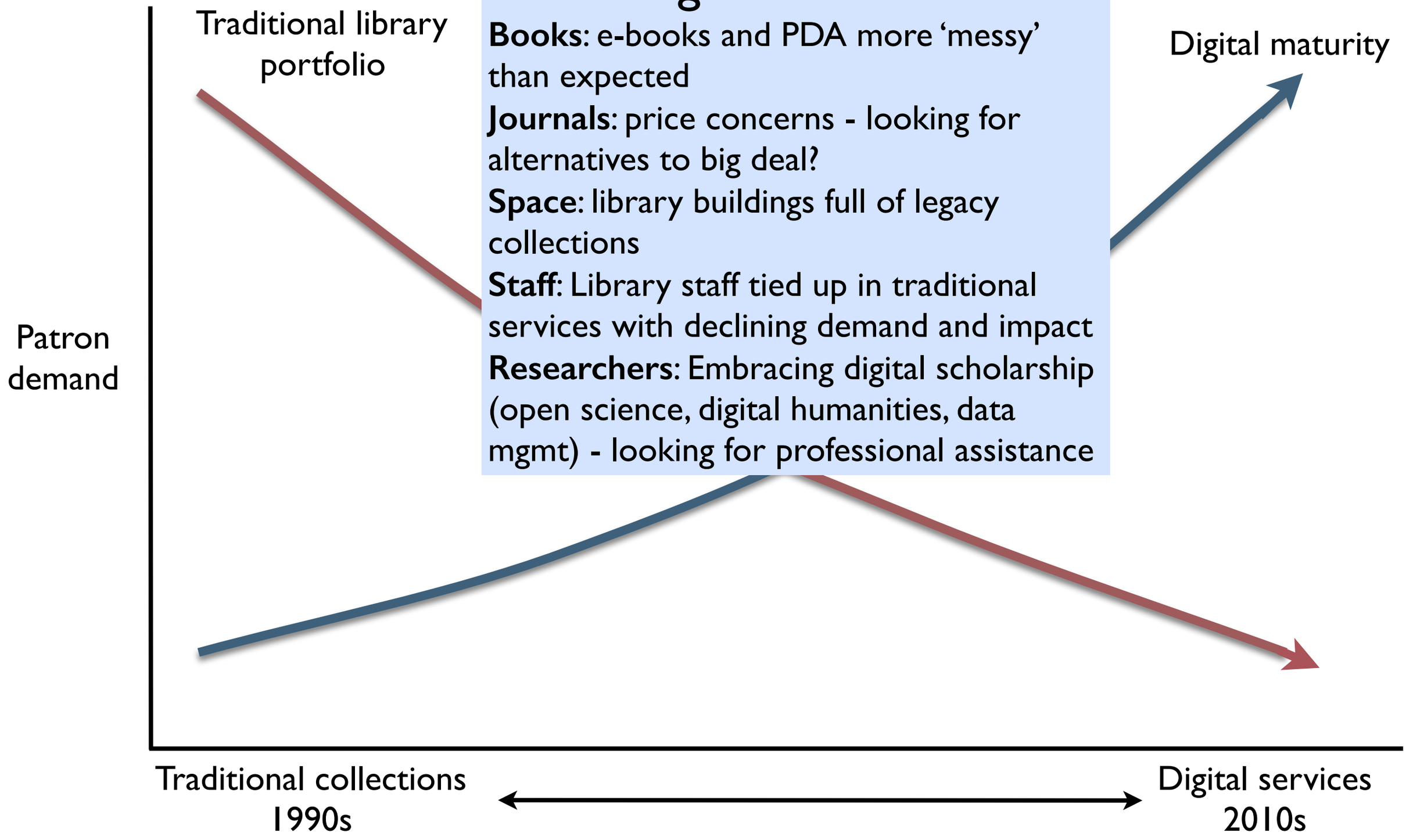
Books: e-books and PDA more 'messy' than expected

Journals: price concerns - looking for alternatives to big deal?

Space: library buildings full of legacy collections

Staff: Library staff tied up in traditional services with declining demand and impact

Researchers: Embracing digital scholarship (open science, digital humanities, data mgmt) - looking for professional assistance



The ‘owned’ collection

The ‘borrowed’ collection

The ‘demand-driven’ collection

The ‘facilitated’ collection

A collections spectrum

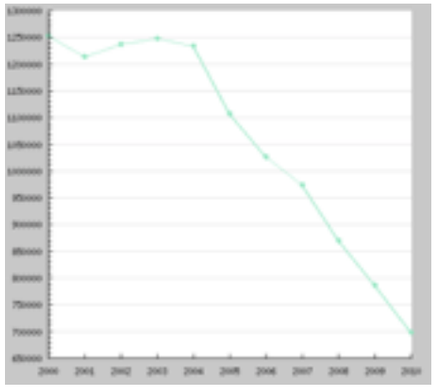
The ‘licensed’ collection

The ‘shared print’ collection

- Purchased and physically stored

- Pointing people at Google Scholar
- Including freely available e-books in the catalog
- Creating resource guides for web resources

Figure: A collections spectrum. OCLC Research, 2015.



Traditional usage declining

Changes in media access

New competitors

Changing user demands and IT

Financial challenges

WHERE ARE WE GOING?

Current directions in academic libraries - building the library of the future

1. Continue the migration from print to electronic and realign service operations
2. Review location of lesser-used collections
3. Continue to repurpose library as primary learning space
4. Reposition library expertise and resources to be more closely embedded in research and teaching enterprise outside library
5. Extend focus of collection development from external purchase to local curation

LEARNING SPACE

Case study 1

UQ - use of space

Focus group themes

- Opening foci
  - What are we doing well?
  - What could we do better?
  - What more could we do to support you in your studies?
- Your assignment story
  - Where did you work? With whom? What information did you gather? Where did it come from? What technology did you use? From whom did you seek advice?

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

LIBRARY
Enriching world-class scholarship

Information Seeking Behaviour of First Year Students

A research study

Log Book

Programme:.....

Course:.....

Assignment topic

_____

_____

_____

Length:.....

Due Date:.....

Date work on assignment commenced: .....

For each day, please record the following:

- Persons consulted: (categories, not names; eg friend, tutor)
- Places where you worked: eg library –(please give branch and space – group or quiet or room); home; collaborative learning centre; coffee shop; on the train; etc
- Activities undertaken: See list below (not exclusive – add anything else you need to)
- Time spent in each activity

Types of activity:

- Attend Library information class
- Begin writing
- Course reading lists
- Draft essay
- Identify key concepts
- Look at Assignment Planner
- Note taking
- Reading from articles
- Reading from books
- Recording references
- Searching databases
- Searching internet (how and what)
- Searching Library catalogue (How – title, keyword, subject. Using what terms)
- Subject guides
- Talk to librarian
- Talk to others in course
- Talk to parent/other
- Talk to tutor
- Topic analysis
- Visit Library other than UQ

Example:

Monday	Home: Reviewed assignment topics and decided which one to do – 30 mins Home: Analysed topic for main concepts, listed key words – 15 mins. Uni – refec: Discussed topic with tutorial group students – 10 mins. SS&H Library, Level 1: searched catalogue, recorded book titles and call numbers - 40 mins

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

LIBRARY
Enriching world-class scholarship

Win an Apple iPod Touch

What would your ideal Library look like?

Join in a design workshop with other students to be in the draw to win an iPod Touch. Open to all students. All you need to do is bring your ideas!

When Tuesday, 19 August 2008, 12 – 2 PM

Where Room 241 Collaborative Teaching & Learning Centre,
Sir James Foots Building (Bldg 47A)

A FREE LUNCH WILL BE PROVIDED

Name: _____

Email: s_____@student.uq.edu.au

There is a **maximum of forty places** available. Student entries will be drawn at random. Students whose entry is selected will be notified by email by 15 August.

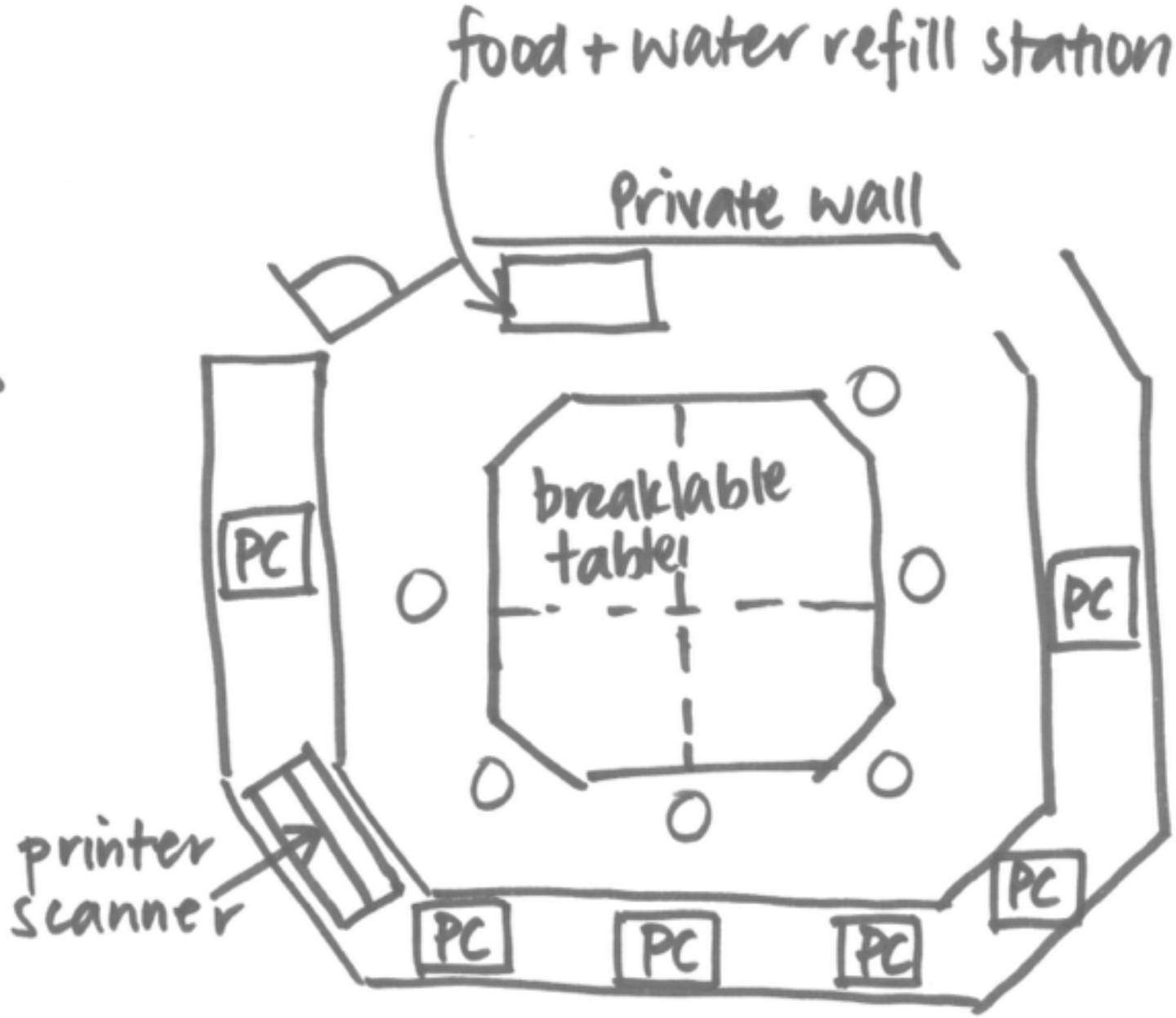
The workshop will be facilitated by Hamilton Wilson of Wilson Architects.

