



Digital Scholarship at Harvard: Current Practices, Opportunities, and Ways Forward.

Citation

Kalikman Lippincott, Sarah. 2017. Digital Scholarship at Harvard: Current Practices, Opportunities, and Ways Forward. Harvard Library.

Permanent link

<http://nrs.harvard.edu/urn-3:HUL.InstRepos:34830923>

Terms of Use

This article was downloaded from Harvard University's DASH repository, and is made available under the terms and conditions applicable to Other Posted Material, as set forth at <http://nrs.harvard.edu/urn-3:HUL.InstRepos:dash.current.terms-of-use#LAA>

Share Your Story

The Harvard community has made this article openly available.
Please share how this access benefits you. [Submit a story](#).

[Accessibility](#)

Digital Scholarship at Harvard: Current Practices, Opportunities, and Ways Forward

**A Report Prepared by Sarah Kalikman Lippincott for the Harvard Library
Submitted June 27, 2017**

Contents

I. Executive Summary	6
Background	6
Findings	6
Recommendations	7
II. External Scan and Benchmarking	8
Introduction	8
Scholars' Needs	8
Library Offerings	9
Conceptualizing the Service Model	11
<i>Service or Lab?</i>	11
<i>Degrees of Capacity</i>	12
<i>Service Hierarchy</i>	13
<i>Services and the Research Lifecycle</i>	13
Staffing and Organization	15
<i>Professional Librarians</i>	15
<i>Faculty Members</i>	15
<i>Paraprofessionals and Technologists</i>	16
<i>Postdocs and Students</i>	16
<i>Reporting Lines</i>	16
<i>Skills and Responsibilities</i>	16
Professional Development and Cross-Training	18
<i>Digital Competencies and Skills</i>	18
<i>Position Description Frameworks</i>	20
<i>Reskilling and Cross-Training</i>	21
Case Studies and Site Visits	22
<i>Yale DHLab</i>	22
<i>Northeastern University NULab & Digital Scholarship Group (DSG)</i>	26
<i>Temple University Digital Scholarship Center (DSC)</i>	30
Additional Case Studies and Planning Documents	33
<i>University of Colorado Boulder</i>	33
<i>Case Western Reserve University</i>	33
<i>University of Houston</i>	33
<i>University of Pittsburgh</i>	33
<i>University of Illinois Urbana-Champaign</i>	33
<i>ARL Digital Scholarship Support Profiles</i>	33
IV. Internal Context and Existing Services	34
Relevant Campus and Library Services	34
V. Campus Digital Scholarship Practices and Needs Assessment	36
Introduction	36
Digital Scholarship Practices of Harvard Faculty Members	36
<i>Corpus creation and management (including database development)</i>	36
<i>Data analysis and visualization</i>	37
<i>GIS and mapping</i>	37
<i>Annotation</i>	37
<i>Digital publishing and online exhibits</i>	38

<i>Multimedia content creation and analysis</i>	38
<i>Text mining, analysis, and markup</i>	38
<i>Coding, web and software development</i>	38
<i>Digital pedagogy</i>	38
Unmet Needs and Desired Services	41
<i>Consultation and Advisory</i>	41
<i>Training, Workshops, and Bootcamps</i>	42
<i>Community</i>	43
<i>Digital preservation and curation</i>	44
<i>Hosting, storage, and sandbox space</i>	44
<i>Physical spaces and equipment</i>	45
Other Challenges and Barriers	46
<i>Skepticism about digital scholarship</i>	46
<i>Time and competing priorities</i>	46
<i>Navigating support networks</i>	46
<i>Funding and sustainability</i>	46
Web Survey Findings: Aggregate Results	51
<i>Survey Methodology</i>	51
<i>Demographics</i>	51
<i>Digital Scholarship Adoption & Practices</i>	51
<i>Barriers</i>	52
<i>Current and Desired Support</i>	52
Web Survey Findings: Results by Department	53
<i>Demographics</i>	53
<i>Digital Scholarship Adoption & Practices</i>	53
<i>Departmental Support</i>	54
<i>Desired Support</i>	54
V. Recommendations	55
Goals and Outcomes Resulting from Library Action	55
Recommendations for Library Action	55
<i>Phase 1: Consolidating and Marketing (6-12 months)</i>	55
<i>Phase 2: Responding to Current Needs (6-18 months)</i>	56
<i>Phase 3: Taking the Lead (12-18 months)</i>	57
Appendix A: Web Survey Charts	59
Chart 1 & 2. Respondent status and school affiliation	59
Chart 3. Respondent departmental affiliation	60
Chart 4. Current engagement with digital scholarship by status	61
Chart 5. Reasons for lack of interest in digital scholarship	63
Chart 6. Current and desired engagement with digital scholarship tools	64
Chart 7. Current and desired engagement with digital scholarship tools by DS practitioners and non-practitioners	65
Chart 8. Barriers to engaging in digital scholarship	66
Chart 9. Perceptions of departmental Support for digital scholarship	67
Chart 10. Current sources of support for digital scholarship	67
Chart 11. Types of support identified as most useful to scholars	68
Chart Set 12. Breakout of respondent status by department	69

