Strategic Space Plan for the University of Washington Libraries

Dugdale Strategy and Mahlum Architects
December 2016

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University of Washington Libraries Strategic Space Plan Report

Introduction

The University of Washington Libraries and Capital Planning & Development engaged the consultant team of Dugdale Strategy and Mahlum Architects in spring 2016 to develop a Strategic Space Plan as a framework to guide future changes. Aligning with the University's strategic initiatives, capital planning priorities and the Libraries' Strategic Plan, this plan articulates planning and identifies opportunities for the physical development of the University of Washington Libraries on the Seattle Campus for the next ten to fifteen years.

The planning process included a series of meetings on the Seattle campus, comprised of interviews, focus groups and workshops with staff and constituents. It engaged a wide range of participants—from faculty and students to institutional partners, university planners and Divisional and School leadership.

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The Libraries Strategic Space Plan

Executive Summary

Executive Summary

Additional offsite shelving will allow responsible stewardship of a valuable University asset and optimize opportunities for re-purposing of high-value core campus space through the construction of a relatively inexpensive offsite facility.
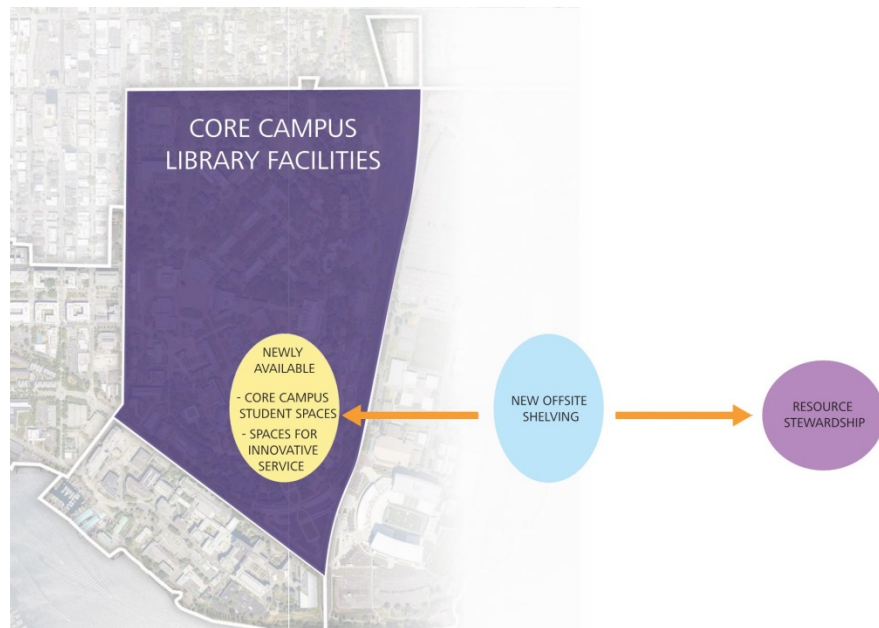
The Strategic Space Plan for the University of Washington Libraries recommends additional offsite shelving to enable the following benefits:

- Increase available **core campus student study spaces** (currently in high demand) to address current shortcomings and projected population growth
- Build on the University of Washington **Libraries' proven track record of success in creating innovative spaces and services** for UW students, faculty and the broader community
- Ensure long-term **responsible stewardship** of the Libraries' distinctive and valuable collections.

The plan was developed in response to the following key drivers:

- Growing student demands for new and evolving kinds of library space
- Limited availability of highly-valued central campus space to meet demand
- The changing nature of research and scholarship, such as digital scholarship and data-intensive research
- The Libraries' role in supporting the UW Innovation Ecosystem
- Continued collections growth housed in environmentally sound conditions.

Major goals of the plan are to:

- Provide additional study seats for a growing campus population
- Provide new kinds of facilities and service points, enhancing the user experience
- Collaborate with partners to develop consultation services to meet evolving needs
- Accommodate the collections in proper environmental conditions
- Develop better space adjacencies for more efficient staff operations.

To achieve these goals, the key enabler is the development of increased offsite shelving capacity. The plan recommends:

- **Relocation of up to 30% of existing on-site print collections** (approximately 2 million items or 182,000 linear feet) to appropriate off-site shelving facilities. Collections occupy approximately 252,000 assignable square feet (ASF) on the Seattle campus; up to 75,000 ASF of central campus space could be gained for re-purposing.

- **Analysis of real estate and construction options for off-site shelving solutions to include 15 years projected growth**, for an estimated 3.6 million items or 397,000 LF. Based on existing Libraries shelving facilities efficiency, this would eliminate the burden of creating 53,000 ASF of new on-campus stack space to accommodate future collections growth. New, purpose-built shelving facilities can achieve much greater efficiencies.

- **Off-site shelving options to be explored include construction of a modular high density facility that can be readily expanded** to support future offsite collections storage needs.

Proven Impact

The Libraries has a successful history of developing new spaces and innovative services for UW students and faculty. **The Research Commons and the renovated Odegaard Undergraduate Library are models for re-purposing existing collections spaces into innovative student-oriented spaces** that expand services and opportunities for teaching, learning and research. Due in large part to the success of such initiatives, library attendance has increased to approximately 5.5 million visits in the last year versus only 2 million visits eight years ago.

The Strategic Space Plan identifies immediate and near-term opportunities in the following existing facilities to transform them and build on this track record of creating benefit for the University:

- **Engineering Library:**
  The plan identifies an opportunity to convert **up to 60% of existing stack space within the Engineering Library into student-oriented space.** Located at the heart of the Engineering precinct, the Library currently serves as a popular study space for Engineering and other students.

Reducing shelving at or near the campus core enables the Libraries to efficiently re-purpose portions of vacated space into high-value functions through small scale interventions.

Up to two floor plates (including 7,000 ASF of stack space) can be re-purposed to provide new student-oriented spaces and services to be programmed in partnership with the College of Engineering.

- **Health Sciences Library**:
  The majority of collections shelving space in the T-wing can be re-purposed if adequate offsite facilities are made available; only a small portion of monographs has been identified to remain on-site. This provides the Health Sciences Library with the opportunity to fashion their space as an **interdisciplinary hub supporting current initiatives** such as Interprofessional Education and Population Health and to make new types of spaces available to its users for training, testing, and collaboration.

- **The Suzzallo and Allen Libraries**:
  With additional offsite shelving, the Suzzallo and Allen libraries can realize significant opportunities to improve user-experience. Large, strategic areas of existing shelving could be removed and spaces reorganized for improved wayfinding, more efficient staff spaces, integrated service points, and the creation of new spaces for study and innovative services. An expanded Research Commons, a Digital Scholarship hub, and enhanced facilities to showcase and engage the University's Distinctive and Special Collections are among the programming concepts identified in the plan.

- **Kane Hall :**
  The existing shelving area within the Kane Hall basement has been identified as unsuitable for collections storage. With additional offsite shelving provided to accommodate these collections, **this space (13,670 ASF) will be vacated and returned to the Provost's space inventory** for other uses.

- **Odegaard Undergraduate Library:**
  The basement level of this building was identified during the planning process as a near-term, **high-impact opportunity for re-purposing as an innovation hub** through a partnership between UW Housing & Food Services, the Libraries and the Office of the Provost.

Planning Principles

The Strategic Space Plan identifies Planning Principles to guide facilities changes over a 15-year planning horizon in support of the Libraries Strategic Plan and facility consolidation goals.

Responsible Stewardship

The Collections are a unique institutional resource representing significant long-term capital investment that provides mission-critical value to the institution, maintains current and historical significance for the regional community, and serves as an increasingly global resource.

Additional offsite storage ensures preservation of a valuable University resource.

Growth Projections in the Digital Age

Estimated growth projections for this study reflect an expectation that **collections will continue to increase overall, but at a declining rate** over the 15 year study-period (see p. 30). Acquisition of print materials has not changed as dramatically as expected due to a number of factors including the cost, availability and licensing requirements of new digital acquisitions and digitization of existing materials, the persistence of print materials as the preferred media in certain disciplines and formats, and the continued obligations of the University of Washington Libraries as an institutional, regional and even globally significant repository. However, a shift to electronic publishing is almost fully realized for many academic journals and this trend is expected to increase in the next 10-20 years. In addition, the Libraries continually pursues opportunities to **leverage sharing opportunities** through involvement and leadership in consortiums such as the Western Regional Storage Trust (WEST) and HathiTrust, and to **expand its digital archives** through digitization and by providing active leadership in policy development around digital licensing and open access scholarship.
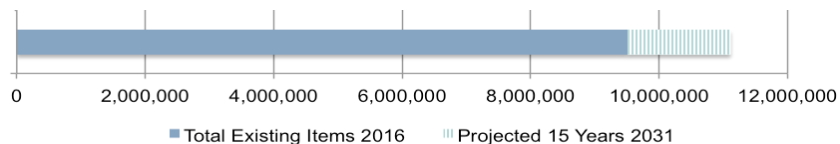
Collections Growth Projections through 2031

Existing Collections Environments

All of the Libraries' on-campus facilities have exceeded or are quickly approaching their maximum operational capacity for shelving (see p. 31). Print collections are currently distributed across all of the Libraries' on-site facilities and at the existing Sand Point Shelving Facility. With the exception of the purpose-built Special Collections vault in the basement of the Suzzallo and Allen Libraries and the Baker stacks at the Sand Point Shelving Facility, **none of the existing facilities meet baseline environmental standards** for collections, such as temperature and humidity control. Existing shelving areas in the Kane Hall basement have been identified as unacceptable for continued collections storage and certain collections have been identified as being at critical risk in their current environments based on their age and material composition.

Proposed Collections Environments

This study recommends that additional off-site shelving facilities and any new construction meet baseline environmental conditions standards for Cool storage (p. 43). The study assumes that purpose-built storage for materials requiring Cold or Frozen storage will be expanded within existing on-campus facilities and that incremental improvement for remaining on-campus collections environments will be made in conjunction with future planned renovations and capital improvements.

1 Collections & Access

2 Research & Scholarship

3 Teaching & Learning

4 Engagement & Community

5 Organization & Effectiveness

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Planning Principles

Vision | Planning Principles

The core of the University of Washington Libraries Strategic Space Plan are the Planning Principles. These developed out of the workshop and meeting process and reflect input from users, staff and partners.

They have been organized to align space strategy with the five key tenets of the University of Washington Libraries Strategic Plan:

- Collections & Access
- Research & Scholarship
- Teaching & Learning
- Engagement & Community
- Organization & Effectiveness

These principles will provide guidance for facilities changes as they are applied to various projects over the next decade.

The following pages explain in more detail the recommended space strategies to achieve each of the planning principles.

1.1 Ensure environmental controls for responsible stewardship

1.2 Seek best long term value for collection accommodations

1.3 Right-size the on-campus collections

1.4 Celebrate UW's distinctive and special collections

1.5 Anticipate space needs for preserving and making accessible new forms of digital scholarship and digital media

Planning principles
1 Collections & Access

Sand Point Auxiliary Stacks Facility

1 Collections & Access

1.1

Ensure environmental controls for responsible stewardship of the University of Washington Libraries collections

- Develop capital investment plans for space to accommodate all print collections with proper environmental conditions, to protect the State of Washington's years of past investment in these scholarly materials.

- Install HVAC systems throughout existing spaces for environmental stability, including sensor systems to monitor them.

- Shift material most at-risk as soon as possible into better conditions, especially remove materials in locations subject to leaks and high temperatures/humidity fluctuations.

- Provide proper storage for film and other media requiring cold or frozen conditions to reduce degradation as soon as possible, and develop associated staff space to accelerate media conversions for conservation.

1.2

Seek best long term value for collection accommodations

- Plan to increase offsite shelving capacity to leverage best use of core campus space.

- Identify immediate, short term, and long term needs for off-site shelving.

- Evaluate long term costs of different storage approaches to achieve best value for UW over time, taking into consideration operational costs and carbon footprint of transportation.

1.3

Right-size the on-campus collections

- Plan to reduce browsable stack area in response to evolving disciplinary needs and shift to digital versions of resources as appropriate, e.g. shift journals to off-site storage or reduce holdings based on purchase of electronic backfiles and a deaccessioning program.

- Leverage collaborations with consortiums and evolving print repositories, demonstrating UW leadership.

1.4

Celebrate UW's distinctive and special collections to showcase UW as a center of excellence

- Make the Distinctive and Special Collections more visually prominent and accessible to users.

- Showcase with exhibit areas and distributed electronic displays to help users become aware of the unique collections.

- Develop spaces to enable events and symposiums to bring scholars and faculty together to use resources.

1.5

Anticipate space needs for preserving and making accessible new forms of digital scholarship

- Provide physical space for staff involved in conservation of digital products, magnetic media and film and for their preservation through reformatting to updated formats, as well as the equipment required to play obsolete media formats.

- Provide virtual space through digital repository development.

2.1 Implement space strategies to support all phases of the scholarly research cycle

2.2 Develop spaces that demonstrate new ways of working with information and visualization of data

2.3 Enhance support for digital scholarship, with hubs offering consulting, visualization and tech support

2.4 Expand research commons settings and services

2.5 Accelerate the shift from collection to consultation

Planning principles

2 Research & Scholarship

Center for Digital Scholarship, Brown U. Library

2 Research & Scholarship

2.1

Implement space planning strategies that support all phases of the scholarly research cycle

- Create more consultation space for advising individuals and teams, collocated to enable collaborations with partners

- Convert more space from print storage to new types of user scholarly activities

- Plan space to accommodate staff who will be needed to provide the expertise and consulting for new kinds of services. Some may interact with users in mobile, distributed work styles; others may interact predominantly virtually. Some will be existing staff performing new roles; others may be new staff or partners with complementary expertise.

2.2

Develop spaces that demonstrate new ways of working with information and visualization of data

- Reinforce the Libraries as an interdisciplinary lab for working with emerging informatics and leveraging opportunities to collaborate with the UW iSchool.

- Develop pilot spaces optimized for analyzing or teaching with data, which can be used by the whole campus community.

- Integrate displays of UW research data flows in progress (e.g. sensor data being transmitted real time from the field or ocean) as well as visualizations of completed research.

2.3

Enhance support for digital scholarship with service hubs offering consulting, visualization and tech support

- Enhance visibility of the Libraries' growing Data Services/Geospatial Information Services by developing a welcoming suite in a prime location to serve different domain areas, similar to how the Data Science Studio serves the science community. Librarians together with partners in these suites will support the life cycle of research—from early stage consulting on planning and training, to assistance during projects, and afterwards with curating/archiving datasets and publishing research.

- Create an integrated hub for digital scholarship, data services and GIS consulting in a prominent location along a primary path of travel in the Suzzallo and Allen Libraries. Similar hubs can be located in the Engineering and Health Sciences Libraries.

- Integrate interactive displays along main passages to make UW research more visible to users and visitors.

2.4
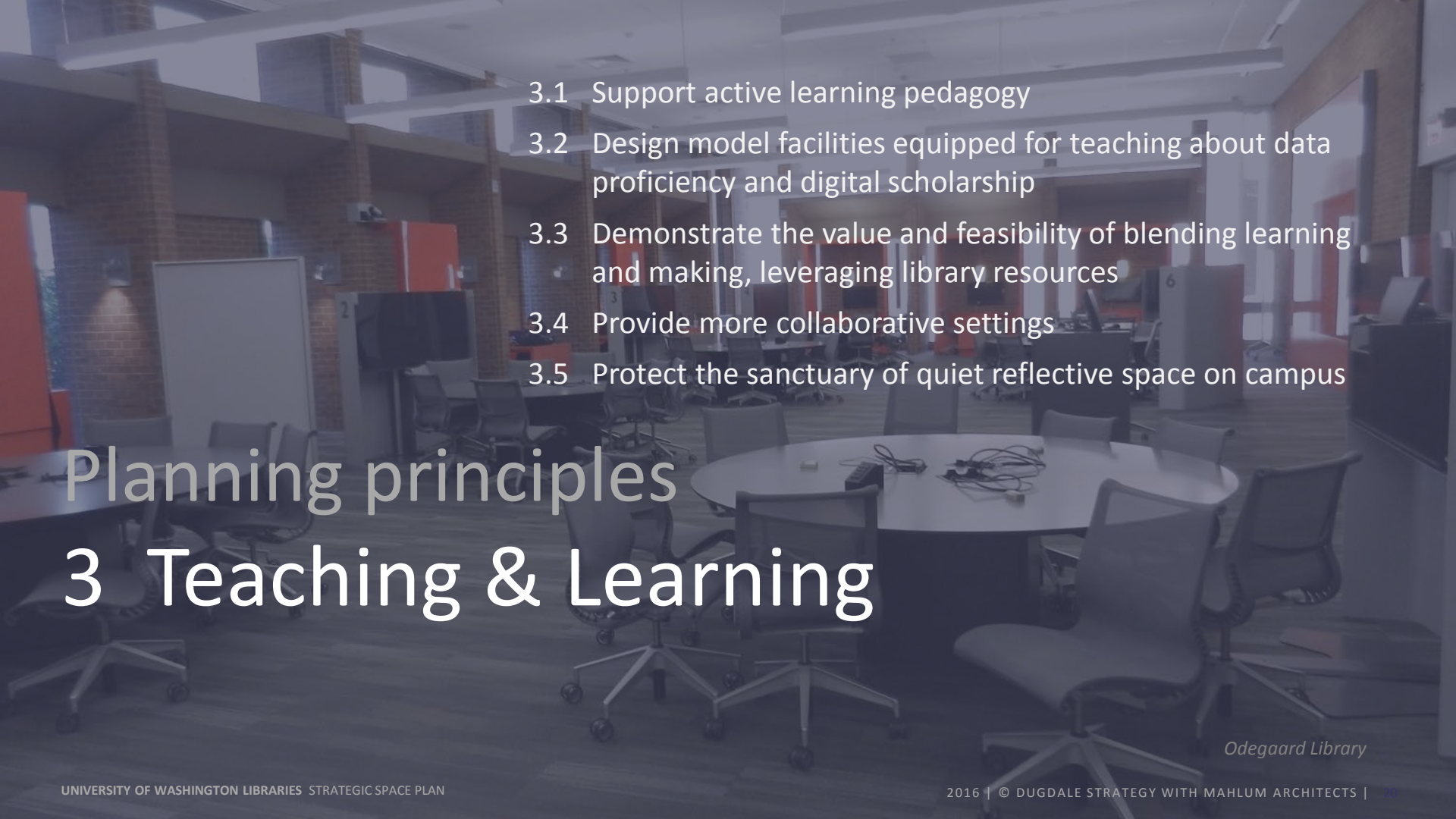
Expand the research commons concept to other areas in the libraries

- Expand the Research Commons in Allen Library to add more services, user seating, and consultation spaces.

- Integrate the media services with a digital media lab as part of the Research Commons.

- Develop research commons approach in other libraries.

2.5

Accelerate the shift from collection to consultation

- Develop more partnership opportunities for consulting (e.g. the Research & Writing Center in Odegaard Library)

- Increase spaces available to meet for consultations. Reframe and redesign service points to make them more approachable to students.

- Anticipate changing staff skills and how new working relationships will influence future workspace planning.

3.1 Support active learning pedagogy

3.2 Design model facilities equipped for teaching about data proficiency and digital scholarship

3.3 Demonstrate the value and feasibility of blending learning and making, leveraging library resources

3.4 Provide more collaborative settings

3.5 Protect the sanctuary of quiet reflective space on campus

Planning principles

3 Teaching & Learning

Odegaard Library

3 Teaching & Learning

3.1

Support active learning pedagogy

- Continue to develop active teaching and learning spaces in the libraries which can become campus demonstration pilot projects and position the libraries as supporters of pedagogy innovation.

3.2

Design model facilities equipped for teaching about data proficiency and digital scholarship.

- Develop model teaching spaces in the libraries equipped with large screens for visualization and manipulation of multiple image streams. These might be developed in the Suzzallo and Allen Libraries, the Engineering Library and Health Sciences Library.

3.3

Demonstrate the value and feasibility of blending learning and making, leveraging library resources.

- Develop makerspaces and creative spaces where there is community interest, and leverage student peer learning.

3.4

Provide more collaborative settings

- Continue to develop a variety of collaborative settings across all the libraries, in parallel with student population growth. Equip more spaces to be enabled to connect distributed participants.

3.5

Protect the sanctuary of quiet reflective space on campus

- Increase the amount of quiet study seating in parallel with student population growth.

4.1   Promote the Libraries as Incubator

4.2   Enhance the Libraries as an intellectual meeting ground

4.3   Provide a welcoming place for all, with learning communities that create and share knowledge

Planning principles

4 Engagement & Community

Odegaard Library

4 Engagement & Community

4.1

Promote the Libraries as Incubator

- Develop facilities that foster a culture of innovation and risk taking, among users, staff, faculty and partners. Support entrepreneurial and creative energy with makerspaces for both digital and physical making.

- Support digital scholarship trends on campus with incubator project space and technology support services-- for project teams to meet, collaborate with expert staff, get assistance with technology and research consulting, complementing the offerings of the Simpson Center.

- Create design thinking friendly spaces throughout the libraries.

- Enhance digital displays of innovations, exhibits

- Host pop-up events or programs like hackathons, and help users implement their ideas

4.2

Enhance the Libraries as an intellectual meeting ground

- Leverage the libraries as neutral shared space that can bring disciplines together to share knowledge and work on common challenges supported by rich information resources.

- Focus users on what is being created at UW, connecting people through displays and sharing venues like the Scholars' Studio

- Preserve the prominent reading rooms and renovate the Allen Library auditorium

4.3

Provide a welcoming place for all, with learning communities that create and share knowledge

- Create welcoming venues for learning communities, whether campus based undergraduate interest groups or local community groups (like the East Asia Library has with its meeting room).

- Improve wayfinding and orientation in the Suzzallo and Allen Libraries.

5.1 Plan for new roles and the evolution in professional skills required for the 21st Century library

5.2 Develop space strategies for new ways of working and mobility, more choice in work settings

5.3 Improve adjacencies to enhance work processes and efficiencies

5.4 Develop facilities to encourage collaborative partnership opportunities, both internal and external

Planning principles

5 Organization & Effectiveness

Odegaard Library

5 Organization & Effectiveness

5.1
Plan for new roles and the evolution in professional skills required for the 21st Century library

- Develop training spaces for staff development activities

- Develop agile, technology-enabled workspaces that can foster new ways of working

5.2
Develop space strategies that enhance new ways of working and mobility, more choice in work settings.

- Provide more shared collaborative settings that allow staff to chose the most appropriate setting to support desired activities.

- Equip spaces to enhance productivity, with writable walls and flexible furnishings.

- Consider impact of mobile technology on future service provision.

5.3
Improve adjacencies to enhance work processes and efficiencies

- Reorganize staff space to achieve improved adjacencies.

- Develop policies to intensify the use of space around the clock and allocate less space to specific uses or user groups.

5.4
Develop facilities for collaborative partnership opportunities, both internal and external

- Develop spaces to support university-based partnerships, such as the Research/Writing Center in Odegaard Undergraduate Library, or partnerships with faculty on grant funded research

- Provide spaces for collaborating with external partners, such as foundations, organizations and consortium members

3

Introduction

The Libraries Facilities Today

About the Libraries

The University of Washington Libraries has facilities across three campuses—Seattle, Tacoma and Bothell —as well as a small facility at Friday Harbor. The Strategic Space Plan focused on the Seattle campus library facilities, while estimating the need for offsite shelving to serve the whole system.

The main libraries are the Suzzallo and Allen Libraries and the Odegaard Undergraduate Library. In addition there are 10 branch libraries on the Seattle campus. The Space Plan develops a strategic overview for the facilities through 2031 and defines specific needs and opportunities regarding the collections, the Engineering Library and the Health Sciences Library. A district master plan is currently underway for the College of Engineering which the library's vision will help to inform. A master plan for the T-Wing is defining future needs for the Health Sciences sector; a transformed Health Sciences library can offer new facilities to contribute to that vision. (The Gallagher Law Library was not included in the strategic master plan.)

In addition to branch libraries on the Tacoma, Bothell and Friday Harbor campuses, the Libraries manages the Sand Point Shelving Facility which serves all the libraries and delivers materials requested by patrons.

Seattle Campus Libraries

Drama Library
Foster Business Library
Gallagher Law Library
(not in study scope)
Art Library
Music Library

Mathematics Research Library
Odegaard Undergraduate Library
East Asia Library

The Suzzallo and Allen Libraries
Built Environments Library
Engineering Library

Health Sciences Library

Recent Projects

The Libraries are housed in a variety of building types and environments on the Seattle campus, from the historic 1926 Suzzallo Library building, to the Odegaard Undergraduate Library recently renovated in 1972, and the relatively new (1994) Foster Library in Paccar Hall.

Recent large scale renovations include Phase 1 of the Odegaard Undergraduate Library, the Foster Library, and the seismic upgrade of the Suzzallo Library building which was completed in 2002. Partial renovations occur throughout the libraries on an ongoing basis, such as the conversion of the ground floor of the Allen building into the Research Commons in 2010. The existing Sand Point Shelving Facility was developed in 2007.

Recent library planning initiatives included a task force study of new models of service delivery which put in motion organizational changes, the concept of the Research Commons, and a facilities consolidation strategy in 2010, which closed several branches and relocated their collections into the Suzzallo and Allen Libraries, consolidating service points. An ongoing driver for the Libraries' planning is to offer user services with greater effectiveness as well as efficiency.
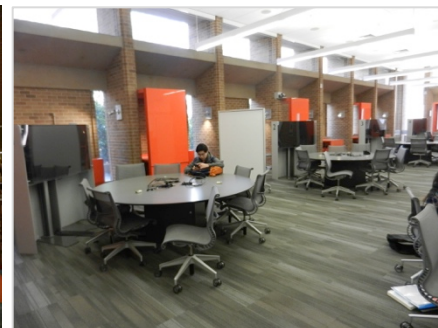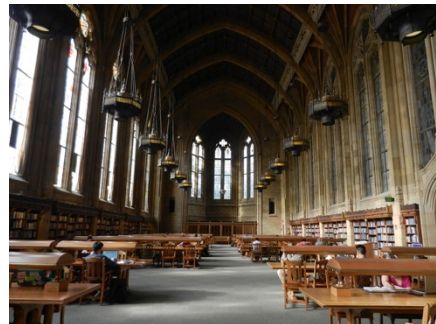
Suzzallo Library Seismic Renovation
Odegaard Library Renovation

Seating Zone in Allen Library
Active Learning Classroom in Odegaard

Recent Collections Growth

Total Collections Expenditures
UWS and ARL Public "Top Twenty" Average and Median
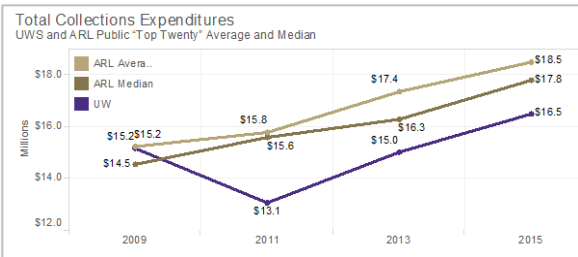
The Libraries print collections continue to grow, although with gradually decreasing rates of acquisition. UW lags behind its peers in the ARL (Association of Research Libraries) "Top 20" public university research libraries in collection expenditures, much of which now needs to go to electronic resources.