Comp
Comp
Comp
Comp
Comp
*Natural Light
*PLANTS
FISH TANK
OUTSIDE AREA
*Bean bags/comfortable chairs
→ Quiet but not silent
→ reading
*lockers
↳ swipe access
[FREE]
*Possibly online access to texts. (ie, main network)
*Isolated rooms
*Online forums for all courses.
Enough space to read AND have a computer
*Glass doors
*BIG desk
*Hire (lockable)
*Power points
*Drinks

group space

- adjustable height chairs and desks (sleeping friendly)
- different lighting option e.g. lamp

- size of groups - 4-6
- lecturer sets
  - can't pick group members



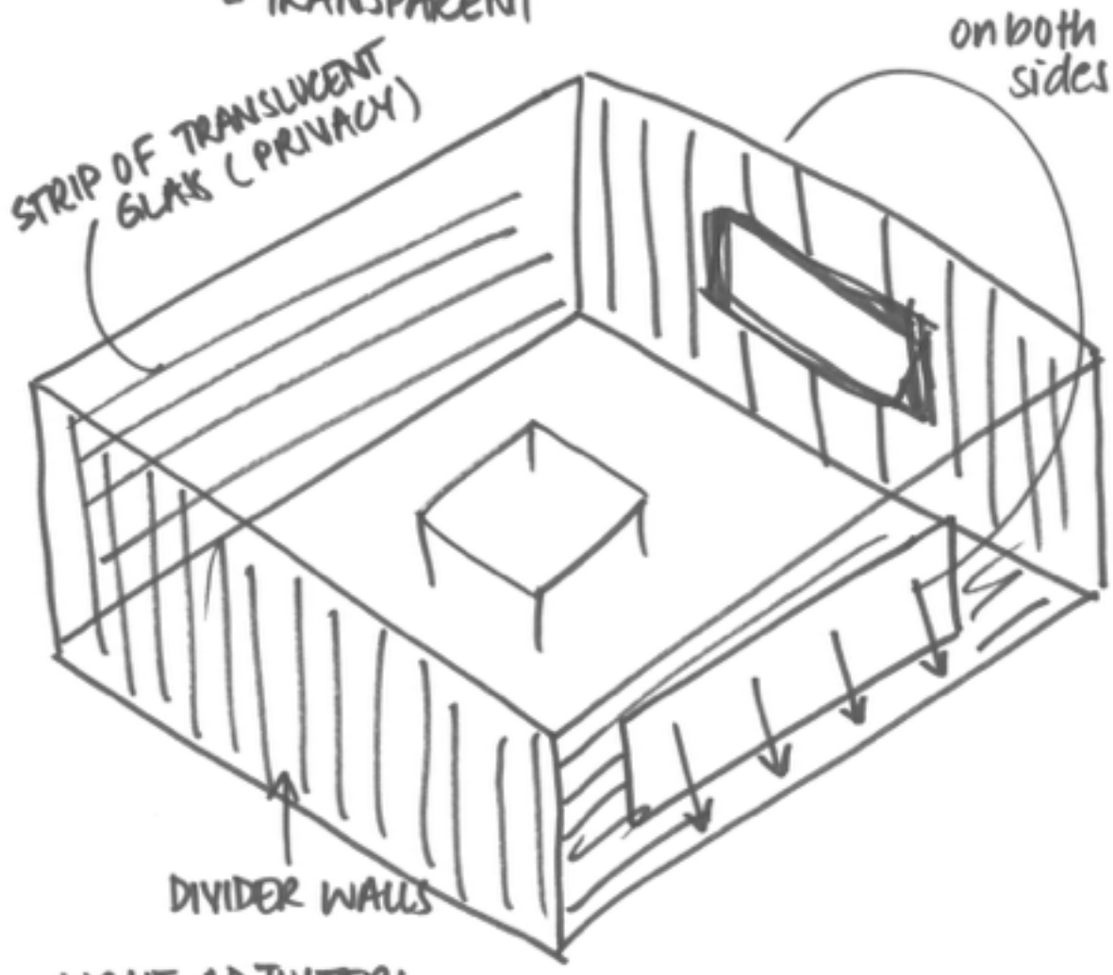
sound proofing

private room

BIOLOGICAL LIBRARY ROOMS AT LEAST, BUT BETTER.

GROUP SIZE: MAX 8

. RETRACTABLE SHADES
. WHITEBOARD..(IN BUILT PRINTER) (MAYBE PORTABLE)
. TABLE WITH POWERPOINTS (AT LEAST 4)
. COMFY CHAIRS /HEIGHT ADJUSTMENT
. STUDY ROOMS
  - PLASMA SCREENS
    PROJECTOR SCREEN
· GOOD TO HAVE NATURAL LIGHTING
· SPACIOUS ROOMS
  - SOUND PROOF
  - TRANSPARENT



· LIGHT ADJUSTERS
. VOICE RECORDER (STUFF TO SIMULATE REAL PRESENTATION ENVIRONMENT)
· PRINTER
. TELEPHONE

Key themes

Reliable and wide-spread access to the Internet

A range of technology to support group work including voice recorders, smart boards and printers

A steady supply of drinking water and coffee and adequate natural light

Services that provide convenience are valued and we are looking to implement website features that should help satisfy demands for simpler ways to find material in the Library.

The students at the workshop affirmed that place is important to them: they like to come to the Library.

Student demands of our spaces can change during the academic year according to course progression and the nature of assessment tasks, so flexibility is an important design consideration

Dorothy Hill Physical Sciences and Engineering Library

PLEASE START HERE

1. **Time of entry:**_____**AM/PM**

2. I am: _____Male / Female

3. I am _____years old

4. My program is *(e.g. BA)*:

_____

5. I am in Year_____of my program *(e.g. 1, 2, 3)*

Please now open the questionnaire and answer the questions.

The University Of Queensland AUSTRALIA | LIBRARY *Enriching worldclass scholarship*

My time at UQ Library

How can we make it better?

The Library is conducting some research about how and why our students* use the Library. We are very interested to know what you do so that we can plan for future services and facilities.

Please help us help you and complete this questionnaire during your visit today.

And just for doing this, you will be eligible to enter the draw for an Apple iPod Touch.

Thank you for your time.

** Survey for UQ Students only*

1. **What have you come to the Library to do today?**
(tick as many as you like)

Use Library computer/laptop	
Quiet study	
Group work	
Find/borrow books	
Find journal articles	
Attend a training session	
Use printer/copier	
Use my own laptop	
Work on individual assignment	
Meet friends	
High Use	
Find course materials	
Get IT help	
Get research help	
Coffee	
Other *(please specify)*	

2. **Why did you come to the Library to do this?**

It is the only place to find what I need (above)	
My friends come	
My group is meet	
Good study atmo	
Good study/work	
Convenient location	
Nowhere else open	
Other *(please comment)*	

3. **Where were you before you came to the Library?** *(e.g. lecture, Red Room, home)* _____

4. **How long do you plan to stay here this visit?**

Quick visit (< 30 minutes)	
30 minutes - 2 hours	
Long visit (> 2 hours)	

5. **Where in the Library do you plan to work?**

Level 1	
Level 2	
Level 3	
Level 4	
Level 5	
Wherever I can find a computer	
Wherever I can find a free space	

6. **Is this your only visit to this branch today?**

Yes	
No	

7. **How often do you usually visit this branch (in person)?**

Daily	
Weekly	
Monthly	
Not often	

8. **How often do you usually visit any UQ library branch (in person)?**

Daily	
Weekly	
Monthly	
Not often	

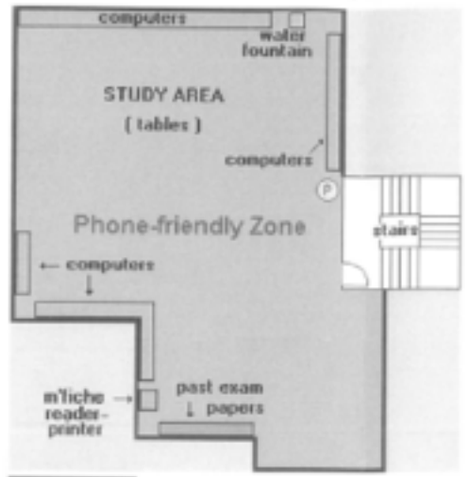
9. **How often do you usually visit other non UQ libraries (in person)?**

Daily	
Weekly	
Monthly	

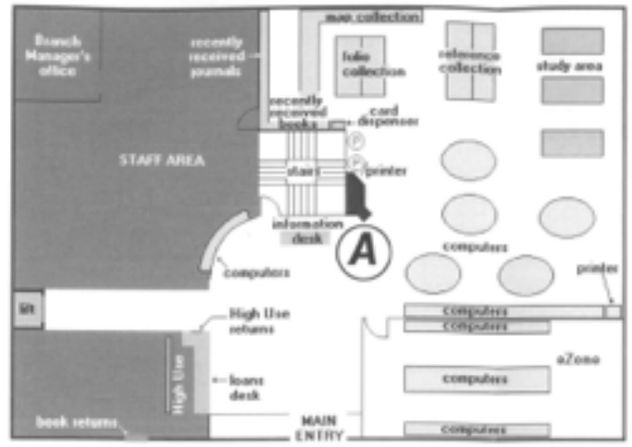
know more about:
(1) WHERE you went in the Library today and
(2) in WHAT ORDER.

Please mark your visit destinations on the floor plans at right and add any comments about what you did there *(If you run out of room in the table, please write on the back of the form).*

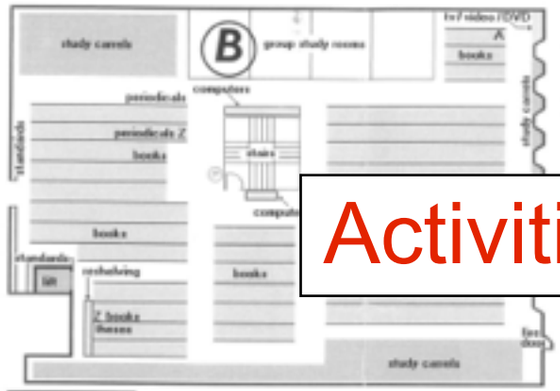
Remember to write down your comments in the table below and **how long** it took, *e.g. Catalogue Check, 10 mins.*



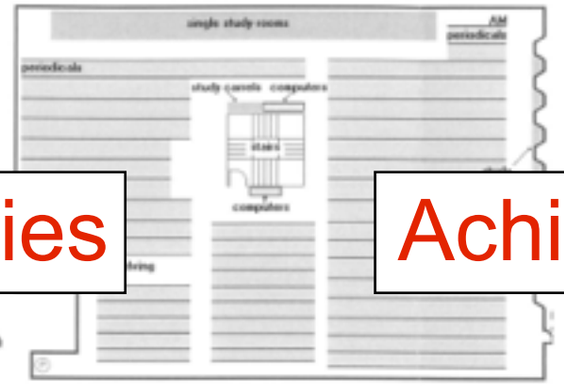
LEVEL 1



LEVEL 2



LEVEL 3



LEVEL 4

LEVEL 5

Dorothy Hill Physical Sciences and Engineering Library

Activities

A	*e.g. Ⓐ Asked question*	*2 mins*
B	*e.g. Ⓑ Worked on group assignment*	*1 hr*
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

EXIT QUESTIONS

1. **What did you ACTUALLY do on this visit?** *(tick as many as you like)*

Use Library computer/laptop	
Quiet study	
Group work	
Find/borrow books	
Find journal articles	
Attend a training session	
Use printer/copier	
Use my own laptop	
Work on individual assignment	
Meet friends	
High Use	
Find course materials	
Get IT help	
Get research help	
Other *(please specify)*	

2. **What else did you do and why?**

4. **Did you spend as much time as you had intended on this visit?**

Yes	
No, more	
No, less	

5. **If no, why?**

6. **Where are you going to now?**

7. **Time of exit:** _____ **AM/PM**

*Thank you for your time. Please put this form in the **SURVEY BOX** as you leave the Library. If you want to go in the draw for an Apple iPod Touch, please fill in the enclosed form and put it it the **ENTRY BOX** near the front gate.*

THE UNIVERSITY OF QUEENSLAND | LIBRARY

Intentions

Activities

Achievements

Number	Activity	Duration
1	Got questionnaire	1 min
2	Borrowed laptop	4 mins
3	Checked for space	1 min
4	Check for suitable place for laptop	3 mins
5	Found a place to study	2 mins
6	Work on assignment	2 hrs
7	Toilet	7 mins
8	Vending machine - buy DVD	5 mins
9	Burn DVD on laptop	10 mins
10	Exit	0

1. **What have you come to the Library to do today?** *(tick as many as you like)*

Use Library computer/laptop	✓
Quiet study	✓
Group work	
Find/borrow books	
Find journal articles	
Attend a training session	
Use printer/copier	
Use my own laptop	
Work on individual assignment	✓
Meet friends	
High Use	
Find course materials	
Get IT help	
Get research help	
Coffee	
Other *(please specify)*	✓

2. **Why did you come to the Library to do this?**

It is the only place to find what I need (above)	✓
My friends come here	
My group is meeting here	
Good study atmosphere	✓
Good study/working spaces	✓
Convenient location	✓
Nowhere else open	
Other *(please comment)*	✓

3. **Where were you before you came to the Library?** *(e.g. lecture, Red Room, home)* Refectory

4. **How long do you plan to stay here this visit?**

Quick visit (< 30 minutes)	
30 minutes - 2 hours	
Long visit (> 2 hours)	✓

5. **Where in the Library do you plan to work?**

Level 1	
Level 2	
Level 3	✓
Level 4	
Level 5	
Wherever I can find a computer	
Wherever I can find a free space	✓