Chart 13. Breakout of DS practitioners by department	72
Chart Set 14. Current and desired practices by department	73
Chart Set 15. Perceptions of departmental support by discipline	89
Chart Set 16. Types of support identified as most useful s by department ...	93
Appendix A.1: Survey Comments	97
Communication and Awareness	97
Training and Consultation	97
Staffing	97
Digital Collections and Access	98
Institutional and Departmental Support	99
Other	99
Appendix B: Survey Instrument	100
Appendix C: Faculty Interview Protocol	106
Appendix D: Professional Development & Training Resources	109
Workshop Series	109
<i>Harvard Workshop Series and Resources</i>	<i>109</i>
<i>Regional Workshop Series and Resources</i>	<i>109</i>
Upcoming Intensive Trainings & Conferences (Spring/Summer 2017)	110
<i>Local/Regional.....</i>	<i>110</i>
<i>National/International.....</i>	<i>110</i>
Online Resources	110
<i>General Digital Scholarship, DH, and Technology.....</i>	<i>110</i>
<i>Data Management and Visualization</i>	<i>111</i>
<i>Digital Exhibits</i>	<i>111</i>
<i>Text Mining and Encoding</i>	<i>112</i>
<i>Command Line and Coding</i>	<i>112</i>
<i>Web Development and Content Management Systems</i>	<i>112</i>
Appendix E: Digital Scholarship Courses Offered through FAS	113
General Digital Humanities or Digital Methods	113
Data Visualization and Analysis	113
Mapping and GIS	113
Coding and Programming	114
New Media	114
Appendix F: Professional Development Curriculum	115
Curriculum Description	115
Core Competencies and Levels of Expertise	116
Supplemental Professional Development	117
Module 1: Introduction to Digital Scholarship	118
<i>Learning Outcomes.....</i>	<i>118</i>
Module 2: Digital Archives & Exhibits	120
<i>Learning Outcomes.....</i>	<i>120</i>
<i>Preparation and Materials</i>	<i>120</i>
<i>Suggested Lesson Plan</i>	<i>120</i>
Module 3: Multimodal Online Publishing	122
<i>Learning Outcomes.....</i>	<i>122</i>