Collections growth assumptions for this study are summarized on the following page.
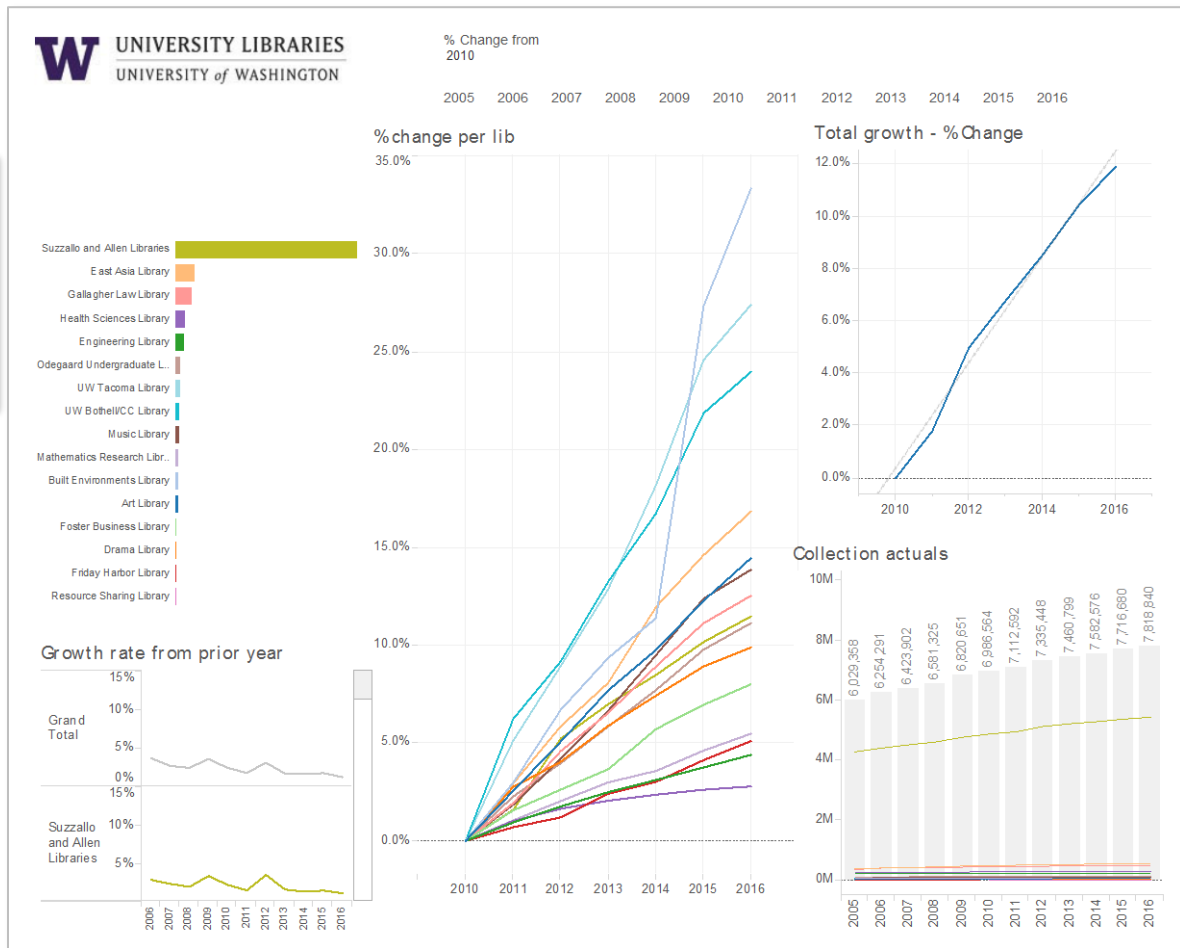
Pressures | Accommodating the Collections

Although the acquisition rates of physical materials are anticipated to slow over the next decade, the Libraries' collections will continue to grow to meet evolving research needs. While electronic resources continue to grow and more scholarship is being published in digital form, not all resources are online and scholarship in many disciplines will continue to be published in print form within this study's planning horizon. Some types of resources in the UW research collections will continue to be published in print form for the foreseeable future, such as the Distinctive Collections of the East Asia Library.

Growth projections assume either steady or reduced growth rates for five years depending on discipline, followed by gradual decline over the next ten years with increasing investment in digital resources. For some disciplinary areas (e.g. the health sciences), no print growth was assumed. The Seattle campus libraries' collections are anticipated to grow from 7.68 million items to over 9.2 million items in 15 years.

However, all the libraries have reached their operational stack capacity and some are even 100% full, as explained on the following pages. The Sand Point Shelving Facility is now also close to capacity, so developing additional shelving capacity off-site will be a crucial enabler before existing stack space on campus can be converted to other uses.

Libraries/Locations	Total Items	Linear Feet of Shelving	Projected 10 Years 2026	Projected 15 Years 2031
ART LIBRARY	53,780	5,170	62,957	66,609
BUILT ENVIRONMENTS LIBRARY	61,614	4,938	72,128	76,311
DRAMA LIBRARY	45,795	3,135	53,610	56,719
EAST ASIA LIBRARY	565,110	29,197	819,579	867,114
East Asia Library - Est'd Uncataloged	135,000			
EAL KANE HALL BASEMENT STORAGE	incl. above	52,992		
ENGINEERING LIBRARY	239,465	22,095	257,013	263,695
FOSTER BUSINESS LIBRARY	49,969	4,698	53,631	55,025
HEALTH SCIENCES LIBRARY	289,363	35,300	289,363	289,363
MATHEMATICS RESEARCH LIBRARY	62,878	6,848	73,608	77,877
MUSIC LIBRARY	106,775	5,223	124,995	132,245
ODEGAARD UNDERGRADUATE LIBRARY	136,013	14,213	159,223	168,458
SUZZALLO & ALLEN LIBRARIES	5,441,108	330,420	6,369,595	6,739,032
Suzzallo Allen - Est'd Uncataloged	500,000		500,000	500,000
Totals - Seattle Campus:	7,686,870	514,230	8,835,800	9,292,500
UW BOTHELL/CC LIBRARY	119,126		119,126	119,126
UW TACOMA LIBRARY	125,853		125,853	125,853
FRIDAY HARBOR LIBRARY	16,890	2,500	16,890	16,890
Totals - Other Campuses:	261,900	2,500	261,900	261,900
TOTAL On Campus:	7,948,770	516,730	9,097,700	9,554,400
SAND POINT AUXILIARY STORAGE	1,560,670	166,720	1,560,670	1,560,670
Total Collections:	9,509,440	683,450	10,658,370	11,115,070

Pressures | Shelving Capacity Limitations

Although the acquisition rates of physical materials are anticipated to slow over the next decade, the Libraries' collections will continue to grow to meet evolving research needs. While electronic resources continue to grow and more scholarship is being published in digital form, not all resources are online and scholarship in many disciplines will continue to be published in print form within this study's planning horizon. Some types of resources in the UW research collections will continue to be published in print form for the foreseeable future, such as the Distinctive Collections of the East Asia Library.

All of the libraries are approaching or have reached their operational stack capacity and some are even 100% full. Libraries are considered operationally full once they reach a 80-85% working capacity. With shelving at 88% full, The Sand Point Shelving Facility is now also operationally at its limit.

Without additional available on-campus capacity, and given continued projected collections growth, the provision of additional offsite shelving is a critical enabler for decanting existing stack space on campus so that it can be converted to user-oriented purposes.

Existing Operational Stack Capacity
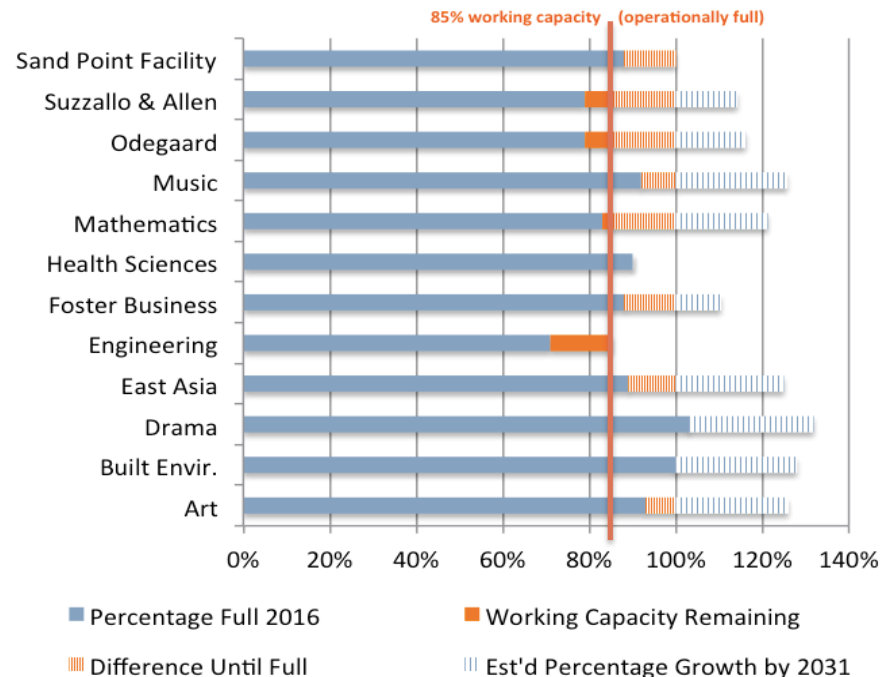
Pressures | Future Collections Growth Projections

This table summarizes the assumptions about rates of growth projected for each library for the next 5, 10 and 15 years.

Growth projections assume either steady or reduced growth rates for five years depending on discipline, followed by gradual decline with increasing investment in digital resources over the next 10 years.

By 2031 the Seattle campus libraries' collections are projected to grow from 7.68 million items to over 9.2 million. See p. 53 for a description of the space needs impact of this projected collections growth.

Projected Collections by Library	Existing 2016 Total Print + Nonprint Volumes/ Items	Projected 5 Years 2016-2021 Projected Growth Rate 5 yr incr	Additional Volumes in 5 yrs	Projected Total Volumes/ Items	Projected 10 Years 2022-2026 Projected Growth Rate 6-10 yr incr	Additional Volumes in 5 yrs	Projected Total Volumes/ Items	Projected 15 Years 2027-2031 Projected Growth Rate 11-15 yr incr	Additional Volumes in 5 yrs	Projected Volumes/ Items	Notes/Assumptions
ART LIBRARY	53,780	9.10%	4,894	58,674	7.30%	4,283	62,957	5.80%	3,652	66,609	
BUILT ENVIRONMENTS LIBRARY	61,614	9.10%	5,607	67,221	7.30%	4,907	72,128	5.80%	4,183	76,311	
DRAMA LIBRARY	45,795	9.10%	4,167	49,962	7.30%	3,647	53,610	5.80%	3,109	56,719	
EAST ASIA LIBRARY	700,110	9.10%	63,710	763,820	7.30%	55,759	819,579	5.80%	47,536	867,114	Assumes 565,110 items plus est'd 135,000 uncataloged items
KANE HALL BASEMENT STORAGE	incl in EAL										
ENGINEERING LIBRARY	239,465	4.00%	9,579	249,044	3.20%	7,969	257,013	2.60%	6,682	263,695	
FOSTER BUSINESS LIBRARY	49,969	4.00%	1,999	51,968	3.20%	1,663	53,631	2.60%	1,394	55,025	
HEALTH SCIENCES LIBRARY	289,363	0.00%	0	289,363	0.00%	0	289,363	0.00%	0	289,363	
MATHEMATICS RESEARCH LIBRARY	62,878	9.10%	5,722	68,600	7.30%	5,008	73,608	5.80%	4,269	77,877	
MUSIC LIBRARY	106,775	9.10%	9,717	116,492	7.30%	8,504	124,995	5.80%	7,250	132,245	
ODEGAARD UNDERGRADUATE LIBRARY	136,013	9.10%	12,377	148,390	7.30%	10,832	159,223	5.80%	9,235	168,458	
SUZZALLO & ALLEN LIBRARIES	5,441,108	9.10%	495,141	5,936,249	7.30%	433,346	6,369,595	5.80%	369,437	6,739,032	
Suzzallo Allen - Est'd Uncataloged	500,000	0.00%	0	500,000	0.00%	0	500,000	0.00%	0	500,000	
Totals - Seattle Campus (2):	7,686,870		612,912	8,299,800		535,919	8,835,800		456,747	9,292,500	
UW BOTHELL/CC LIBRARY	119,126			119,130			119,130			119,130	Assume steady state, no growth. No need for storage capacity.
UW TACOMA LIBRARY	125,853			125,860			125,860			125,860	Assume steady state, no growth
FRIDAY HARBOR LIBRARY	16,889	0%	0	16,890	0%	0	16,890			16,890	Assume steady state, no growth
Totals - Other Campuses:	261,900			261,880			261,900			261,900	
Totals:	7,948,770			8,561,680			9,097,700			9,554,400	

Comparative Collection Sizes and Their Projected Growth
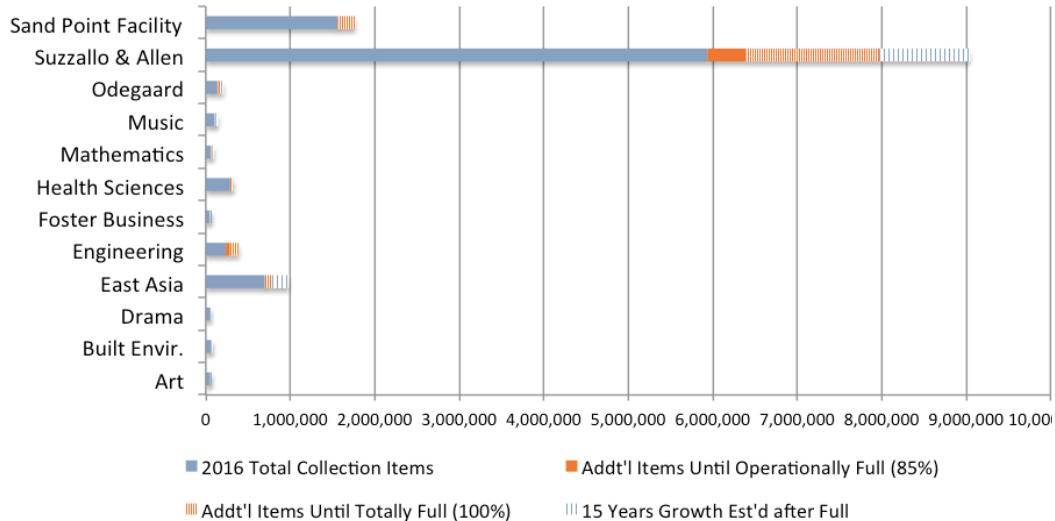
Branch Libraries Collection Sizes
and Projected Growth

- 2016 Total Collection Items
- Addt'l Items Until Operationally Full (85%)
- Addt'l Items Until Totally Full (100%)
- 15 Years Growth Est'd after Full

- 2016 Total Collection Items
- Addt'l Items Until Operationally Full (85%)
- 15 Years Growth Est'd after Full
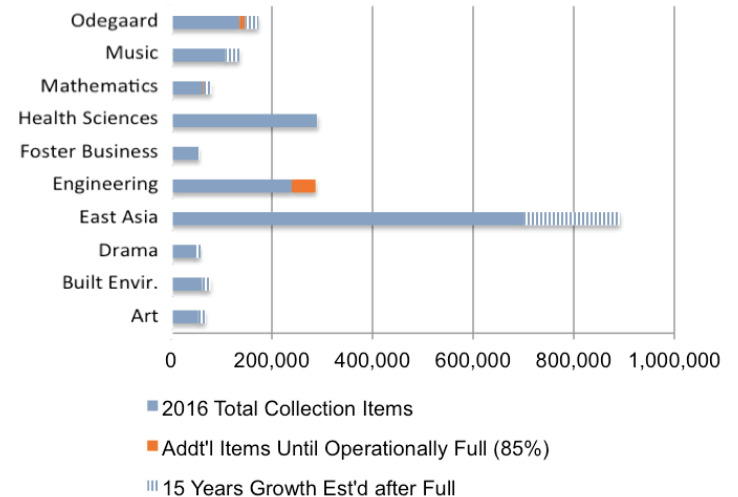
The primary growth is projected to be in Suzzallo and Allen Libraries' collections, which hold the majority of the consolidated physical materials on campus.

Pressures | Prioritizing User Space

The largest proportion of the Libraries space across the system is currently devoted to collection storage: 44% is stack space compared with 28% open study, 22% staff space, and 3% each for teaching and meeting spaces (see Appendix p. 130).

Collections currently occupy approximately 252,000 assignable square feet (ASF) on the Seattle campus. An additional 53,000 ASF would be required to accommodate projected collections growth (see p. 32) based on existing shelving efficiencies. See page 58 for explanation of projected 2031 needs.

Visitation statistics and feedback from surveys demonstrate the importance of the Libraries' role in the student experience. The Libraries have a proven track record in developing popular user spaces like the Research Commons and library seating is already heavily used, especially in the Odegaard Undergraduate Library and the Suzzallo and Allen Libraries. **As scholarship and research become increasingly born digital, determining the right size for browsable collections on campus in 15 years will be an important step to reallocating space for more effective user settings and facilities.**

Existing Space Allocations 2015
Total Seattle Campus*
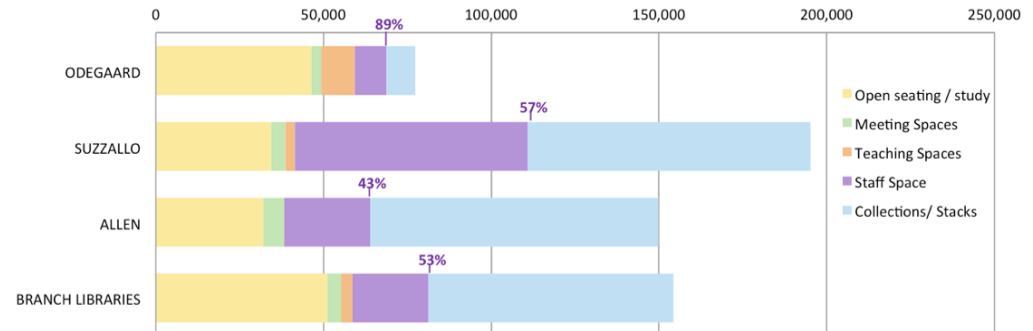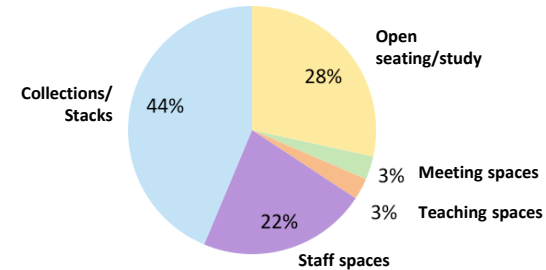
*2015 library assignable square feet (ASF) on Seattle Campus, excluding service spaces and the Law Library, as provided by Capital Planning & Development.

Pressures | Branch Libraries Constraints

The chart on the right illustrates how space is allocated in the branch libraries. The percentages indicate the total proportion of space that is used for all functions other than collections/stacks.

Space constraints in on-campus facilities and insufficient capacity at the existing Sand Point Shelving Facility limit opportunities for the branch libraries to provide more space for users.

Approximately 198,000 ASF within existing library facilities on the Seattle campus are allocated to open seating/ study, meeting, and teaching spaces (see Appendix p. 130). Based on modeled FTE growth projections alone, an additional 47-56,000 ASF should be allocated for these functions by 2031. The space needs model also identified an existing deficit, resulting in an even greater projected need for study/library space across campus (see p. 58).

Existing Space Allocations 2015
Seattle Campus Branch Libraries

Legend:
- Open seating / study
- Meeting Spaces
- Teaching Spaces
- Staff Space
- Collections/ Stacks
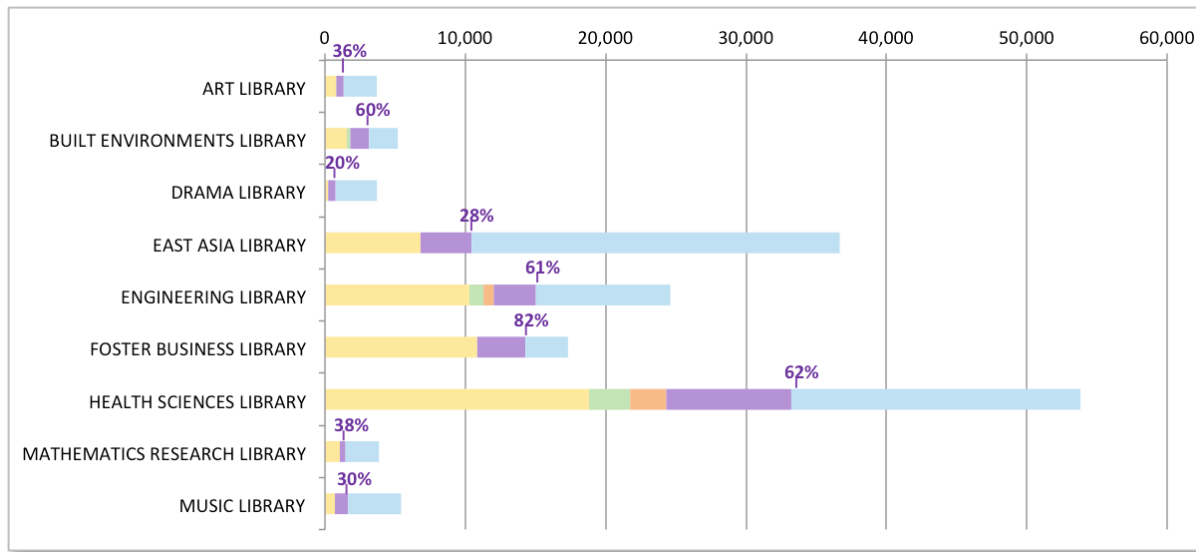
Assignable Square Feet (ASF) excluding Service spaces, as provided by UW Capital Planning & Development 2015 (excluding the Law Library)

Chart values (%):
- ART LIBRARY: 36%
- BUILT ENVIRONMENTS LIBRARY: 60%
- DRAMA LIBRARY: 20%
- EAST ASIA LIBRARY: 28%
- ENGINEERING LIBRARY: 61%
- FOSTER BUSINESS LIBRARY: 82%
- HEALTH SCIENCES LIBRARY: 62%
- MATHEMATICS RESEARCH LIBRARY: 38%
- MUSIC LIBRARY: 30%

In-Library Use Survey Feedback

The Libraries have a wealth of information available drawn from years of surveys to assess satisfaction with library services, resources and spaces. The Triennial Surveys to students and faculty were conducted spring of 2016, so results will be available to inform the next stages of planning. The 2016 In-Library surveys showed that 50% of those visiting the library come two or more times per week, and 76% visit at least weekly.

Convenience of location and quiet places to work rate high with respondents relative to reasons for visiting library facilities and should be considered when planning additional seating locations.

Students spend long hours in the library. On average 42% of undergraduates and 38% of graduate students polled in the library will spend 1-3 hours in the library per visit. Ergonomic furnishings, comfortable environments and quality of lighting are important design features.

W UNIVERSITY of WASHINGTON

In-Library Use Survey Results, 2014

Explore student and visitor use of University of Washington libraries.

Data collected by the University Libraries during the In-Library Use survey period. Users were sampled during multiple two-hour blocks in May, 2014, and returned 3514 completed surveys. The study was planned by the Library Assessment Office, and this dashboard was created by Maggie Faber.

Please contact Jackie Belanger at jeb24@uw.edu if you have questions.

Select branch/unit
- Grand Total
- Suzzallo/Allen
- OUGL
- Engineering & Math
- Health Sciences
- Foster Business
- Arts
- East Asia

3,514 Respondents

Select student type
- Grand Total
- UW Undergrad Stud..
- UW Grad/Profession..
- UW Faculty/Staff
- Other
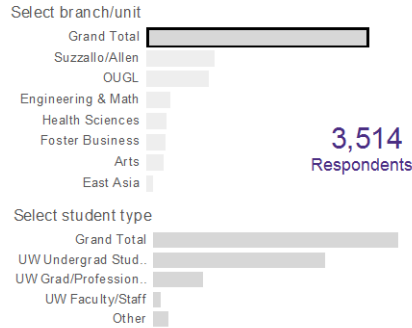
How important are the following services to you in this library?

	1 - Not Important	2	3	4	5 - Very Important
Quiet place to work on your own	2%	2%	6%	18%	72%
Library Computers	9%	7%	14%	17%	54%
Access to online library resources	7%	7%	16%	22%	48%
Place to work in groups	8%	7%	16%	23%	45%
Access to on-site books, journals, or ..	9%	10%	19%	21%	40%
Assistance from staff	7%	11%	27%	25%	29%
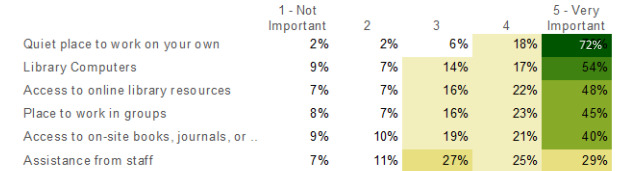
Why did you visit this library today?
- Location
- Quiet place to work
- Work on class assignment or ot..
- Environment
- Place to work in groups
- Other

(0.0% — 20.0% — 40.0% — 60.0%)
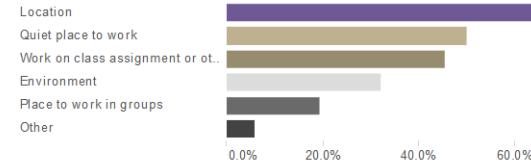
What did you do in the library today?
- Studied or worked individually
- Used laptop or mobile device
- Used a library computer
- Used printer or scanner
- Studied or worked in a group
- Looked for on-site and/or online books..
- Checked out or returned materials
- Asked library staff for assistance
- Other
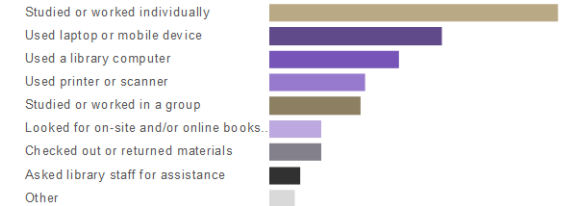
How long did you spend in the library?

UW Undergrad Student
19% (<30min), 27% (30min-1 hr), 42% (1-3 hrs), 13% (3+ hrs)

UW Grad/Professional Student
23% (<30min), 19% (30min-1 hr), 38% (1-3 hrs), 19% (3+ hrs)

UW Faculty/Staff
58% (<30min), 21% (30min-1 hr), 17% (1-3 hrs), 5% (3+ hrs)

Other
24% (<30min), 21% (30min-1 hr), 35% (1-3 hrs), 21% (3+ hrs)
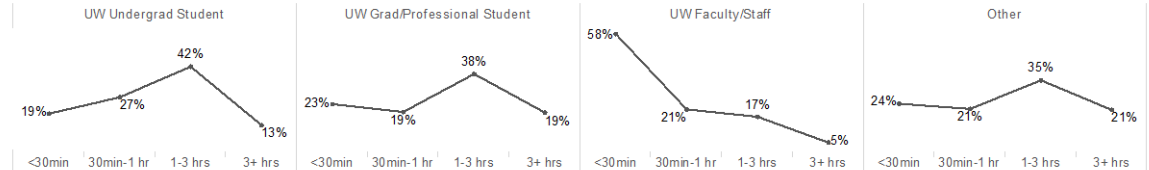
Library Staffing | Seattle Campus by Facility

The Libraries have maintained a stable staffing level over the last five years, partially due to reductions in state funding. However, the projected growth for the campus assumes staff will need to increase across UW to support the larger population.

Based on past experience, it is anticipated that the Libraries will be reshaping the organization in the future by replacing retiring or leaving employees with those who have different skills and new roles to meet emerging needs. As the proportion of hourly staff who handle print material declines, the libraries will need a commensurate increase in staff with new types of expertise in digital resources and their management—which may include students as well as librarians. Consulting activities will need to increase (face-to-face and virtual), as well as off-site shelving operations. Library staff spaces, which currently occupy approximately 127,000 ASF, would increase proportionally or be reorganized for improved efficiency.
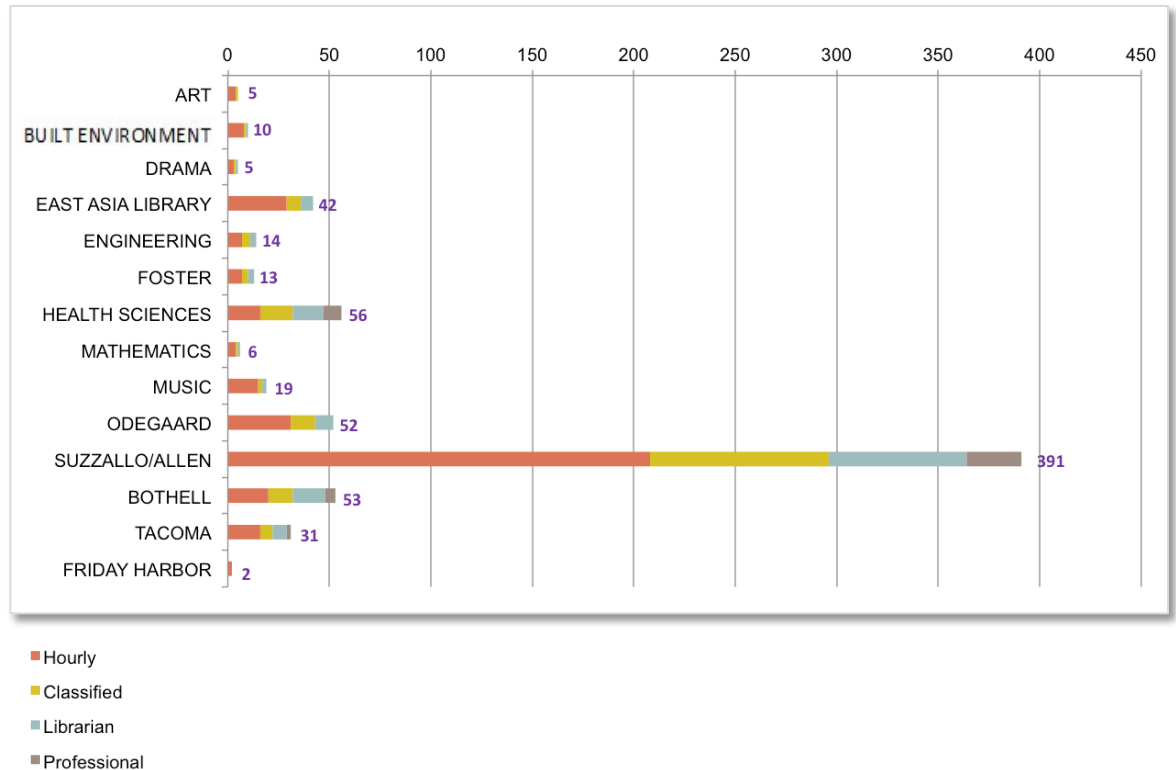
Facility	Value
ART	5
BUILT ENVIRONMENT	10
DRAMA	5
EAST ASIA LIBRARY	42
ENGINEERING	14
FOSTER	13
HEALTH SCIENCES	56
MATHEMATICS	6
MUSIC	19
ODEGAARD	52
SUZZALLO/ALLEN	391
BOTHELL	53
TACOMA	31
FRIDAY HARBOR	2

Legend:
- Hourly
- Classified
- Librarian
- Professional

4

Key Issues

Collection Stewardship

Planning for Improved Stewardship of the Collections

As a public institution, the University of Washington Libraries have a responsibility for stewardship of the exceptional research collections which scholars and librarians have curated for over 150 years. The State of Washington's investment in these resources will be at risk if improvements in collection conditions are not achieved soon. In addition the Libraries are responsible for storing institutional archives and making them accessible to the public.