6. **Is this your only visit to this branch today?**

Yes	✓
No	

7. **How often do you usually visit this branch (in person)?**

Daily	
Weekly	
Monthly	
Not often	

8. **How often do you usually visit any UQ library branch (in person)?**

Daily	✓
Weekly	
Monthly	
Not often	

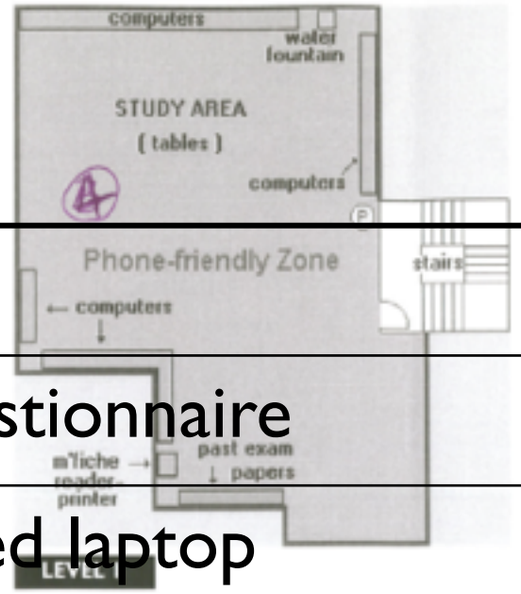
9. **How often do you usually visit other non UQ libraries (in person)?**

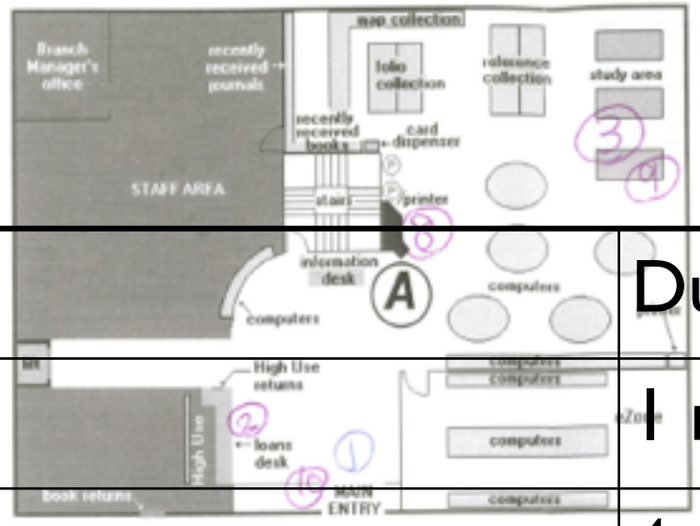
Daily	
Weekly	
Monthly	✓
Not often	

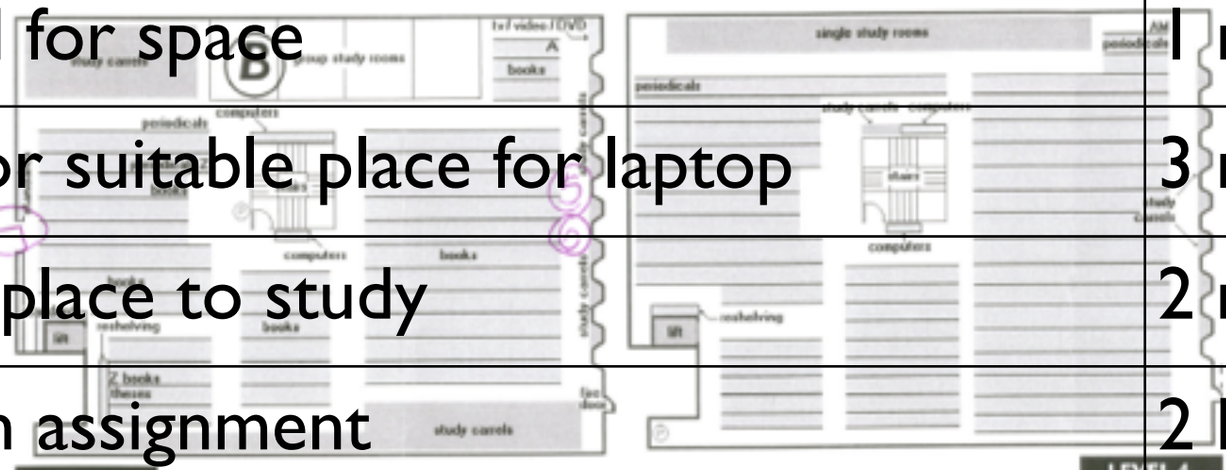
10. **We would like to know more about:**
(1) **WHERE** you went in the Library today and
(2) in **WHAT ORDER**.

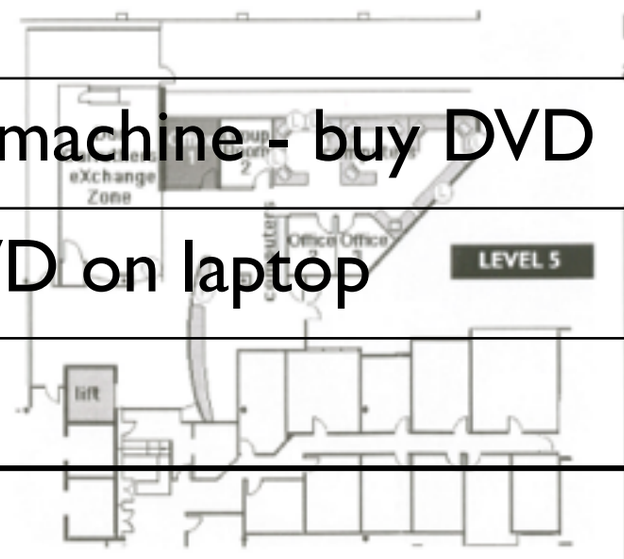
Please mark your visit destinations on the floor plans at right and add any comments about **what you did there** *(if you run out of room in the table, please write on the back of the form)*.

Remember to write down your **comments** in the table about **how long** it took, e.g. *Catalogue Check, 10 mins*.









Dorothy Hill Physical Sciences and Engineering Library

Activities

A	e.g. Ⓐ Asked question	2 mins
B	e.g. Ⓑ Worked on group assignment	hrs
1	got questionaire	1min
2	borrowed laptop	4min
3	checked for space	1min
4	check for suitable place for laptops	3min
5	found a place to study	2min
6	work on assignment	2hr
7	go to toilet	7min
8	go to vending machine to buy DVD disk	5min
9	burn self DVD on laptop	10min
10	exit	NA

EXIT QUESTIONS

1. **What did you ACTUALLY do on this visit?** *(tick as many as you like)*

Use Library computer/laptop	✓
Quiet study	✓
Group work	
Find/borrow books	
Find journal articles	
Attend a training session	
Use printer/copier	
Use my own laptop	
Work on individual assignment	✓
Meet friends	
High Use	
Find course materials	
Get IT help	
Get research help	
Other *(please specify)*	✓

2. **What else did you do and why?**

3. **What more could the Library provide to support you in your studies?**

4. **Did you spend as much time as you had intended on this visit?**

Yes	✓
No, more	
Less	

5. **If no, why?**

6. **Where are you going to now?**

Time of exit: AM/PM

*Thank you for your time. Please put this form in the **SURVEY BOX** as you leave the Library. If you want to go in the draw for an Apple iPod Touch, please fill in the enclosed form and put it in the **ENTRY BOX** near the front gate.*

The University of Queensland | LIBRARY

Categories of activity

Individual - Social - Library Staff

Q1: What have you come to the Library to do today?

All Respondents

1. Use computer/laptop	63.11%
2. Quiet study	53.88%
3. Find/borrow books	37.66%
4. Work on individual assignment	32.11%
5. Use printer/p'copier	28.94%
6. Find journal articles	18.99%
7. Group work	18.22%
8. Course materials	15.63%
9. Meet friends	15.05%
10. Use my own laptop	10.4%
11. High Use collection	9.69%
12. Coffee	5.81%
13. Other	3.75%
14. Get research help	1.81%
15. Attend training session	1.61%
16. Get IT help	1.55%

Exit Q 1: What did you ACTUALLY do during this visit?

1. Use Library computer/laptop	62.4
2. Quiet Study	47.93
3. Find/borrow books	29.91
4. Work on individual assignment	24.68
5. Use a printer/copier	24.03
6. Meet friends	16.34
7. Group Work	13.24
8. Find journal articles	13.24
9. Find course materials	10.85
10. Use my own laptop	7.43
11. High use collection	5.81
12. Other	4.52
13. Get IT help	1.36
14. Get research help	1.29
15. Attend a training session	0.52
16. Coffee	0.26

Key lessons/ideas

Student use of the Libraries is very intentional and focussed.

- They spend their time between lectures in the Library, they know what they want to do, and they do it
- They call in to the Library when they first arrive, or before they go home
- They come with the intention of putting in a good few hours' solid work

Students spend long periods in the Libraries. They appreciate comfort, and also an aesthetically pleasing environment, as well as one providing an appropriate study atmosphere.

The prime causes of frustration and irritation in our Libraries are around computer access and noise levels.

- People wanting to do quiet study are very annoyed by chatter, phones, iPods
- People want to do group work are very annoyed when one individual has taken up a whole table (note design workshop students said they liked to spread out and wanted to work, individually, at large tables)
- Both groups expect Library staff to police the other group

Maximising facilities for computer use (both in group contexts and individually) is paramount.

They want provision for eating/drinking without having to leave the Library and risk losing their place.

- Please don't allow the anti-academics amongst your management to allow our libraries to be turned into playgrounds. Playgrounds are available everywhere to those that want them. If you drive those of us who want real libraries out, where can we go? (Plus, remember: the current fashion will pass, fly-by-night management will move on to the next fashion as always).

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

LIBRARY
Enriching world-class scholarship

DESIGN BRIEF

Staff area to be soundproof to library
clientele

Returns area
Returns and mail area (adjacent to lift/loading bay)
Returns (accessed by external returns chute)
Automated book return system
Document supply area
Shelving/sorting

3.0 Space Requirements

3.1 Introduction

This Brief provides some guidance as to the broad spatial planning requirements. Details of the spaces required need to be reviewed through a discussion involving all parties. Emphasis will be on flexibility.

3.2 Required Spaces

Entrance
Information/Loans Service
Reading Area
eZones/Education Space
Reading /study area
Group/Study Cluster Rooms
Pharmacy Population in 2010
Print Collection
Printing/Document Production
Staff Areas
Returns area

3.3 Broad space descriptions are provided below:

Entrance
- Combined entrance/exit
- Entrance should be clearly identifiable in the building context
- Customer assistance clearly visible
- Large welcoming space for orientation
- Multi corridor security gate for theft detection (at least 1.5 metres from any constructional metal and/or computer terminals)
- 2 stand-up information computers for quick access
- Internal courtesy phone
- Informal area and gathering space
- Large plasma screen
- Chilled water fountain
- After hours returns location (in PACE building)

Information/Loans Service

Service point for loans checkout, information enquiries and returns
- Adjacent to exit/entrance
- Two computer workstations at loans service point with two docket printers. One of these computers on low desk for wheelchair enquiries or for long enquiries – desk with no front for wheel-under
- Duress alarm
- Shelving for holds on open access
- Network printers, change machine, and card dispenser in this vicinity
- Easy access to staff copier/printer
- Auto loan service close enough for staff intervention
- In-desk desensitisers to deactivate security
- Telephones
- Interview area between staff member / user (perhaps in semi enclosed space)

Reading Area
- Low display shelving for recently received books and journals (single bay)
- Comfortable seating for 10 -15
- Quiet area with pleasant outlook

eZones/Education Space
- 1 training room with 24 workstations. Room needs to be able to divide into 2 areas to accommodate 11 students and 1 trainer in each room.
- 2 data projectors, projection screens (or plasma), whiteboards
- Lectern/desk in each space
- Storage facilities
- Blackout blinds
- Dimmable lighting with overhead lighting appropriate for screen-based work
- Telephone

Group/Study Rooms
- 3 group rooms each to accommodate 6 people (all with viewing facilities, network access, plasma screens and white board walls)

