Research and Academic Engagement Benchmarking

David Greenbaum and Jenn Stringer

RTLTC 5/20/2015

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Research & Academic Engagement (RAE) Benchmarking

- Benchmarking work overview
- Progress Report
  - LMS: bCourses
  - Research Computing: BRC
  - Research Data Management
  - Content & Collaboration: bConnected
  - Consultation Support
- Strategic Planning

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Research & Academic Engagement (RAE) Benchmarking*

Ensure UC Berkeley maintains the highest quality services to support research and teaching by:

- Benchmarking Berkeley technology services with peer institutions
- Developing a set of recommendations around future resource realignment and investments
- Fostering collaboration and a shared understanding across domains and service areas

*Benchmarking framework developed at NYU

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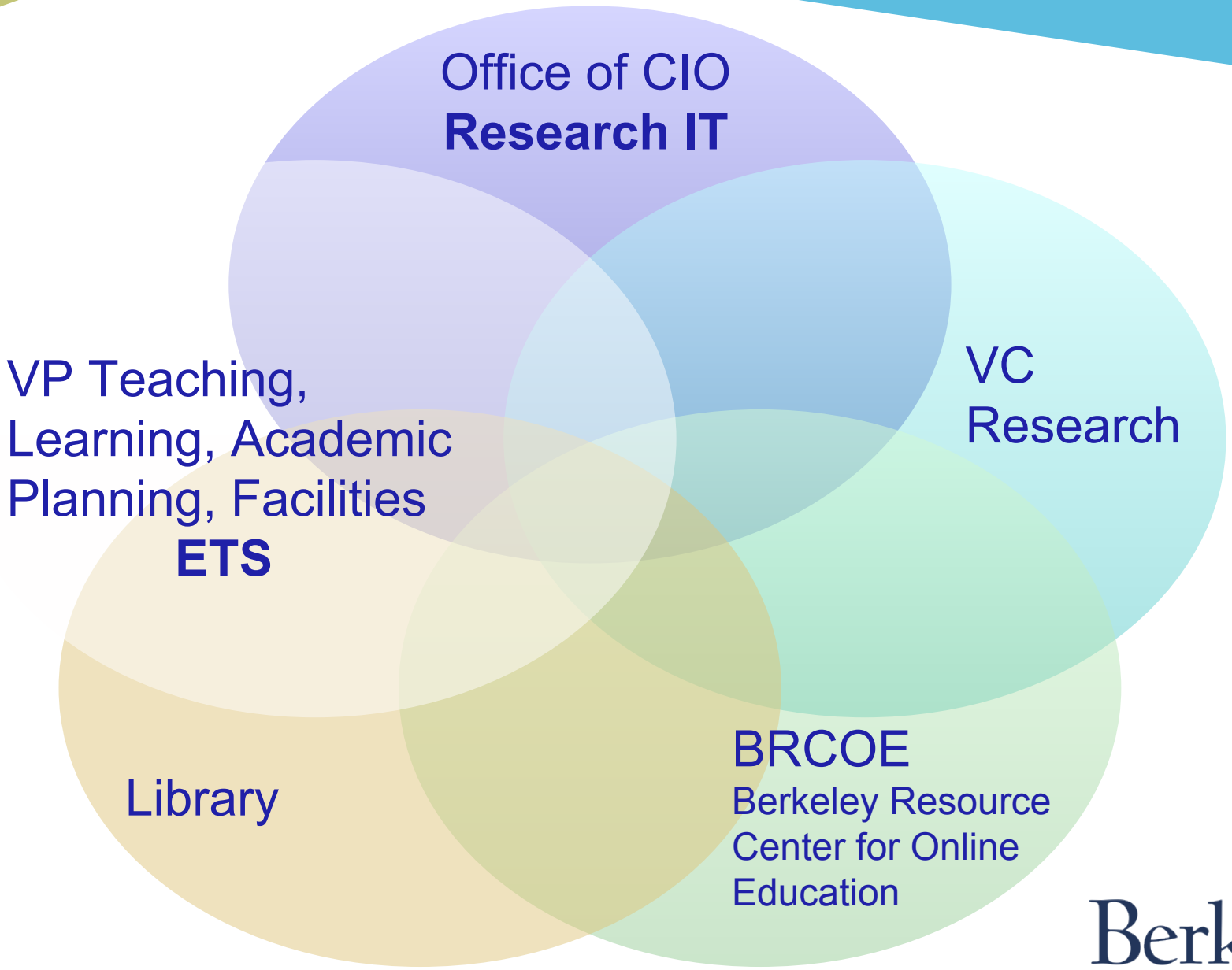

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RAE Benchmarking Goals

Ensure UC Berkeley maintains the highest quality services to support research and teaching by:

- Benchmarking Berkeley technology services with peer institutions
- Developing a set of recommendations around future resource realignment and investments
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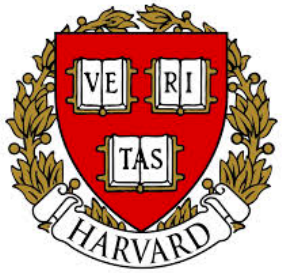
RAE Benchmarking

Define	Research	Share
Identify Peer Institutions	Gather Benchmarking Data from University Websites	Narrative Summary of Research Findings
Define Service Areas	Record Data in Worksheets	Group Presentation & Discussion
Develop Benchmarking Criteria	Follow-up Phone/Email Interviews	One Page Executive Summary

Berkeley Peer Institutions



COLUMBIA UNIVERSITY

UCLA

NEW YORK UNIVERSITY

Massachusetts Institute of Technology

UCSD

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Research Services		Teaching & Learning Services	
Berkeley Research Computing (BRC)		Online Courses	
Research Data Management		Learning Management Systems & Support	
Data Analysis: Quantitative & Qualitative		Instructional Content Creation	
Data Visualization & GIS		Technology Enhanced Teaching & Learning	
Preservation & Archival Services		Learning Spaces	
Linked Open Data & Semantic Web		ePortfolio Support	
Research Applications		Course & Program Evaluation	
Museum, Archives, & Special Collections			
Survey Research Support			
Enabling Services			
Collaboration & Communication		Portals, Dashboards & Aggregators	
Video & Web Conferencing		Web Publishing	
Google Apps for Education		Scholarly Networking	
Software Licensing & Distribution			

Peer Benchmarking Report:
Instructional Content Creation

August 16, 2013

Subject Experts
Ben Hubbard, ETS
Zach McHenry, BRCOE
Noah Wittman, IST-API/ETS

Description
Programs, tools, and services that empower faculty to develop digital learning assets (e.g. videos, simulations, online learning modules, etc.) for use in on-campus, hybrid, and/or online courses.