Much of the collections are being stored in spaces without air conditioning or humidity control, so books are subjected to wide and damaging variations in environmental conditions. Temporary storage locations are problematic: Kane Basement where a large amount of the East Asia Library's collections are stored, not only has constant active leaks under Red Square but is subject to pollutants, particulate matter and vermin from the adjacent food services loading dock. Only about half of the Sand Point Shelving Facility has air conditioning.

A large portion of the collections was produced from the late 19th century through the 1970s and is subject to deterioration from acidification. Although browsing print remains desirable for the humanities and other disciplines, storage in a better environment will slow the accelerating deterioration of many materials.

This section outlines the needs, preliminary estimates of what could shift off-site, and projections for collection growth over the next 15 years.

Planning Needs | Better Environmental Conditions

The University of Washington Libraries is behind its peers in providing proper conditions for its collections. The Libraries monitors many collections areas with environmental dataloggers and in all of these locations collections are at risk due to current environmental conditions. Even the conditioned Baker stacks area at the Sand Point Shelving Facility and Special Collections vault fall short of the standards that are desirable given the value and importance of these collections.

Kane Basement in particular is subject to constant leaks, insects, fumes and particulate matter—the large amount of East Asia Library materials there are at serious risk.

All of today's on-campus storage conditions are so poor (except for the Spec. Coll. vault) that everything would be in better conditions if housed at the Sand Point Shelving Facility.

Yet even the Sand Point Shelving Facility building is not an ideal facility: for example, exposure to aging uninsulated exterior masonry walls and windows required a corridor to be built all around the perimeter to protect the collections and much of the stacks area is still not air conditioned.

The general collections are becoming special collections: for books and paper in all collections, anything published during the period of acidic, wood-pulp paper production—roughly 1850-1990—is inherently unstable due to its chemical makeup and the rate of deterioration is accelerated by poor storage conditions. Most papers produced from the mid-19th century to the present become brittle in about 25 to 50 years. Large surveys done in the 1980s showed that yellowing and brittleness were present in about **25 to 40 percent of research library collections and presumably collections are in worse shape now**. The extent of "brittle books" and those subject to acidification across the collections should inform long term plans for amounts to be housed off-site in better conditions.

For other media (film, photo, audio and video tapes), the substrates that these audio/visual materials are mounted on are inherently unstable and fragile by nature so the **vast majority would be considered in poor/fragile condition**. At least 10,000 cubic feet of current collections require cold storage ranging from microfilm masters and audiotapes at the Sand Point Shelving Facility to visual materials (photos, film and videos) in Special Collections.

Collections at Risk | East Asia Library Kane Basement Storage

- **Leaks**: The location under Red Square makes the space prone to leaks. **There is an open internal gutter around the perimeter of the space**. Gutters get backed up, overflow and bring down debris. The leak locations have been patched 5 times over the past 1-2 years. A lot of staff time is dedicated to dealing with problems in this space and student workers have to regularly monitor known problem spots.

- **Adjacent loading dock for food services**: Garbage handling brings in fumes, leaks and insects. The expansion joint material broke down, allowing air borne particulate matter to settle on a large valuable collection of material.

- **There is no HVAC system except for outside air ventilation, so humidity and temperature cannot be regulated**. An adjacent server room exhausts its hot air directly into the stacks storage area, which contributes to the poor conditions.

- **The space has supported mold growth and insects**. Books had to be vacuumed and mold removed taking weeks of staff time—with risks to the collection and to staff health.
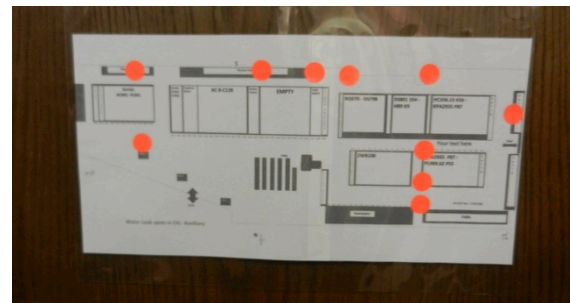
Collections at Risk | Aging General Collections

Keeping collections in a climate that is comfortable for humans is not beneficial for the long term preservation of print materials, especially those published between 1860 and 1975. Many major research libraries have extensive print collections from the 20th century on open shelving which are increasingly at risk from acidification because of the paper they were printed on.

In the Suzzallo and Allen stacks, 34% of the print materials were published before 1975. Environmentally controlled storage is recommended to slow their deterioration. Some books are becoming too brittle to handle or scan. Protection from exposure to light, air pollution and high humidity is desirable.

These volumes ideally would be put into conditioned storage as soon as possible to preserve them longer and at the same time will provide space either for new materials in their place or user seats to work with growing digital resources.

Age of Materials in Suzzallo and Allen Libraries

Publication Date		Books	Bound Issues	Other Materials	Total Volumes
Before 1900		50,223	105,485	167,330	323,038
1900 - 1924		71,575	102,488	130,565	304,628
1925 - 1949		173,974	186,366	68,543	428,883
1950 - 1974		626,539	442,565	164,242	1,233,346
	Subtotal	872,088	731,419	363,350	1,966,857
1975 - 1999		1,462,661	402,982	344,592	2,210,235
2000 - 2016		821,225	32,281	127,404	980,910
Unknown Pub Date		64,289	133,313	98,743	296,345
	Subtotal	2,348,175	568,576	570,739	3,487,490
	Totals	3,270,486	1,405,480	1,101,419	5,777,385
Percentage with publication start date prior to 1975		27%	52%	33%	34%

Environmental Standards for Collections

For combined stack/user rooms:

68 degrees F (for user comfort) and 30-55% RH (Relative Humidity)

Stability is important: The 30 day moving average RH should not exceed 55% or be less than 30% for all storage areas.

For COOL collection storage - DESIRABLE

54 degrees F and 30-55% RH

- Desirable for books, B/W photographs, paintings, inorganic 3D objects

For COOL collection storage – REQUIRED

54 degrees F and 30-55% RH

- Required for rare books, art on paper, manuscripts, maps, organic 3D objects, textiles

For COLD collection storage – REQUIRED

40 degrees F and 30-55% RH

- Acceptable for nitrate, acetate and polyester
- Applies not only to Special Collections but also other materials in the music, media and microform collections.

For FROZEN collection storage - REQUIRED

32 degrees F or less

- Critical for degrading acetate and nitrate film; best practice for B/W & color acetate, B/W and color polyester

Better environmental controls are the single most important and cost-effective action to preserve the collections as a whole over time. Design guidelines are to follow the standards of the Image Permanence Institute (see Appendix p. 137 for further information). These are available at: www.imagepermanceinstitute.org

Comparison of Existing Conditions with Standards

The effect of temperature on decay rate is a continuum—the higher the temperature, the faster the decay.

The Libraries use sensors and a data logging system to track environmental conditions in various stack spaces.

This table compares some of that data from sensors to recommended standards, illustrating that existing conditions in many storage areas seriously exceed recommended limits. Few of the approximately 252,000 ASF of collection spaces on the Seattle Campus meet them.

Recommended Ranges Compared with Actual Conditions | **Red = Areas at Risk**

Type of Material	Temp. Low	Temp. Actual Mean	Temp. High	RH min	RH Actual Mean	RH max	Fluc. Limits	Dew Point Low	Dew Point High	Collections
ROOM Combined readers & stacks			68	30%		55%	25%			Recommended for materials on open stacks near user seating areas
Suzzallo/Allen upper levels										General collections
COOL Storage - DESIRABLE	55		67	30%		55%	25%			Recommended for books, B&W photos, inorganic 3D objects, paintings
Kane Basement	58		83	31%		61%	30%	35	58	East Asia Collection
East Asia Library West Stacks	65		79	18%		72%	54%	21	62	East Asia Collection
Gov. Pubs.										
Sand Point - Baker		67			45%					
COOL Storage - REQUIRED	40		54	30%		55%				Recommended for rare books, art on paper, AV media, manuscripts, maps
Special Collections B086		72			38%					
Special Collections B086A		65			47%					
Special Collections B083B		68			48%					
Special Collections SB087		72			41%					
Special Collections SB089		71			45%					
Special Collections SB083		66			49%					
Media collection storage (SuzB)										
Map collection storage (SuzB)										
Sand Point - Vault		69			45%					
COLD Storage - REQUIRED	32		40	30%		55%				Recommended for color photos; acceptable for nitrate, acetate & polyester (see Frozen)
FROZEN Storage - REQUIRED	32		40	30%		55%				Critical for degrading acetate & nitrate film; best practice for B/W & color acetate; polyester
Freezers (2)										Film, color negatives, nitrate materials

5

The Critical Enabler

Off-Site Shelving

The Critical Enabler | Additional Off-Site Shelving Capacity

The existing Sand Point Shelving Facility was created in 2007. It houses approximately 167,000 LF in fixed and movable shelving in 69,000 ASF on the 3rd Floor of a former US Navy/Air Force storage warehouse. **Expansion to the 4th floor of the existing Sand Point Shelving Facility to create additional shelving capacity is an available option, but it will require significant investment:** a perimeter interior wall to protect collections from the exterior walls, installation of a full HVAC system, ductwork, sensors, security and fire protection systems. Investment in compact shelving will be needed to maximize capacity. There are slab limitations on loading for very dense materials (e.g. microforms), some of which are candidates for relocation to free up space on-campus. A Pre-Design Study was completed in June of 2014 that estimated this work at approximately $14.9 million project cost, without the cost of shelving. **Even if another floor is built out, it will only meet growth needs for a few years.** Today, about 150,000 LF of additional materials could be shifted into off-site shelving if space were available. By 2031, off-campus storage capacity of over 500,000 LF (or an additional 397,000 LF) is anticipated (see page 53).

High density storage buildings with new construction offer stable environmental conditions for the most cost effective construction and lowest long term operational cost. This section of the report includes examples of recent academic library auxiliary shelving solutions, estimates for materials from each library which could moved off-site, estimates for long term storage needs, and factors to consider.

The Sand Point Shelving Facility houses many types of materials, from books and bound journals on compact shelving, to folios, architectural drawings, microforms and other media such as film canisters and LP records.

Considerations | Long Term Storage Costs

A study was published in 2010 that examined the comparative cost of keeping a book in different forms of storage. The analysis took into consideration factors such as initial construction cost and ongoing operational costs. It compared keeping a print volume on open stacks vs. in a high density storage facility, as well as hybrid scenarios where a book is kept for 10 years or 20 years on open stacks. The table to the right summarizes the findings in terms of comparative annualized dollars per book (in 2009 dollars). The high density model is the most cost effective form of storage over time. The long term cost implications are an important factor in favor of off-site shelving, in addition to improved environmental conditions for the collections.

With new offsite shelving, projected collections growth could be accommodated in a facility ranging from approximately 10,700 ASF in a high density automated retrieval storage facility to approximately 84,000 ASF in a facility with conventional shelving.

Cost Element	Shelving Model			
	Open Stack	High Density	Hybrid (10 years in open stack)	Hybrid (20 years in open stack)
Construction	108.51	16.40	32.36	43.21
Maintenance	16.69	1.24	5.66	8.99
Cleaning	3.64	0.28	1.32	2.09
Electricity (heating and cooling)	2.39	0.20	1.03	1.53
Base staffing	6.08	1.20	2.42	3.36
Circulation	4.58	9.45	8.19	7.25
Total	141.89	28.77	50.98	66.43
Annual Average	4.26	0.86	1.53	1.99

Paul N. Courant and Matthew Nielson, "On the Cost of Keeping a Book",
CLIR report *The Idea of Order: Transforming Research Collections for 21st Century Scholarship*, 2010.
http://www.clir.org/pubs/reports/pub147

Considerations | Range of Options for Off-Site Shelving

Regular Shelving Print

Load: 150 psf

Typical height 90". These are open shelves for print books, bound journals, pamphlet boxes, etc. Large flat maps/posters will require deeper shelving and spacing.

Regular Shelving Dense materials

Load: depends on media type

These may include cabinets dense with microfiche or other heavy media.

Compact Shelving Print

Load: 300 psf

Typical height 90" but can be higher. These ranges can be moved manually with cranks or by motor, depending on range length. They can reduce the amount of aisle space by ~80%.

High Density "Harvard" Type

Stationary shelving with manual retrieval

Typical height 30'. Workers retrieve items using cherry-picker type equipment. Items are stored by size in bins for greater efficiency.

High Density "Harvard" Type

Movable shelving with manual retrieval

Heights up to 35', with up to 30 tiers of shelves with bins. Manufacturers have introduced movable systems for even greater density.

High Density with ASRS

Stationary shelving with automated robotic retrieval

Typical height 35'-50', using bins with items sorted by size. Robotic systems operate extremely quickly, reduce staff labor required.

Examples of Recent Auxiliary Shelving Solutions

Many major research libraries challenged with space pressures and collections growth have developed auxiliary shelving solutions that offer improved environmental conditions and lower operating costs per item over time.

In addition to the examples pictured, successful models exist at Brown University and many others. A new high-bay storage facility near the University of Wisconsin-Madison made approximately 30,000 sf of existing library space across campus available for study and learning facilities and enhanced services.

ReCAP
High Density Facility

Research Collections & Preservation Consortium serving Princeton U., Columbia U., & NY Public Library. Mechanical forklift with manual order picking. Building modules vary in length & width. Ultimate site capacity: 252,000 sf, 37.5 million volumes

UBC
PARC Storage Facility

High density storage facility built in research sector of the campus. Previous 2005 ASRS in Barber Learning Center is full, so new modular facility was opened in 2015. Capacity: 24,540 sf, over 1 million volumes.
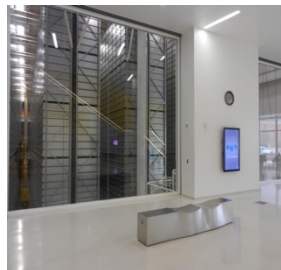
NCSU
James B. Hunt Library

New building with integrated ASRS along its length. Windows into the ends of the "bookbot" became a feature in the lower entry lobby.
Capacity: 2 million volumes.

Univ. of Chicago
Mansueto Library

New building adjacent to Regenstein Library with ASRS 50' below grade, glass enclosed 180 seat reading room at grade, and connector passage to the main library. Capacity: 3.5 million volumes, with 5 minute delivery time..

McGill Univ.
Redpath Library

Proposed new high density shelving facility below adjacent green, to enable renovation and infill project with additional user seating and new library facilities. Capacity: 2.7 million volumes which occupy half the existing library space.

Considerations | Off-Site Shelving Facilities

Environmental Conditions:

This study recommends that additional off-site shelving facilities meet baseline environmental conditions standards for Cool storage.
Proper environmental controls are the single most important and cost-effective action to preserve the collections as a whole over time. Control of temperature and humidity swings cannot be compromised. (See Section 4 and p. 137 for environmental standards.)

- High density solutions protect the collections better, with less exposure to light and particulate matters than they would have on regular shelving with aisles.
- Dedicated cold and frozen storage areas will be required
- Temperature, relative humidity, particulate matter filtration

Shelving Equipment Types:

- Built-in equipment to be factored into the estimate: Can range from regular fixed, movable compact shelving, high density fixed or movable, to high density ASRS (Automated Storage & Retrieval System).
- High density ASRS allow extremely rapid retrieval operation and reduced staff levels; much greater capacity for the investment.

Building Considerations:

- Structural loads: will vary by shelving type
- Daylight/UV control
- Ventilation ACH; sensor systems
- Fire suppression issues
- Ceiling height, systems layout for unobstructed clearance
- With purpose built high-density storage facilities, available adjacent land to expand with future modules is important.

Operational Considerations:

- Distance from campus: retrieval time to meet user expectations, numbers of trips and volumes per day required, long term campus carbon footprint impact
- Staff space requirements: circulation processing; document delivery scanning; space for accessing archives and/or doing preservation-quality digitization/digital conversion.
- Loading dock and security office.

Potential to Shift to Off-Site | Seattle Campus Branch Libraries

Estimates were done of what parts of branch library collections could be shifted to off-site storage today if shelving capacity was available. For example, the materials in Kane basement (at risk of leaks and other problems) are now fully cataloged and can be retrieved by users from off-site shelving.

This diagram summarizes linear feet of existing collections shelving (dashed lines on the left) which could be moved off-site (shown as striped bars on the right). (See table in Appendix pages 131-132 for further detail.)

Retained On-Campus

ON CAMPUS | **OFF-CAMPUS SHELVING**

East Asia Library
100% | 29,200 LF | 0 LF

Kane Basement (East Asia Library Storage)
0% | 0 LF | 52,990 LF

Health Sciences Library
4% | 1,400 LF | 33,700 LF

Engineering Library
41% | 9,000 LF | 13,200 LF

Odegaard Undergraduate Library
100% | 14,215 LF

Art Library
72% | 3,700 LF | 1,470 LF

Drama Library
58% | 1,820 LF | 1,315 LF

Music Library
52% | 4920 LF | 300 LF

Math Library
88% | 3,580 LF | 3,270 LF

Built Envir. Library
100% | 4,360 LF | 575 LF

Foster Business Library
49% | 2,280 LF | 2,420 LF

Existing

Proposed for Relocation

Potential to Shift to Off-Site | The Suzzallo and Allen Libraries

Similar estimates were done for the Suzzallo and Allen Libraries. A lot of material from these libraries is already stored off-site at the Sand Point Facility (hence the solid bars to the right). Striped bars to the right indicate linear feet of physical materials that could be sent to off-site shelving.

	ON CAMPUS	OFF-CAMPUS SHELVING

Suzzallo and Allen Libraries General Stacks
181,900 LF — 44,950 LF

Gov Pubs
38,660 LF | 31,400 LF — 7,260 LF

Special Collections
29,800 LF — 65,570 LF — Baker Auxiliary (conditioned)

Spec. Coll. Archives
36,000 LF — 27,240 LF + vault 4,835 LF

Subbasement Non-Circulating
44,730 LF

Allen First Floor South
23,855 LF — 23,855 LF

Reference
2,320 LF — 1,460 LF

Newspapers
1,620 LF — 800 LF

Media
3,560 LF — 3,560 LF

Folios
2,064 LF — 5,080 LF

Gifts/Storage
2,340 LF

Existing
Proposed for Relocation

Estimates for Off-Site Shelving Needs

Additional off-site shelving needs were estimated for today, in 5 years and in 15 years.

Almost 30% of existing materials have been identified for potential relocation to new off-site shelving. The existing materials identified as feasible to shift into off-site storage today (see p. 131-132), plus an allocation for items that could move but will need to be cataloged before relocation, total approximately 182,000 linear feet (LF)* of additional off-site shelving capacity that could be utilized if it was available.

Adding estimated collections growth for 15 years (see p. 32), including an allocation for 70,000 LF for Special Collections Archives growth, the additional capacity needed by 2031 is estimated to be approximately 397,000 LF.

Existing collections at the Sand Point Shelving Facility are 166,720 LF. It may be desirable in the future to consolidate the materials there into one high density storage facility.

Linear feet assumptions are based on existing Libraries' shelving efficiency of 11 items/LF.

Estimates for Additional Off-Site Shelving Facility Capacity
(in linear feet of shelving*)
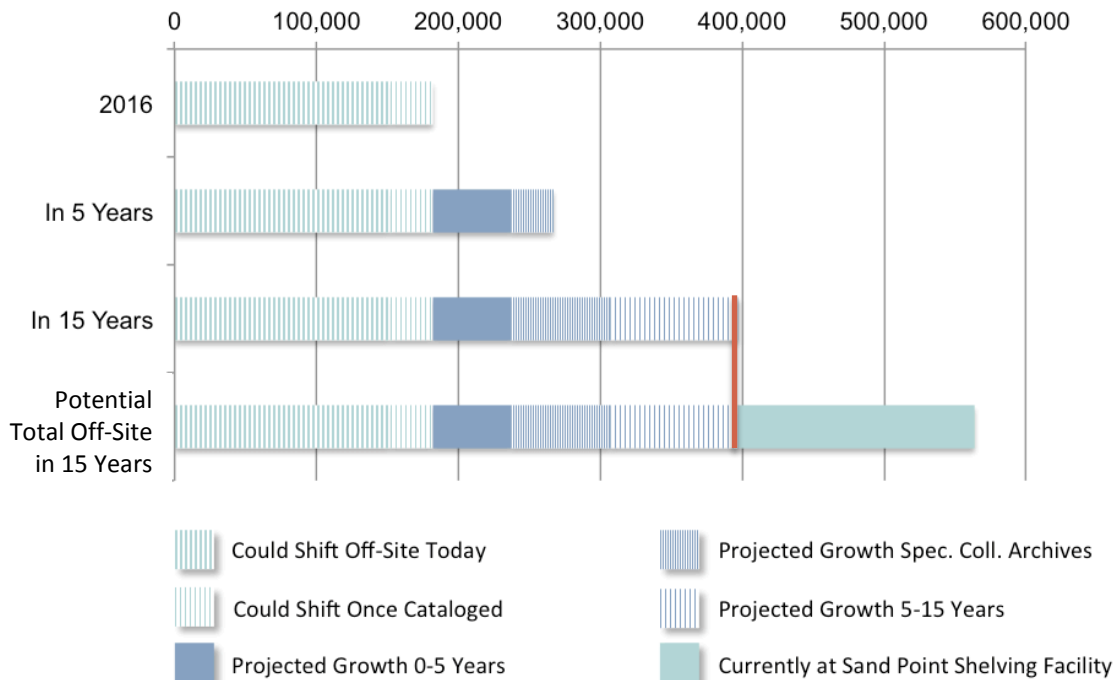
Legend:
- Could Shift Off-Site Today
- Could Shift Once Cataloged
- Projected Growth 0-5 Years
- Projected Growth Spec. Coll. Archives
- Projected Growth 5-15 Years
- Currently at Sand Point Shelving Facility

6

The Future Planning Context

Campus Growth

Campus Planning Context

The University of Washington is planning long term growth for the next two decades. A campus space needs model was developed in 2015, projecting a steady rate of student enrollment growth and the potential need to create 5.5 million to 8.1 million gross square feet of space by 2038. Within this context of growth, long term expansion plans for campus districts have been developed and are currently being synthesized into an updated 2018 Campus Master Plan.

Development will be focused on areas surrounding the Core campus, especially the West Campus which is being conceived as an innovation district—a vibrant neighborhood with residences, services, and a mix of private industry with education to stimulate innovation activity around the Northeast Campus Parkway. The South Campus, where the UM Medical Center is located, is already well built out but will see renovations and some replacement buildings. The Health Sciences Library is located centrally in the T-Wing currently being studied for renovation.

Most of the libraries are located in the Core Campus district, for which a number of master planning studies are underway, including a district plan for the College of Engineering. The new light rail station provides enhanced public access to the Libraries' facilities.

Draft Campus Plan, as of October 2015
Source: Sasaki Associates, Inc.

Growth in Populations to be Served by 2031

The total Seattle campus population is anticipated to grow steadily over the next couple of decades. Recent application and acceptance levels have reached new highs. Significant growth is projected across all populations:

- **Students**: from about 54,000 FTE by 2028 to 61,000 FTE by 2038
- **Faculty**: between 8,100 and 9,100 FTE by 2028; between 9,200 and 10,200 FTE by 2038
- **Staff**: between 18,200 and 20,100 FTE by 2028; between 20,400 and 22,600 FTE by 2038

Estimates for the populations the library will serve during this study's planning horizon have been extrapolated from the space needs model.

The student population is very diverse. An increasing number are international students, so the library provides a cultural role in creating a welcoming community. The library also must support both on-campus and on-line learners. In Fall 2015 the Seattle campus enrolled 45,870 students (out of 55,767 total at all campuses) and educational outreach educated over 50,000.

Enrollment Trends by Student Population

- Overall Student Population (FTE)
- Undergraduate Student Population (FTE)
- Graduate Student Population (FTE)
- Professional Student Population (FTE)
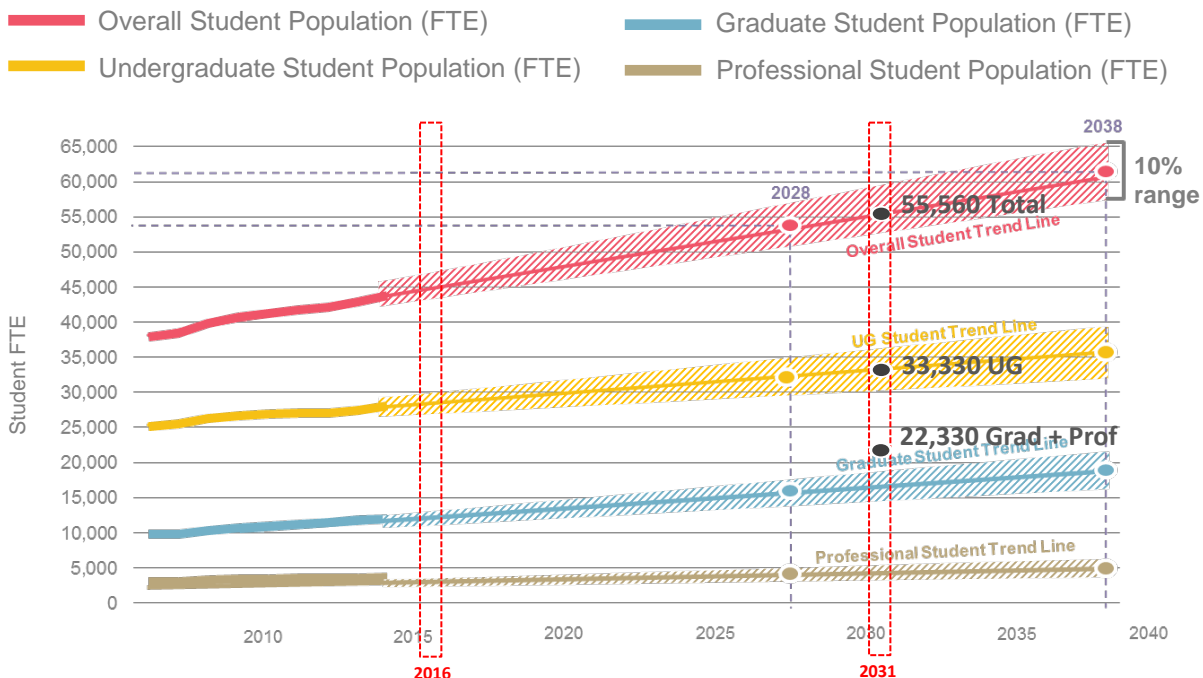
Source: Office of Institutional Analysis, Seattle campus FTE Enrollment by Level

Campus Planning Priorities

Current Capital Plan priorities are centered around improvements and expansion for the following focus areas: **Student Experience, Innovation, Public Good and Transforming Administration.**

Focused planning studies are being conducted to address specific areas of divisional growth and research initiatives, including a district Master Plan for the College of Engineering and a Feasibility Study for the renovation and addition to the existing T-wing for Health Sciences academic initiatives.