Training for students

SS&H

the hive

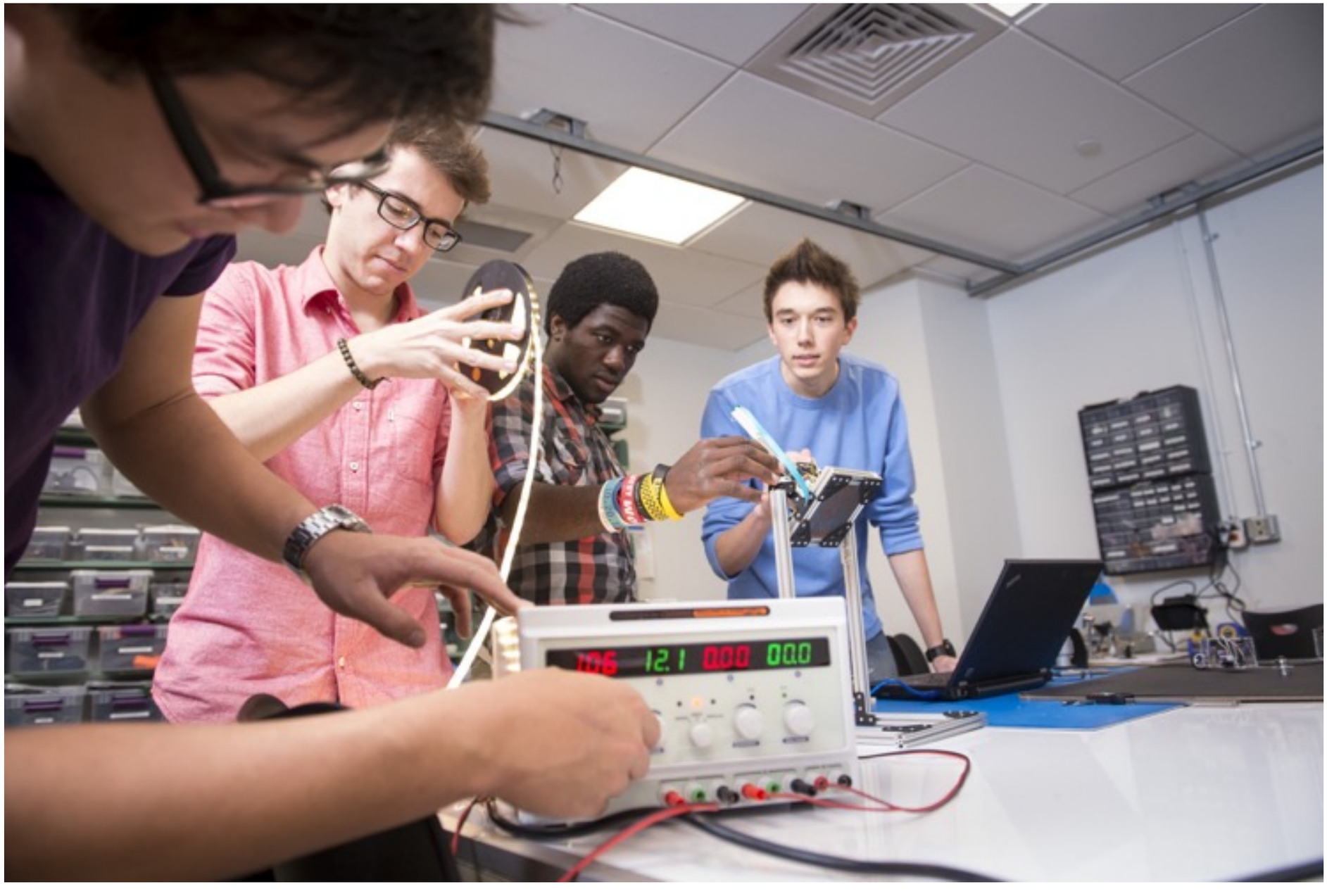
Case study 2

CMU - IDeATe

21st Century Complexity - Great Global Challenges

Requires collocated teams of diverse experts

and experiential inquiry – collaborative making



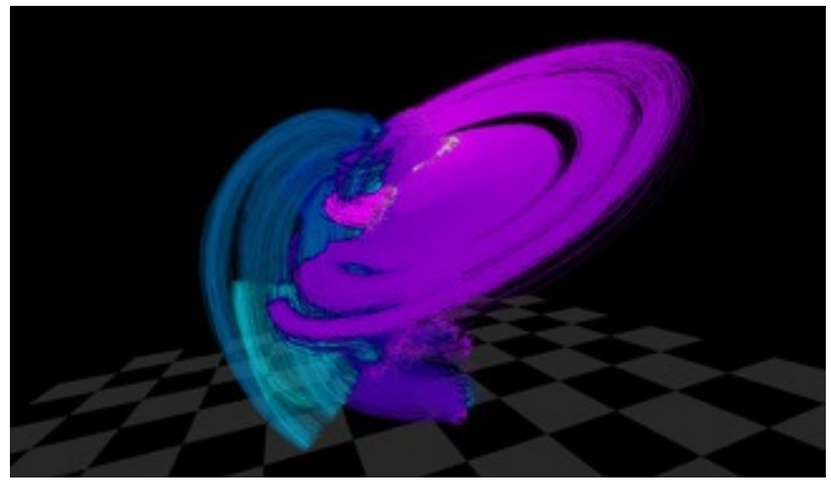
Collaborative Learning Through Making - a key characteristic of the residential experience

Learning from faculty and diverse peer cohorts

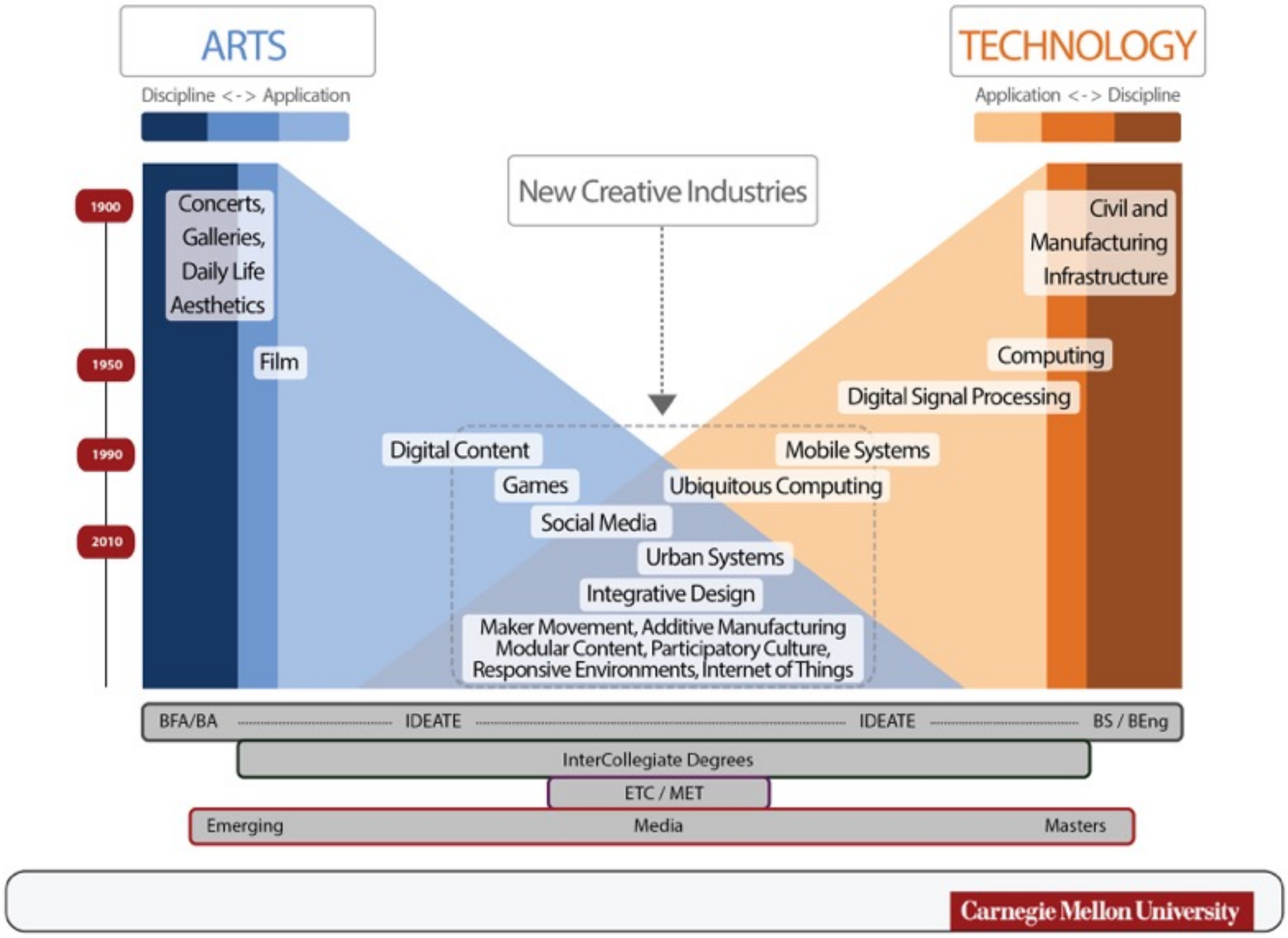
CMU as THE Destination for New Creative Industries Education and Research

Carnegie Mellon is the only U.S. University with

- top-ten ranked units in computer science, engineering, the arts and design
- distinguished record in collaborative technology-arts efforts (from HCII to the ETC and Traffic 21).
- top ten ranked units in business and computational social sciences



CMU as THE Destination for New Creative Industries Education and Research



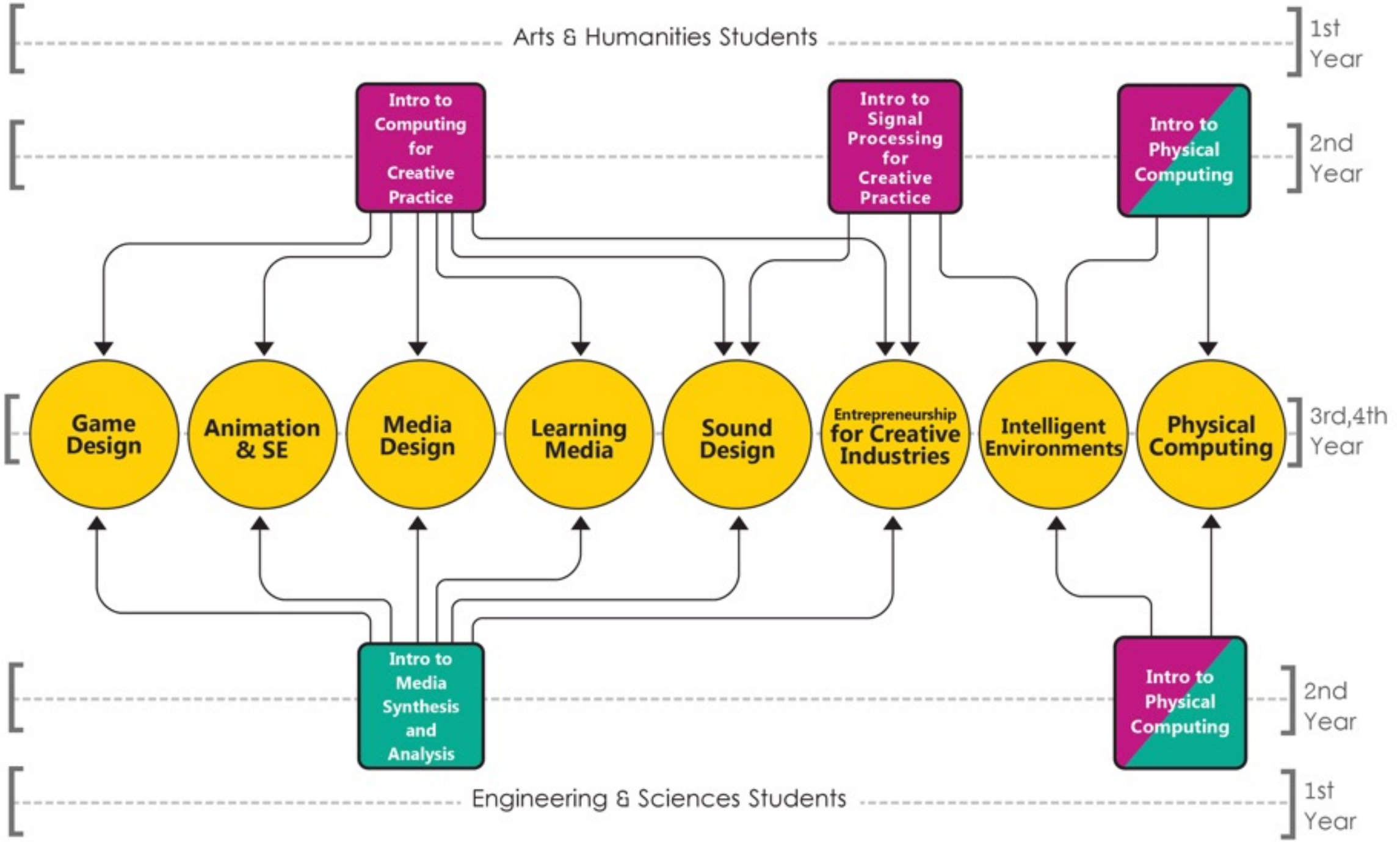


Diagram 01 **Integrative Design, Arts and Technology Undergraduate Concentrations**