Criteria: Program Coordination, Breadth of Service Portfolio, Customer Experience (Project Management, Instructional Design, Video/Media Production, Platform support and customization), Resources/Facilities, Cost Recovery Model

Overview

Tier	Criteria	Institutions

1	• Highly coordinated services (e.g.,Office of Digital/Online Learning, Vice Chancellor for Online Learning)
	• Broadly available portfolio of services that support content development for online learning initiatives and are clearly communicated to faculty:
	  ○ Instructional Design
	  ○ Course Content/Multimedia Production Support
	  ■ Multimedia Production Studio
	  ■ DIY Support - Workshops, Training, Equipment Checkout, Software Licensing
	  ○ Platform Support & Customization
	• Clearly articulated funding model that leverages combination of central funding and revenue generation (no way to know through web-scan, hoping to surface whether this exists through the deep-dive).
		Stanford, MIT

2	• Services that support content development for online learning are offered to campus faculty by multiple organizations within the institution and are not closely coordinated or offered under the direction of a single organization. • Some resources and services that support content development and online learning are broadly available and	Berkeley, Harvard, UCLA

General Links & Citations

- Chronicle of Higher Education Digital Campus
- 2013 NMC Horizon Report
- ACM White Paper on Online Learning
- Chronicle of Higher Ed Article -- How Worries About Online Education Helped Oust the UVa President. President advocated for incrementalist approach in contrast to board members sense of urgency outlined here
- Insider Higher Ed Article on now dead California Bill SB520 to Promote Online Education
- UT Report on Technology-Enhanced Education

Criteria: Program Coordination
Extent to which campus has invested in campuswide online learning or digital learning program that coordinates and communicates ICC service offerings.

Tier 1 (robust program)	Tier 2 (significant effort)	Tier 3 (some)	Tier 4 (minimal/none)
Stanford, Michigan	Harvard, Berkeley	NYU, Michigan, UVa, Columbia	UCSD

Observations:

- Stanford has Vice Provost for Online Learning
- Stanford also has robust portal around online learning, although ICC services have not yet been clearly defined.
- MIT has Office of Digital Learning, which incorporates MITx, MIT OCW, OEIT (media production services)
- BRCOE is not yet well integrated with other campus services
- UCLA has great Online Instruction Resource Website
- Program driven by clearly articulated goals, values, and pedagogical principles: MIT, Stanford, Open University, BRCOE

Criteria: Instructional Design Services
Services to assist faculty in redesigning existing courses or developing new courses for online, hybrid (partially online, partially face-to-face) and web-assisted (supplement to a traditional course) modes of instruction. This covers learning objectives, platform selection, pedagogical strategies, video/multimedia, content development strategies, student assessment, course evaluation.

Tier 1 (robust/exemplary)	Tier 2 (services)	Tier 3 (some online resources)	Tier 4 (minimal/none)
	UCLA, Stanford, Berkeley, Columbia, Harvard, MIT	Michigan, NYU	UVa, UCSD

Observations:

Research Computing (HPC +)

Subject Experts

Steve Masover, Patrick Schmitz, Chris Hoffman - RIT; Harrison Dekker - Library Data Lab

Description

Includes provision of "traditional" HPC (highly parallelized computing); cloud-based HPC; and high-powered workstations (including VMs) to support computation at a level between a typical desktop/laptop and an HPC cluster or VM array. Secure compute, storage, data transfer, and data archiving are also in scope. Services here are provided for both research and instruction.

Description

Benchmarking Criteria

- **Coordinated program** that includes a suite of coordinated services to support computational research and teaching, including a roadmap for service evolution.
- **Support for diverse computational research techniques**, e.g., 'traditional' HPC, virtual machine arrays, and high-powered workstations (which may be virtualized); as well as data transfer and lifecycle management.
- **Training**: Availability and breadth of training.
- **Documentation**: Availability and breadth of documentation.
- **Consulting services**: Including assessment and advice on aligning research problems/needs to available computational resources; grant writing, hardware and software purchasing, and software design, tuning, and refactoring consultation.

Criteria

Summary of Findings

Tier	Description	Institutions
1	• Strong across all benchmarking criteria	UC San Diego, Princeton, Northwestern
2	• Strong in most benchmarking criteria, stronger in some areas than others.	Harvard, Michigan, MIT, NYU, UCLA, Virginia
3	• Mixed assessment	Columbia, Stanford, Cornell, UW
4	• Weak assessment in most or all areas.	**Berkeley**