The campus space needs model benchmarked existing assignable square feet (ASF) per student for different space categories against space allocation on the (main) campuses of peer research institutions. UW ranks on the low end relative to these peers across all categories of user space except Athletics and Recreation. **For non-classroom Study spaces, UW ranks 5 out of 6, providing 13.6 ASF per student FTE in a peer range of 12.5 to 27.6 ASF per student.**

Benchmarking – Assignable Square Feet (ASF) Per Student FTE
Peer benchmarking comparisons
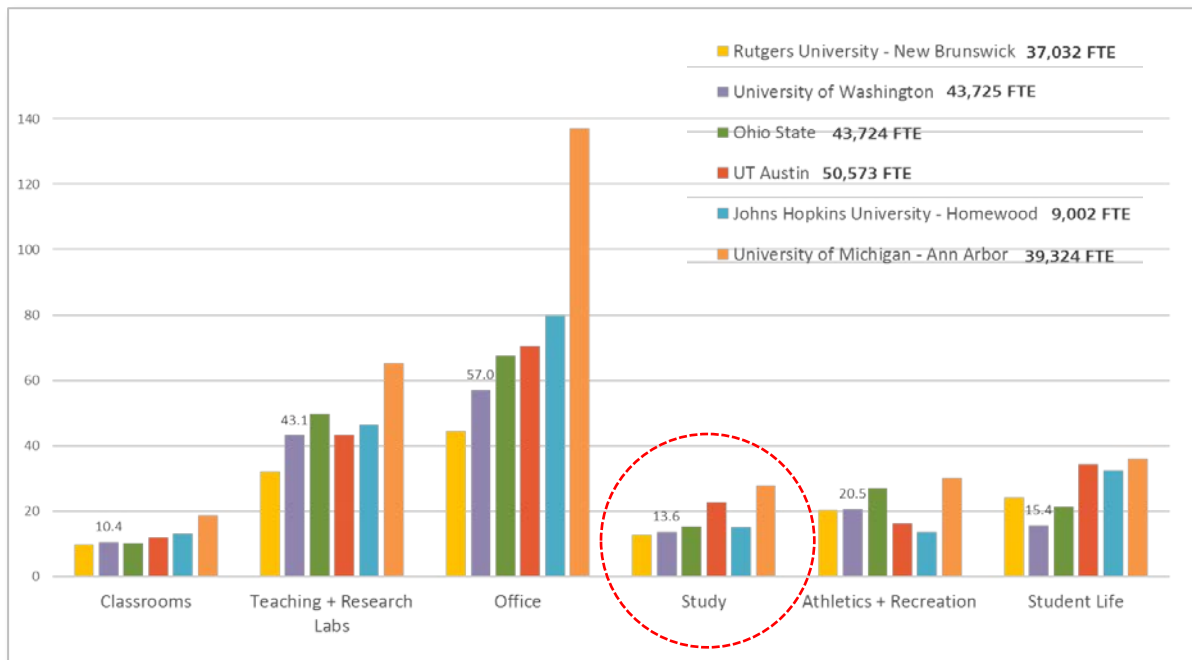
Source: UW Capital Planning and Development

Campus Space Needs Model

Developing adequate out-of-classroom study space to address the existing deficiency and meet the anticipated extent of growth will require bold moves. In addition to the increased space need associated with projected FTE growth, the model also identified an existing deficit in Study/Library spaces, resulting in a **projected need for study/library space across campus in 2038** (blue) **of almost double the amount of existing space** (brown)**.**

The Libraries are constrained from addressing this need because of the large amount of library space which must be allocated to stacks. If enough additional off-site shelving capacity became available to accommodate a portion of the existing collections and projected collections growth, space in the core campus could be freed up for additional user seating, improved staff space adjacencies, and new types of library facilities to meet changing scholarship needs.

Projected Space Deficit at 54,000 FTE (2028) and 61,000 Student FTE (2038)
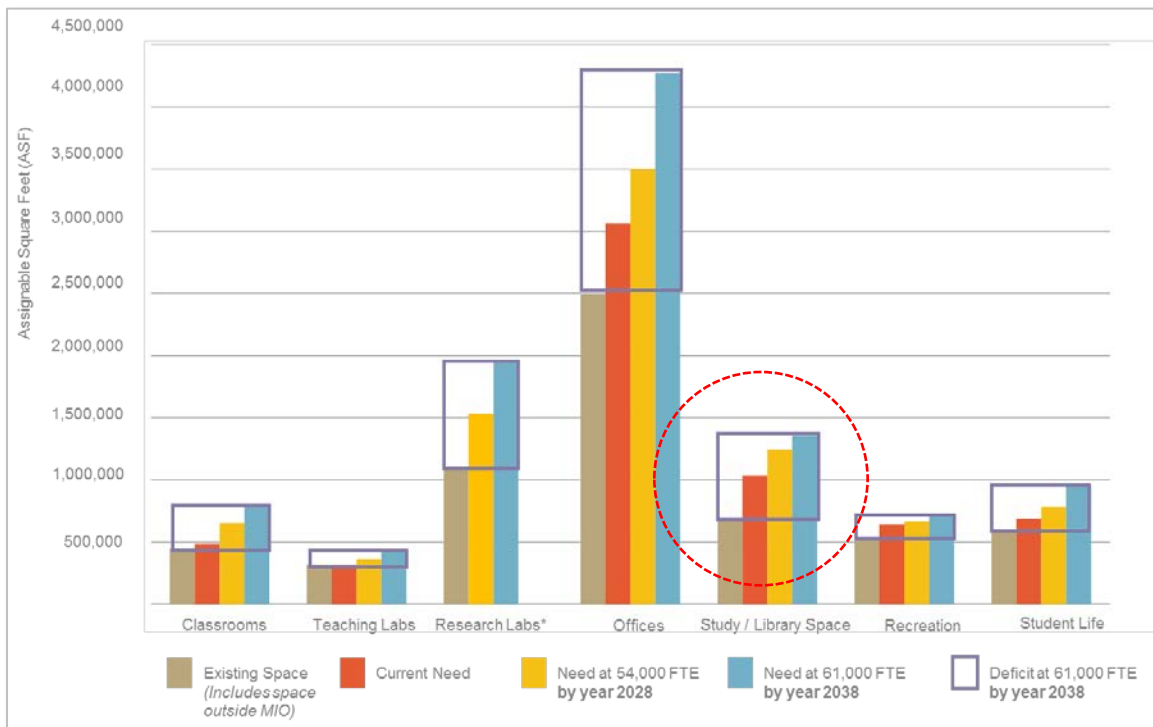
Source: UW Capital Planning and Development

Projected Study Seating Needs

The Libraries today cannot provide sufficient study seating to meet demand. Assuming recommended seating targets (CEFPI) for only 12% of undergraduate and 30% of graduate student populations, the Seattle campus is estimated to have an **existing deficit of approximately 2,550 seats** or 83,300 ASF (see Appendix p. 136).

There will be need for approximately 5,000 additional study seats on campus by 2031 based on campus enrollment projections—almost double the existing seating in the libraries.

Relocating collections and repurposing stack spaces will be critical to meet the growing core campus study seating need. Although resulting new study seating will be distributed across campus, surveys show that many students want both the quiet study environment, the long hours and the collaborative, staff-supported work areas that libraries provide. The ratio of graduate to undergraduate students is anticipated to increase, so demand will also grow for work areas and facilities that support graduate research.

Projected Study Seating Needs *(in thousands)*
Seattle Campus

EXISTING SEATING COUNT - 5,679 TOTAL
CURRENT SEATING NEEDED - 8,230 TOTAL (+ 2,551 FROM EXISITNG)
ESTIMATED 2031 SEATING NEEDED - 10,656 TOTAL (+ 4,977 FROM EXISITNG)
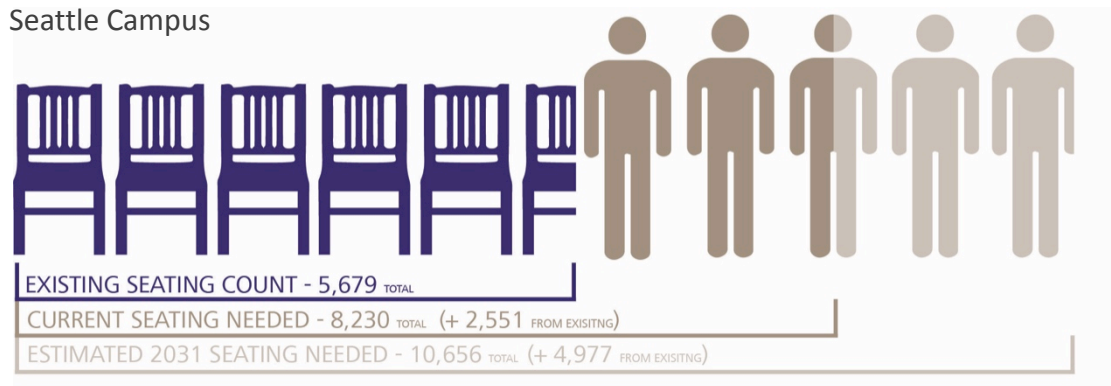
Projected Study Seating Space Needs *(in Assignable Square Footage - ASF)*
Seattle Campus

EXISTING SEATING ASF - 180,034 TOTAL
CURRENT SEATING ASF NEEDED - 263,360 TOTAL (+ 83,326 FROM EXISITNG)
ESTIMATED 2031 SEATING ASF NEEDED - 340,992 TOTAL (+ 160,958 FROM EXISITNG)
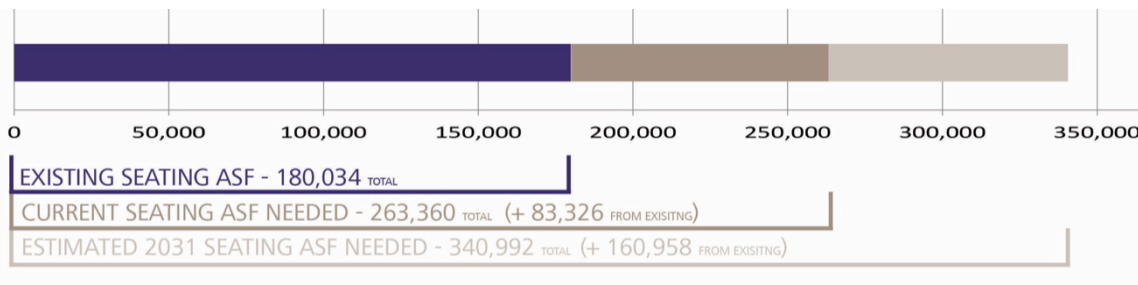
Library Buildings Conditions

2015 Facilities Condition Survey scores for existing Libraries buildings vary from" Superior" Condition (Foster Library) to "Fair But Deferrable" Condition (East Asia Library).

None of the existing library facilities are flagged on the current Capital Planning watchlist for immediate attention relative to deferred maintance concerns. However, Facilities Condition Surveys indicate that the Art, Music, and Drama buildings have high damage potential and high life safety hazard in event of seismic activity.

In addition, none of the existing library facilities provides adequate environmental conditions for collections storage, except the nearby Sand Point Shelving Facility.

Several of the buildings, such as Padelford Hall and the Magnusson Health Sciences Center T-wing, present sigificant accessibility and organizational efficiency challenges because of their existing building configuration.

Total Seattle Campus: 2.75
Branch Average: 2.9

BUILDING CONDITION FACILITES SCORE

1. Superior condition
2. Adequate condition
3. Fair, deferrable condition
4. Needs improvement, limited functionality
5. Needs immediate improvement

Average: 2.75
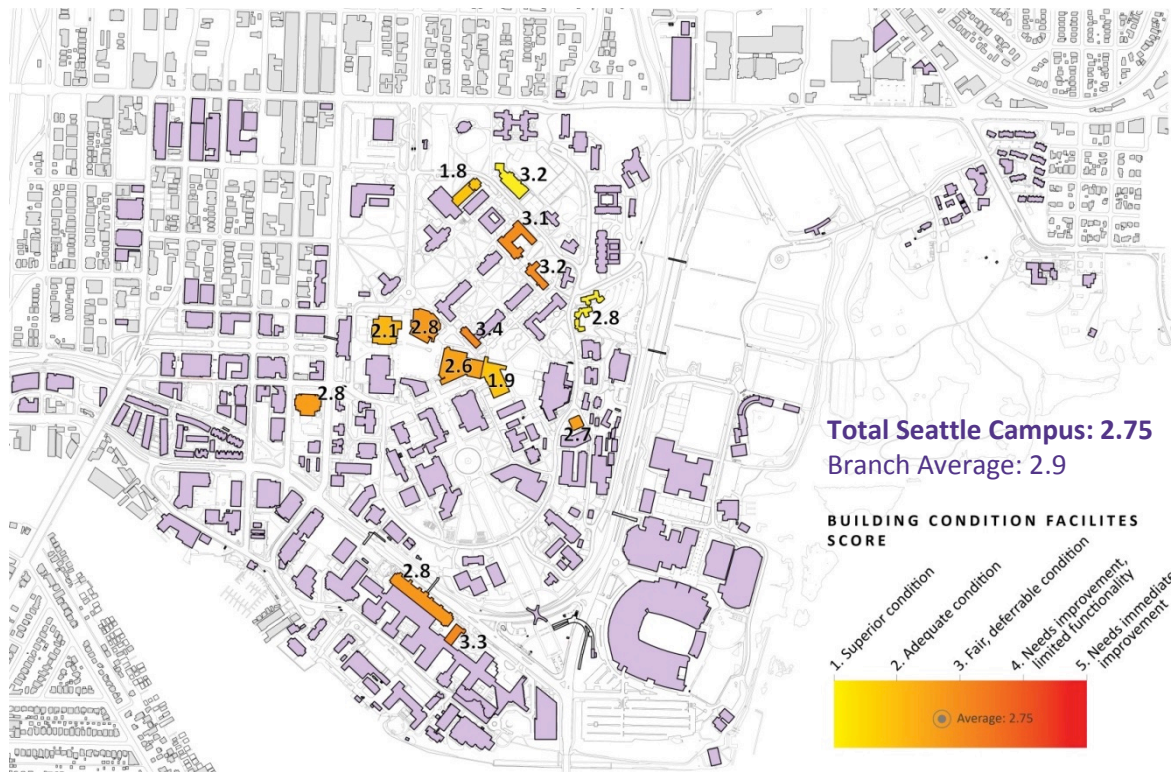
Deferred Maintenance

Facilities Services 2016 records identify **$71.4 milion of the total estimated deferred maintenance projects for existing Libraries buildings**. Library footprints vary widely within the buildings that house them, so these estimates may over-inflate the relative value of the expense relative to library space. For example, $12.5m deferred maintenance expenses are identified for the Art Building, but only 4,228 square feet of the 124,082 GSF building is dedicated to the Art Library.

Some deferred maintenance needs are notably absent from these records, such as repair of basement waterproofing in Kane Hall, where leaks from Red Square above seriously threaten the collections.

Future investment in deferred maintenance projects should be evaluated relative to overall value for the library's functionality, user spaces, collections, life-safety, accessibility and transformational impact.

Total Seattle Libraries: $38/GSF and $81/ASF
Branch Average:
$57/GSF and $199/ASF

FACMAN DEFERRED MAINTENANCE
OVERALL COST BY FACILITY ($)

$0 $7 mil $13 mil

Average: 3.4 mil
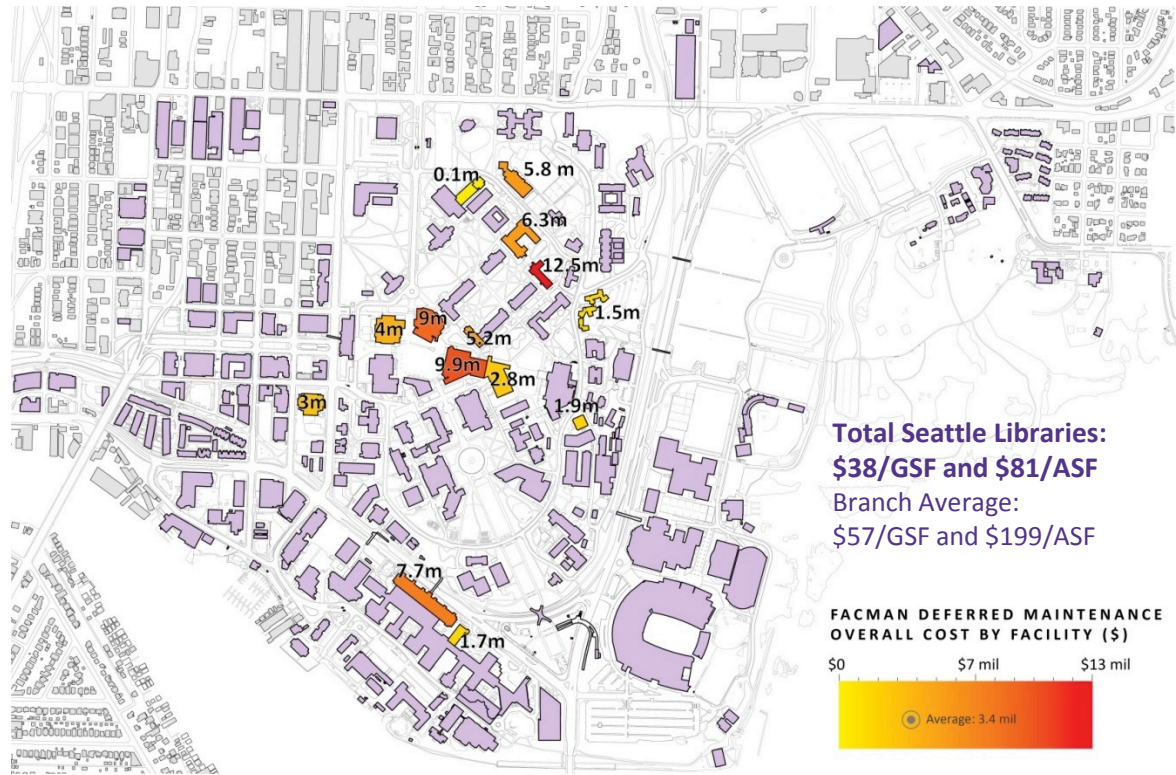
7

Future Planning Context

The Changing Nature of Research & Scholarship

The Changing Nature of Research & Scholarship

With much scholarship now born digital, academic libraries need to develop robust capabilities to support the entire research cycle—from planning stages to publication and archiving. Helping their users discover and apply an ever expanding set of tools, systems and resources, or find researchers doing similar work globally, is becoming as important as tracking down a book in a world which offers many open source search systems.

As the traditional scholarly publication process becomes less sustainable and more alternative paths develop, scholars are exploring open source avenues for sharing their research. Public academic research libraries especially have an opportunity to become stewards of their institution's contribution to the scholarly record.

Purchase on demand options are developing (whether articles separate from subscriptions, books or textbooks) and eroding the traditional just-in-case model of collections. Increasing expertise in scholarly communications, intellectual property management and digital curation will all be integral to these future practices.
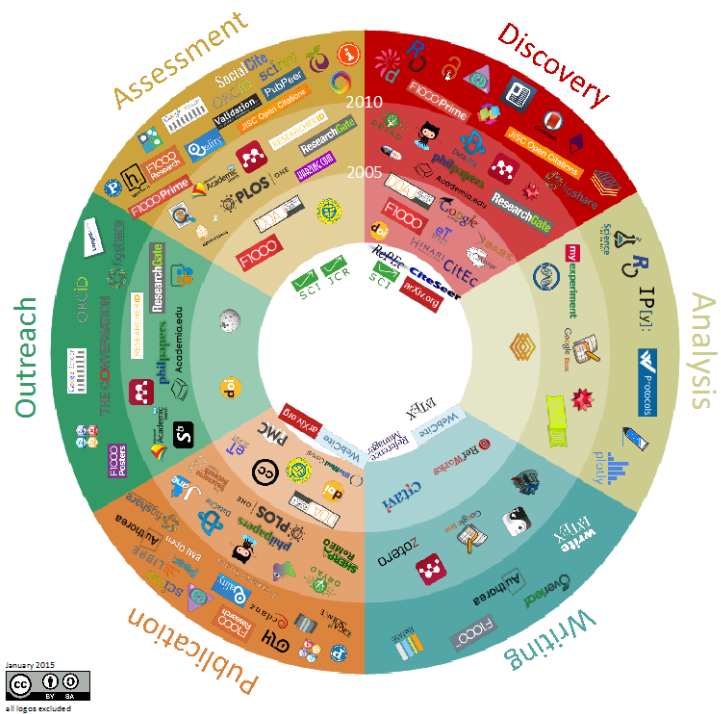
Source: 101 Innovation in Scholarly Communication: The Changing Research Workflow, by Jeroen Bosman and Bianca Kramer, Ultrecht University Library, 2015

Emerging Directions in Scholarship

In the humanities existing print resources and historical documents are being scanned, and made accessible not only as visual resources but for text mining and textual analytics. Digital representation of objects allows scholars globally to collaborate and the integration of media in scholarship is increasing, despite traditional practices requiring publication for tenure.

Applications for GIS systems are being explored in the humanities and social sciences, for example, for geotagging of historical materials, using geospatial software to document archeological research or illustrate shifting social patterns. Graduate students and faculty may be primary users today but undergraduates are rapidly getting interested in applications for their projects. "Geohumanities" is emerging as a spatial-temporal perspective on digital scholarship.

The University of Washington Libraries can help foster creative scholarship using these new tools in facilities that are shared by all disciplines. Expertise will be needed for curation of cultural artifacts, datasets, dialogue and knowledge created in digital form—often transient and fragile in formats which become quickly obsolete.

*"Upon seeing a medieval manuscript for the first time, I realized the **humanities aren't data poor; it's just harder to extract the data digitally from within the various physical layers**."*

*"**Data sets are primary research materials; they are fragile and they provide insights into the problems of our time. Data is the new special collections.**"*

— Sayeed Choudhury
Associate Dean for Research Data Management, Director,
Digital Research and Curation Center
Johns Hopkins University Sheridan Libraries

New Skills and Services

Data management plans are now required by many funding sources and the ability to replicate results requires data curation with metadata that will enable reuse of data by others. Libraries have an opportunity to help establish guidelines for research data management best practices at all stages of the research cycle. Libraries will offer distributed consulting services to research teams, faculty and students—from one on one consulting or project based workshops to virtual consultations or online tutorials—in all fields.

The Libraries promotes establishment of a long term plan for a central institutional repository, which will enable librarians to help archive and publish UW scholarship, research findings and datasets, and support managed preservation of more digital content into the future. Collaboration across the university on IT infrastructure for digital storage for researchers and students will be needed to meet the growing demands for scholarly work.

*"**Planning for data management is one of the most fundamental processes for success in developing data that is sharable and reusable**. Often, the data generated by a research lab is extremely detailed and encoded in ways that make sense to the person who collected and analyzed the data but without explicit structure or tags (metadata) the data might be unintelligible to an outside researcher. The planning process and attention to developing consistent and clear methods for processing and storing data from the beginning of a project are important."*

*"There is a definite need for a stronger push to make data management an integral part of any research. **Building students and researchers into the culture of data will ensure data sharing and increasingly thorough research in the future.**"*

— Findings from UWL study of data management needs, 2012

Data-Intensive Research & Scholarship

Particularly in the physical, biological and social sciences, the exponentially increasing research data now places new burdens on research teams. The previous model of the classic T-shaped researcher with broad breadth of knowledge and deep domain expertise is evolving into a model of a Pi-shaped researcher, requiring strong statistical/computational skills as well. Libraries are developing data services to help support researchers, complementing those skills emerging from within the discipline (e.g. biocuration) and have an opportunity to prepare students campus-wide with training for data proficiency.
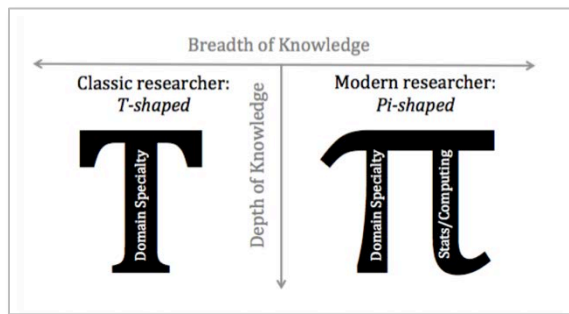
Credit: Alex Szalay, Johns Hopkins University (Source: Jake Vanderplas, 22 August 2014 blogpost)
https://jakevdp.github.io/blog/2014/08/22/hacking-academia/

*"**Data analysis, and not experimental data acquisition, is the new bottleneck to discovery.***

*This trend can be attributed to advances in data acquisition technology: high-throughput lab techniques, remote sensing platforms, and high resolution computational modeling. While the technology and resources necessary to collect or generate such data at high rates are becoming widely available, technology to manage and analyze the data have not kept pace. Traditionally, each data acquisition activity was coupled to a specific hypothesis, but **now researchers collect data en masse---they "download the world"**---exchanging a problem of how to **extract knowledge from the environment** to one of how to **extract knowledge from a database**."*

— Bill Howe
Associate Director, eScience Institute,
Univ. of Washington

The Changing Scholarly Record

Preserving the scholarly record is no longer just about acquiring published research for the university library. Pressures on libraries are leading to local library collections in combination with consortia of regional libraries who can collaborate on efficiencies of shared collections, many in off-site facilities. As this phenomenon develops further, in the future UW will have a particular responsibility in the northwest region for both curation and leadership as the largest research library in the area.

Capturing the electronic scholarly record will be equally daunting. Research into new ways of tracking scholarly communications, such as by harnessing technology and visualization software to make visible research citation patterns, is being lead by faculty at the UW iSchool.
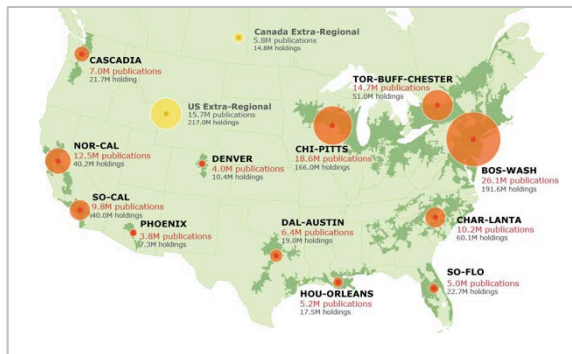
A study by OCLC documented the shift from locally held library collections to the concept of a system-wide managed collective collection, with a network of shared print repositories.

Source:
Dempsey, Lorcan, Brian Lavoie, Constance Malpas, Lynn Silipigni Connaway, Roger C. Schonfeld, JD Shipengrover, and Günter Waibel. 2013. *Understanding the Collective Collection: Towards a System-wide Perspective on Library Print Collections*. Dublin, Ohio: OCLC Research.
http://www.oclc.org/research/publications/library2013/2013-09.pdf.
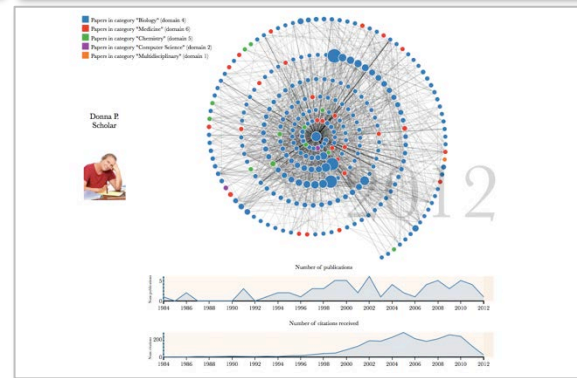
Innovative tools developed by Jevin West and the UW DataLab are enabling new ways of understanding scholarly citation practices.

Technology Drivers

Beyond the campus, major drivers in global society are likely to have a profound influence on the use and management of information in fifteen years that long term library planning needs to consider. The exponential growth in the Internet of Things has implications for the many objects libraries track as well as libraries' growing expertise in data management, helping students as well as faculty who are harvesting data from instruments and sensors to analyze in their research and projects. Progress in Artificial Intelligence will lead in directions challenging to anticipate today—which are being explored by UW researchers. Augmented reality and virtual reality will become more integrated into learning, with libraries providing physical places where all are welcome to experience emerging technologies.
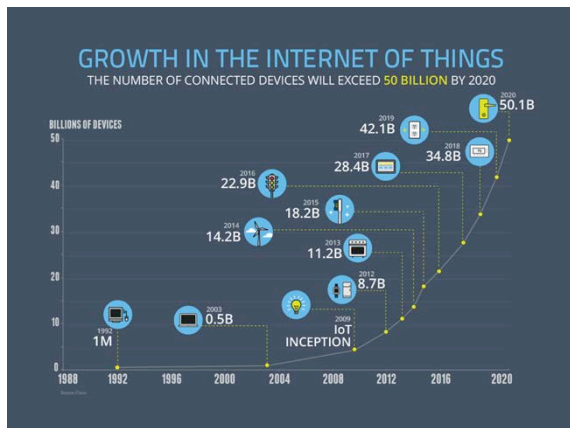
Platform, March 2015 <https://www.ncta.com/platform/broadband-internet/behind-the-numbers-growth-in-the-internet-of-things/>

> Tomorrow's scientists will have armies of virtual graduate students, doing lab work, statistical analysis, literature search and even paper-writing for them.