<i>Preparation and Materials</i>	122
<i>Suggested Lesson Plan</i>	122
Module 4: Geospatial and Temporal Mapping	125
<i>Learning Outcomes</i>	125
<i>Preparation and Materials</i>	125
<i>Suggested Lesson Plan</i>	125
Module 5: Information Visualization	125
<i>Learning Outcomes</i>	125
<i>Preparation and Materials</i>	125
<i>Suggested Lesson Plan</i>	125
Module 6: Text Analysis, Manipulation, and Visualization	126
<i>Learning Outcomes</i>	126
<i>Preparation and Materials</i>	126
<i>Further Reading</i>	126
<i>Suggested Lesson Plan</i>	126
Appendix G: Effective Digital Scholarship Website Examples	129
Project Inventories	129
Service Portfolios	129
Resources	129
Appendix H: Digital Scholarship Position Descriptions	130
<i>Director of the Center for Digital Scholarship, Brown University</i>	130
<i>Head, Digital Scholarship Services, University of Oregon</i>	131
<i>Digital Scholarship Librarian, Boston College</i>	132
<i>Digital Scholarship Librarian, NYU</i>	133
<i>Digital Scholarship Librarian, Georgetown University</i>	134
<i>Digital Scholarship Librarian, UCLA</i>	135
<i>Digital Arts & Humanities Specialist, Tufts University</i>	137
<i>Digital Scholarship Specialist, UNC-Chapel Hill Libraries</i>	138
<i>Digital Scholarship Specialist, Johns Hopkins University</i>	139
<i>Digital Scholarship Coordinator, University of Houston</i>	140
Appendix I: Digital Projects Curation Workflow Models	141
Defining Services and Levels of Commitment	141
<i>Case Study 1: University of Rochester</i>	141
<i>Case Study 2: Northeastern University</i>	141
Contracts and MOUs	142
Project Guidelines and Ingest Questionnaires	147
<i>Model 1: University of Ottawa Ingest Questionnaire</i>	147
<i>Model 2: Boston College Intake Form</i>	148
<i>Model 3: Bates College Digital Project Guidelines</i>	149
<i>Model 4: Baker Library, Harvard Business School</i>	149

I. Executive Summary

Background

In response to growing faculty and graduate student engagement in digital scholarship, the Harvard Library aims to develop a three-year roadmap for enhancing support for digital scholarship. To inform this process, the Library engaged Sarah Lippincott (referred to as the Consultant) to conduct a needs assessment and planning process to identify opportunities for the Library to develop services, build technical infrastructure, cross-train staff, and strengthen strategic partnerships with other units. From January through June 2017, the Consultant completed the following scope of work:

- Conduct user needs survey and gap analysis
- Conduct skills assessment survey of library staff
- Map areas of expertise belonging to the library and to those belonging to other units on campus (e.g. academic technology, IQSS)
- Articulate needed skills and positions for a new Digital Scholarship Services Unit
- Articulate suite of services to be provided by the Library to users in the Faculty of Arts and Sciences
- Identify and coordinate training opportunities for users
- Recommend workflow process for curating and preserving digital scholarship
- Create communication plan of action with staff anchoring the initiative in language from the Objectives in Action
- Organize and initiate digital scholarship training program for public services librarians, especially liaisons

Findings

A literature review and three site visits informed a state-of-the-field report on digital scholarship support in academic libraries. The literature review identified a number of frameworks for conceptualizing digital scholarship services, with the most significant distinction being those services that position the library as a digital scholarship innovator or core partner and those that indirectly support digital scholarship primarily through training, consultation, and infrastructure. Three case studies (Yale DHLab, Northeastern University's Digital Scholarship Group/NULab, and Temple University Library's Digital Scholarship Center) provide three distinct illustrations of these models in practice. The case studies discuss multiple facets of these centers, including their mission/focus, organization and staffing, core and peripheral services, funding sources, and spaces.

A complementary internal scanning and needs assessment process comprised interviews with over a dozen library and other academic staff members, 16 faculty interviews, and a campus-wide web survey that received 290 responses, primarily from graduate students. Among web survey respondents, approximately half (n=134) engage in digital scholarship in their research, including 51% of graduate students (n=111) and 11% of faculty members (n=2). Another quarter (n=65) of respondents engage in digital scholarship in BOTH their research and teaching, including 67% of faculty members (n=12) and 23% of graduate students (n=50). General use of digital or digitized collections was the most common current digital scholarship practice (n=100); followed by data visualization (n=83); editing and manipulation of digital images, video, and audio (n=80); and annotation of digital texts, images, video, or audio (n=68). All of the 19 tools/methods listed in the survey were used by at least one respondent and current digital scholarship practitioners use an average of 3.5 different tools/methods. Respondents would most like to visualize data (n=72); create online exhibits (n=66); perform computational text analysis or text encoding (n=60); and use geospatial analysis (n=53). Particularly large discrepancies between current and desired practices exist for creating online exhibits, computational text analysis and text encoding, machine learning and computational linguistics, and digital writing/storytelling/remixing. These areas may particularly benefit from added support and resources.