Findings

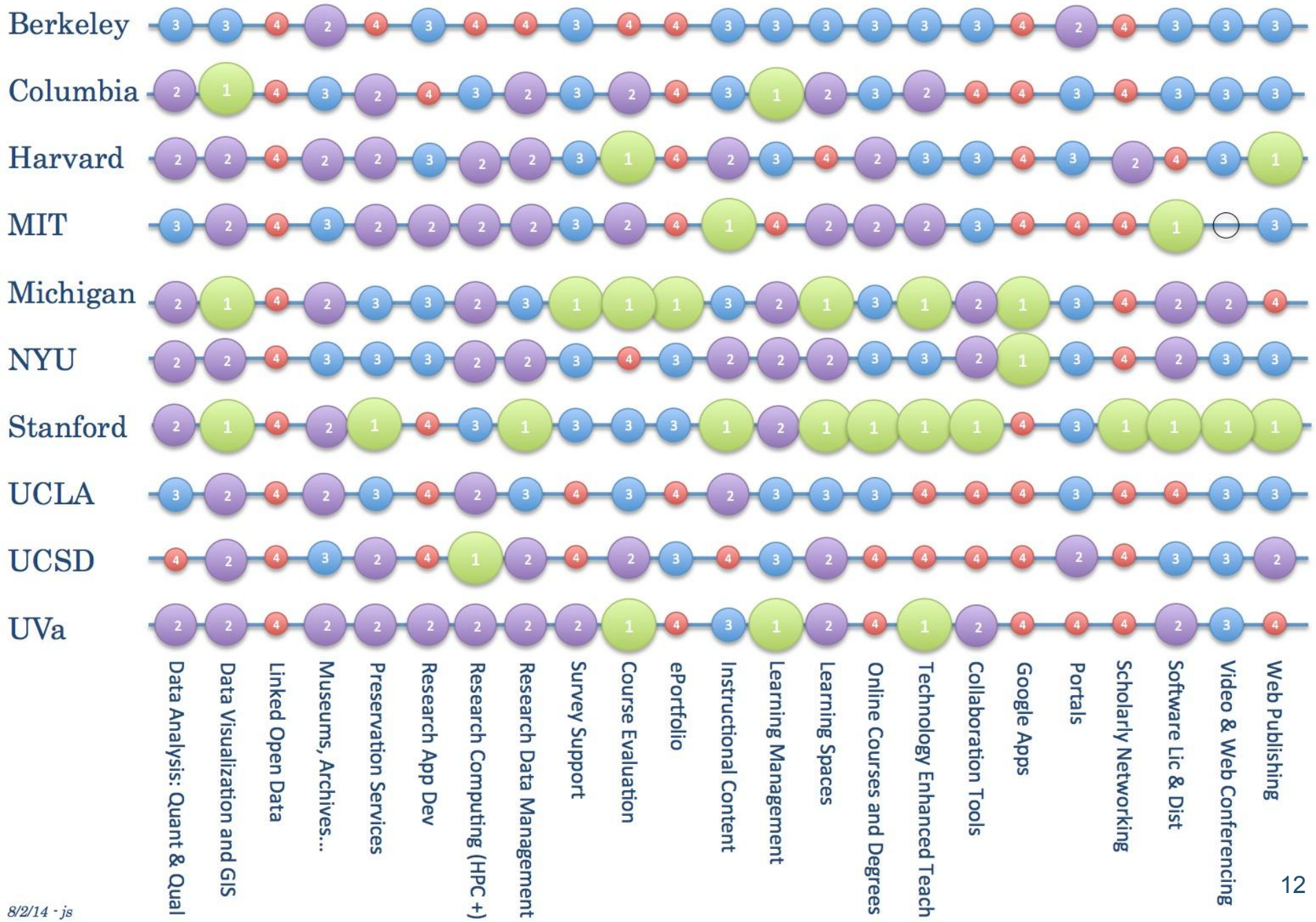
Strategies for Improvement

Tier	Action
4 → 2	Build a comprehensive program for research computing that provides a range of services from traditional HPC to cloud VM resources to virtual workstations. Develop a community of consultants who have joint appointments in schools, colleges, centers with RIT. One time investment of approx. $1.2 million and recurring investment of approximately $1.8 million.
2 → 1	Use Berkeley's strengths in innovation and partnerships with such groups as EECS/Amp Lab, D-Lab, BIDS, and science centers to grow new services in cloud-based HPC and virtual research workstations.

Recommendations

Research Services		Teaching & Learning Services	
Berkeley Research Computing (BRC)	**4**	Online Courses	**3**
Research Data Management	**4**	Learning Management Systems & Support	**3**
Data Analysis: Quantitative & Qualitative	**3**	Instructional Content Creation	**3**
Data Visualization & GIS	**3**	Technology Enhanced Teaching & Learning	**3**
Preservation & Archival Services	**4**	Learning Spaces	**3**
Linked Open Data & Semantic Web	**4**	ePortfolio Support	**4**
Research Applications	**3**	Course & Program Evaluation	**4**
Museum, Archives, & Special Collections	**2**		
Survey Research Support	**3**		
Enabling Services			
Collaboration & Communication	**3**	Portals, Dashboards & Aggregators	**2**
Video & Web Conferencing	**3**	Web Publishing	**3**
Google Apps for Education	**4**	Scholarly Networking	**4**
Software Licensing & Distribution	**3**		

RAE (Research and Academic Engagement) Benchmarking Summary



Who have we presented to?

Internal

- EVCP Steele and VCAF Wilton
- VCTLAPF Koshland and CIO Conrad
- CoHSSD (Council of Human and Social Sciences Deans)
- VC Research Fleming
- CoSED (Council of Science and Engineering Deans)

External

- CNI (Coalition of Networked Information)
- RUCC (Research University CIO Conclave)
- *ARL Library Assessment Conference*
- *EDUCAUSE Workshop*

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What have we heard?

EVCP Steele and VCAF Wilton:

1. Identify campus priorities for RAE Services
2. Define the current "pain points" for for faculty and students
3. Put together the costs of improvement and a "bang for the buck" analysis
4. Identify organizational options that could lead to substantial improvement in service --- e.g., should we consolidate organizations rather than coordinate
5. Identify sequence of improvement in services over time: we can't do all at once; what should we do when

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What have we done?

- **Used findings to help prioritize work**
  - Confirmed our investment in online degrees, LMS, HPC
  - Prioritized rationalizing Content & Collaboration services

- **Governance**
  - Reinforced the need to create governance

- **Leverage academic partners**
  - Built the foundation for continued partnership
    CTL ✧ BRCOE ✧ RIT ✧ IST ✧ Library

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Research Services		Teaching & Learning Services	
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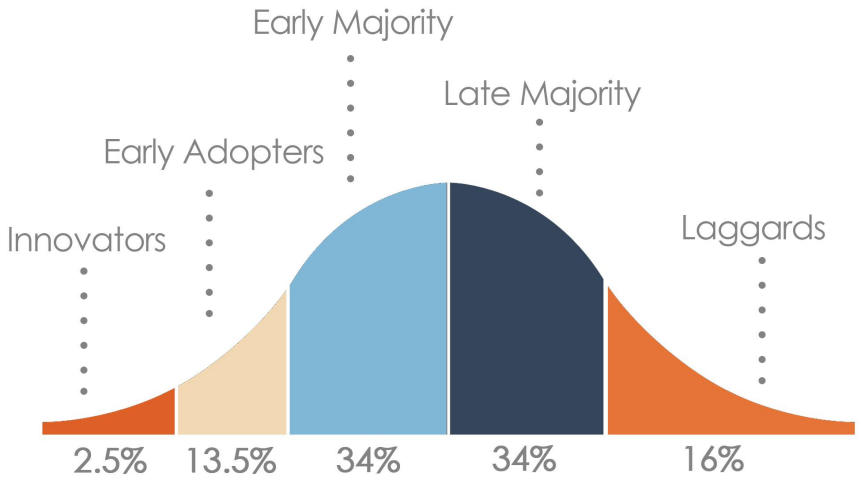
Video & Web Conferencing	**3**	Web Publishing	**3**
Google Apps for Education	~~(4)~~ ‡	Scholarly Networking	**4**
Software Licensing & Distribution	**3**		

Progress Report: LMS bCourses

- Late Adopters
- The Majority
- Innovators
- Students



Rogers Diffusion Of Innovation Bell

PhotoBizCoach.com
BeateChelette.com

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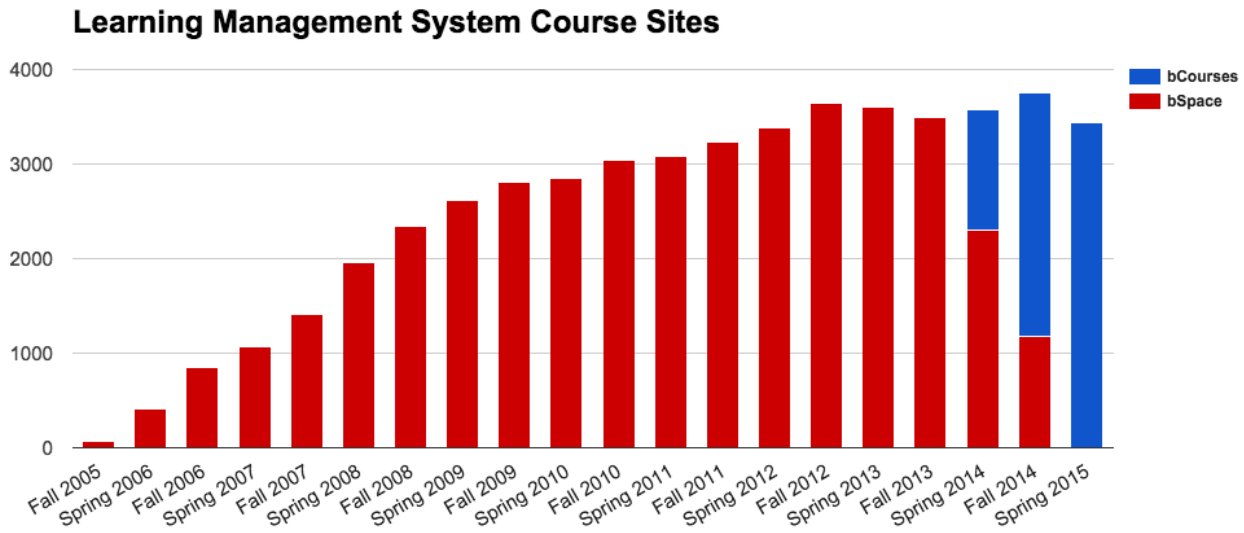
Late Adopters