PEDRO DOMINGOS
Machine-learning researcher, University of Washington, Seattle
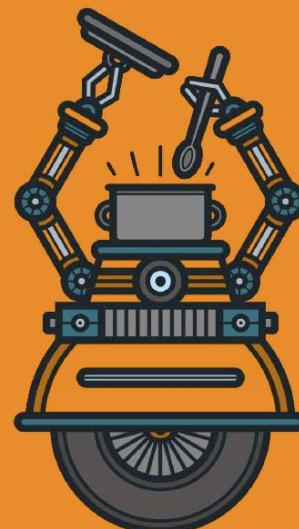
(Illustration by Greygouar, for Nature, vol 530, issue 7591, 24 Feb 2016)

Emerging Digital Humanities at UW

Findings from interviews conducted by the Digital Humanities Committee in 2014 on emerging needs:

- **The library is valued as neutral space to bring experimenters together**. Departments may not have such a culture nor resources.

- **The library is the logical institution to facilitate communication between humanities and STEM disciplines**, especially computer science.

- **Students crave more interdisciplinary opportunities**. A space should support those in early formative stages of ideas to share with other "border crossing" students, exploit the informal opportunities, and provide open hours for peer based learning.

- A hackerspace, **a place where a "culture of fearlessness in learning new things is always present".**

- **Hosting:** symposia; digital scholarship events; micro-seminars and short-form educational opportunities; i-School workshops

- **Exhibition space** for DH work

- **Initiatives** like guest expert from outside a discipline embedded in a department for a semester to stimulate activities

- **A physical and virtual sandbox is desirable** with equipment, software, tech-savvy staff, collaboration and presentation spaces, offering:
  - Image scanning
  - Mapping and other spatio-temporal visualizations
  - Image and video database hosting, storage, mark-up annotation capabilities
  - Workshops on copyright, metadata, open source resources

- **An ethos of public scholarship, open access and advocacy in DS is important** – all values the UW Library stands for

- **Simpson Center lacks adequate space, technological infrastructure and support staff** to assist scholars in projects—which the libraries can provide

- **A wide and growing support gap** exists on the UW Seattle campus

The Need for a Physical Hub for Digital Scholarship

Digital Humanities Committee Report, Sept. 2014:

Recommended a physical space for digital scholarship services, events, and experimentation that have a humanities, arts and social sciences focus. Stakeholders stressed the importance of a **neutral experimentation/collaboration** space to:

- **Bring together expertise** to support e-research and digital scholarship

- **Support faculty, graduate and undergraduate students** who wish to create digital projects but do not have access to tools and expertise in their department.

- **Provide access to a suite of innovative digital scholarship technologies to meet emerging needs**

- **Provide access to equipment**, such as large format scanners, computers, A/V digitization workstations

- **Support development of digital tools.** Current tools do not always satisfy the needs of a project, nor experimentation with no final digital product.

Digital Scholarship Task Group Report, Spring 2015:

Recommended that the libraries establish a stronger digital and physical presence for leadership in digital scholarship.

Stakeholders expressed desire for **an interdisciplinary place where DS scholars could come for help with a project, to share work with colleagues and connect with others.**

Options suggested for a physical place:

- Add DS office hours at the Research Commons, staffed by Digital Collections Curator, Preservation Librarian, Scholarly Publishing, Research Data Services, Metadata Librarian, UW IT Learning Technologies

- Creation of a Digital Scholarship Center within the Libraries

Other suggestions included a spectrum of recommendations for programming, communication, outreach, staffing and capability building.

Some examples of digital scholarship hubs are shown on the following pages—and most of them are associated with libraries.

Digital Scholarship Centers | Examples from Public Research Institutions

Scholars' Lab, Alderman Library University of Virginia

"At the Scholars' Lab, advanced students and researchers across disciplines partner on digital projects and benefit from expert consultation and teaching. ...faculty and staff focus on digital humanities, geospatial information, and scholarly making and building at the intersection of the digital and physical worlds." The space offers workstations with large monitors, consultation areas and a makerspace.

http://scholarslab.org

Michelle Smith Collaboratory for Visual Culture, University of Maryland College Park

This is a lab and learning space in the Department of Art History & Archaeology with a large curved visualization wall. The seminar space is a comfortable blend of advanced technology and traditional print materials. It is used for presentations, events and student project work, and as a classroom provides visualization capabilities not available elsewhere on campus.

http://michellesmithcollaboratory.umd.edu

Inquiry Labs, Powell Library, UCLA

InqSpace is the hub of the Inquiry Labs and UCLA Library's Teaching and Learning Services—a suite designed to foster student and faculty consultations with librarians and trained graduate and undergraduate "Inquiry Specialists". The flexible space has a mix of settings: small consultation tables with large monitors, work areas for small groups and workshops, a small makerspace with high tables, and adjacent open staff work areas.

http://www.slideshare.net/inquirylabs/ucla-library-inquiry-labs-innovative-reference-models-carl

Digital Scholarship Centers | Examples from Private Research Institutions

Patrick Ma Digital Scholarship Lab
Brown University Library

A collaborative center for digital scholarship in the Research Commons of Rockefeller Library serving the humanities and sciences. The visualization wall has been used for a wide range of applications. Recent funding from the Mellon Foundation will support development and preservation of digital publications and development of guidelines for evaluating digital scholarship.

http://library.brown.edu/cds/

The Edge, Ruppert Commons, Bostock Library
Duke University

A "collaborative space for interdisciplinary, data-driven, digitally reliant or team-based research." A hub with resources and expertise "to help Duke researchers innovate, in a space that invites discovery, experimenting, and collaboration" with open workspace, bookable rooms, writable wall zones, the Brandaleone Lab for Data and Visualization Services, and the Murthy Digital Studio.

https://library.duke.edu/edge

Center for Spatial & Textual Analysis
Stanford University

An interdisciplinary collective of labs which operates independently of any particular department, organizationally within the office of the Dean of Research. They pursue research which utilizes both geospatial and textual data and visualization in collaboration with diverse teams on campus and globally. A graduate certificate in Digital Humanities is now being offered.

http://cesta.stanford.edu/labs-projects/

Data Intensive Research Hubs | Library Related Examples
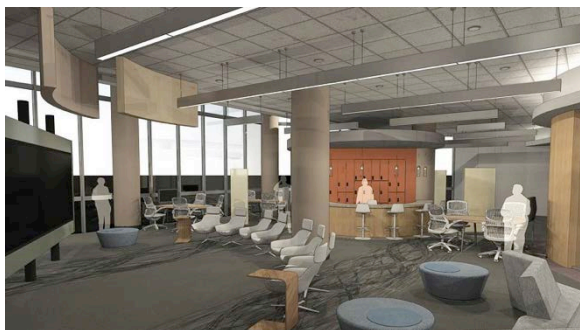
CURVE, University Library
Georgia State University

A "Collaborative University Research and Visualization Environment" that is a technology rich discovery space in the University Library designed to promote interdisciplinary engagement, collaborative investigation, and innovative inquiry. The librarians have multiple areas of specialization and consult to students and faculty on a variety of geospatial systems and data services. The facility is an open commons notable for its central approachable interactive wall.

http://sites.gsu.edu/curve/
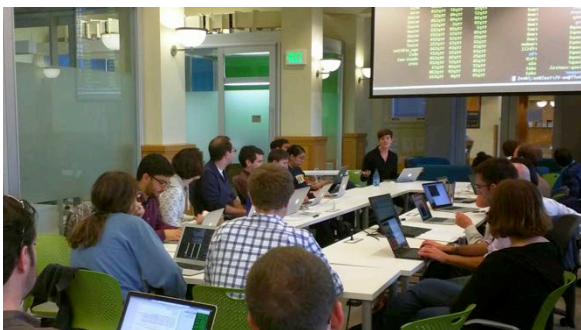
Berkeley Institute for Data Science
Doe Library, UC Berkeley

A central hub of research and education designed to facilitate and nurture data-intensive science. Initiatives are designed to bring together domain experts from many domains to foster collaboration across fields. Development of the working spaces and culture to grow a community of practice has been one of six focuses as a model center.

https://bids.berkeley.edu

DataLab, iSchool
University of Washington

A Data Science and Analytics lab at the UW iSchool that focuses on study of large-scale, heterogeneous human data in an effort to understand individual, consumer, and societal behaviors and inform policymaking. As a focal point for industry partnerships, the DataLab provides infrastructure and support for student training and engagement in projects that involve the analysis of large datasets.

https://datalab.ischool.uw.edu

8

Vision

The Libraries in the Innovation Ecosystem

Vision | The Libraries in the Innovation Ecosystem

As the Libraries plan for the next decade, understanding ways the library system can contribute to the Innovation Ecosystem at UW was a focus for the strategic facilities plan vision. The spectrum of facilities across the campus that support innovation today were identified and mapped. The Co-Motion makerspace is complemented by a wide range of other types of facilities that support making and innovative scholarship with digital resources, but many have developed to serve specific domain areas.

The Libraries are shared facilities offering services to all so are well positioned to introduce and support innovation across campus—from scholarship and teaching, making and creativity, to data management for research. A range of potential opportunity spaces emerged out of focus group and workshop discussions. Areas for innovation in services were envisioned together with facilities implications. The planning explored concepts for facilities to be developed over the next 15 years—how they might differ in terms of character, services and affordances and how they might leverage partnerships to offer new services and user spaces.

The makerspace features described on the UW Co-Motion website* are very similar in spirit to those of libraries:

- Provides access to a wide variety of **tools and equipment** for prototyping, as well as studio **space** for individuals and teams to **create and share** projects.

- Is **community-centered** and **diverse**; a social place for people with different skills and common interests to **collaborate and learn from each other**.

- Provides an **open environment** for innovation and creative expression.

During the Space Plan study, a range of potential opportunity spaces emerged out of focus group and workshop discussions. Areas for innovation in services were envisioned together with facilities implications. The planning explored concepts for facilities to be developed over the next 15 years—how they might differ in terms of character, services and affordances and how they might leverage partnerships to offer new services and user spaces.

* http://comotion.uw.edu/makerspace

The University of Washington Libraries in the Innovation Ecosystem
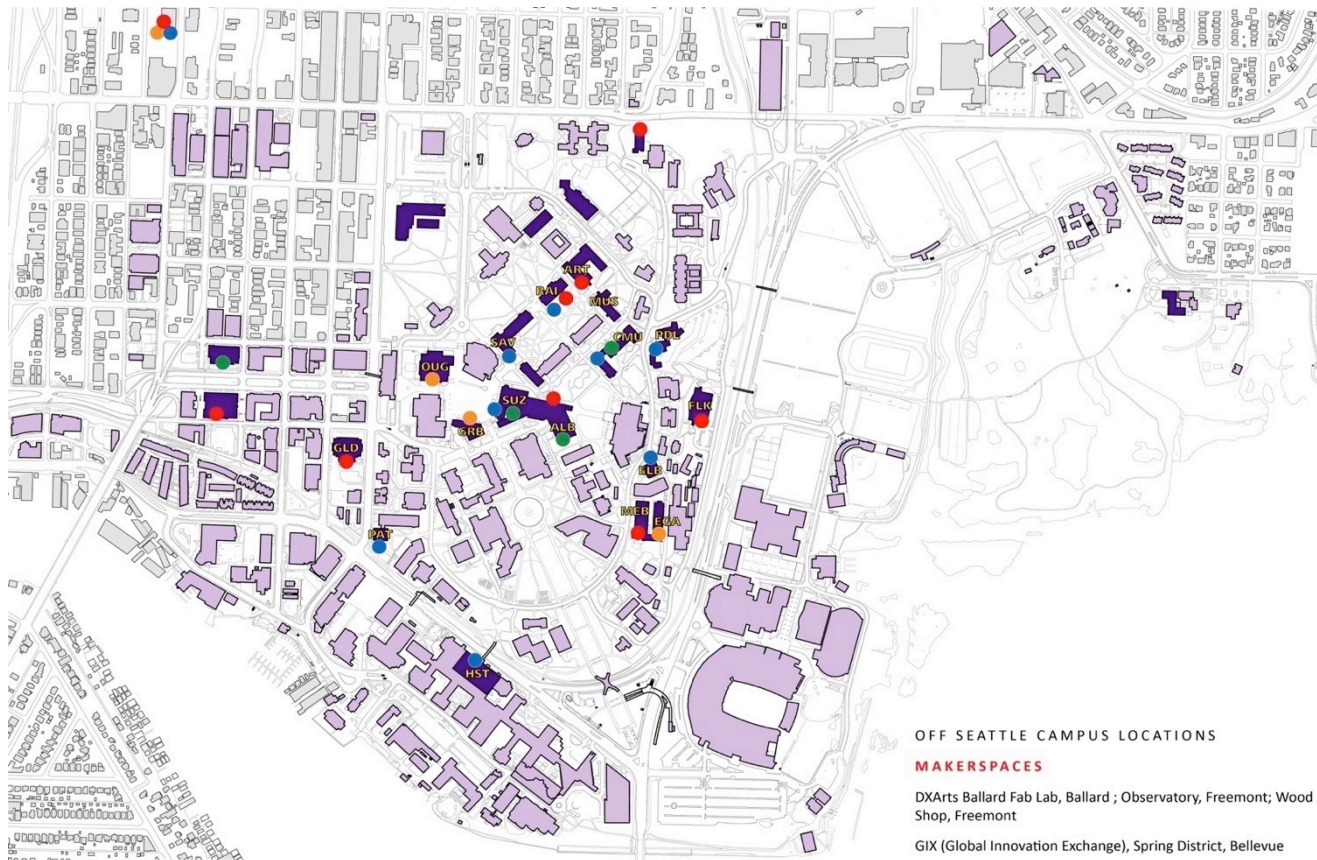
INNOVATION ECOSYSTEM AT UW
SEATTLE CAMPUS

● **MAKERSPACES**

Built Environments Fabrication Labs: (GLD) Gould Hall

CoMotion MakerSpace: (FLK) Fluke Hall, Suite 215

Dabble Lab Maker Space: Maple Hall

DXArts: (RAI) Raitt Hall

Engineering Shops/Fabrication Labs: (MEB) Solheim Rapid Prototyping Lab

mediArcade: (ALB) Allen Library North

3D Design Lab / 3D Build Lab: (ART) Art Building

● **CONSULTATION HUBS SUPPORTING INNOVATION IN DIGITAL SCHOLARSHIP & RESEARCH**

Simpson Center: (CMU) Communications 218D

UWL Research Commons: (ALB) Allen Library South, Ground Floor

UWL Media Center/mediArcade: (ALB) Allen Library North 381F

UWL Data Services

Geographic Information Systems (GIS) Lab: (SUZ) Suzzallo Library, Ground Flr

Animation Research Labs

CSE Graphics and Imaging Laboratory

Center for Game Science

● **CONSULTATION HUBS SUPPORTING INNOVATION IN ENGINEERING, DATA-INTENSIVE SCIENCE & RESEARCH**

eScience Institute/WRF Data Science Studio: (PAT) Physics/Astronomy Tower

Center for Statistics & the Social Sciences: (PDL) C-14 Padelford Hall

Center for Studies in Demography & Ecology: (RAI) 206 Raitt Hall

Center for Social Science Computation and Research (CSSCR): (SAV) Savery 110

UWL Data Services

Geographic Information Systems (GIS) Lab: (SUZ) Suzzallo Library, Gronud Flr

Health Sciences Library: (HST) Upper Level in T Wing of Health Sciences Bldg

(ELB) Engineering Library

● **HUBS SUPPORTING INNOVATION IN TEACHING AND LEARNING**

Center for Teaching & Learning: (GRB) 100 Gerberding Hall

Center for Engineering Learning & Teaching: (EGA) Engineering Annex

Center for Health Sciences Interprofessional Education

UWL Active Learning Classrooms: (OUG) Odegaard 136 & 141

OFF SEATTLE CAMPUS LOCATIONS

MAKERSPACES

DXArts Ballard Fab Lab, Ballard ; Observatory, Freemont; Wood Shop, Freemont

GIX (Global Innovation Exchange), Spring District, Bellevue

Envisioning Opportunities | Libraries in the Innovation Ecosystem

Opportunity spaces for supporting innovation across the libraries were explored, using a framework to define the nature of activities and levels of support that might be required. Then physical space concepts were developed to articulate the library's network of places for physical and digital making and innovation energy.

These were conceived in the spirit of Co-Motion's offerings:
- Identified as community innovation spaces—flexible multi-use spaces to foster cross-disciplinary work and communities
- Rich with consulting services, including concierge services connecting users to other partners
- Welcoming with workshops and events
- A work, meeting and sharing venue

Considerations:
- *Process vs. output form*
- *Equipment complexity*
- *Consultation services*
- *Collaborative venues for peer learning*
- *Community building*

Digital Making

1 1 Research Commons
Digital Media Studio

Digital Scholarship Studio

Health Sci. Libr. Lab 5 5

3 Odegaard CTL consult hub

2 Odegaard Makerspace & Media Studio

Physical Making

4 4 Engineering Library Makerspace/design studio

Low Complexity/ Low Support   **High Complexity/ High Support**

Legend:
- 🔴 **Makerspaces**
- 🟢 **Consultation Hubs** supporting innovation in digital scholarship & research
- 🔵 **Consultation Hubs** supporting innovation in engineering, data-intensive science & research
- 🟡 **Teaching & Learning Hubs**
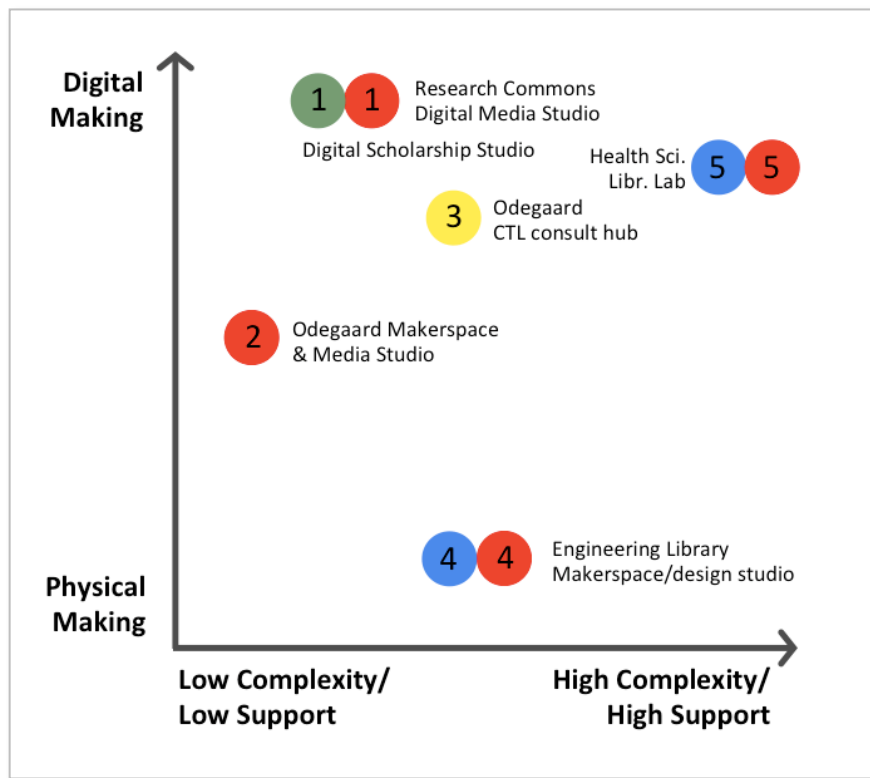
Vision | Library Space Concepts Supporting Innovation across UW

for making and learning with digital resources across the libraries
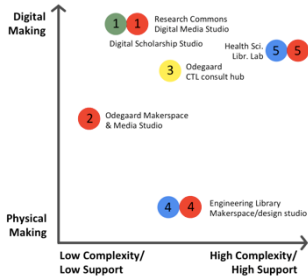
Digital Scholarship Studio
Suzzallo Library

A new support center for consultation services, collaborative interdisciplinary research, scholarly communications expertise, and technology support with academic scholarship

Data/GIS Services Hub
Suzzallo Library

A prominent new service point to get help with using GIS or data services, integrated into a commons environment with work, training and consultation spaces shared with partners, modeled after the Research Commons
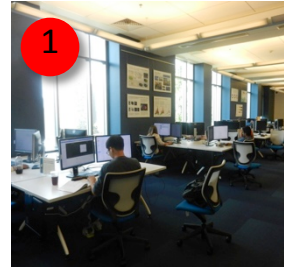
Digital Media Studio
Research Commons

A studio for integrating digital and media resources into scholarly research, with ready assistance from the wide range of Research Commons consultants, from media experts and subject specialists to academic technology advisors

Model Learning Spaces
Suzzallo & Allen Libraries

Re-envisioned teaching spaces in the main library building as models for the campus, designed to support new ways of learning with information and emerging tools for a data-intensive future in partnership with academic computing

mediArcade + makerspace
Odegaard Library

An active lab supporting a community of makers interested in creating with digital media, together with lab coaches and media expertise for consultation on innovative uses of library resources

Opportunity spaces were plotted on a spectrum of Physical to Digital Making and Low to High Complexity/Support required. This framed the development of concepts and their distribution across the library system.

Vision | Library Space Concepts Supporting Innovation across UW

for making and learning with digital resources across the libraries

Digital Making

- 1 1 Research Commons Digital Media Studio
- Digital Scholarship Studio
- Health Sci. Libr. Lab 5 5
- 3 Odegaard CTL consult hub
- 2 Odegaard Makerspace & Media Studio
- 4 4 Engineering Library Makerspace/design studio

Physical Making

Low Complexity/ Low Support → High Complexity/ High Support

- 🔴 **Makerspaces**
- 🟢 **Consultation Hubs**
  supporting innovation in digital scholarship & research
- 🔵 **Consultation Hubs**
  supporting innovation in engineering, data-intensive science & research
- 🟡 **Teaching & Learning Hubs**

3
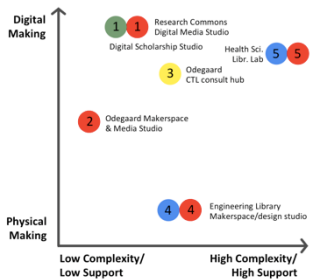
Pedagogy Lab
Odegaard Libraries

A hub for innovation in pedagogy, where faculty can connect with subject specialist librarians, CTL staff and academic technologists to get assistance in creating teaching materials and course redesign to align with changing pedagogy

4

Engineering Consultation Hub
Engineering Library

A library hub for a wide range of consultation services with partners serving all engineering disciplines—for help in computation and design software, data/GIS services, simulation and visualization, writing, and student academic advising

4
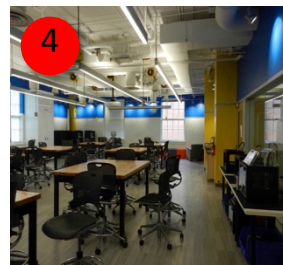
Project Studio
Engineering Library

A new multipurpose co-working space open to all disciplines for teams to work on projects in the library, supported with light prototyping tools and equipment, movable furnishings and monitors—close to expert consulting services if needed

5
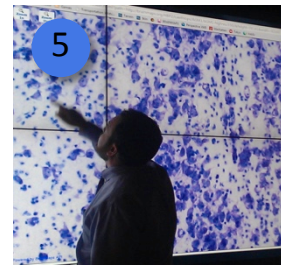
Population Health Informatics Studio
Health Sciences Library

A consultation hub and collaborative studio designed to enhance interdisciplinary team work with visualization, grant strategy and preparation support, and data services consulting

5

HSL Digital Lab
Health Sciences Library

A digital makerspace to to develop new tools and information resources to serve all the health sciences—e.g. mobile apps, VR simulations for IPE practice, online learning materials— staffed by partnered library, CTL and IT teams

Vision | Partnering for Innovative Initiatives

The Libraries have had a longstanding tradition and proven track record of implementing innovative initiatives, as:
- developers of the Research Commons, integrating consulting services with partners and programming activities to bring graduate students together, e.g. Scholars' Studio and Co-Lab;
- leaders in library assessment practices for many years;
- promoters of partnering to provide enhanced services, such as the Odegaard Undergraduate Library's combined Research & Writing Center;
- developers of model Active Learning Classrooms;
- leaders in development of data management services;
- supporters of emerging distributed service models, like the data services consultations at the new Data Science Studio

The Libraries are major participants in collection consortiums in the Northwest and engaged in leadership of the HathiTrust building digital collections. These initiatives will help define how much print needs to be retained over the next 15 years.

Looking forward, UW researchers may be on the global forefront of solving the thorny problem of long term digital storage, with the Libraries participation (see images on the right).
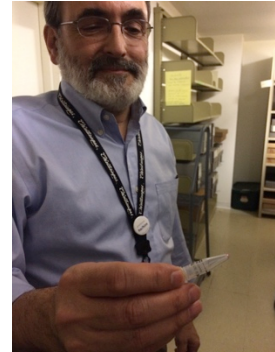
Paul Constantine, Assoc. Dean of Distinctive & Special Collections
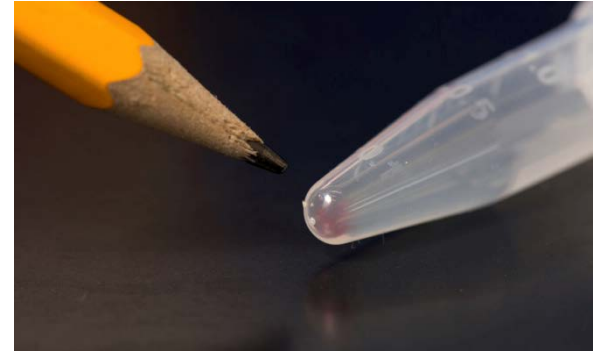
DNA sample produced by UW researchers (photo: Tara Brown, UW)

"Life has produced this fantastic molecule called DNA that efficiently stores all kinds of information about your genes and how a living system works — it's very, very compact and very durable. We're essentially repurposing it to store digital data — pictures, videos, documents — in a manageable way for hundreds or thousands of years."

>   -- Luis Ceze, Assoc. Prof. Computer Science & Engineering, Univ. of Washington, April 2016

Library as Incubator | Examples from Public Universities

Institute for Advanced Technologies in the Humanities (IATH), Alderman Library University of Virginia

- *The UVA Library has offered incubator space to emerging digital humanities projects for years, and collaborated in their development*
- *UVA Library is recognized for having developed many innovative initiatives*

http://www.iath.virginia.edu

Makerspace, D. H. Hill Library North Carolina State University

- *New makerspace right at the entry of the D. H. Hill Library*
- *3D printing, 3D scanning, electronics prototyping and other tools*

https://www.lib.ncsu.edu/services/makerspace

Makerbot Innovation Center, DuBois Library University of Massachusetts-Amherst

- *Library initiative to provide 3D printing services to all students, anticipating emerging demand for its use in teaching and class projects, as a stimulant to pedagogy innovation*
- *First Makerbot Innovation Center in a university library*

https://www.lib.ncsu.edu/services/makerspace

Vision | Seeking Opportunities to Blend Physical and Digital Experiences

Visualizing Wikipedia edits real time, James B. Hunt Library, NCSU

Cooper Hewitt Museum, NYC

Digital pen, Cooper Hewitt Museum, NYC

A key area for innovation in libraries over the next decade involves exploring new ways users can experience resources and learn as communities, blending the physical and digital library—from making virtual collaboration visible, revealing rich digital collections, to providing a place to interact and experience them together.

How will the blending of the physical and digital library be evident in the future?

What might it mean for new ways of engaging with collections? For definition of spaces?

9

Concepts

The Suzzallo and Allen Libraries

The Suzzallo and Allen Libraries Today | Improving the User Experience

Users have difficulty navigating through the complex and figuring out where to get information and how to find resources in the stacks. Renovation should enhance the user experience, improve orientation and make consultation points more visible.

Relocation of collection storage from along the two primary routes through the building would allow conversion of space there to create a new center for digital scholarship and emerging data services. These passages are also an opportunity to showcase UW research.

Long term upgrades to the Suzzallo and Allen Libraries will require ADA compliance, so this may require changes to stack layouts. If so, this might provide an opportunity to substantially rethink space allocations.

The Suzzallo and Allen Today | Improving Services and Staff Effectiveness

With changes over the next decade and the introduction of new types of services, **service points can be rethought** for a new phase of revitalization for the library. More convenient one-stop concierge type services, cross-trained staff and use of mobile technologies may provide help closer to the user's point of need.

Staff areas are distributed over the building complex—as illustrated in purple in the diagram to the right—which has resulted in an adverse effect on adjacencies and operational relationships. The need to have staff presence on each floor may no longer be a driver in the future.