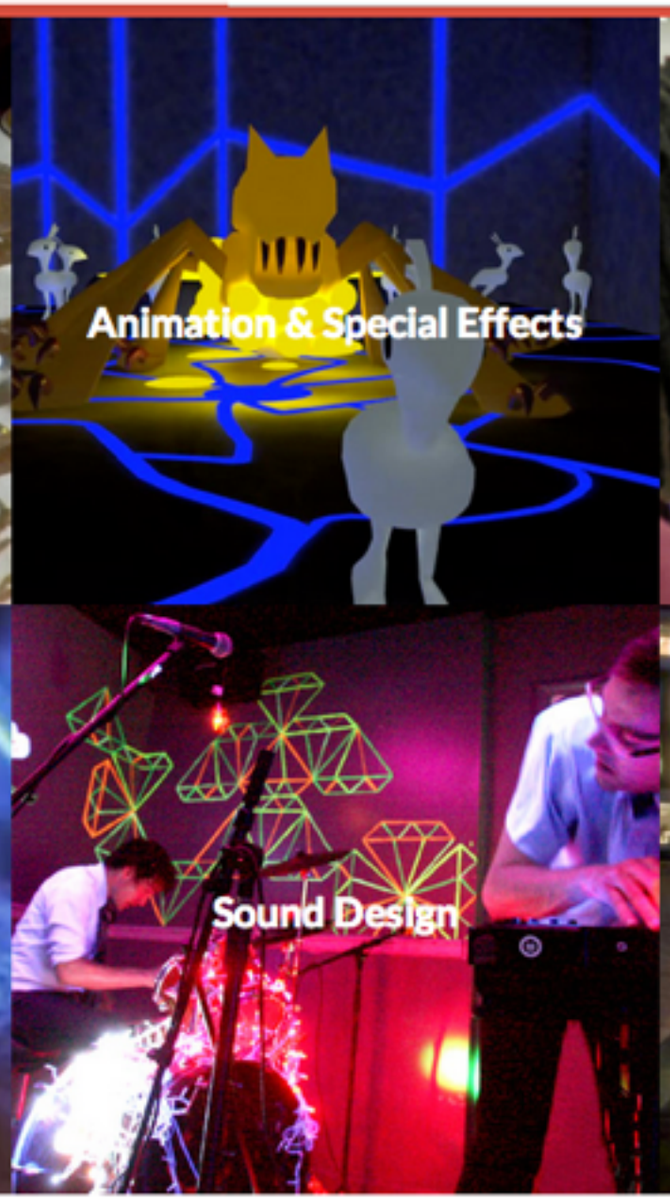
Carnegie Mellon University

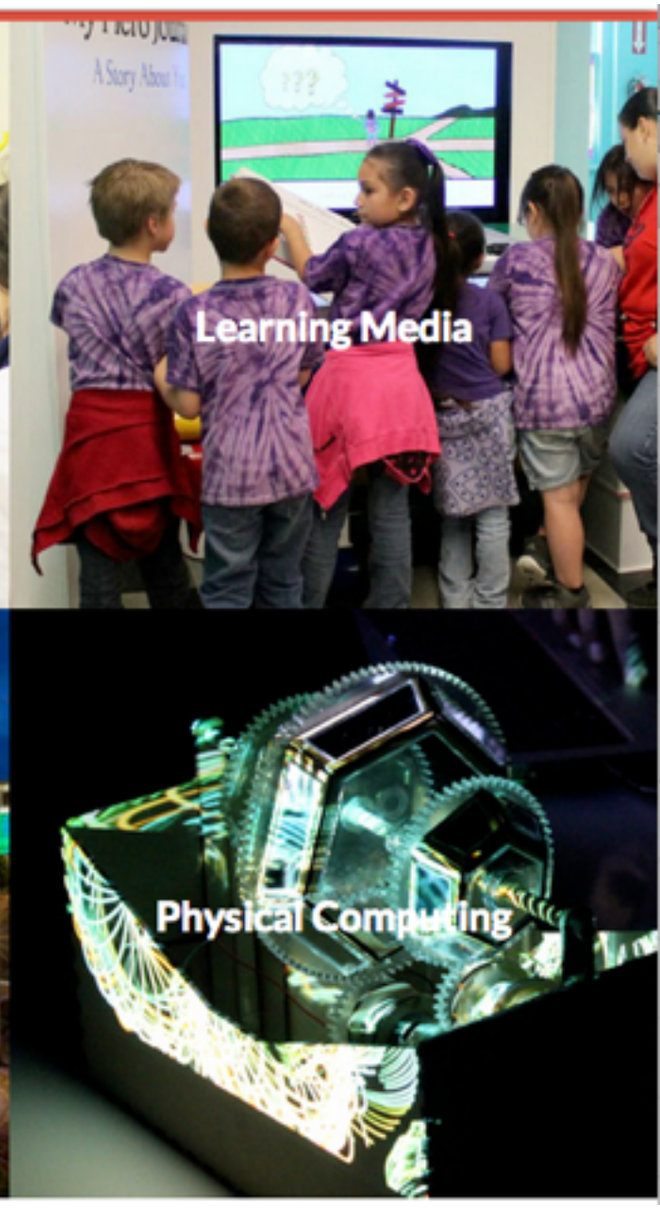
- Concentration or Minor
- Portal course for arts/humanities students
- Portal course for engineering/science students

Concentration Students Take: ❶+❷+❶

① Portal Course ② Concentration Area Courses ① Other Concentration Area Course

Eight Undergraduate Concentrations



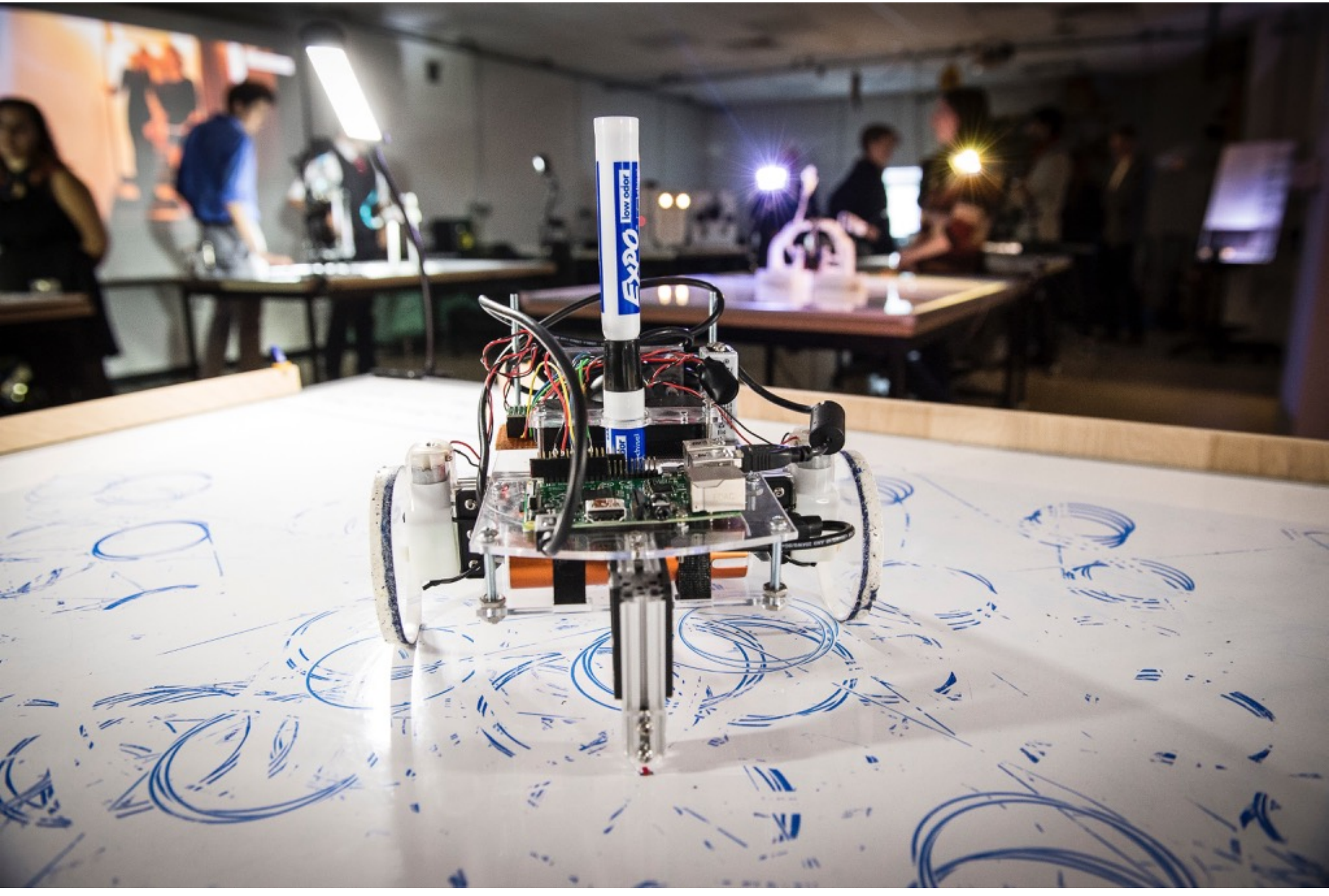


IDEATE@Hunt

- Contains:
  - a digital fabrication shop
  - a physical computing lab
  - an interactive media black box
  - traditional fabrication facilities
  - and collaborative design studios that also serve as classrooms

- learning through making key part of the residential experience at CMU
- evolution of the library into a mediated learning commons

1A7


Expo
low odor

THE LIBRARIAN

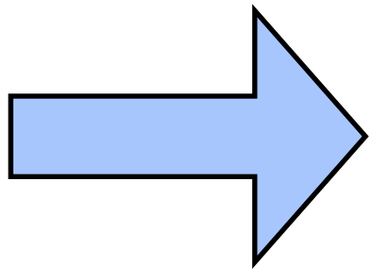
The role of librarians

Current state

Many libraries retain large numbers of librarians to catalogue and count

Even more librarians wait at service desks ‘just in case’

Few librarians leave the library building



Future state

Librarians embedded in research and teaching activities

Librarians become campus specialists in areas such as e-science, academic technology and research evaluation

Librarians have meaningful impact

Current barriers

Many librarians lack skills and useful qualifications
Many librarians are resistant to change
Academics do not believe librarians are useful or credible partners

New Roles for New Times:

Transforming Liaison Roles in Research Libraries

August 2013

Janice M. Jaguszewski
Karen Williams

LEVERAGING THE LIAISON MODEL

FROM DEFINING 21ST CENTURY RESEARCH LIBRARIES TO IMPLEMENTING 21ST CENTURY RESEARCH UNIVERSITIES

ANNE R. KENNEY
CARL A. KROCH UNIVERSITY LIBRARIAN
CORNELL UNIVERSITY

Ithaka S+R

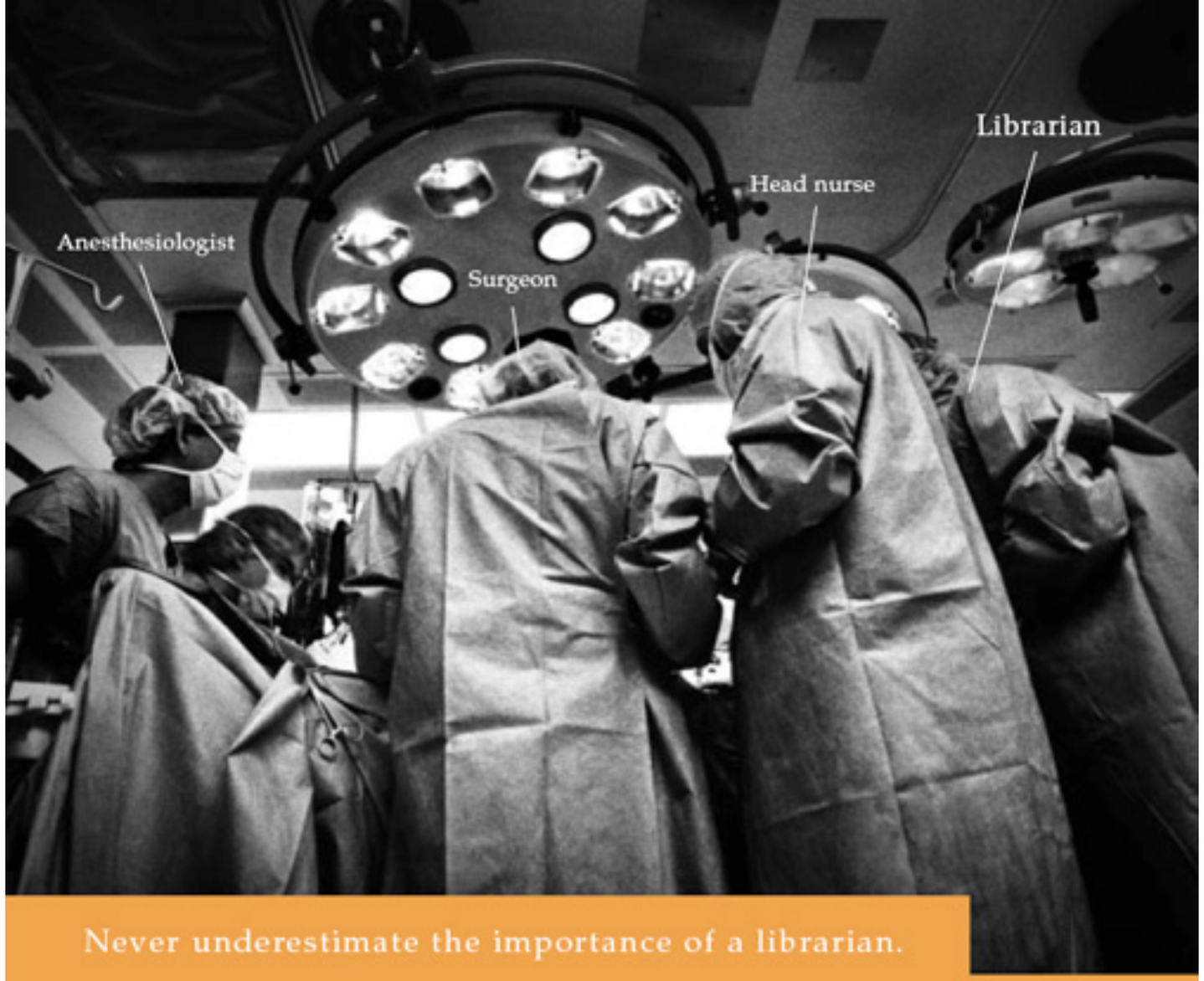
RLUK Research Libraries UK

Re-skilling for Research

An investigation into the role and skills of subject and liaison librarians required to effectively support the evolving information needs of researchers

Conducted for RLUK by Mary Auckland, OBE MSc HonFCLip

January 2012



Never underestimate the importance of a librarian.