Measures of Success



Spring Sites in bCourses

3438

Sites in bSpace

4

Not hard to use

70%

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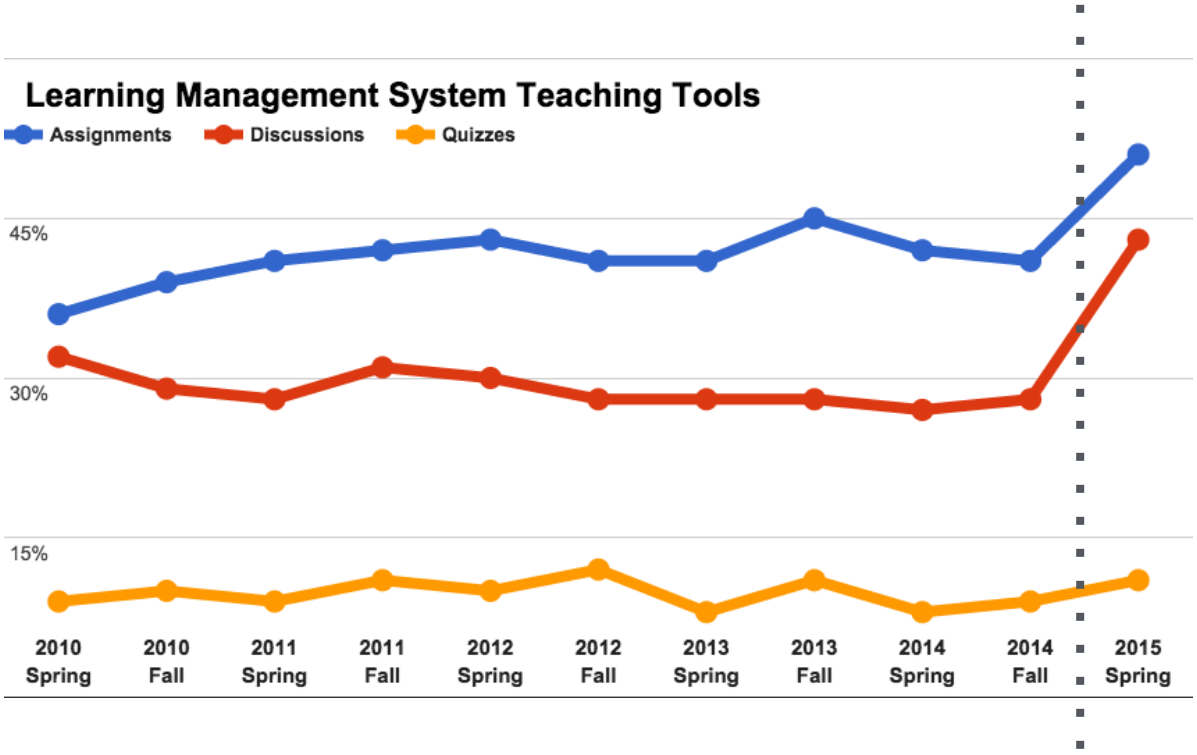
The Majority



Use of Assignments
+10%

Use of Discussions
+14%

Use of Quizzes
+2%

(based on average for spring terms)

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The Innovators

Measure of Success

- **2 instructional innovation projects (so far)**
  - Data Cultures (Greg Niemeyer)
  - Collabosphere (Glynda Hull)
- **faculty using API's to build tools themselves**
  - Raymond Yee
- **5 custom tools for Berkeley users**
- **3 contributions of custom code to Canvas**

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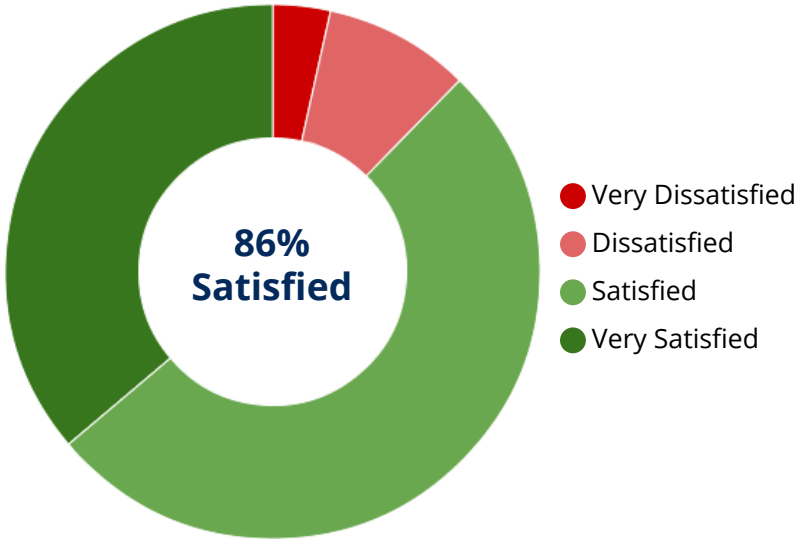
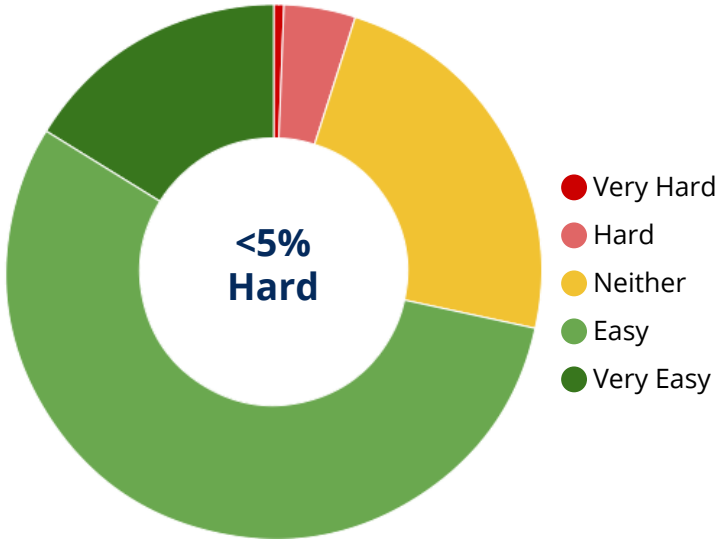
Students