Integrated service points coordinated with partner units can connect users with the help they need. One possibility discussed was a central UW Information Technology service point in the Suzzallo and Allen Libraries.
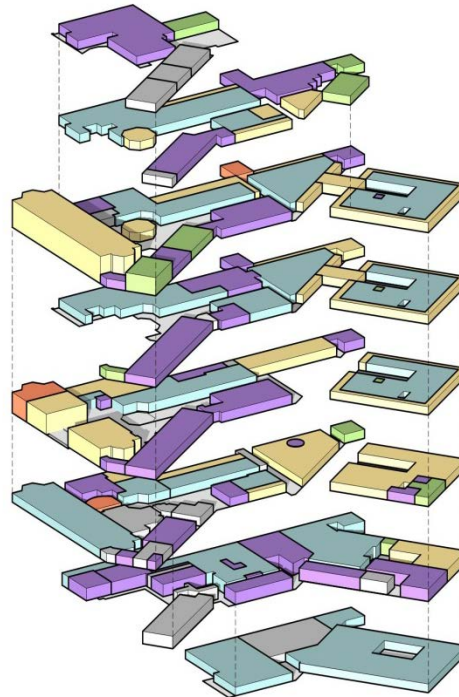
Diagram of existing building space allocations

Service desk, Reference area, Suzzallo Library

Reference collection area

The Suzzallo and Allen Libraries Today | Media Services Issues

- **The mediArcade space is isolated on the 3rd floor, hard for users to discover and limited in space for user workstations**.

- **Media Services collects and preserves media materials in a wide range of physical and electronic formats**, but storage areas do not meet archival temperature standards.

The Media Center Review Task Force in 2016 concluded:

- **Combine Media Center and mediArcade services into a single service point that is integrated into an active learning space with the necessary equipment, computers, software, tools and staffing to create a media-rich digital learning commons environment**. This could align either with the Research Commons or with the proposed new makerspace in the lower level of Odegaard Undergraduate Library, supporting and facilitating digital scholarship activities.

- **Add an audio archivist or curator** who specializes in the care and reformatting of archival sound recording collections, which will increase staff capacity to engage in innovative and creative initiatives.

- **Consider a consolidated archival sound collection with a single service point.** Discovery might be improved by unifying (or cross-referencing) various archival sound recording collections that are currently distributed. Some of these are fragile and culturally significant artifacts in Special Collections, e.g. wax cylinders, radio transcription discs in the University Archives.

- **Develop spaces not only to exhibit media materials but also to create experiences with media**. Recording and archiving more performance-based work would be desirable (dance, drama, multiple arts) with the library archives making them retrievable.

The Suzzallo and Allen Libraries Today | Gov Pubs, Maps & Microforms

The Government Publications, Maps and Microforms (GMM) area along the Ground Floor of Suzzallo Library could be rethought and revitalized to offer improved user facilities. An estimated 50% of the materials stored in this area in the heart of the building can be shifted to off-site storage, without impacting the unit's service to the public. The number of newspapers received in print form and associated browsing is diminishing. The GIS classroom is tucked away and hard to find, as is the Data Services office.

As geospatial information becomes increasingly digital, helping users learn how to use and apply GIS systems to their work and where to get help with emerging data services is a focus for the Libraries. Improved service points, user facilities and teaching space are a priority in the master plan.

Ground Floor Corridor Suzzallo Library Corridor to GIS Classroom on right

Current Newspapers Shelving Maps Cases with windows beyond

Microform Readers Stations Microforms Storage Cabinets

Concepts | The Suzzallo and Allen Libraries

Key recommendations for the Suzzallo and Allen Libraries involve improving the user experience and creating new learner-oriented facilities.

Transform the user experience at the First and Ground Floors by streamlining the Reference, GovPubs, maps, microforms and newspaper areas, improving wayfinding, and developing visible and user-friendly consultation hubs for digital scholarship and data/GIS services.

Expand the successful Research Commons to provide additional seating and expanded consulting services.

Leverage needed future life safety and accessibility systems upgrades, along with right-sizing of on-site collections, to introduce opportunities to add more additional seating areas and improve working adjacencies for evolving staff roles.
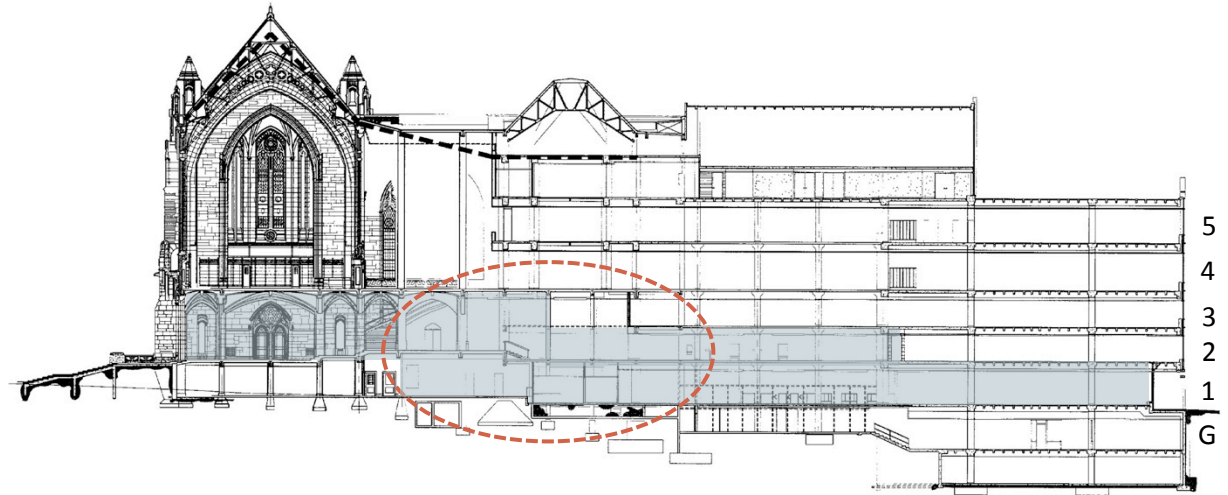
This section through Suzzallo Library shows the zone on the First and Ground Floors proposed for conversion into hubs along the main paths of travel. A carefully located opening could connect the levels visually to enhance orientation.

The path leads from the main entry off Red Square through the building to the Allen Library entry on the east. Many visitors come up the stairs to see the historic Suzzallo Reading Room so wayfinding for visitors as well as students is a consideration for the planning.

Center for Digital Scholarship, Brown Univ. Library

CURVE, Georgia State Univ.

Research Commons, Allen Library, UW

A Digital Scholarship Hub

- A central hub on the main corridor for consultation on digital scholarship with library and academic technology experts, for both faculty and students

- Collaborative meeting spaces with visualization technology to nurture an emerging interdisciplinary digital humanities community

A Data/GIS Studio

- A prominently located suite for assistance with data related services, including geospatial information systems, and their application to research and scholarship

- A range of collaborative settings with shared displays, dual screen workstations, large interactive walls for group work

- Assistance with using the map collection and UW historical resources

Expanded Research Commons

- Expanded seating and meeting areas, building on the success of the Research Commons

- Expanded consulting area, to accommodate experts in data services and other partners

- Facilities that allow the blending of learning, making and research

Concepts | The Suzzallo and Allen Libraries

Wallenberg Hall, Stanford Univ.

Murthy Digital Studio, The Edge, Duke U

Special Coll. Research Center Exhibition Gallery, Regenstein Library, U. of Chicago

Prototype Teaching Spaces

- New active learning spaces designed as model informatics labs, for teaching about visualizing complex information resources, datasets and image intensive resources

- Agile furnishings designed to be reconfigured to suit the activity, with nesting tables to clear the room

Media Lab/mediArcade

- Integration of the Media Center into the expanded Research Commons for greater accessibility

- Expanded lab for creating with media as well as viewing, for format conversion, expert consultation on conservation of media, and use of the historical media collections

Enhanced Exhibit Spaces

- Special exhibit space for the unique materials in the Distinctive and Special Collections, with conservation lighting and cases

- Prominent location to showcase the collections, engage students and scholars in discovery of materials, together with space for teaching with historical and rare artifacts

The Suzzallo and Allen Libraries | Opportunities

The following plans illustrate the existing space uses in the Suzzallo and Allen Libraries annotated with suggestions for new uses and opportunities that grew out of the study process.

Sub-Basement

1 Upgrade HVAC systems throughout for consistent environmental control

2 Shift university archives to off-site shelving as it becomes available

3 Use some of the new compact shelving capacity to shift materials from upper levels

Service Point
Teaching Lab
Open Seating/Study
Meeting Spaces
Collections/Stacks
Staff
Service
Seismic Bracing

SUB-BASEMENT

The Suzzallo and Allen Libraries | Opportunities

BASEMENT

Service Point
Teaching Lab
Open Seating/Study
Meeting Spaces
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Service
Seismic Bracing
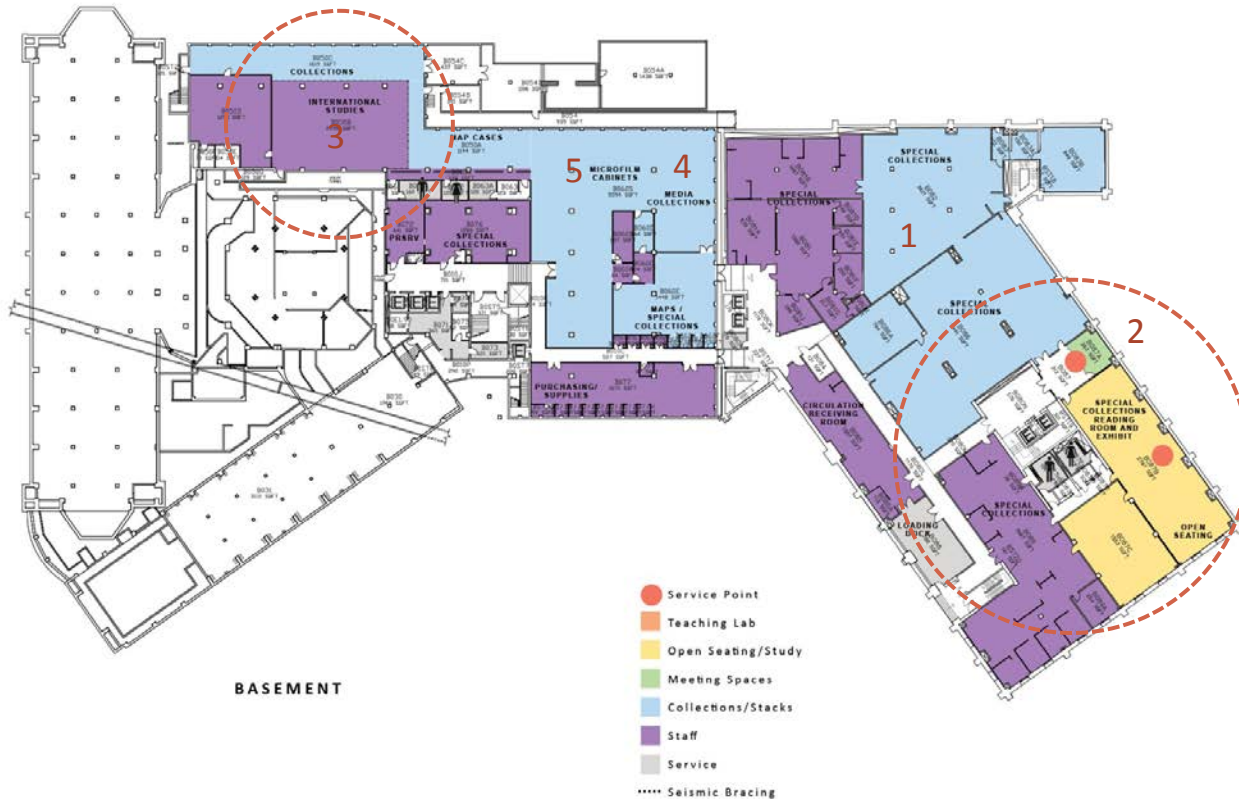
Basement

1   Upgrade HVAC systems throughout for consistent environmental control

2   Create an engaging entry sequence to Special Collections, with renovated exhibit and reader space

3   Replan floor layout to link Distinctive & Spec. Coll. working areas. Make areas storing materials users may browse by appointment to be more accessible, with better work space.

4   Improve conditions for media and map collections, and work areas associated with them.

5   Relocate some of maps into new compact shelving, freeing up space for other GMM materials from Ground Floor

The Suzzallo and Allen Libraries | Opportunities

GROUND FLOOR

Legend:
- 🔴 Service Point
- Teaching Lab
- Open Seating/Study
- Meeting Spaces
- Collections/Stacks
- Staff
- Service
- ⋯⋯ Seismic Bracing
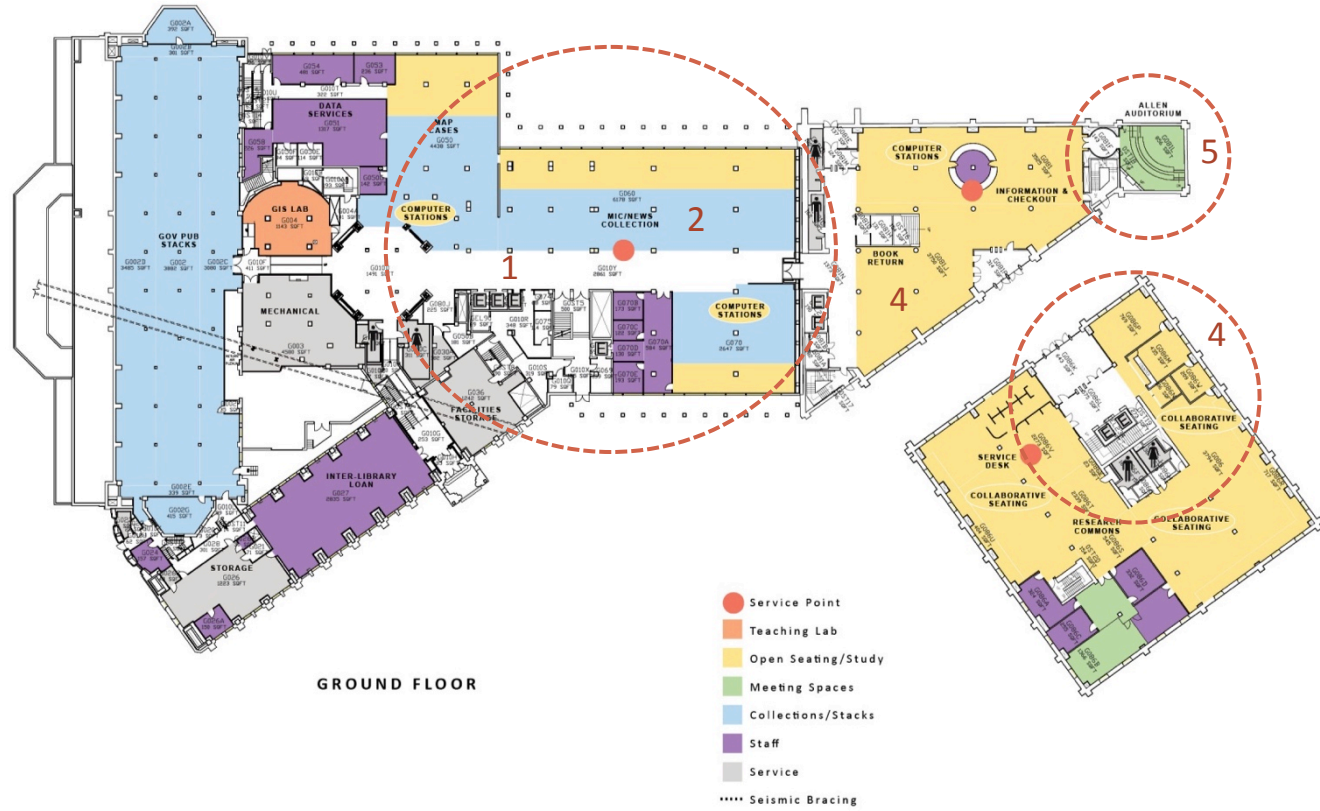
Ground Floor

1   Enhance the user experience along this main passage connecting between entries

2   Condense GMM collection storage area to create an inviting Data/GIS Services hub, with consultation settings and training facilities. Relocate staff to be more visible and classroom to be easier to find, column-free

3   Retain transparency through the building in central zone and study visual connection between First & Ground Floor to help with user orientation

4   Enhance exhibit areas in Allen and Suzzallo. Create SC exhibit space at Allen South entry with visible connection to below.

5   Renovate auditorium for film screenings with surround sound

The Suzzallo and Allen Libraries | Opportunities

FIRST FLOOR

Legend:
- ● Service Point
- Teaching Lab
- Open Seating/Study
- Meeting Spaces
- Collections/Stacks
- Staff
- Service
- ⋯⋯ Seismic Bracing
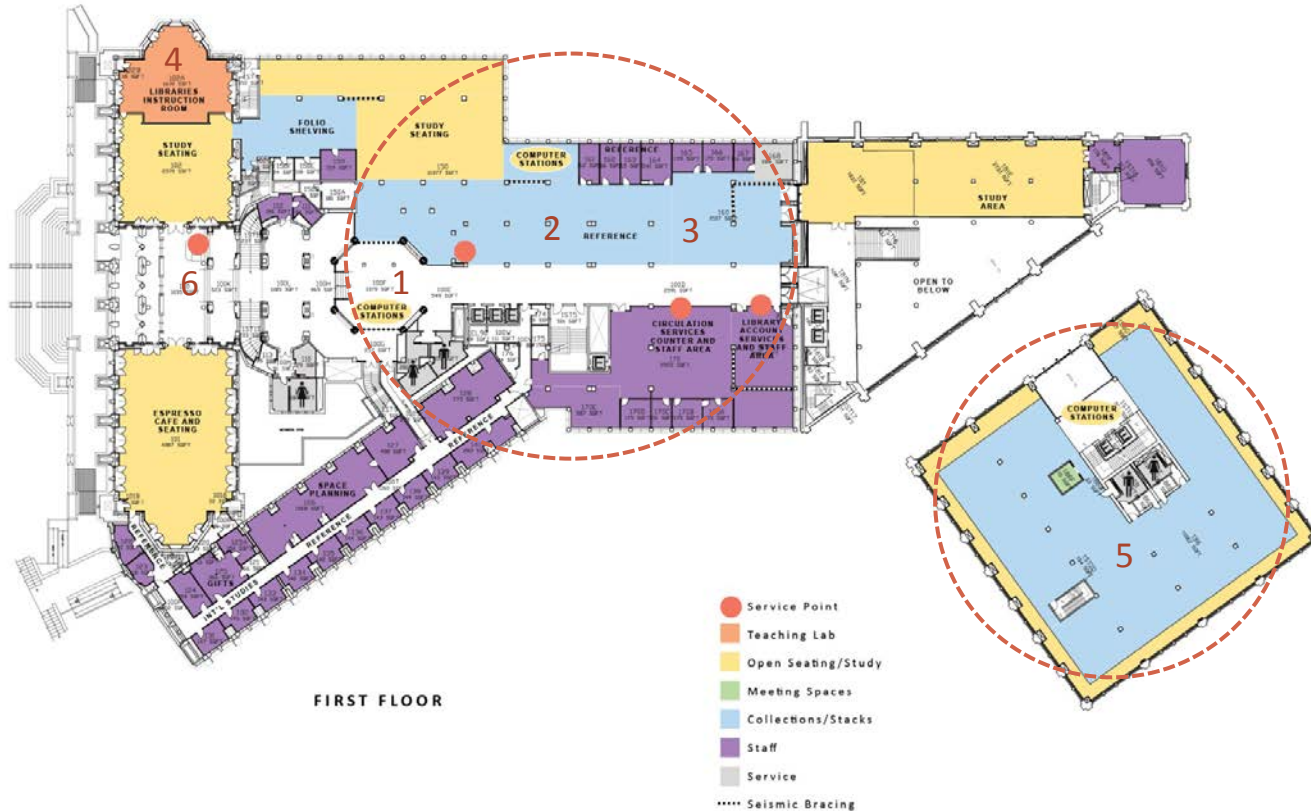
First Floor

1 Enhance the user experience along this main passage connecting between entries.

2 Study reduction of reference collection to open up a rich zone for interaction with users. Corridor as digital display showcase.

3 Create a Digital Scholarship support center, offering consultation areas, a range of open collaborative workspaces. Study regaining visibility through the center section.

4 Convert classroom to support more active learning methods

5 Expand the Research Commons into Allen First Floor

6 Review service point strategy to enhance user experience in finding resources and services

The Suzzallo and Allen Libraries | Opportunities

SECOND FLOOR

Legend:
- ● Service Point
- ● Teaching Lab
- ● Open Seating/Study
- ● Meeting Spaces
- ● Collections/Stacks
- ● Staff
- ● Service
- ····· Seismic Bracing
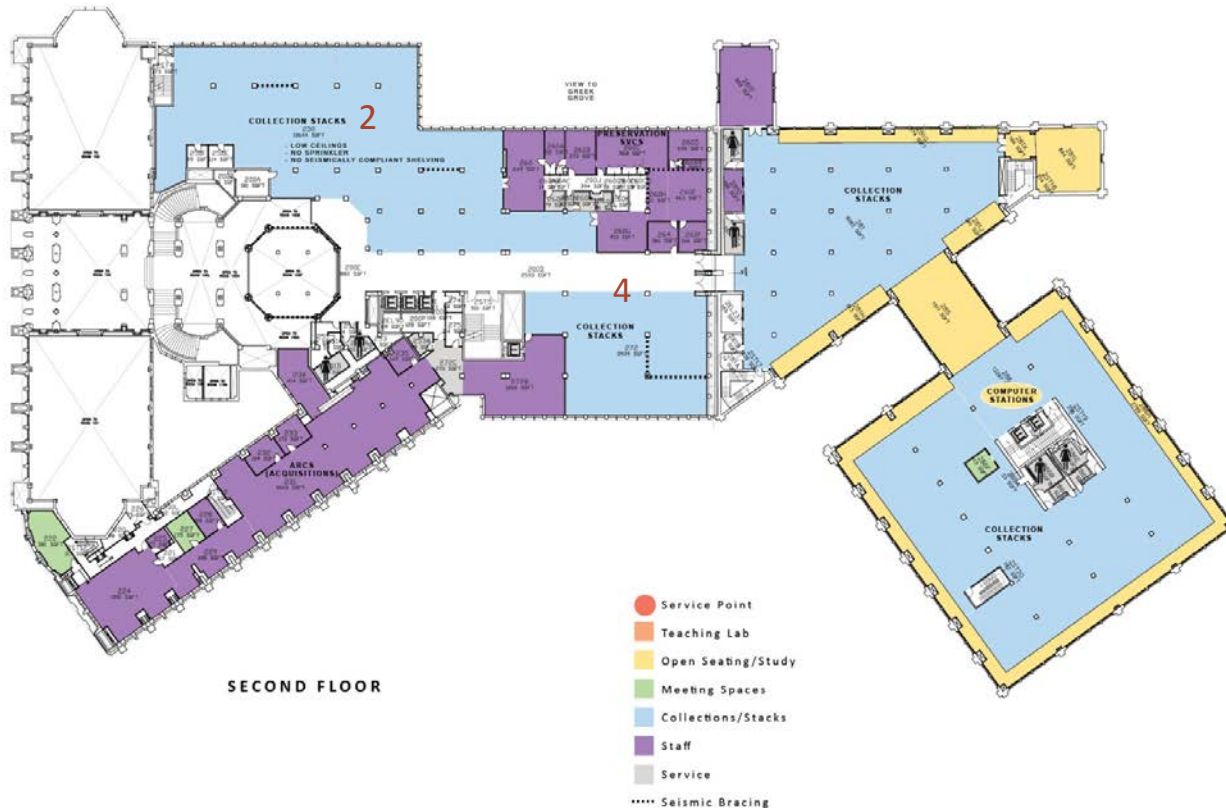
Second Floor

1. Study reallocation of staff spaces throughout the building for improved adjacencies and operations

2. Improve HVAC systems in collections areas for consistent environmental control. Study fire protection system needs and impacts. Consider separation in Suzzallo zones without seating for cooler conditions.

3. Enhance and add quiet reader seating

4. Open up transparency through central zone of the building if possible to aide user orientation.

The Suzzallo and Allen Libraries | Opportunities

THIRD FLOOR

Legend:
- Service Point
- Teaching Lab
- Open Seating/Study
- Meeting Spaces
- Collections/Stacks
- Staff
- Service
- ••••• Seismic Bracing

Third Floor

1 Relocate mediArcade/Media Services to be more accessible

2 Relocate portions of Media collections to off-site shelving or basement archives. Consider integrating Media into Research Commons with integrated digital media lab.

3 Enhance the exhibit area at entry to Reading Room

4 Review allocation of all staff spaces to improve working relationships, make layouts more functional

5 Convert underutilized space in Allen to study seating

The Suzzallo and Allen Libraries | Opportunities
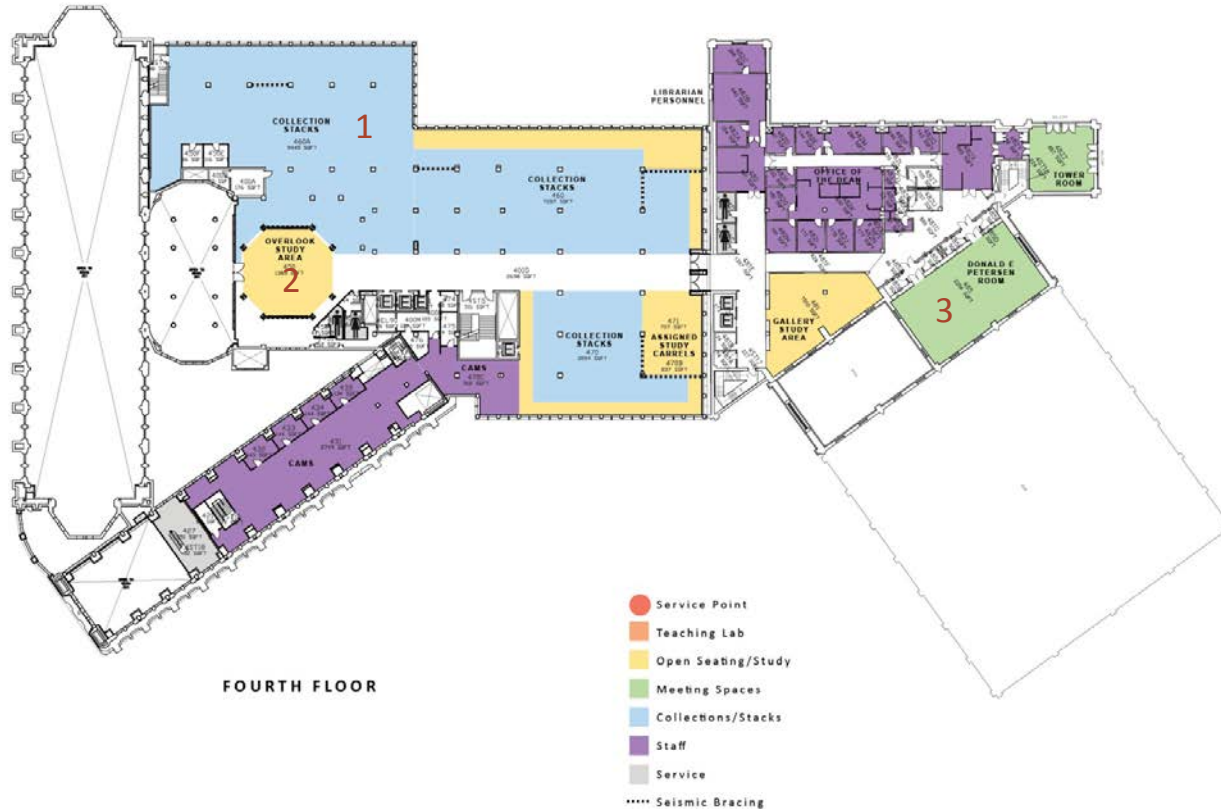
FOURTH FLOOR

Fourth Floor

1 Improve HVAC systems in collections areas for consistent environmental control. Study fire protection system needs and impacts. Consider separation in Suzzallo zones without seating for cooler conditions.