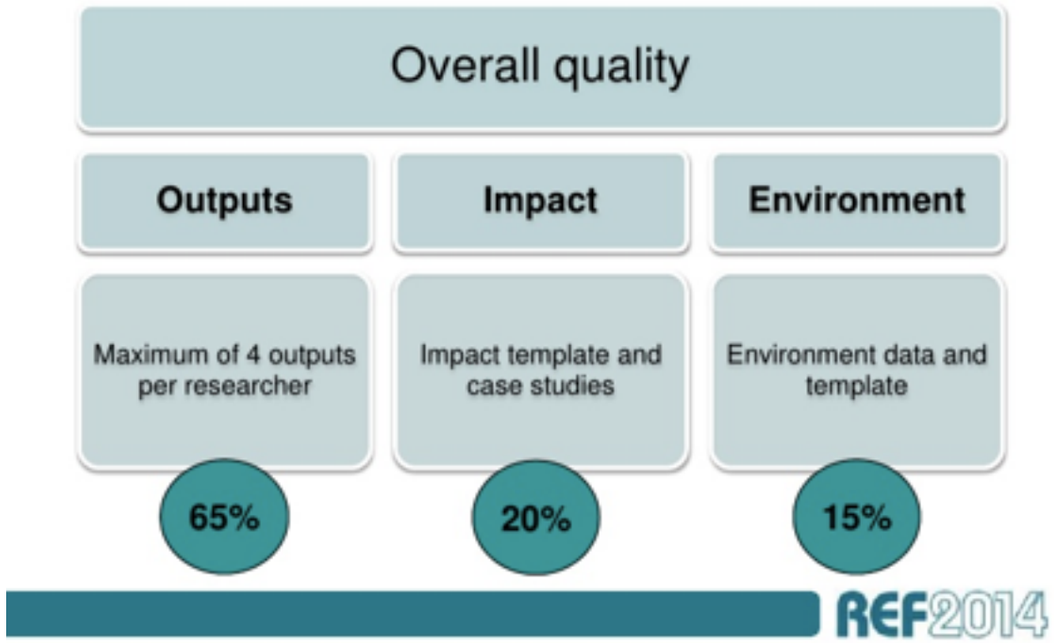
Okay, chances are you won't actually find a librarian in the operating room. But librarians do play a vital role on any surgical team enabling research breakthroughs and point-of-care solutions. Whether you're choosing information for specific research communities or decision-support for professionals, Elsevier offers access to a world of information that knows no boundaries. Select from a wide range of scientific, technical and health information available in multiple media, including innovative electronic products like ScienceDirect® and MD Consult. After all, getting the right information into the right hands is critical to the success of any operation. **BUILDING INSIGHTS. BREAKING BOUNDARIES.™**

ELSEVIER

http://www.rin.ac.uk/our-work/using-and-accessing-information-resources/value-libraries-research-and-researchers

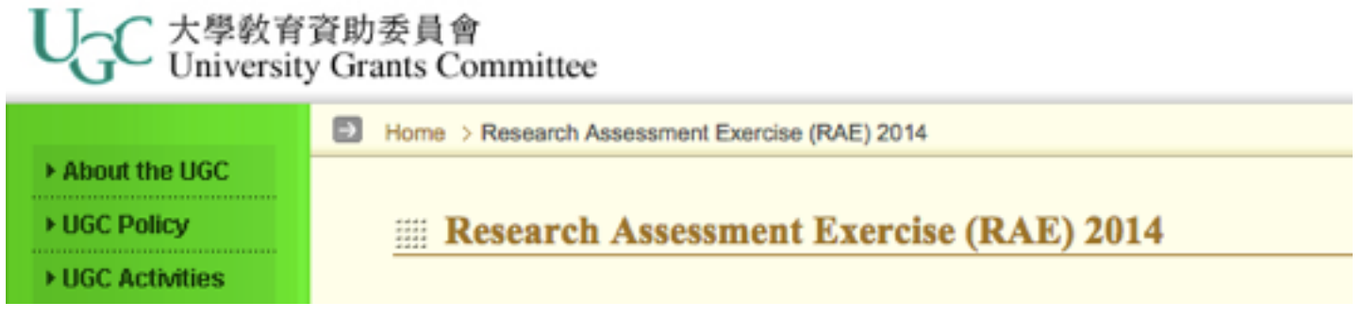
Overview:

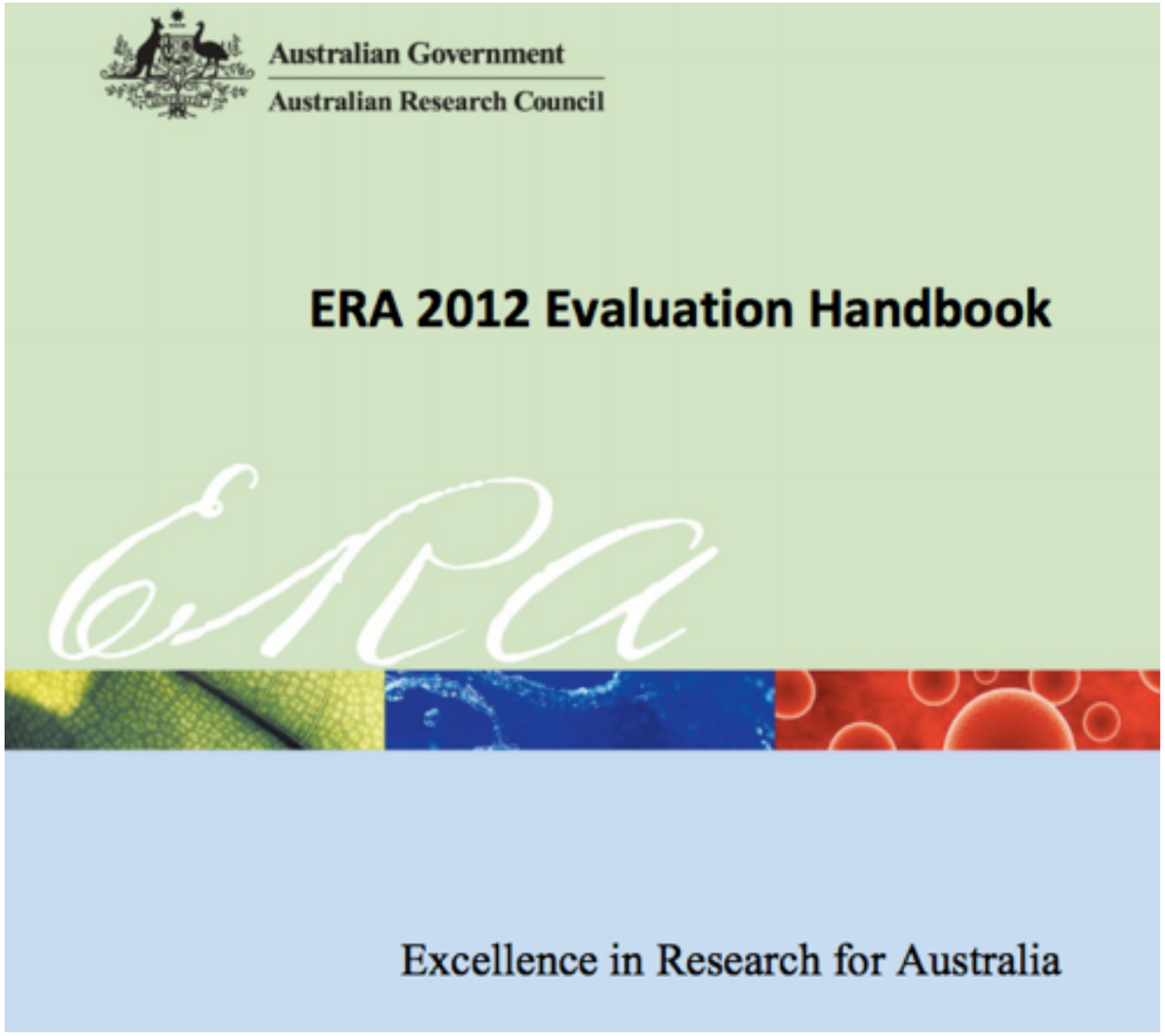
The assessment framework



Standard Evaluation Protocol
2015 – 2021

ERA 2015 | Excellence in Research for Australia





ERA uses a number of bibliometric tools for the citation analysis indicators. Two broad types of citation analysis are used in ERA: Relative Citation Impact (RCI) and the distribution of publications based on comparisons with field-specific benchmarks.

REF will assess universities on the basis of the quality of research outputs, the vitality of the research environment and the wider impact of research.

Research Publications Impact: Metrics

Information on research impact measures, including citation metrics, journal quality indicators, benchmarking, altmetrics and collaboration measures.

Metrics

Metrics, commonly referred to as bibliometrics, includes basic measures such as numbers of publications and the citation counts to them. As a broader topic, it can be include the h-index, journal quality metrics like the Impact Factor, collaboration metrics and citation impact measures.

Metrics are **discipline-specific** and **they vary over time**. It is therefore important that they are **used in context**, taking into account the discipline and timeframe under consideration.

- San Francisco Declaration on Research Assessment (DORA)
  In December 2012, the San Francisco Declaration on Research Assessment (DORA) was initiated by the American Society for Cell Biology together with a group of editors and publishers of scholarly journals in recognition of the need to improve the ways in which some metrics are used in research evaluation.

Related guides

- Research Data Management Research Guide
- Open Access Research Guide

Where can I get help?

Your **Research Information Service Librarian** can assist you with citation analysis, journal impact factors, rankings and

Common metrics

Commonly used metrics include:

- Number of publications (typically peer reviewed journal articles, reviews & conference papers, scholarly books and book chapters)
- Career citation count
- Citations per paper (cpp)
- Percentage of papers cited
- h-index

These metrics are useful, though limited in scope. They are easily accessed via Scopus Citation Tracker, Web of Science Citation Report, ResearcherID Citation Analysis and Google Scholar profiles. See **here** for more information.

Metrics for grant writing and promotion

- Need some information about what sort of metrics you should use in a research grant application?
- Want to know how to support claims of research excellence, significance and impact?
- Would you like to provide information about the extent of your research collaborations?

Look at **Grant Writing: Using Metrics to your Advantage** for information about the various metrics available to you to support claims of research excellence, significance and impact, as well as how to demonstrate your collaboration extent. You will need to **login to UQeSpace** to access the file.
See also the presentation **"The dos and don'ts in individual level bibliometrics"** by Paul Wouters and Wolfgang Glänzel, presented at the 14th International Society for Informetrics and Scientometrics Conference in Vienna in July 2013.

What is a citation count?

A citation count is the number of times a research work such as a journal article is cited by other works. It is considered (by some) to indicate the quality of the work, the assumption being that

Training & Education

CWTS offers a range of courses on using bibliometric analyses for research management and research evaluation. Courses are regularly held in Leiden and we are also pleased to organize tailor-made on-site training courses. This training provides users of bibliometric analyses with the knowledge and skills they need to interpret bibliometric statistics properly and usefully.

CWTS Course 'Measuring Science and Research Performance'

This course is for everyone who wants to build a solid and comprehensive foundation in bibliometrics and research evaluation. This popular course was established ten years ago and is given by highly experienced scientists who have in-depth and up-to-date knowledge of all the latest developments in the field. The course provides a solid understanding of the role played by quantitative analyses in research evaluation. The core of the course is devoted to bibliometric analysis approaches and examines their rationales, methodology and limitations. The programme offers both lectures and hands-on interactive modules.