Measures of Success



Student Satisfaction



Student Ease of Use

n = 2000+ students responses to Spring 2015 Satisfaction Survey

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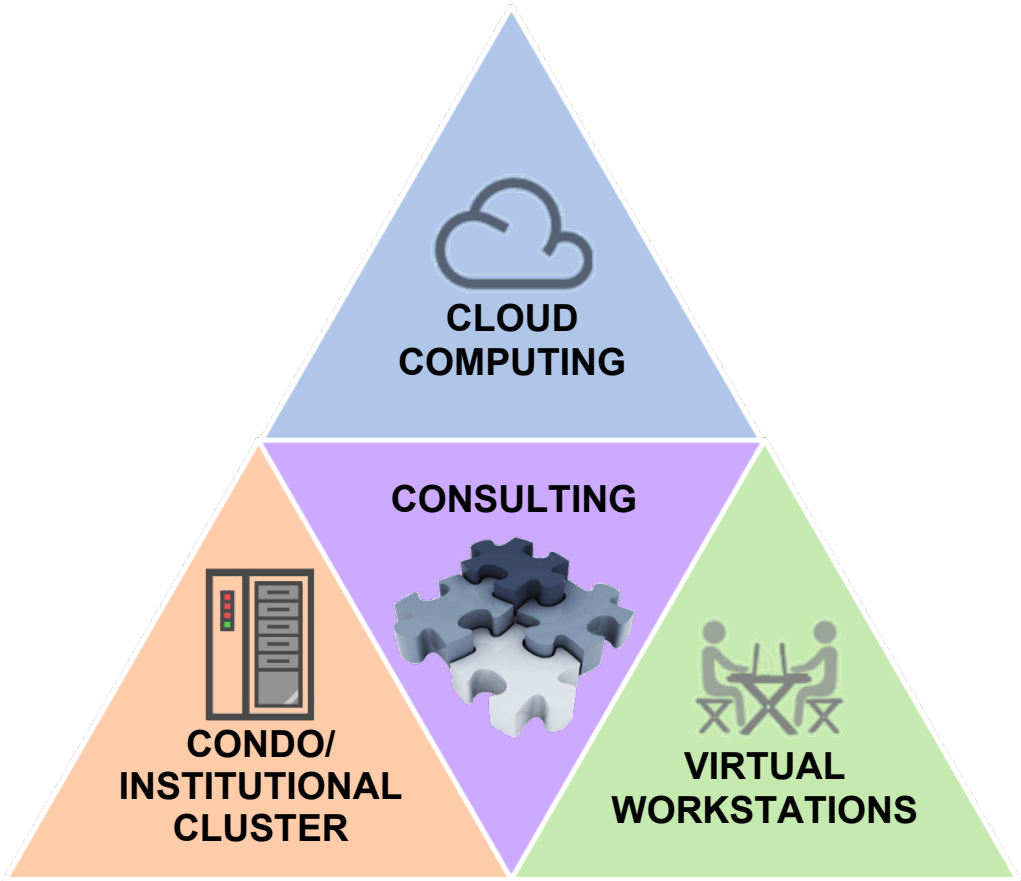
Berkeley Research Computing (BRC)



A partnership of the Vice Chancellor for Research, Chancellor, CIO/IST, and the Lawrence Berkeley National Laboratory.

BRC: Success in Year 1

- **Began with Institutional cluster - "Savio"**: 72 nodes / 1,440 cores.
- **"Condo" Model:** 10+ research groups from Astronomy, Chemistry, Earth Sciences, Engineering, Political Science, Law, D-Lab *make Condo contributions of 92 nodes ($432K) in 9 months, more than doubling Savio* to 164 nodes / 3280 cores. A win for research group and campus.
- **Launch Free "Faculty Computing Allowance" April 2015**: Each faculty members gets up to 200,000 core-hours per year at no cost. We launched this in partnership with Vice Provost for the Faculty to help with Faculty recruitment, retention, and grant applications.
- **Adding new hardware for HPC, Big Memory nodes, HTC, GPU, and storage this fiscal year.** Approx. 6000-7000 cores.
- **Savio on Science DMZ with 100gbps connection and DTN**

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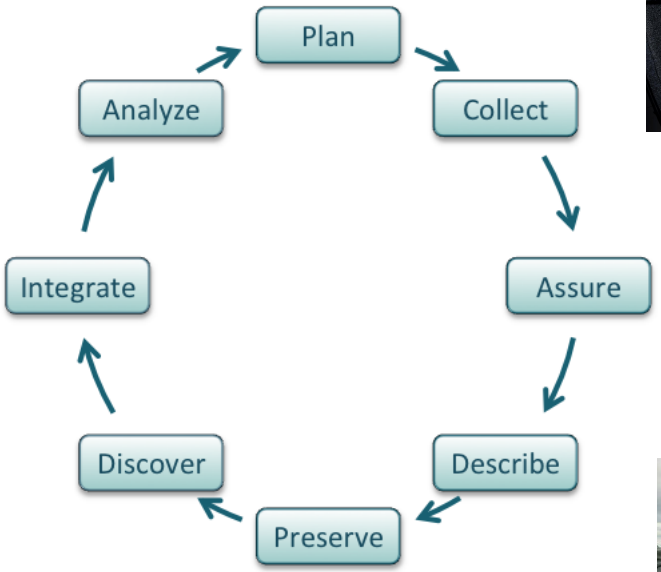
Research Data Management (RDM)

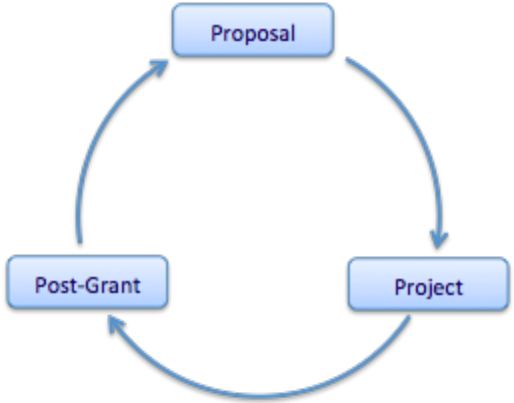
A partnership of CIO: Research IT and the University Library. Launching program spring 2015.