2 Enhance special study seating zone, add seats

3 Upgrade Petersen Room for data rich projection capabilities, dual screens

Legend:
- Service Point
- Teaching Lab
- Open Seating/Study
- Meeting Spaces
- Collections/Stacks
- Staff
- Service
- ····· Seismic Bracing

The Suzzallo and Allen Libraries | Opportunities

FIFTH FLOOR

Service Point
Teaching Lab
Open Seating/Study
Meeting Spaces
Collections/Stacks
Staff
Service
····· Seismic Bracing
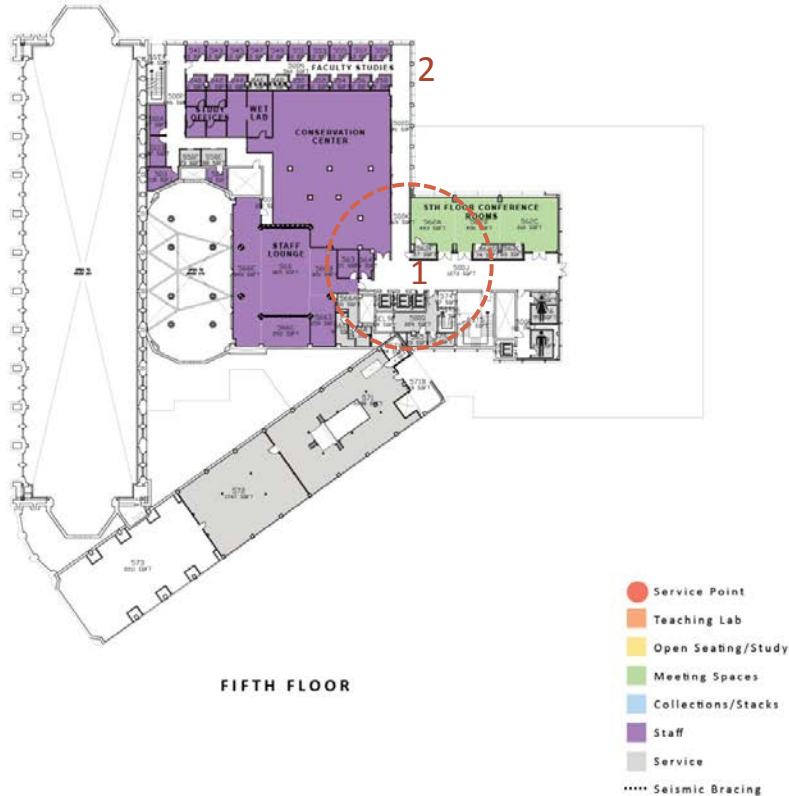
Fifth Floor

1 Showcase conservation initiatives to visitors attending events in the conference room with digital exhibit at elevator lobby

2 Consider long term repurposing of dedicated faculty carrels, or convert them to bookable space to increase usage

10
Concepts
Engineering Library

The Engineering Library Today

The Engineering Library has not been fully renovated and generally needs improvements throughout—particularly additional power, better lighting design, improved acoustics, updated finishes and more flexible furnishings. The Ground Level has a services desk, staff offices and table seating, whereas upper levels are predominantly stack zones with perimeter seating.

Assets

- Good views at upper levels
- Strong collections, but many low usage areas
- Existing compact shelving zone

Opportunities

- Open up at Ground Level to improve connection to Loew Hall

LEVEL 0 BASEMENT

LEVEL 01 GROUND FLOOR

LEVEL 02

LEVEL 03

LEVEL 04

MEZZANINE

Service Point
Teaching Lab
Open Seating/Study
Meeting Spaces
Collections/Stacks
Staff
Service
College of Engineering
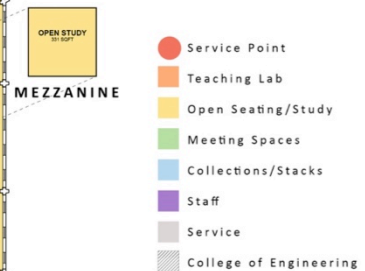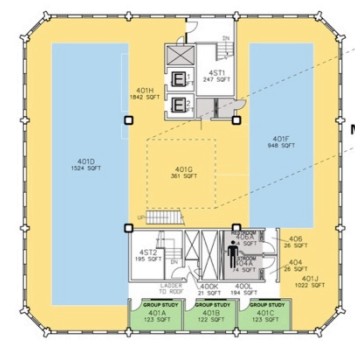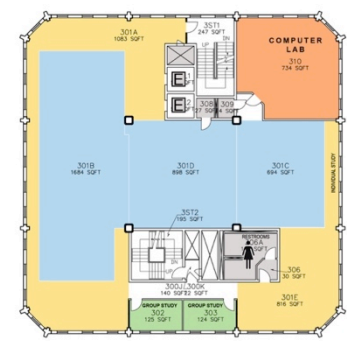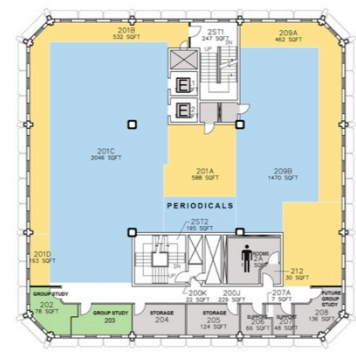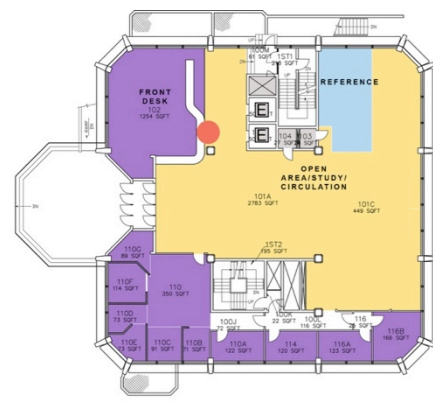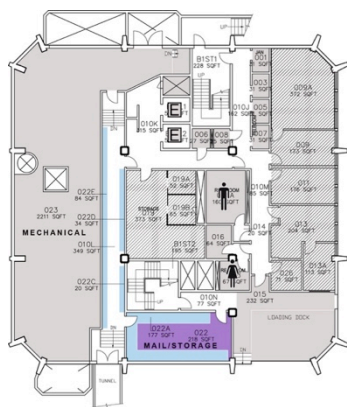
- Much of the low use bound journals and microforms collections can be moved off-site if space became available, allowing consolidation of the book stacks and addition of user seating.

- Users want more collaborative work areas, makerspaces and spaces that support active learning, but also value the quiet study areas the building offers.

- Students need to access engineering related specialized software that is licensed but not widely available in open labs across campus, but is offered in the library.

- There is emerging need for data fluency, GIS use & visualization skills as engineering involves increasingly data-rich design processes.

Changing Needs of the College of Engineering

- **The College of Engineering is in the process of transforming undergraduate education,** moving to more project-based and experiential learning, involving multidisciplinary collaboration. Libraries are well positioned to provide collaborative spaces for learning and work with peers outside the classroom.

- **The number of students graduating from the College of Engineering is anticipated to grow 40% from about 1,000 this year to a target of 1,400**. Additional facilities will be required for study seating, collaborative work and consultation services.

- **The plan is to increase touchpoints, especially to reach undergraduates, to develop "innovation readiness"** and skill sets for students across the campus.

- **The move to a flipped classroom model will be better supported by study venues with tutoring and mentoring available**, workshops and events for students and faculty.

- **A hub is needed for academic support services with advising, tutoring, and a career center with interview rooms and counselors.** Places that build community are needed.

- **Facilities are needed that are less discipline-specific and support multidisciplinary teams**. The library is neutral turf offering facilities shared by all, similar to the makerspace ethos.

- **Fostering emerging learning communities is desirable**: the library can play a role in connecting and supporting groups in both physical and virtual spaces.

- **More bookable group rooms equipped to engage remote participants in discussions are desirable**. Masters level students especially are working with industry professionals, and there is a mix of face-to-face and distance students.

- **Students need more training in visualization and presentation skills**, including practice rooms with recording capability.

- **This library serves many**: In-use surveys show that up to 30% of the students coming to the library today are non-engineering students, perhaps coming to work with friends or seek quiet.

- **Students continue to need a quiet place to study—a restorative environment for reflection** is needed as much as inspiration and stimulation.

Aspirations | Findings from the Innovation Ecosystem workshop

"Libraries are well positioned to help the integration of left brain and right brain activities!"

— on hackathons in the library

The Engineering Library should be a place that inspires with:

- Exposure to innovative activities
- Rotating displays
- Showing off the messiness, raising questions
- Transparency, visibility into the spaces
- A welcoming element
- Always busy atmosphere
- Cross-functionality
- A place for building community, a place to meet and learn things

Additional comments:

- Different users and activities need different types of spaces
- Provide advice on copyright issues or triage to people with expertise. Will be more interaction with private companies in future
- The library can provide late hours access to spaces and tools, welcoming to all, centrally located
- The library is a place to apply technology tools, but in the future may also offer studios to develop them
- Need to seek good value, like writable walls or walls that enable use of Post-It notes
- Lessons from the Human Centered Design Labs: big rolling carts with materials, flexible team workspaces
- Makerspaces are interactive places, student-owned

"How is a research project like a start-up?"

— on support service needs

Vision | Engineering Library

The Engineering Library will offer a welcoming place that serves the whole undergraduate engineering community. To enhance the learning experience of the growing student population in the College of Engineering, the Library will continue to offer services to students that may not be available elsewhere in the CoE and 24/7 access to facilities.

Programming will be developed in partnership with the College of Engineering to apply the Research Commons concept on the 1st Floor. The commons on this entry level should convey the excitement of engineering— with group work areas, whiteboards, and interactive displays. Following the Research Commons model, the library will partner with other units to provide a wide range of services and training by appointment or with consultation hours in shared space. It will have a hub for consultation on library resources, academic advising, research, writing and other services. A makerspace should be easily at hand, planned with Co-Motion for either the 1st or 3rd floors. Library staff will be located on both the entry level and the 3rd floor, engaged with partners and users in both zones.

The plan proposes to reprioritize how space is used. If most of the bound journals shift to off-site shelving, the books on the 3rd & 4th floors can be consolidated into the existing compact shelving on the 2nd floor. This will open up space for more user seating and new types of facilities and services.

The 3rd floor is envisioned as an integrated hub for computation and data/GIS services, offered by librarians teamed with partners—for use of specialized engineering and statistical software, data management, and learning about visualization and other skills useful to engineers of all disciplines. A rich variety of team settings in a flexible, co-working environment will model future workplaces that graduates will be moving into.

The top floor will offer a quiet, reflective study space that students (and faculty) value, with additional seating and enhanced furnishings.

Renovation of the building infrastructure and systems will be needed in addition to refreshed interior finishes, e.g. power, mechanical systems, lighting, exterior envelope, etc.

Envisioning the Future Engineering Library | Proposed Concepts

Data Science Studio, UW

CURVE, Georgia State Univ. Library

Teaching & Visualization Lab, Hunt Library, NCSU
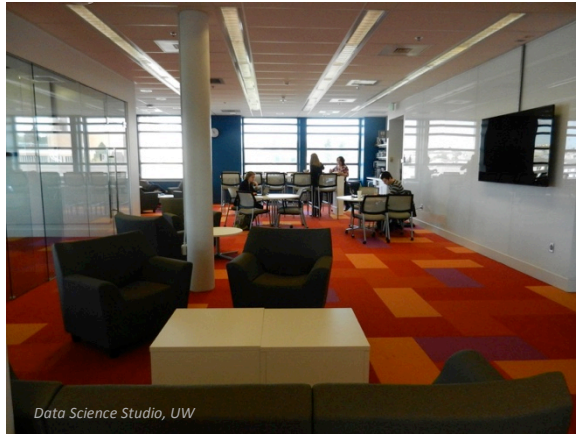
Engineering Research Commons

- **A Research Commons offering a wide range of consultation services to all engineering disciplines,** with expertise in research, patent searches, and assistance with resources

- **A shared consultation zone for services offered with partners,** such as academic advising, peer tutoring and writing support

A Data/GIS Services Consultation Hub

- **A one-stop support center** for assistance with using and learning about GIS and statistical software, access to datasets and data management consulting

- **Integrated into a computational commons with approachable interactive technology**, for groups of students and faculty to explore digital modeling and work with geospatial information applications

A Visualization Lab

- **Space for immersive viewing, learning about visualization and working with simulations** displayed on three walls, as a collaborative space within the Data/GIS Services hub

- **Flexible furnishings for teaching or interdisciplinary meetings** and problem solving, informed by complex data

Envisioning the Future Engineering Library | Proposed Concepts

BME Design Studio, Johns Hopkins Univ.

Research Commons, Allen Library, UW

James B. Hunt Jr. Library, NCSU
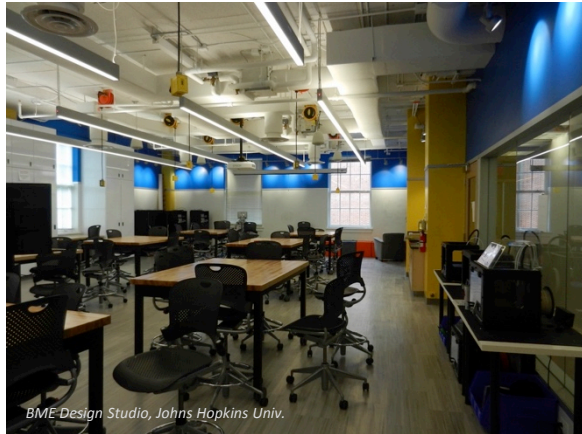
Project Studio Space for Team Work

- **Design thinking friendly space**, equipped with movable furnishings, displays and whiteboards on wheels, writable walls, with activity visible to those passing by

- **A design/build space with light prototyping capability** near the collaborating teams, with materials and tools, 3D printers and laser cutters, and lockers for work in progress

Additional Study Seating

- **Shared collaborative settings** to bring users from different disciplines together, with spaces for teams of various sizes

- **More bookable team rooms**, acoustically separate for videoconferencing

- **Additional quiet individual study seating** on the top floor—a zone for reflection and concentrated study
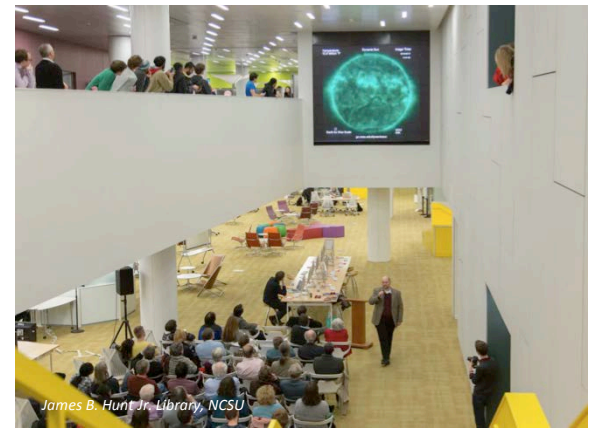
Informal Sharing Space

- **Places to gather**, share project work and practice pitches, similar to space in the Research Commons

- **Coding-friendly group work zones**, hackathon space

- **Interactive displays** showcasing UW innovations

Envisioning the Future Engineering Library | Proposed Stacking Summary

4 **Reflect/Study**

3 **Collaborate/Make**

2 **Think/Research**

1 **Consult/Search**
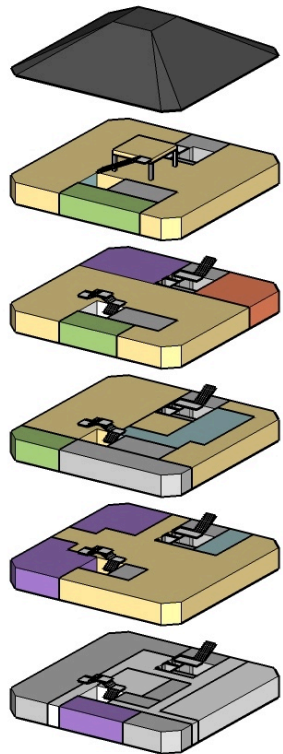
4th Floor | Reflect, Study
Remove book shelving, create quiet reading room with additional individual study seating

3rd Floor | Collaborate, Make, Visualize
Remove shelving and create an open computation commons with flexible tables, dual monitor stations, movable whiteboards
Create a GIS/Data services consulting hub & teaching space
Visualization Lab with interactive wall, VR/AR work settings
Project Studio (with 3D printers, laser cutters, etc.)

2nd Floor | Think, Research
Remove bound journals from compact shelving, replace with books from 3rd & 4th Floors, add more study seating

1st Floor | Consult, Search
Create an Engineering Research Commons, with advising hub
Add collaborative workspaces with a makerspace, pitch practice/presentation spaces, interactive display walls
Improve ground floor connection to Loew Hall

11

Concepts

Health Sciences Library

The Health Sciences Library Today

Planning for the future of the Health Sciences Library offers a great opportunity to develop new services to meet emerging needs and spaces that will serve all the schools. The Interprofessional Education initiatives are transforming the curriculum and planning efforts are studying options for T-Wing renovation and future facilities.

The library is student-centered space, heavily used by both resident and commuter students. With renovation this shared space can provide a range of model work settings for interprofessional teams and act as a zone for testing new types of teaching spaces, especially those dealing with data-intensive research and evidence based health care. The library is partnering with other units to develop innovative services, and reconceiving the space as a vibrant collaborative hub.

Health Sciences Library | Existing Level 3

The existing main entry of the library is on Level 3. The front portion of the space has an information desk, open seating with some resources available on shelving. A passage leads to the Commons computing area at the back, which is adjacent to classrooms, the assessment center lab and two meeting rooms.

Most of the print materials on this floor have already been relocated to off-site, and only limited shelving for reference items remains.

A Level 1 space has been used for closed print storage that could move off-site as soon as space is available. The below grade space is very inaccessible and would be hard to repurpose for user spaces.
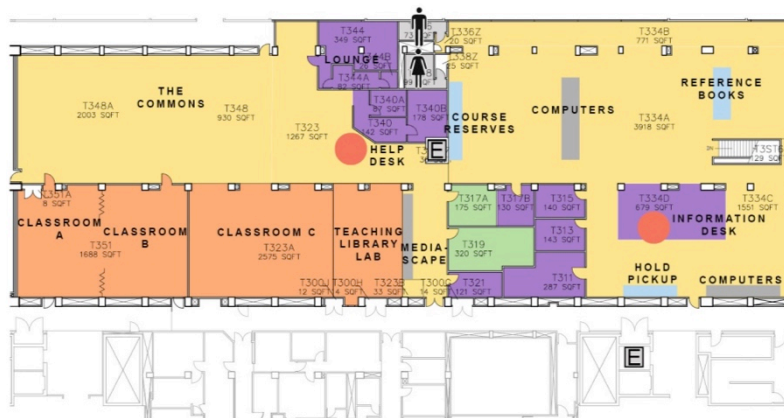
HEALTH SCIENCES LIBRARY LEVEL 3

- ● Service Point
- Teaching Lab
- Open Seating/Study
- Meeting Spaces
- Collections/Stacks
- Staff
- Service
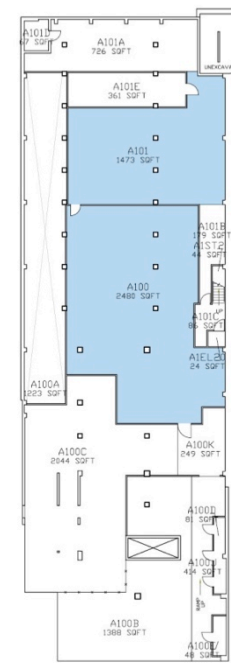
LEVEL 1

Health Sciences Library | Existing Level 2

On Level 2, the open study areas provide a mix of seating types, including a quiet seating zone. Group study rooms line the stacks zone. There is a Writing Center at this level, providing consultation services for all health sciences students. The staff zone at the back has gradually transformed from technical processing to electronic resource management.

This library is open for 24 hour use. With the increase in electronic resources, 100% of the bound journals and 75% of the monographs on this floor can be shifted into off-site shelving and the spaces repurposed into new functions and user facilities to meet changing needs. Some of the library's concepts for future facilities are described on the following pages.

HEALTH SCIENCES LIBRARY LEVEL 2

- Service Point
- Teaching Lab
- Open Seating/Study
- Meeting Spaces
- Collections/Stacks
- Staff
- Service

Envisioning the Future Health Sciences Library | Proposed Concepts

CURVE, Georgia State U. Library

Digital Innovation Greenhouse, Univ. of Michigan

Human Centered Design program studio, UW
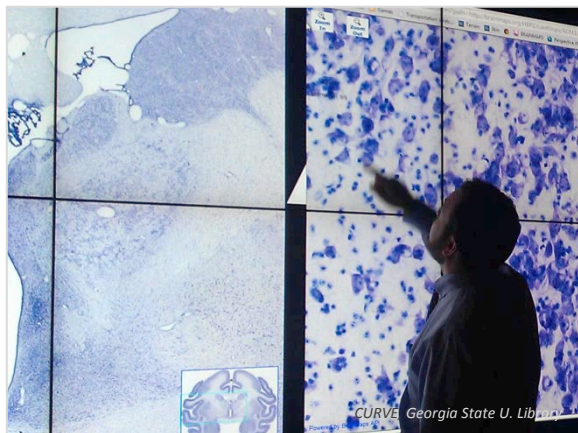
Population Health Informatics Studio

- A collaborative studio for addressing interdisciplinary problem solving in the health sciences

- A consultation hub in coordination with partners, similar to the Data Science Studio model, offering expertise in informatics and data management from planning to curation

Digital Innovation Lab

- A digital makerspace for creating mobile apps for clinicians, VR/AR tutorials for IPE teams to practice together, online materials to support Interprofessional Education (IPE)

- Staffed with librarians teamed with CTL and IT to develop new tools and resources for teaching and learning

Pilot Teaching Spaces

- New prototype teaching spaces, designed to support different aspects of IPE

- Also used for training by librarians on evidence based medicine and information search methods

- 3D printing capability for developing new teaching tools as well as prototyping

Library, Phoenix Health Sciences Center

Testing Center, Health Sciences Library, UW

Phoenix Health Sciences Center
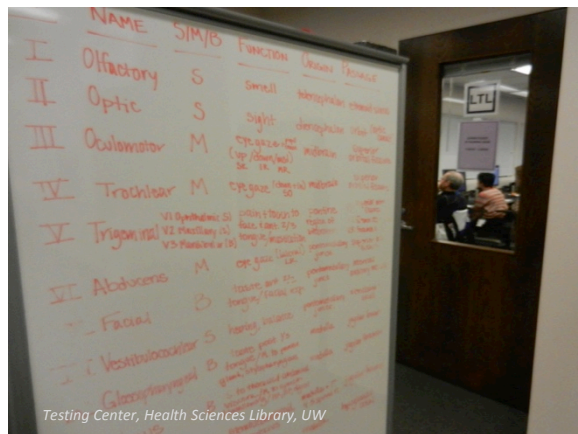
Expanded Commons

- Renovate with more user seating, both collaborative and individual study seats, clusters for team work using large shared screens

- Plan for future settings for working with small simulation devices, e.g. for VR/augmented reality or haptic feedback, plus demo areas displaying the latest technology

Expanded Assessment Center

- Renovate and expand the Assessment Center to meet increasing demand for both formative and summative testing, Board exams, certifications, CME (Continuing Medical Education)

- Continue to provide these services and approved/monitored equipment to all the Schools

Collaborative Hub for Curriculum Planning

- Library as neutral ground with meeting spaces for hosting interdisciplinary educational planning sessions

- Staff space for those involved in course development and support for learners from introductory years to residency levels

12

Branch Libraries

Concepts | Seattle Campus Branch Libraries

The branch libraries on the Seattle campus are tight on space, with collections that have outgrown available shelving, and cannot provide adequate user seating for the populations they serve or improve staff operations. The Music Library is split on two floors without internal connection but is prominently located at the building entry and top of the Quad. The Math library is small, split on multiple floors and prone to leaks, but important to its users. The Foster Business Library has been able to install compact shelving because of its location on grade level, so has reduced print materials for seating. The branch libraries provide quiet study space and convenient access to consultation services, but a long term plan will need to be coordinated with university plans for the buildings that house them.

Art Library
Foster Business Library

Music Library
Math Library

Drama Library
Built Environments Library

Art Library | Planning Issues

- **Both Art and Drama libraries are limited by their physical footprint**. Space is tight for both collections and user seating is limited.

- **Art and Drama are disciplines where students tend to work collaboratively, but it is hard to without disturbing others.** Classrooms are tightly scheduled so undergraduates tend to come into the libraries to do group work. The Art Library has created some space for collaborative work, but its main attraction is access to staff and books.

- **Desirable spaces include a computer lab space and a photo/media lab.** The Art Library would need to relocate 25% of the collection to off-site or to the Suzzallo and Allen Libraries to create space for additional seating.

- **Portions of the print collections that could be relocated:** legacy subject matter in areas they no longer collect but which has archival or historical value; collections supporting programs that have been phased out (interior design, weaving, furniture design); theses; probably the entire bound journal collection, which does not circulate and could be retrievable.
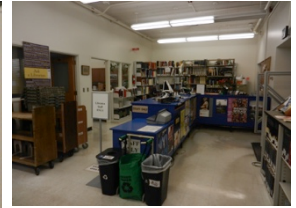
Drama Library | Planning Issues

- **The Drama Library has to be an on-site collection**. The collection is heavily browsed, primarily play scripts and materials about musical theater, costumes and technical theater.

- **A lot of material that can be moved off-site has already been sent to the Sand Point Shelving Facility**; most of the rest needs to be retained on campus. Theses and journals are still shelved in the library.

- **Drama students tend to work on posters and models.** Graduate studios are available for graduate students but undergraduates are always looking for a place to build models. The Design Lab is available to do graphics but capability to do digital design work in the library would also be useful.

Music Library | Planning Issues

- **The spaces need to be reconfigured to interconnect the levels with better functionality.** The library is split on two floors but with no internal connection. Staff space separates the music listening lab from the scores stacks. Circulation flow is very awkward and a time waster traveling between floors.

- **There is not enough space for staff, users or collections**. It has some quiet seating but little group study seating.

- **The location offers benefits:** The good view into the Quad attracts readers and the main entry is prominently located next to the building entry. However, increased visibility into library spaces from the corridors is desirable.

- **This collection must remain browsable** because users have to look at a score to see if they can play it. There are no scores kept in off-site storage and scores do not circulate. Even if scores become available in digital form in 10 years, they may not be ideal to practice with in that form and getting licensing may be an issue. With a renovation stacks would have to become ADA compliant, likely reducing stack capacity.

- **The library is still collecting physical CDs and videos**. Although students prefer the convenience of online resources, copyright issues are a barrier to streaming resources.

- **The library would like to support more programming and create a Research Commons space** for Music open to all students, which can be used for sharing research, networking events, group study and consultations with teaching assistants. In addition a mediArcade type facility in the Music Library would enable users to move from listening to editing/making digital projects.

- **Addition of a small consultation room near the service desk** would enable staff to consult with users in an acoustically separate space without disturbing others.

Proposal for a Consolidated Arts Library | with Media & Digital Arts

Much of the Art, Music and Drama print collections will need to remain browsable for the foreseeable future because of the way the materials are used. Even if more of the existing branch libraries' collections were moved to the Suzzallo and Allen Libraries or to off-site shelving, it would not generate sufficient space to accommodate future collections growth nor provide adequate space for study seating for these user populations.

The Strategic Space Plan proposes a consolidation of the Art, Music, Drama and Dance collections into a combined Arts Library facility. This facility will be a vibrant hub for innovation in the creative use of digital media, through the Libraries' Media Services partnering with DxArts. The Space Plan recommends a facility that includes:

- Combined Art, Music, Drama and Dance libraries
- A media center with audio, film, video & ethnomusicology archives
- A Digital Curation Innovation Center with media curators
- DxArts Studios and makerspace
- Digital Arts exhibit and visualization gallery
- A co-working hub for interdisciplinary arts projects
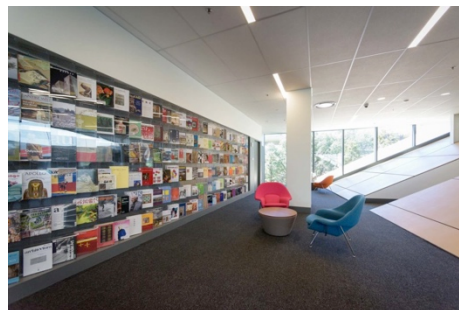
An Arts Library combining Art, Drama, Music and Dance collections with a Media Center—as a center for studying and creating with the UW distinctive collections of audio, film, video and the School of Music Ethnomusicology Archives

Math Library | Planning Issues

- The Math Library in the C Wing in Padelford is **constrained by its size, layout and column locations**. Elevator access to go between its three levels is outside library space, which becomes a burden for staff trying to aid users.

- **The stacks are close to capacity**, including the large storage room in the basement with compact shelving. The constraint to reducing stack space is availability of storage capacity off-site.

- **The Library is a member of WEST** consortium so this requires staff to retrieve materials between floors about 2 or 3 times per day. (More WEST materials could be located off-site but must remain non-circulating if retrieved.)

- **There is no HVAC system** which is damaging for the collection. It gets very warm and when overhead pipes leak, materials are prone to mold.

- **The limited user seating is used daily, all day long**. There is room for only one group study table

- **Having this library integrated with the department is of high value to users** to support their research and access to historical and current print materials. Math faculty and students still interact with the library in person and browse older materials.