» Read more

Training & Education

- CWTS Course for Professionals
- Advanced Citation Analysis
- VOSviewer Course
- Tailor-made Training Courses
- Minor Science and Technology in ...
- Master and PhD Thesis Supervision

Share this page

Advanced Citation Analysis

The Advanced Citation Analysis course deals with all ins and outs of professional citation analysis and its use in research assessment contexts. The course can be seen as a follow up on

Current collaboration | Potential collaboration

Map | Table

Export | Shortcuts | Find Institution

Institutions collaborating with Carnegie Mellon University

Worldwide | All sectors | ← Filter for more (regional) detail or filter by field at the top of the page

1,883 collaborating Institutions | 11,038 co-authored publications

Collaboration by Carnegie Mellon University

United States | More details on this Institution

Source: Scopus data up to 05 May 2015 | 2010 to >2015 | Computer Science

Current collaboration | Potential collaboration

Map | Table | Export | Shortcuts | Find Institution

Institutions collaborating with Carnegie Mellon University

Worldwide | Corporate | reset filter

81 collaborating Institutions | 931 co-authored publications

Institution	Co-authored publications	Co-authors at Carnegie Mellon University	Co-authors at the other institution	Field-Weigh
Intel	180 ▼	217 ▼	84 ▼	4.03
Microsoft USA	179 ▼	160 ▼	178 ▲	3.36
IBM	143 ▼	107 ▼	135 ▼	2.17
Google Inc.	87 ▲	112 ▲	94 ▲	3.21
IBM Research	42 ▼	47 ▼	55 ▼	1.43
Microsoft Research Asia	41 ▼	58 ▲	51 ▼	3.22
General Motors	29 ▼	37 ▼	15 ▼	4.07

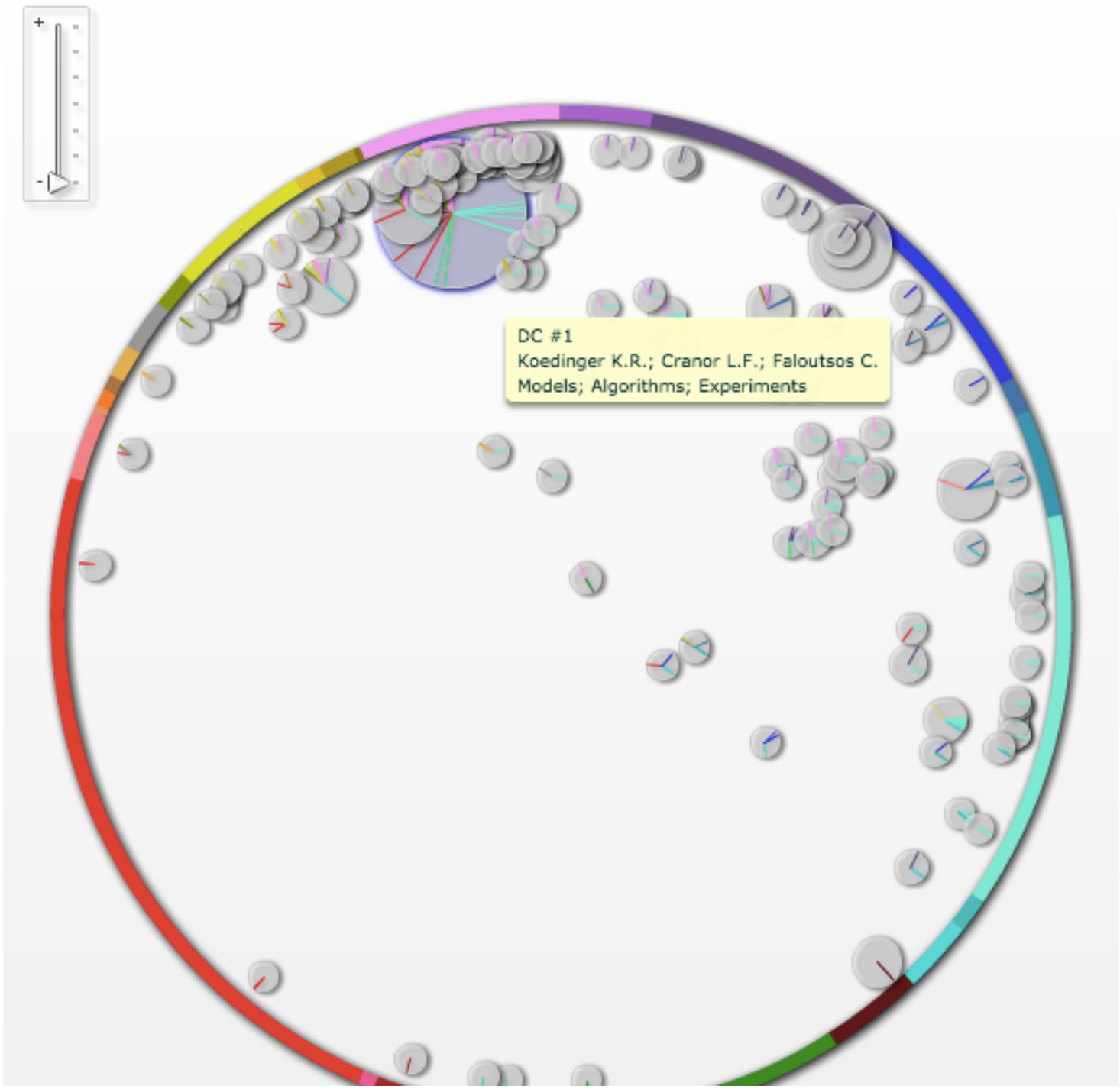
Browse competencies

Export ▾ Shortcuts ▾

Competencies of Carnegie Mellon University in 2013 based on an analysis of publications over the period 2009-2013

Table | Circle | Matrix

Filter competencies by



UNIVERSITY OF CALIFORNIA

Research *Impact*

About

The University of California is one of the leading academic research enterprises in the world. UC research has contributed to California's emergence as the intellectual and economic power that it is today. Almost all of the industries in which California is a world leader – biotechnology, telecommunications, digital media, computers and semiconductors, and environmental technologies – grew out of university-based research.

Innovation and technology transfer

- UC research produced 1,581 new inventions – an average of four a day – in 2011 alone.
- UC develops more patents than any other university in the nation. It holds 3,900 active U.S. patents, many of which have led to creation of today's leading industries.
- More than 600 startup companies have been formed with UC inventions; 58 in 2011 alone.

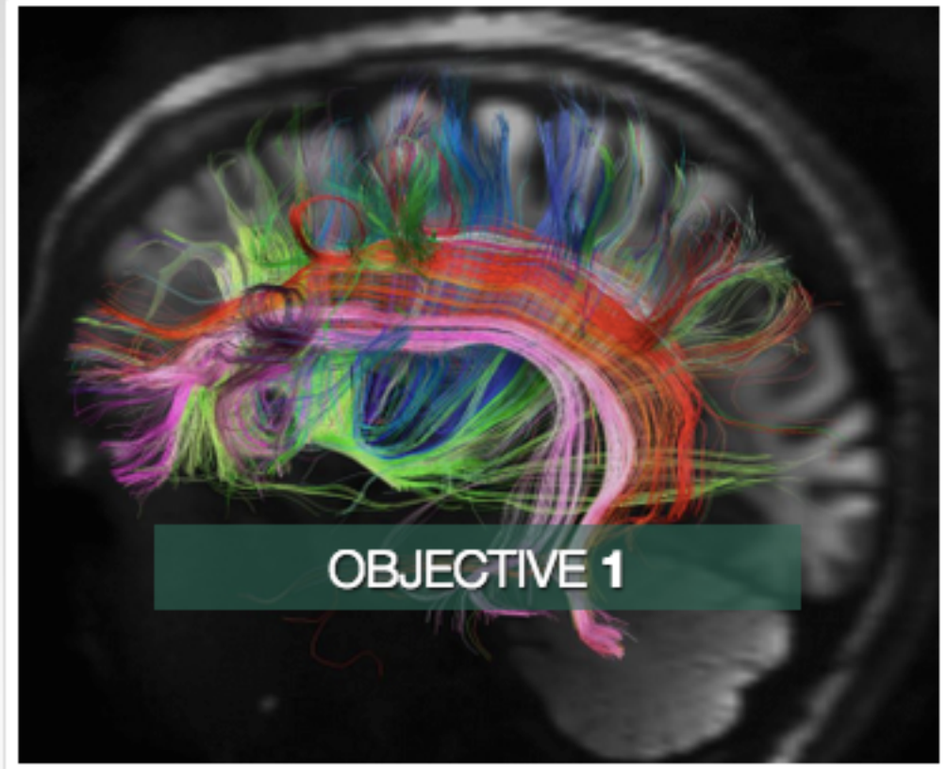
UC Technology Transfer Annual Report, 2011

Research budget

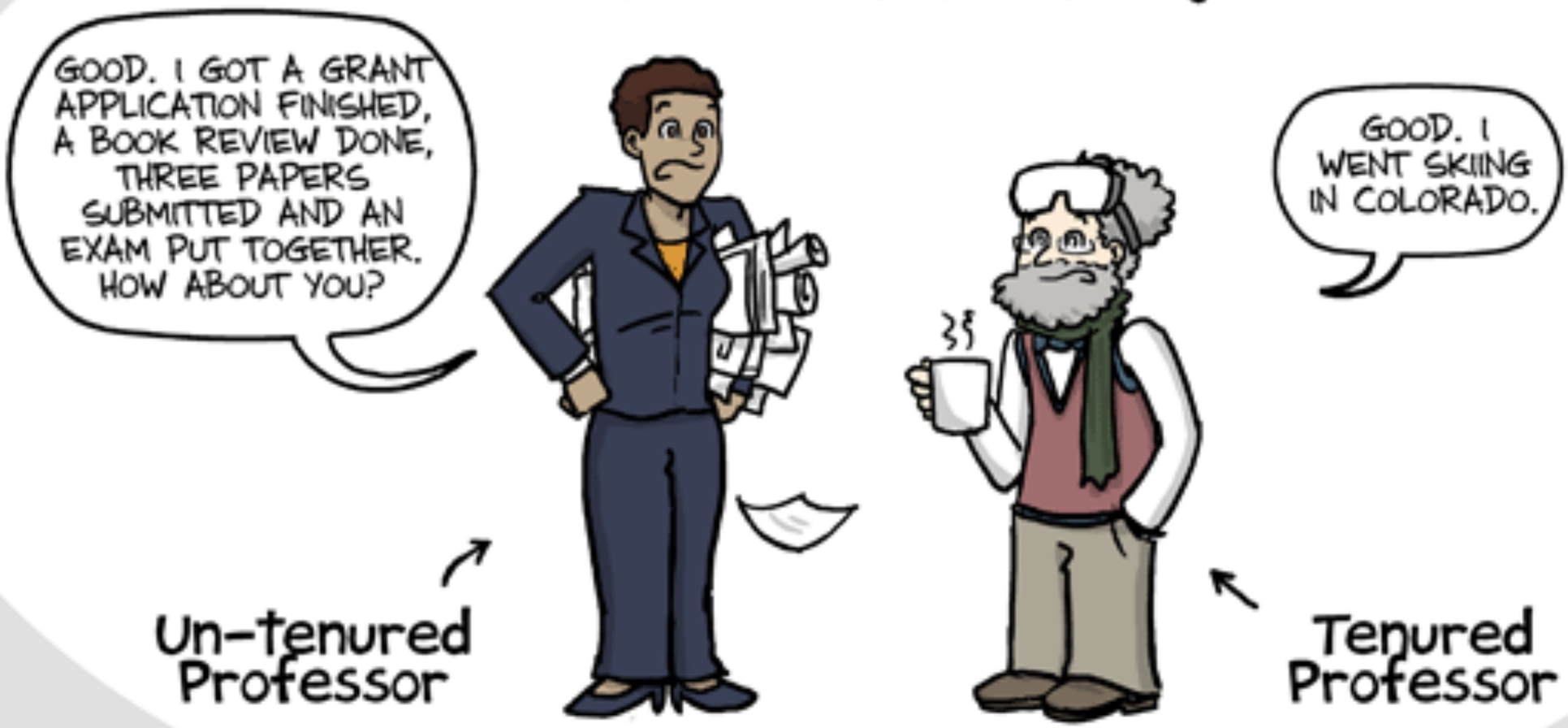
UC investigators received $4.4 billion in research funding in the 2011-12 fiscal year.

- For every $1 in research funding provided by the state of California, UC secures $7 more in federal and private dollars.
- Nearly 75 percent of UC's research funding comes from federal agencies and private sources, with approximately 50 percent from federal funds.
- UC is a leader among universities receiving research awards from the National Institutes of Health and the National Science Foundation. Other federal agencies that figure prominently in UC's research awards are the National Science Foundation, Department of Defense, National Aeronautics and Space Administration, and Department of Energy.
- State funds accounted for about 11 percent of UC's research expenditures in 2011-12.

Strategic Research Priorities



HOW WAS YOUR SPRING BREAK?