Research Data Life Cycle



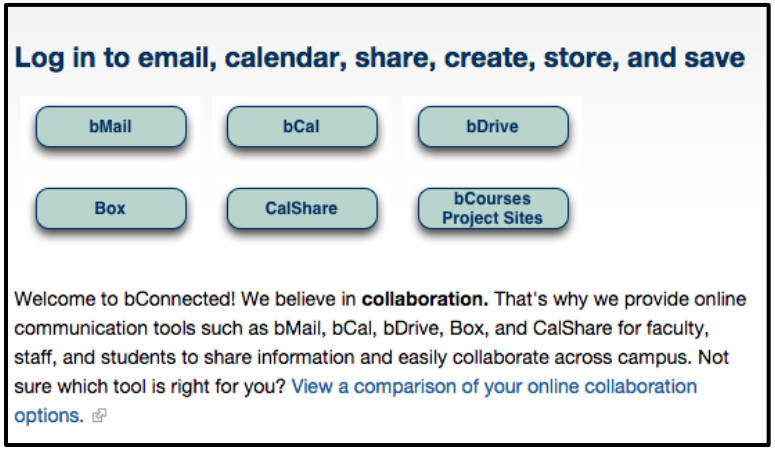
Source: DataONE primer on data management

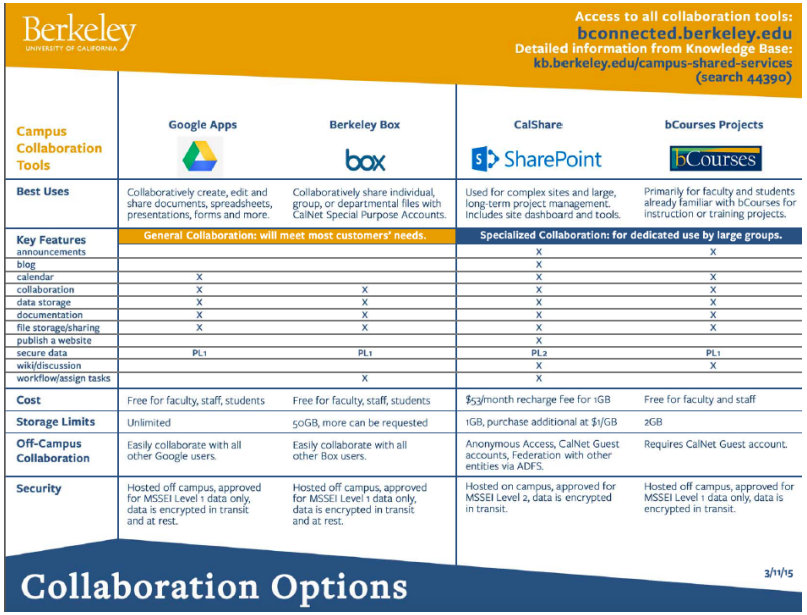
Research Project Life Cycle



Progress Report: C&C bConnected

- Rationalize service offerings
- bCourses Project Sites
- Outreach
- Turn on more services





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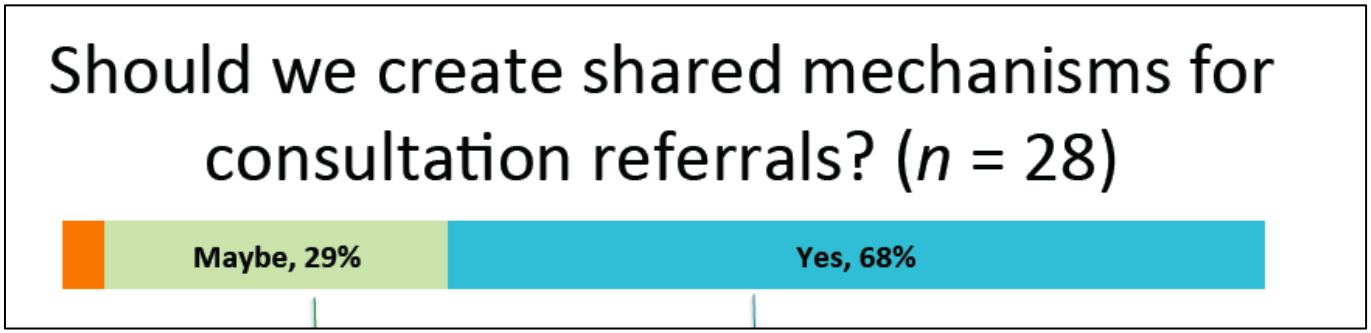
Progress Report: Consultation Support

- A need for greater consultative support for teaching and research
- A recognition that academic partners need to work together
  - CTL/ETS/BRCOE retreat
  - CTL Teaching Consultation Survey
  - RIT Consultation Summit
  - Exploring collaborative service model in “ETS” Service Space in Dwinelle



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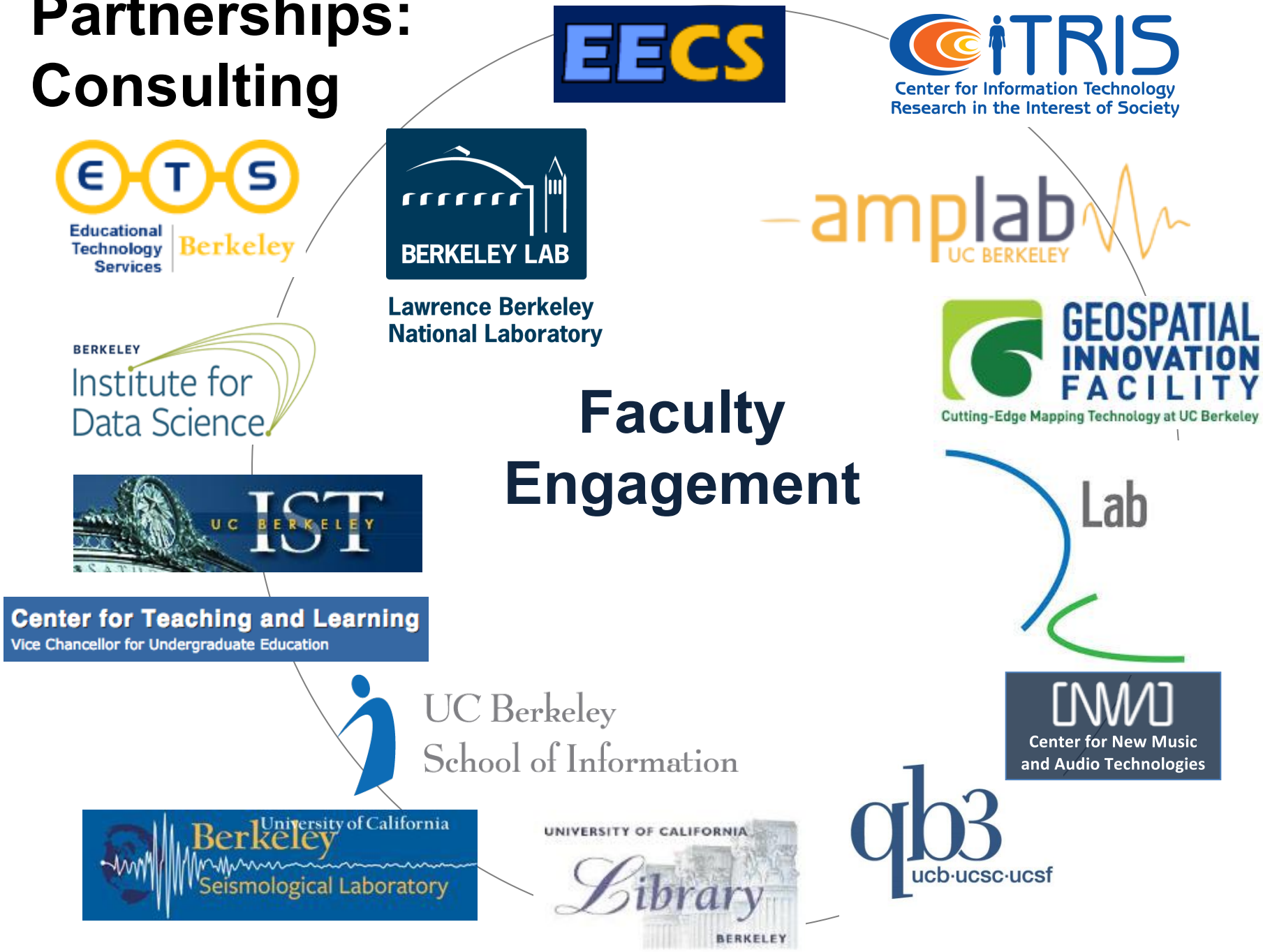
Partnerships: Consulting