The interviews and survey suggested an acute need for support services for a variety of digital scholarship practices (from text analysis to data visualization), in a variety of forms (including consultations, training, referrals, and access to digital collections), and at all levels of user sophistication (inexperienced technology users who are curious about digital approaches to scholarship to scholars working at the leading edges of computer-aided scholarship). Scholars in the humanities disciplines appear to be the least well-served by existing units on campus and are the least likely to learn digital tools and methods as a part of their academic training. Novice technology users also appear underserved and eager for training and guidance that will help them understand not just the specific features of a given software,

but the conceptual underpinnings of digital approaches to scholarship. Scholars also expressed eagerness for technology infrastructure to support their work, specifically web hosting and preservation services. Scholars are looking to commercial web hosting services for their convenience and speed, but worry about the long-term viability of their work.

Other notable challenges and barriers to engaging in digital scholarship include ongoing skepticism about its value (and lack of clarity about how it will be evaluated for tenure and promotion); a lack of time and competing priorities that make it difficult for scholars to pick up new skills or experiment with new technologies; Harvard's decentralized network of support services, which make identifying appropriate individuals, services, and events mystifying to scholars; and a lack of funding for digital scholarship.

Recommendations

Five major goals emerged from this process. In order to more effectively support digital scholarship at Harvard, the Library should aspire to, position itself as a digital scholarship hub; build and strengthen the community of digital scholarship practitioners (including faculty, students, and librarians); strategically expand technical infrastructure; streamline digital scholarship support in partnership with a range of library and other campus units; and improve communication and outreach about library services and collections and the possibilities of digital scholarship.

To further these goals, the library should move forward with concrete actions in three phases. In the Consolidation and Marketing phase, the library will clarify and communicate the support structures and services already available in the Library and begin building a cohesive identity for digital scholarship services in the library. Specifically, the library should consider taking the following actions:

- Establish a Digital Scholarship Advisory Board
- Develop a Unified Web Presence for Digital Scholarship
- Develop an Identity for Library Digital Scholarship Services

In the second phase, the library will focus on responding nimbly to current needs, as identified by scholars. Specifically, the library should consider taking the following actions:

- Launch Fundamentals of Digital Scholarship Workshop Series for Scholars and Librarians
- Launch a Graduate Student Fellowship Program
- Hire a Director of Digital Scholarship
- Launch Digital Scholarship Office Hours

The third phase sees the library taking a proactive, rather than reactive approach to supporting digital scholarship. Specifically, the library should consider taking the following actions:

- Expand Digital Scholarship Services and Staffing
- Build Technical Infrastructure
- Run Pilot Projects, Launch Digital Scholarship Incubator
- Expand Professional Development for Librarians, "Launch DS First Responders"
- Establish Dedicated Space for a Digital Scholarship Center

II. External Scan and Benchmarking

Introduction

This report provides a state-of-the-field summary of faculty needs relating to digital scholarship and the services libraries provide to meet them. Sections addressing scholars' needs, library services, and service model conceptualization are followed by three case studies based on site visits conducted by the consultant on behalf of Harvard Library. Finally, a brief bibliography assembles several additional sources of benchmarking information, including three white papers that describe the process of developing digital scholarship centers at three libraries.

Scholars' Needs

Scholars across disciplines are increasingly adopting digital tools and methods in their research and teaching. A 2014 Ithaka S+R survey found that “29% of respondents self-identified as digital creators.”¹ Junior faculty were significantly more likely to self-identify as digital content creators than their more senior counterparts, implying that digital scholars will constitute a growing segment of the academic community. The specific practices of these scholars vary widely, from text analysis to the creation of digital exhibits to the 3-D reconstructions of archaeological sites. The Ithaka S+R survey, however, found that respondents' highest priority digital projects overwhelmingly consisted of “collections of content that appeared either to have been built using existing platforms or templates, such as wikis, OnCourse, or Omeka, or to consist of digital assets that would lend themselves to a similar format.” The remaining projects included “complex and elaborate content collections with customized functionality and tools (13% of top-priority resources), software (9%), platforms (6%), and visualizations (2%).”²

Support Services	Digital Content Access
digital content management data management and use infrastructure for acquiring & hosting data other campus technology infrastructure initial project development consultations referral services grant writing to support DH research outreach and marketing support training and workshops dedicated space for digital scholarship expanded assistance with GIS data visualization and statistical analysis high performance computing technology	digital primary source materials secondary source digital content digital tools or software data produced using computational methods

Table 1. Commonly identified faculty digital scholarship needs, aggregated from several institutional case studies and reviews.