JORGE CHAM © 2013

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Connecting Research and Researchers

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Researcherid.com

Google Scholar™

refine your research

SCOPUS™

Cornell University Library

arXiv.org

PubMed

SciVal Experts

Identify expertise and enable collaboration

Introducing InCites™

FIND OUT MORE

Customized, citation-based research evaluation on the Web

CURATION

http://www.oclc.org/research/publications/library/2014/oclcresearch-evolving-scholarly-record-2014-overview.html

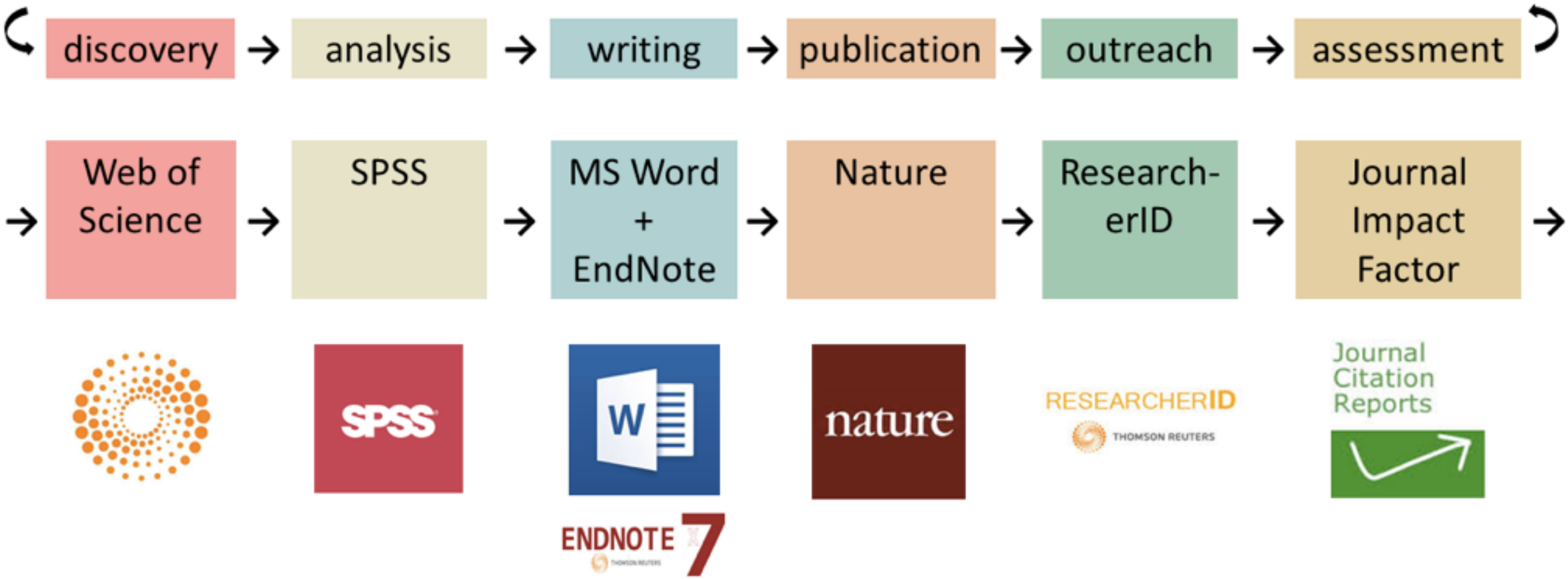
101 Innovative tools and sites in 6 research workflow phases (< 2000 - 2015)

January 2015

all logos excluded

http://figshare.com/articles/101_Innovations_in_Scholarly_Communication_the_Changing_Research_Workflow/1286826

Traditional workflow



All of these tools licensed by institution

Open Science

All of these tools accessible by researcher

Open Web Resources

‘Published’ materials

In many collections

Licensed

Purchased

Low Stewardship

High Stewardship

In few collections

Research & Learning Materials

Special Collections
Local Digitization

https://www.oclc.org/content/dam/research/publications/library/2014/oclcresearch-collection-directions-preprint-2014.pdf

SUCCESS

Size doesn't matter any more

Traditional library metrics

- Number of volumes
- Number of serials subscriptions
- Reference requests
- Gate count
- Number of issues
- Anything else that moves and is easy to count

Evolving library metrics

- Impact on student recruitment and retention
- Impact on student learning outcomes
- Contribution to research excellence
- Impact on broader economic, social and health outcomes
- Return on investment

Making a difference

Adverse event avoided	Percent
Hospital admission	11.5
Hospital acquired infection	8.2
Surgery	21.2
Additional tests/procedures	49.0
Additional out-patient visits	26.4

Marshall (1994) The impact of information services on decision making

Making a difference

Adverse event avoided	Percent
Hospital admission	11.5
Hospital acquired infection	8.2
Surgery	21.2
Additional tests/procedures	49.0
Additional out-patient visits	26.4
Patient mortality	19.2

Marshall (1994) The impact of information services on decision making

The need to understand

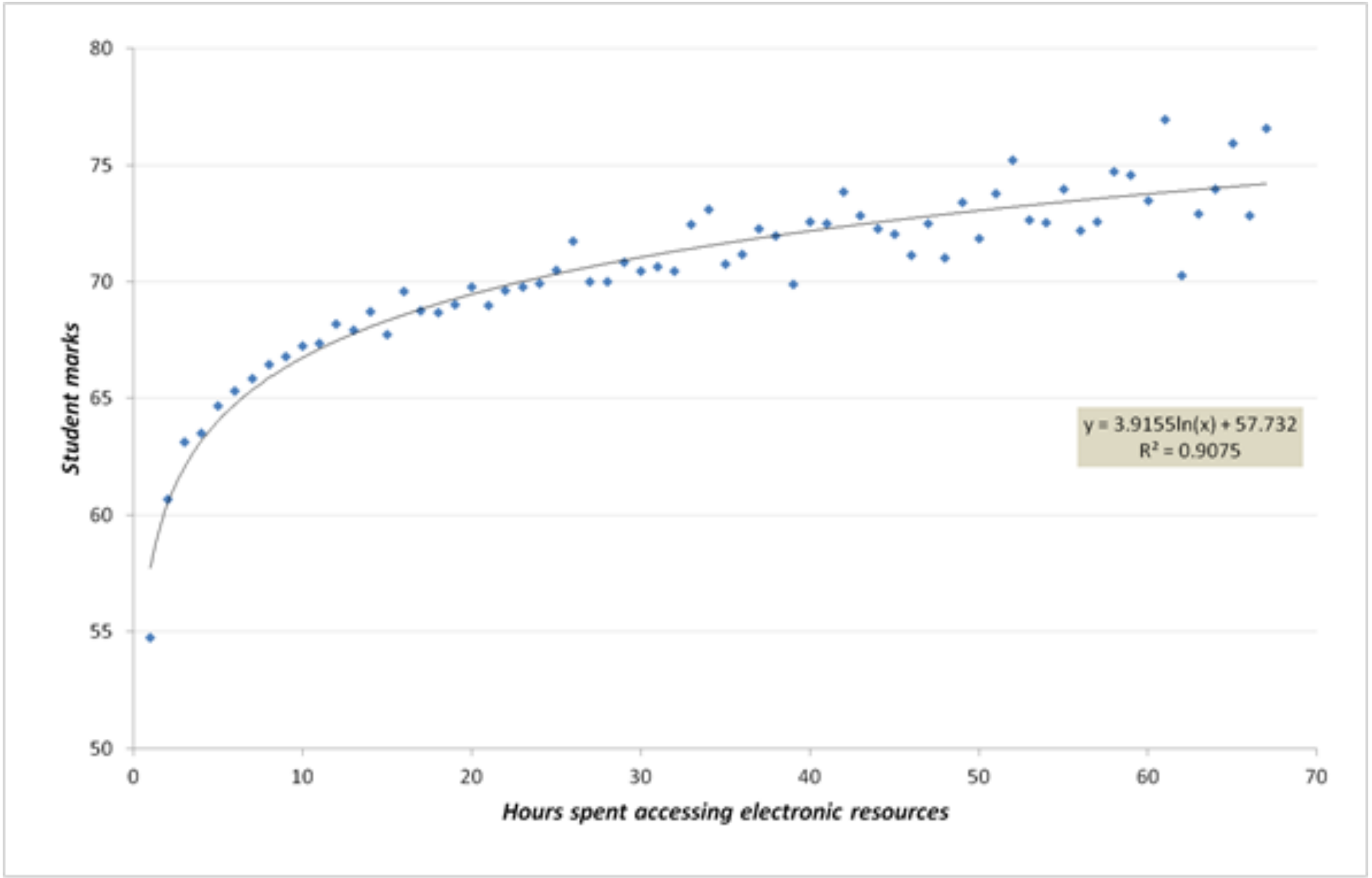
- Dubious about some studies which make claims about the value of libraries
- Commissioned a study to assess the value library-provided information resources deliver to their research communities

Summary finding

- The final scenario would result in total costs to the institution of $81.4m compared to actual spend of $34.5m - a financial return of 136 percent

The UOW Library Cube

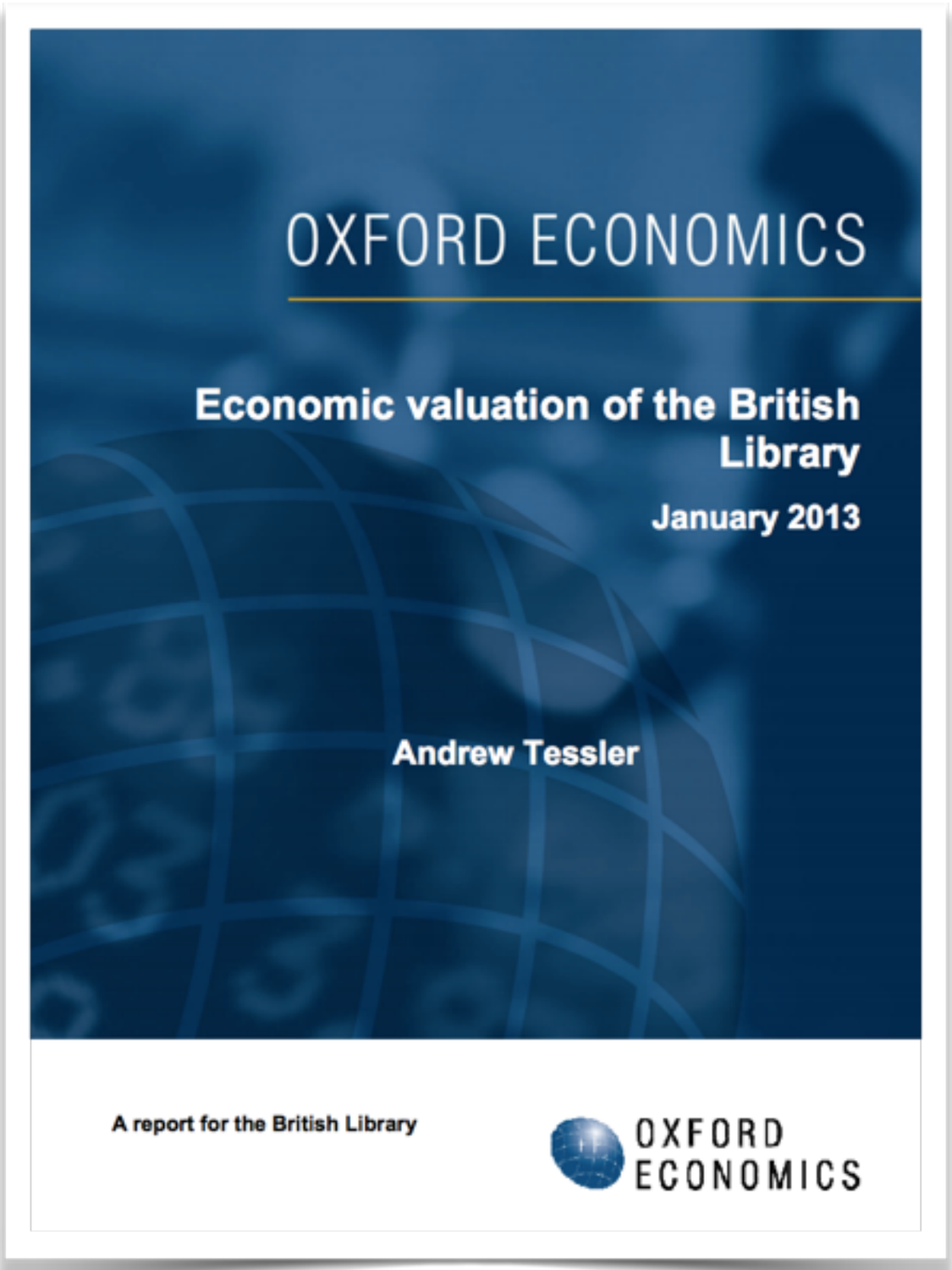
library resources + student use = value


80
75
70
65
60
55
50
0
10
20
30
40
50
60
70
Student marks
Hours spent accessing electronic resources
y = 3.9155ln(x) + 57.732
R² = 0.9075

How do we add value?

- British Library adds £419m of value to the economy each year

http://www.bl.uk/aboutus/stratpolprog/increasingvalue/britishlibrary_economicevaluation.pdf



Carnegie Mellon University

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cmkeithw

Keith Webster