Strategic Planning

How do we use this moving forward?

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Research Services		Teaching & Learning Services	
Berkeley Research Computing (BRC)	~~(4)~~ **2**	Online Courses and Degree Programs	~~(3)~~ **2**
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Enabling Services			
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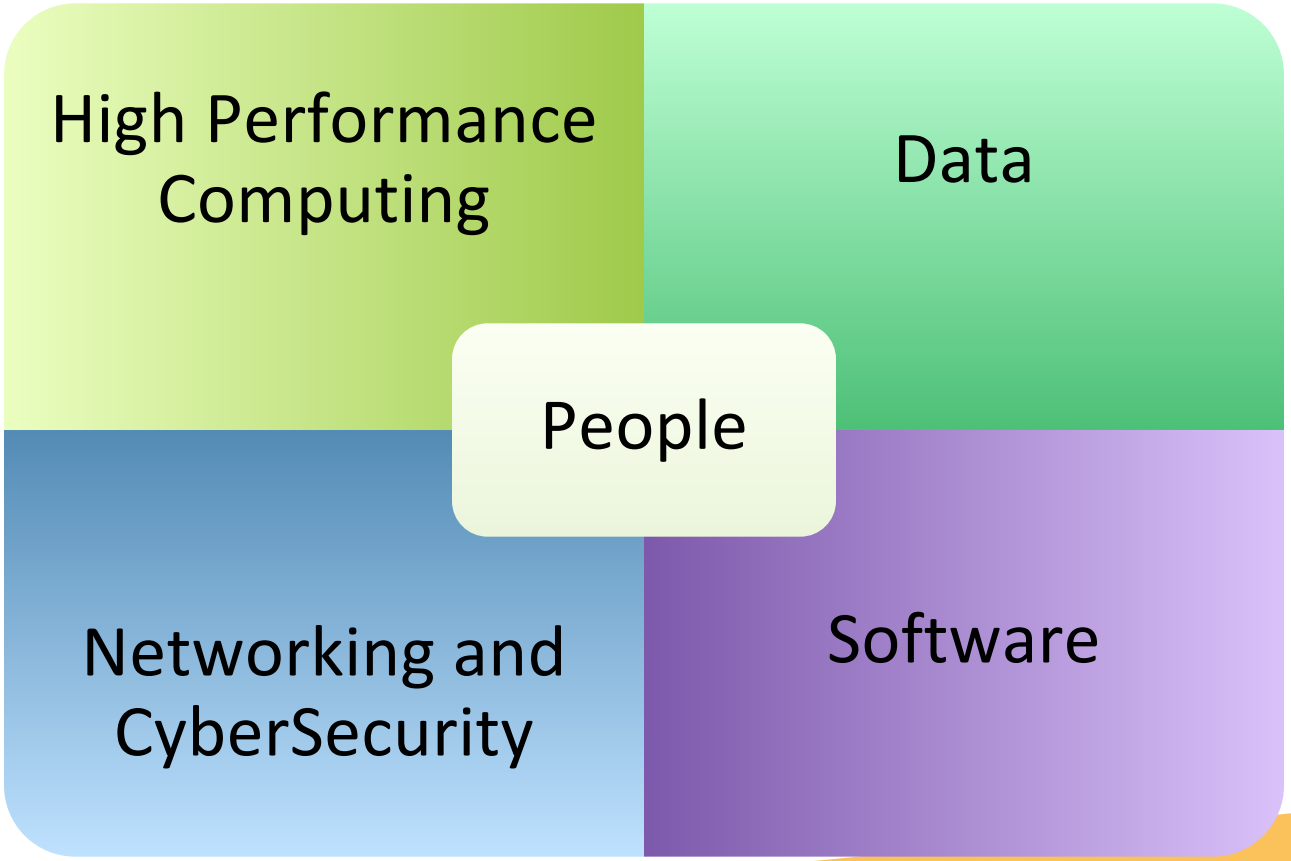
Video & Web Conferencing	**3**	Web Publishing	**3**
Google Apps for Education	~~(4)~~ ‡	Scholarly Networking	**4**
Software Licensing & Distribution	**3**		

NSF Vision of Campus and National Cyberinfrastructure



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Questions and Discussion?

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End of RTLTC Deck

sides below for reference.

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What have we heard?

Survey to Faculty and Deans:

In order to help prioritize our future campus investments, please rate the following services below based on campus needs over the next 2-3 years.

These services follow the same order as listed in the RAE Service Area Definitions.
1) Research
2) Teaching and Learning
3) Enabling Services

1 lowest priority - 5 highest priority

RESULTS

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What have we heard?

Instructional Content Creation *

Program with dedicated service-space to support faculty in development of digital learning assets (e.g. videos, simulations, online learning modules, etc.) for use in on-campus, hybrid, and/or online courses through services such as: course design and instructional development, content production and DIY support, platform support, tools development and integration, rights management support.

	1	2	3	4	5	
Lowest Priority	○	○	○	◉	○	Highest Priority

Learning Management System (LMS) *

Campus services that deliver online systems specifically designed for the delivery and communications of course content, online engagement between students and instructors, and the management of student work in support of face to face and hybrid classes.