Specific trends and tendencies are likely to vary widely by institution, depending on individual faculty research interests, the institution's strengths, and existing campus resources to support digital scholarship. For example, digital content collections do not figure prominently in a campus-wide survey, conducted by Thea Lindquist, Holley Long, and Alexander Watkins at the University of Colorado Boulder. Their team found that the most commonly used digital scholarship approaches on their campus included “multimedia and digital publication (66%); image, audio, and video editing (53%); text mining (43%); digital writing and storytelling (35%); analysis of new or social media (34%); geospatial analysis (25%); machine learning and computational linguistics (23%); and gaming (15%).”³

1 Maron, N. and Pickle, S. (2014). “Sustaining the Digital Humanities: Host Institution Support Beyond the Start-up Phase.” Ithaka S+R. <https://doi.org/10.18665/sr.22548>

2 *ibid.*

3 Lindquist, T., Long, H., Watkins, A. (2015). “Designing a Digital Humanities Strategy Using Data-Driven Assessment Methods.” *dh+lib*. Retrieved from <http://acrl.ala.org/dh/2015/01/30/designing-a-digital-humanities-strategy-using-data-driven-assessment-methods/>

Whether or not a library supports a formal digital scholarship center, recent surveys demonstrate that faculty increasingly desire and expect the library to provide a range of digital services and collections. A 2015 survey conducted by Gale and American Libraries identified collections of digital primary source content as the most common faculty request related to digital humanities. Faculty also want greater access to “secondary source digital content, such as e-journals (67%); digital tools or software (49%); data produced using computational methods (35%); [and] digital platforms, such as a wiki (31%).” The same survey showed that faculty see the library as more than a digital content provider. Over half “would like the library to offer digital content management services,” provide “initial project development consultations [and] grant writing to support DH research. A third would like the library to provide outreach and marketing support for digital projects.”⁴

In a 2014 survey of humanities faculty, Nancy Maron noted a striking “enthusiasm for creating digital collections.” Maron found that “nearly half of the respondents reported not just making use of digital tools and collections but also creating or managing them ... 64 percent of these respondents reported that they intended their digital creations to be primarily for public use.”⁵

Finally, faculty digital scholarship practices and their attendant needs often differ by discipline. These differences are particularly pronounced for example between hard sciences, social sciences, and the humanities, but also between scholars working languages with Roman versus non-Roman scripts, and those working with various types of “data,” from numerical datasets generated by scientific instruments, to text, to maps, to images and visual media. There is an extensive literature exploring the specific digital scholarship practices in a variety of disciplines.

Library Offerings

Training (in the form of workshops, bootcamps, web-based tutorials, classroom instruction, one-on-one tutoring, and resource guides) helps scholars develop desired technical skills related to their digital scholarship. Training empowers scholars to do their own digital work or builds their general digital literacy. Librarians may also work with faculty to embed training within the curriculum. Lippincott and Goldenberg-Hart note that this can be a particularly productive partnership, writing, “Faculty who want to educate their graduate students about digital scholarship present ideal opportunities because they know center staff can fulfill this teaching and training need. Collaborating with faculty to design a curriculum ideally suited to the students’ needs can result in successful partnerships.”⁶ Training may also be designed with internal audiences, such as librarians, in mind.

Consulting typically consists of tailored, one-on-one or small group conversations that provide expert guidance on a range of technical, practical, and policy issues related to a specific digital project. Consulting may also include making referrals to other on- or off-campus experts. A primary goal of consulting is to ensure that scholars have “an informed and realistic understanding of what is involved in including digital methods or tools.”⁷ At McMaster University, for example, a scholar may “with the barest outline of an idea, knowing only that they want to incorporate a digital component into their project. The center’s staff consult with that faculty member or graduate student to workshop and further articulate the idea and to explore appropriate digital methods and tools to meet the objectives.”⁸ Many digital scholarship centers consult work with internal constituents (librarians). For example, they may consult with liaisons about including digital tools or resources in LibGuides.