- **Offices in the building are assigned to 3 or 4 people, so users tend to come and camp out in the library to work. There are 11 departments that are close by that use the library as a drop off and pick up point**.

- **The Library's computers offer math and statistical software** that undergraduates may not be able to afford and which are not on the regular library computers.

Built Environments Library | Planning Issues

- **The Built Environments Library is centrally located in Gould Hall** on the 3rd Floor at the center of the atrium.

- **This library needs to keep visual materials easily accessible** for browsing, especially ones with historic images.

- **Most of the bound journals can be shifted off-site** as journal usage is more likely to be electronic now, so accessible anywhere.

- The atrium provides sufficient collaborative study seating and the studios provide quiet work space, so there is not much pressure for additional seating. There is a Digital Commons on the basement level for computing and several model and fabrication shops in the building. Space for display of new publications and models is desirable though.

- **The collections will continue to support the expanding real estate program**, which includes a new minor and Ph.D. degree and international students in Japan and China. Students are encouraged to become knowledgeable about planning areas related to their core field of study, such as population, sustainability or environmental policy.

Foster Business Library | Planning Issues

- **This library has more users than any other branch library**, due to its central location near residences, its relatively recent construction, availability of group study rooms, and good power distribution.

- **The open plan seating and 13 group study rooms get heavy use**. The library would like to add more seating and meeting spaces. Individual carrels are for the most part grouped together in the main room but a few are distributed adjacent to the upper level group study rooms.

- **The space self-polices as a quiet study space**, but it would be desirable to allocate an areas for quiet study.

- **The print collection has been much reduced** and recently moved into a block of compact shelving at the back. The only way to expand seating will be to shift more print to off-site.

- **A teaching lab with Bloomberg terminals** is desirable (open for drop-in use when not being used for instruction). General purpose computer workstations are getting less use but there is **an increase in the use of equipment with specialized software**.

Friday Harbor Library | Planning Issues

- **This branch library serves a remote marine sciences field station** in the San Juan Islands, which has developed from a summer study institute into a year-round scientific research facility.

- **The library has not been updated since it was built in 1962 and needs renovation**, but is well situated as a commons space. It has windows along three sides with views to the harbor.

- **The stacks could be reduced to make space for some collaborative seating**. Half of the stacks are bound journals so 50% could be put into off-site shelving assuming electronic delivery of scanned articles. About 5% of the journals are unique and should be retained. The rest are books which are well used.

- **The library is dependent on the lab delivery schedule every third week**, which is a huge lag time for retrieving scientific materials, so print volumes were duplicated at this location.

- **Researchers reside there, some for years**, so the library is accessible 24/7.

- **The library is tight on space but the whole lab is desperate for space.** Staff areas are especially constrained, were reduced by half 10 years ago. It is hard to do library orientations because of the lack of meeting space with a screen.

- **The space could be significantly improved with modest upgrades**: removal of some stacks and the carrels, additions of flexible tables and chairs, a Media:scape cluster for group work with shared screens, carpeting and drop-down electrical outlets from the ceiling.

13

Roadmap for

Implementation

Roadmap for Implementation | Recommendations

The Strategic Space Study suggests a number of opportunities that will require future study and can be pursued incrementally by the Libraries. It is anticipated that these recommendations will be evaluated for feasibility and relevance by the Libraries' internal study prior to potential pursuit as a capital planning effort. This is not an exhaustive or prioritized list, but a starting point for discussion.

1   Increase Off-Site Shelving Capacity

1.1   **Study off-site shelving options to determine best investment strategy.** Compare long term operational costs: high density has been found to be significantly more efficient over time. Removal of any stacks from on campus facilities will require additional capacity beyond growth projections and expansion to another floor of the Sand Point Shelving Facility will not provide sufficient capacity to meet future growth.

1.2   **Apply for funding and negotiate/purchase or lease**.

1.3   **Develop shelving facility as phase one for implementation.** Confirm initial capacity and module sizes to accommodate future phases of expansion and adequate staging space for coordinated renovations.

2   Planning and Design Opportunities

2.1   **Engineering Library programming and renovation** in coordination with the district master plan for the Engineering sector.

2.2   **Health Sciences Library space programming and repurposing opportunities**.

2.3   **Reprogramming of the Odegaard Undergraduate Library's basement into a coordinated innovation hub and Maker Commons** with Co-Motion and other partners

2.4   **Reorganization of functions in Suzzallo and Allen Libraries**, defining a long term vision for service points, user seating, teaching spaces, integration of partners, flexibility to accommodate anticipated change, and improvement of user experience and wayfinding. Explore opportunities for expansion of the Research Commons concept across facilities.

2.5   **Definition of next generation teaching space needs**, anticipating future directions in teaching for librarians (such as GIS/data services) and defining new types of activities and design attributes for model teaching spaces to be incorporated within the Libraries.

Roadmap, continued

2.6 **Alternative scenarios for future Media services provision and media conservation operations**, exploring potential future locations and partners.

2.7 **Allen Library Auditorium renovation** to upgrade the AV systems, seating and add surround sound to become a venue for media viewings from the Libraries' collections.

3 Collections

3.1 **A consultative study about the print collections with faculty, subject specialist librarians, and others** to consider how usage of print resources and publication of research in various disciplines are evolving and assess where on-campus browsing can provide best value in the future. This process will lay the groundwork to confirm long term strategy for what should be held on-campus vs. in off-site shelving and storage facility capacity needs.

3.2 **Data analysis of levels of use of collection components**, to provide evidence for the consultative process

4 Recommended Interim Pilot Projects

4.1 **Data/GIS hub pilot**

4.2 **Teaching space pilot**

4.3 **New service pilots** with partners, e.g. with UWIT for a tech support hub in Suzzallo Library or the Research Commons.

5 Long Term Initiatives

5.1 **Library staffing projections may need to change over 15 years**, to guide other initiatives

5.2 **Explore options for a consolidated arts library**—alternatives for possible location and synergies with co-located functions that would make it more viable, developing concepts to pursue funding opportunities

5.2 **Comprehensive renovation plans for the Suzzallo and Allen Libraries and existing branch library facilities**.

5.3 **Explore future consortium options** for collective collection stewardship and potential impact on UW planning

Conclusion | Alignment of the Libraries Space Plan with the Four UW Brand Pillars

Leading Edge Student Experience

- Enhances student experience using the library—more welcoming, easier to navigate

- Provides additional study spaces in libraries across campus, and systems to search and book them easily

- Enhances support for digital scholars, from undergraduate to graduate/PhD level

- Provides hubs for consulting services and training to enhance student proficiency with data management & use

- Access to spaces, services & resources for any student

Innovation Mindset

- Contributes a network of spaces supporting the UW Innovation Ecosystem

- Provides makerspaces in libraries—integrating physical and digital making with UW resources

- Provides flexible incubator space for special projects

- Consultation hubs with partners for data management

- Develops pilot demo spaces

- Digital conservation innovation leadership through technology research

Proven Impact

- Builds on extensive library assessment practices and recent Triennial Survey feedback

- Expands the types of spaces and services of the successful Research Commons and its programming

- Envisions more co-working hubs like the Data Science Studio to bring interdisciplinary teams together

- Track record of successful partnering to provide services to meet evolving needs

Public as a Philosophy

- Provides for long term stewardship of the State's collection assets

- Maintains public access to Government Publications, archives and other public documents

- Celebrates distinctive collections related to local culture, history and art

- Anticipates shift to more open access scholarship

- Anticipates development of national consortia for collection storage

Appendix

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Existing Libraries Space Summary

This table summarizes how library space is allocated across locations and broken down by type. The combination of existing Open Seating/Study space and Teaching space totals 176,833 assignable square feet (ASF).

		Existing 2016		Existing Breakdown					
Libraries	Location	Assigned Square Feet	Net Usable Area	Open seating / study	Meeting Spaces	Teaching Spaces	Staff Space	Collections/ Stacks	Service
ART LIBRARY	101 Art Building	**4,228**	**3,697**	804	0	0	527	2,366	531
BUILT ENVIRONMENTS LIBRARY	334 Gould Hall	**5,190**	**5,190**	1,558	251	0	1,318	2,063	0
DRAMA LIBRARY	145 Hutchinson	**3,707**	**3,707**	225	0	0	529	2,953	0
EAST ASIA LIBRARY		**36,969**	**36,676**	6,808	0	0	3,639	26,229	293
Gowen flrs G, MG, 1 M1, 2, M2, 3	322 Gowen Hall	19,353	19,060	6,687	0	0	2,123	10,250	293
Smith Hall 9 (stacks) & 319 (offices)	Smith Hall	3,938	3,938	121	0	0	1,516	2,301	0
Kane Hall Basement Storage	Kane Hall	13,678	13,678	0	0	0	0	13,678	0
ENGINEERING LIBRARY	Engineering Library Bldg	**24,852**	**24,607**	10,284	1,009	734	3,000	9,580	245
FOSTER BUSINESS LIBRARY	Paccar Hall	**17,974**	**17,317**	7,643	3,489	0	3,144	3,041	657
GALLAGHER LAW LIBRARY	William H. Gates Hall	n/a	n/a						
HEALTH SCIENCES LIBRARY	T-334 Health Sciences Bldg	**53,824**		18,809	2,931	2,575	8,907	20,602	0
T Wing flrs 2-3		44,708	**44,708**	18,619	2,931	2,575	8,907	11,676	0
A Wing flrs 1-2		9,116	**9,116**	190	0	0	0	8,926	0
MATHEMATICS RESEARCH LIBRARY	C-206 Padelford Hall	**3,850**	**3,850**	1,058	0	0	405	2,387	0
MUSIC LIBRARY	113 Music Bldg	**5,502**	**5,419**	705	0	0	934	3,780	83
Subtotal Seattle Branch Libraries:		**156,096**	**100,463**	47,894	7,680	3,309	22,403	73,001	1,809
ODEGAARD UNDERGRADUATE LIBRARY	Odegaard Library Bldg	**78,735**	**77,329**	46,386	2,940	9,980	9,430	8,593	1,406
SUZZALLO & ALLEN LIBRARIES									
Suzzallo	Suzzallo Library Bldg	204,199	195,160	34,373	4,260	2,813	69,382	84,333	9,039
Allen	Allen Library Bldg	151,099	149,770	32,079	6,133	0	25,688	85,871	1,329
Total - Seattle Campus:		**590,129**	**522,722**	160,731	21,013	16,102	126,903	251,797	13,583
SAND POINT AUXILIARY STORAGE		**69,175**	**51,461**						
Total Space:		**661,252**	**574,183**						
UW BOTHELL/CC LIBRARY		n/a							
UW TACOMA LIBRARY		n/a							
FRIDAY HARBOR LIBRARY	F203 Fri. Harb. Fernald Lab	**1,948**							

Potential Materials to Shift to Off-Site Shelving

During the study estimates were compiled on what portions of each branch's collections could be shifted to off-site shelving today, if additional capacity was available.

These initial estimates provided an order of magnitude for additional current storage needs.

	Existing			Potential for Relocation					
	Total Items (Print & Nonprint)	Total Linear Feet of Shelving	Low to No Circulation since 2013	Percentage which could shift to off-site storage	Item Count	Linear feet which could shift offsite	Linear Feet to retain on campus	Percentage to retain on campus	Assumptions/Notes
ART LIBRARY									
Monographs	50,930			25%	12,136	1,103			Art stacks minus bound items; 11 items/LF
Journals	1,084			95%	927	84			Bound journals in Art Stacks; 11 items/LF
Other	1,766			95%	3,071	279			Assumes everything else in Art
Total	**53,780**	**5,170**	44%		**16,134**	**1,470**	**3,700**	**72%**	
BUILT ENVIRONMENTS LIBRARY									
Monographs	39,714			20%	5,934	495			General stacks
Journals	10,936			10%	828	69			Periodicals & oversized periodicals locations
Media	10,965			20%	140	12			Media & storage media
Total	**61,615**	**4,938**	48%		**6,902**	**575**	**4,360**	**88%**	
DRAMA LIBRARY									
Monographs	40,685			10%	2,986	213			Drama stacks items minu bound items
Journals	2,022			95%	1,945	139			Bound items in Drama stacks
Other	3,088			95%	13,487	963			Everything else in Drama
Total	**45,795**	**3,135**	54%		**18,418**	**1,315**	**1,820**	**58%**	
EAST ASIA LIBRARY									
East Asia Library (Gowan)	552,652	**29,197**	84%	0%	0	0	**29,197**	**100%**	See also Kane Basement
KANE BASEMENT STORAGE	345,796	52,992	91%	100%	345,796	52,990	**0**	**0%**	
Total	565,110				345,796	52,990			
Est'd Uncataloged	135,000								Currently on shelves, included in linear feet.
	700,110	82,189							
ENGINEERING LIBRARY									
Monographs	96,667			50%		5,965			
Bound journals	90,350			80%		6,535			
Other	52,448					700			
Total	**239,465**	**22,095**	77%			**13,200**	**9,000**	41%	Refer to breakdown worksheet for details.
FOSTER BUSINESS LIBRARY									
Monographs	20,608			70%	14,185	1,182			Foster stacks minus bound items
Journals	27,392			90%	14,894	1,241			Bound items in Foster stacks
Other									
Total	**49,970**	**4,700**	69%		**29,079**	**2,420**	**2,280**	49%	
HEALTH SCIENCES LIBRARY									
Monographs	78,700	5,545		75%		**4,159**			
Bound Journals	201,148	16,707		100%		**16,707**			
Other	9,522								
Basement storage		12,818		100%		**12,818**			
Total	289,370	35,300				**33,700**	1,400	4%	Estimate based on breakdown worksheet.

Potential to Shift to Off-Site Shelving, continued

A more detailed study of the general collection stacks in Suzzallo and Allen will be needed to determine what is desirable and/or appropriate for location in off-site shelving. For example, for this study it was assumed that the equivalent of one floor of Allen Library's stacks could be relocated—a conservative assumption pending a more in-depth study with subject specialists and faculty.

Special Collections is another area that will require more detailed analysis to estimate what additional materials can be held off-site (as there is much archival material in the Sand Point Shelving Facility already) and that will not be damaged in transit during retrieval .

	Existing			Potential for Relocation					Assumptions/Notes
	Total Items (Print & Nonprint)	Total Linear Feet of Shelving	Low to No Circulation since 2013	Percentage which could shift to off-site storage	Item Count	Linear feet which could shift offsite	Linear Feet to retain on campus	Percentage to retain on campus	
MATH LIBRARY									
Monographs	36,278			50%	17,478	1,589			Browsing stacks, includes dissertations
Bound Journals	24,662			70%	18,309	1,664			Journals in storage location
Media	500			50%	279	14			media location, VHS tapes & CDs
Other	1,438								Over 1000 theses/dissertations (some in manuscript form) now in storage area (circulating collection).
Total	62,878	6,848	69%		36,066	3,270	3,580	52%	1st floor 1,218 LF; 2nd floor 1,809 LF; Storage 3,821 LF
MUSIC LIBRARY									
Monographs	23,348			20%	4,670	157			Music stacks which includes print scores that need to remain browsable. LF estimate per UWL 5/5/16.
Bound Journals	6,978			50%	3,489	102			Assumed periodicals location
Scores	57,879			100%	57,879	0			
Other	1,887								
Subtotal	90,092	5,170	59%		66,038	259	4,910	95%	
Music Listening Center - CDs/DVDs	16,624	53	60%	5%	831	3	50		Used for classes so faculty need immediate access. LPs already in off-site storage. CDs are kept on campus because users prefer them. Only a fraction of performances are available online so use of CDs will persist.
Total	106,775	5,223			66,869	260	4,960	95%	
ODEGAARD UNDERGRADUATE LIBRARY									
Total	136,015	14,213	34%	0%		0	14,210	100%	
SUZZALLO/ALLEN LIBRARY									
Portions of collections to shift:									
General stacks	2,014,470	205,067		12%	235,000	23,855	181,210	0%	Equivalent to one floor of Allen Library
Suzzallo Reference Collection	18,446	2,919		50%	9,220	1,460	1,460	50%	
Gov. Pubs. - total	601,415								
Gov. Pubs. Non-LC		27,560		50%	275,665	13,780	13,780	50%	(Gov Pubs LC items are shelved in S/A stacks.) LF is actual count; item count assumes 20 vol/LF.
Gov. Pubs, refer., indexes, newspapers		2,350		50%		1,175	1,175	50%	
Spec. Coll. Books		31,723		3%		1,035	30,688	97%	(incl. media archives)
Media Center collections (3rd floor)	50,579	1,613		100%		1,613	0	0%	(requires cool & cold storage)
		271,232							
Other formats:									
GMM Maps, microforms cabinets		n/a		50%		n/a		50%	Map cases, microforms cabinets, newspapers
Spec. Coll. Archival Collection (cu. ft.)		37,830		tbd		tbd			Will be determined based on how much capacity is provided with proper environmental conditions.
Total		330,420				43,000	228,313	69%	
Totals - Seattle Campus:		514,230				152,200			

Projections for Future Off-Site Shelving Needs
by 2031

ESTIMATES FOR OFF-SITE STORAGE	Existing		Initial Ph 1 2016	Projected Phase 2 2021 - 5 yrs			Projected Phase 3 2031 - 15 yrs			Assumptions/Notes
	Total Items (Print & Nonprint)	Total Existing Linear Feet of Shelving	Est'd Linear feet for offsite storage	Estimated Total Items	Estimated Additional Items	Estimated Additional Linear Feet	Estimated Total Items	Estimated Additional Items	Estimated Additional Linear Feet	
Projected Collections Growth - Seattle campus	7,686,870	514,230	152,200	8,300,000	613,130	55,000	9,293,000	993,000	90,000	Estimate for 2016 from "Potential for Relocation 2016" tab. Future growth rate per UWL 5/27/16. For the purpose of this rough estimate, a gross number of items per linear foot from across the system has been used.
Uncatalogued Items	500,000	45,455	30,000							These items can not be moved until they are catalogued so they can be searched and retrieved. This assumes these materials could possibly be catalogued within 5 years if budget were available. Information on current formats and storage locations not specified.
Subtotals			182,200			55,000			90,000	
Special Coll. Archives Materials						30,000			40,000	
Target Off-Site Capacities by Phase (LF of shelving)			182,200			85,000			130,000	Note: Projections for SC Archives not included (see below).
Cumulative totals (LF):									397,200	Note this rough estimate does not yet take into account different types of materials and shelving, which will affect total est'd LF (or required bin capacity).
Current Sand Point storage facility (not including proposed 4th Floor)	1,560,670	166,718								Existing Sand Point facility area = 61,450 gsf. Note part of this is on compact shelving so the LF/SF and hence SF requirements will vary depending on what type of shelving is used and the mix. Existing conditioned area and vault size is not sufficient for all the items requiring cold storage and secure storage. UWL is identifying desirable projections for future storage types.

Note: Off-site storage space estimates could vary significantly depending on the type of storage system: the mix of shelving depths required; assumptions about numbers of shelves high; aisles; density of materials; column spacing and load constraints; and level of investment in installed equipment--which could range from regular shelving to compact mobile shelving to high density storage systems. In addition, the proportion of conditioned space required for cold and frozen materials will be a factor.

Sand Point Shelving Facility
2016 Breakdown

	Location	Total Print + Nonprint Volumes	Linear Feet of Shelving Installed	Linear Feet of Material	Est'd Volumes per Linear Foot	Est'd Percentage Full	Assumptions/Notes
SAND POINT AUXILIARY SHELVING FACILITY							
"Auxiliary Stacks"	Stacks	428,243	50,718	44,948	9.5	89%	Existing shelving consists of two lengths: 35" & 29". At the point libraries contribute material to Sand Point, it becomes part of the Suzzallo & Allen Libraries
Folios	Folio stacks	25,470	4,322	3,847	6.6	89%	
Elephant Folios	Folio stacks	2,176	1,386	1,234		89%	Per UWL calculated based on volume count & % full. Stacked laterally.
Archival Boxes	Stacks	25,378	29,288	27,238		93%	Non-circulating collection. Room remains for 1682 archival boxes.
Vault Items	Vault	221,046	4,836				Vault is used for storage of incoming materials and shelving for library-use only materials in varying formats. Contains 200 LF of Media Center materials. Also houses 56 cabinets, 258 SF total.
"Baker Auxiliary"		858,356	76,168	65,566	13.1	86%	"Baker" is the space with temperature & humidity controls built in 2008. Consists of compact shelving for both books and archival boxes. Two types of shelving: 35" & 29"
Totals:		1,560,669	166,718	142,832			Projected estimates may need to be broken down by environmental condition, security level, as well as type of shelving

Existing Library Seating Breakdown

The existing seating in the Seattle campus libraries was inventoried and broken out by type: as collaborative (conversation tolerant), quiet study, and other types.

The total number of seats across the system will be increased but further study will be needed to determine best targets for each type. In general, it is recommended that the target for quiet seating remain at least 40%, and that a higher allocation of computational workstations is provided to enable GIS/data and media work within the libraries.

Existing Seating 2016	Collaborative study/conversation				Quiet			Other									Total seats by library
	Group study room seats	Carrel or booth seats	Seats at tables	Soft seats	Quiet/ table seats	Quiet/ carrels	Quiet/ soft seating	Computer stations	Media stations	GIS/data services stations	Tech lab or maker-space seats	Microfilm/ microfiche seats	Consulta-tion seats	Distinctive/ Special collections area seats	Meeting room seats	Teaching space seats	
ART LIBRARY					32			16									48
BUILT ENVIRONMENTS LIBRARY	6	28	18	9				11									72
DRAMA LIBRARY					7	3	3	10									23
EAST ASIA LIBRARY	6		8		94	10	4	15	2					1		35	175
ENGINEERING LIBRARY	56		36	15	36	125		23				17					308
FOSTER BUSINESS LIBRARY	89		16		112	78	72	55							11		433
																	0
HEALTH SCIENCES LIBRARY	58		179	15	110	10	71	84	12							136	675
MATHEMATICS RESEARCH LIBRARY		2	6	1	14	4		4									31
MUSIC LIBRARY			14	2	8		2	16	4								46
ODEGAARD UNDERGRADUATE LIBRARY	145	16	280	114	273	112	24	320							88	253	1,625
SUZZALLO & ALLEN LIBRARIES	55	26	301	52	357	345	44	186	8	21	7	20	13	54		147	1,636
Research Commons	26	24	112	39				2							16	25	244
Suzzallo Reading Room					363												363
Totals - Seattle Campus Seating by Type:	441	96	970	247	1,406	687	220	742	26	21	24	20	13	55	115	596	5,679
	1,754				**2,313**			**813**				**20**	**68**		**115**	**596**	**5,679**
	31% Collaborative				**41%** Quiet Study			**14%** Computing				**0.4%**	**1%**		**2%**	**10%**	

Projected Study Seating Needs

The Libraries today cannot provide sufficient study seating to meet demand. Assuming recommended seating targets (CEFPI) for only 12% of undergraduate and 30% of graduate student populations, the Seattle campus is estimated to have an **existing deficit of approximately 2,550 seats.**

There will be need for approximately 5,000 additional study seats on campus by 2031 based on campus enrollment projections—almost double the existing seating in the libraries.

Relocating collections and repurposing stack spaces will be critical to meet the growing Core Campus study seating need.

Seattle Campus	Undergrad	Graduate & Prof'l	Total Students	Seats as % of Stud.	No. of Study Seats	ASF per seat	Est'd Area ASF [1]
EXISTING ENROLLMENTS Fall 2015	**30,022**	**15,387**	**45,409**	**13%**	**5,679**	**32**	**180,034**
Percentage of Total	66%	34%					
At Recommended Seating Targets	12%	30%					
Total Need for Seating in 2015 [2]	3,610	4,620			8,230	32	263,360
Estimated Seating Deficit 2015:					**-2,550**		**-83,326**
PROJECTED ENROLLMENTS 2031	**33,300**	**22,200**	**55,500**				
Percentage of Total	60%	40%					
At Recommended Seating Targets	12%	30%					
Total Need for Seating in 2031 [2]	3,996	6,660			10,656	32	340,992
Estimated Additional Seats Needed by 2031:					**-4,980**		**-160,958**

Notes:
(1) Existing total area (ASF) consists of Open Seating/Study + Teaching Spaces from library space inventory.
(2) Existing average of 32 asf/seat across the system is used in the projections.

The Image Permanence Institute provides metrics to correlate environmental conditions with condition of collections.

Their TWPI (Time Weighted Preservation Index) is a quantitative comparison of the preservation quality of different storage locations, used by UW to analyze data from the sensor systems.

SUITABILITY OF STORAGE ENVIRONMENTS FOR COLLECTION MATERIALS

STORAGE CONDITIONS 30-55% RH	INORGANIC 3D OBJECTS	ORGANIC 3D OBJECTS	MAPS & MANUSCRIPTS	BOOKS	RARE BOOKS	B&W PHOTOS	FILM & COLOR PHOTOS	TEXTILES	PAINTINGS	AV MEDIA	ART ON PAPER
ROOM 68°F TWPI ≥ 45	Fair	No	No	Fair	No	Fair	No	No	Fair	No	No
COOL 54°F TWPI ≥ 120	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Good	Good
COLD 40°F TWPI ≥ 350	Good	Good	Good	Good	Good	Good	Good	Good	No	Good	Good

RATING SYSTEM

No	Unacceptable Risk
Fair	Some Risk
Good	Best Practice

Summary of Environmental Requirements

Books, B&W Photos, Inorganic 3D Objects, Paintings
Storage Conditions: COOL Desirable
54°F/12°C – 30-55% RH

Art on Paper, AV Media, Manuscripts, Maps, Organic 3D Objects, Rare Books, Textiles
Storage Conditions: COOL Required
54°F/12°C – 30-55% RH

Film and Color Photos
Storage Conditions: COLD Required
40°F/4°C – 30-55% RH

Environmental Specifications

1. **Acceptable environments** for most collections require three categories: Room, Cool, or Cold.

2. **Relative Humidity (RH) Specifications for all categories:** In no case shall the 30 day moving average RH exceed 55% or be less than 30%.

3. **TWPI Requirement:** IPI's Time-weighted Preservation Index (TWPI) is a metric for environmental quality that is calculated from temperature and RH values for a 12-month period. Preservation Metrics are available in IPI's www.eClimateNotebook.com environmental management website.
   The specifications for the environmental categories are:
   Room: TWPI ≥ 45   **Cool:** TWPI ≥ 120   **Cold:** TWPI ≥ 350

4. **Temperature Requirement:** Temperatures in all three environmental categories may vary as long as the requirements for RH and TWPI are met. For planning purposes, temperatures averaging about 68°F/20°C for ROOM, 54°F/12°C for COOL, and 40°F/4°C for COLD are commonly used in engineering design.

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IPI Standards
Temperature & Humidity Risk Zones

TEMPERATURE & HUMIDITY SAFE AND RISK ZONES

TEMPERATURE SAFE AND RISK ZONES

Zone	Notes
68°F/20°C & Higher	• **High risk** for chemical decay for most materials • Increase in biological activity in damp conditions
55-67°F 12-19°C	• Cool temperatures slow the rate of chemical decay • Good for most materials except film and color photographs
40-54°F 12-19°C	• Cool temperatures slow the rate of chemical decay • Good for most materials except film and color photographs
32°F / 0°C Frozen Storage	• Best for film and color photograph collections • Required for degrading acetate and nitrate film

RELATIVE HUMIDITY SAFE AND RISK ZONES

Zone	Notes
70% RH & Higher	• **High risk** for chemical and mechanical decay • **High risk** for mold growth and biological damage
65-70% RH	• 70% – **High risk** for mold growth and corrosion • 65%> – **Increased risk** of chemical decay and mechanical damage
55-65% RH	• 60%> – Potential for mechanical damage in vulnerable materials • 55%> – Corrosion **risk** for metals and metal elements
30-55% RH	• Generally safe zone for most materials
30% & Lower	• Beneficial for chemical decay • **High risk** of shrinkage & brittleness for organic materials • Safe for most inorganic materials (metals)

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IPI Standards
Film and Non-Print Media

Suitability of Storage Environments for Film

STORAGE CONDITIONS 30-55% RH	NITRATE	ACETATE		POLYESTER	
		B&W	COLOR	B&W	COLOR
ROOM 68°F (20°C)	Unacceptable	Unacceptable	Unacceptable	Acceptable	Unacceptable
COOL 54°F (12°C)	Unacceptable	Unacceptable	Unacceptable	Acceptable	Unacceptable
COLD 40°F (4°C)	Acceptable	Acceptable	Acceptable	Best Practice	Acceptable
FROZEN 32°F (0°C)	Best Practice	Best Practice	Best Practice	Best Practice	Best Practice

RATING SYSTEM	
Unacceptable	Likely to cause significant damage.
Acceptable	Meets ISO recommendations.
Best Practice	Will provide an extended lifetime.

Note: Degrading acetate and nitrate should be frozen.

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