	1	2	3	4	5	
Lowest Priority	○	○	◉	○	○	Highest Priority

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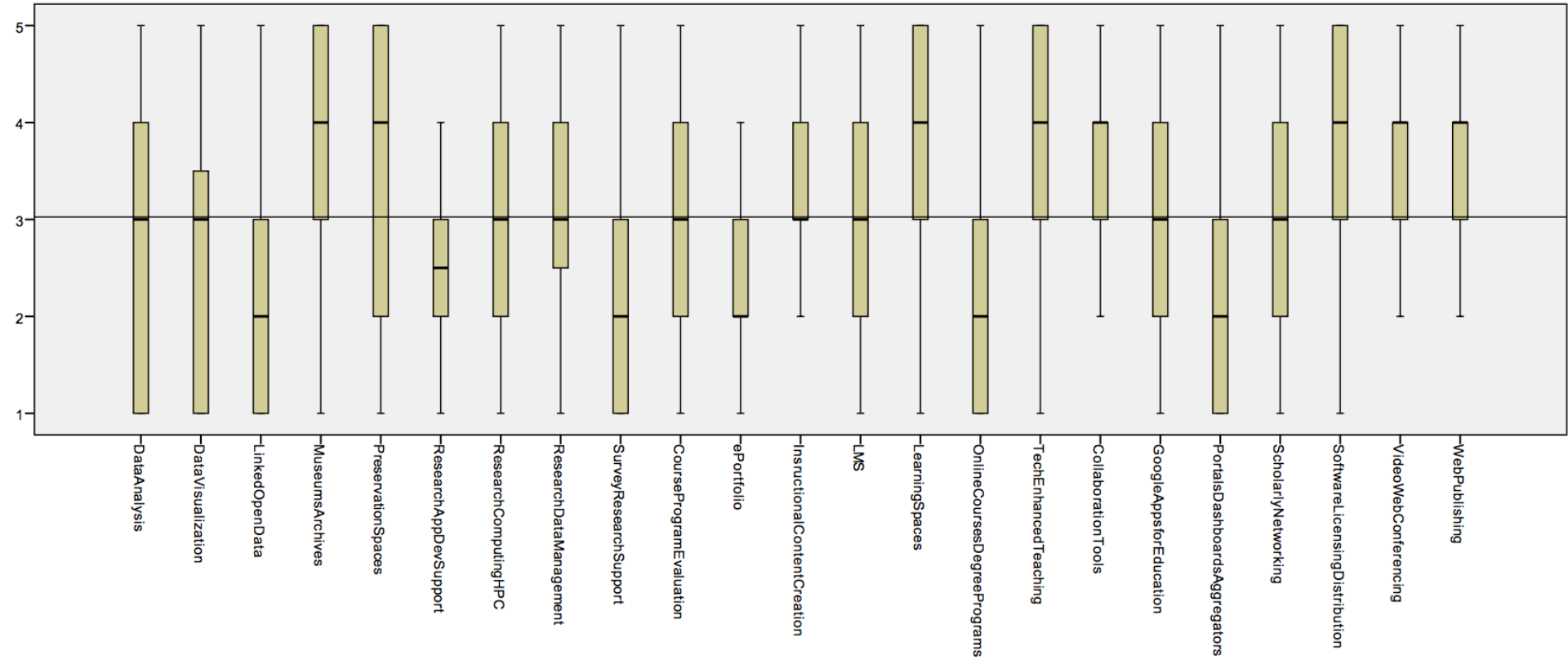
Who Responded to Date n=71

African American Studies
Ag and Res Econ
Anthropology
Art History
City and Regional Planning
Classics
Demography
Economics
English
ERG
ESPM & ARE
Ethnic Studies
Film and Media Studies
French
Geography
Haas
History
History of Art
iSchool
LAEP
Law
Linguistics
Music
NST
Performance Studies
PMB
Psychology
Rhetoric
Graduate School of Education
Sociology
TDPS
UCB-UCSF Joint Medical Program, School of Public Health

What have we heard?

(includes PhD students and Assistant Faculty)



Survey Priorities (so far)

Higher Priority

- Software Licensing
- Technology Enhanced Teaching
- Data Analysis
- Res. Computing: HPC+
- Res. Data Management
- Video Web Conferencing
- Web Publishing

Lower Priority

- Linked Open Data
- Survey Research Support
- Portals / Aggregators
- Scholarly Networking
- Online Course and Degree Programs

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Technology Enhanced Teaching: Sample 3 year roadmap

Service	FY15	FY16	FY17
Online Courses	Establish a unified service and support program and online presence. Coordinate key groups. (i.e., BRCOE, MOOCLab, ETS, Library, CTL, COE/EECS, etc.). Allocate **1.0 FTE in FY15 to coordinate these efforts.**	**Create a service and dedicated space** with staff that offers common good services for faculty developing online courses and content as outlined in the larger Digital Instruction plan.	
Learning Management Systems & Support	Articulate and document the LMS service within the IT service catalog. Extend support hours.	Improve ecosystem of Integrations by leveraging Canvas Open Source, LTI enabled architecture.	Support a greater percentage of faculty bCourses pedagogy tools (e.g. quizzes, content modules, etc.)
Instructional Content Creation	Establish a coordinated service and support program with key entities (i.e., BRCOE, ETS, Library, CTL, COE/EECS, etc.).	Create a **dedicated space** that offers common good services for faculty developing digital content. **One-time purchase of specialized equipment and software ~150K.**	
Technology Enhanced Teaching & Learning	Develop or strengthen partnerships among ETS, IST, SAIT, CSS-IT, DSP, CTL. **Allocate Instructional Technologist 1.0 FTE in FY15.**	**Allocate additional Instructional Technologists in FY16.** Test support for a shared funding model 50/50 that embeds them in departments similar to Stanfords ATS program.	Implement program that embeds **additional Instructional Technologists** in departments with shared funding approach.
Digital Instruction Program	• **Allocate 1.0FTE to coordinate effort.** • **Foster active partnership between ETS, BRCOE and CTL**	• **Build out Faculty Digital Lab in Dwinelle or Moffitt.** • **Allocated additional FTE as needed.** • **Build departmental partnerships**	• **Implement departmental "Partner Program"**

3 Year Roadmap for *New* Research Services

R-Service	FY 14	FY 15	FY 16	FY 17
BRC / HPC+ (see details)	Design	Rollout		
Research Data Mang.	Plan	D/Rollout	Rollout	
Data Analysis	Plan	Design	Rollout	Rollout
Data Visualization	Plan	Plan	Design	Rollout
Preservation and Archival	Plan	D/Rollout	Rollout	Rollout
Linked Open Data	Assess	Assess	?	?
Research Applications	Plan	Design	Rollout	Rollout

3 Year Roadmap for Major Partnerships

Partner	FY 14	FY 15	FY 16	FY 17
BRC Community	Design	Rollout		
D-Lab: Social Sciences	Plan	D/Rollout		
Digital Humanities	D/Rollout	Rollout		
BIDS	Plan	D/Rollout		
Museum Informatics	Reset	Rollout		
Others / TBD				
Others / TBD				