Development includes actual software, tool, collection, and infrastructure development and maintenance, often (but not exclusively) in partnership with a scholar. These projects may be unique, one-off initiatives or first-of-a-kind projects to develop reusable/adaptable infrastructure and software. Development projects may also include research initiated by the center’s own librarians or staff. This helps cement the library as an active partner and intellectual peer

⁴ Eberhart, G. (2016). “How Librarians and Faculty Use Digital Humanities.” American Libraries. Retrieved from <https://americanlibrariesmagazine.org/2016/03/03/how-librarians-and-faculty-use-digital-humanities/>

⁵ Maron, N. (2015). “The Digital Humanities Are Alive and Well and Blooming: Now What?,” EDUCAUSE Review. Retrieved from <http://er.educause.edu/articles/2015/8/the-digital-humanities-are-alive-and-well-and-blooming-now-what>

⁶ Lippincott, J., and Goldenberg-Hart, D. (2015) “Digital Scholarship Centers: Trends & Good Practice.” Coalition for Networked Information. Retrieved from https://www.cni.org/wp-content/uploads/2014/11/CNI-Digital-Schol.-Centers-report-2014.web_.pdf

⁷ Davidson, C. (2017). “Library Digital Scholarship Support Profile: University of Notre Dame.” Association of Research Libraries. Retrieved from <http://www.arl.org/focus-areas/scholarly-communication/digital-scholarship/digital-scholarship-support>

⁸ *ibid.*

with faculty and can result in the development of tools and systems that help a broad audience of library users, such as the development of new discovery interfaces for digitized collections.⁹

Finally, **Outreach and Community-Building** activities might include hosting networking and showcase events, maintaining a robust web presence for digital scholarship, or maintaining an inventory of campus digital scholarship initiatives.

Services Associated with Teaching	Services Associated with Research
Integration of DH tools in teaching Instructional technology support Student fellowships Credit courses or degree programs	Integration of DH tools in research Seed grants for projects Scholarly publishing and repository submission services Professional networking
Consultation and Training	Other Services
Project development & management Text encoding & analysis Geospatial analysis Statistical analysis Graphic design Data services Intellectual property Grant writing Web development & content management Software coding and development Digital asset access & preservation Lectures and symposia Workshops Training grants Web-based DH guides and resources	Collaborative workspace Community support Software Equipment Access to digital collections

Table 2. Common services and resources offered at digital scholarship centers.¹⁰

A 2014 report published in *EDUCAUSE Review* identified the following common offerings in digital scholarship centers: consultation on digital technologies, digital preservation and curation, and digital project management; workshops; credit courses and/or certification programs; and conferences.¹¹ The report found that a minority of centers offered some or all of the following: “grant writing assistance; repository development/management; working as partners on project development; data services; imaging; text analysis; consultation in pedagogy/instructional technologies; usability lab; [and] seed grants.”¹²

A 2016 review study found that library digital scholarship services frequently include, “digitization and digital preservation, often of archives and special collections; metadata creation and enhancement for linked data, exchange, and reuse; assignment of identifiers to promote discovery; hosting of digital collections in library repositories; publishing of faculty-edited journals; open access dissemination of research outputs and learning materials; management of research data; curation of born-digital collections; advice on copyright, digital rights management, and the application of standards; participation in text mining, data analysis, and geographic information systems (GIS)

⁹ Posner, Miriam. (2013). No Half Measures: Overcoming Common Challenges to Doing Digital Humanities in the Library. *Journal of Library Administration*, 53(1), 43 - 52. DOI: 10.1080/01930826.2013.756694.

¹⁰ Adapted from Lindquist, T., Long, H., Watkins, A., Arellano, L., Dulock, M., Harbeson, E., Kleinova, E., Oliynynk, V., Paul, E., and Tovstiadi, E. (2013) "dh+CU: Future Directions for Digital Humanities at CU Boulder." Retrieved from http://scholar.colorado.edu/libr_facpapers/32

¹¹ Lippincott, J., Hemmasi, H., and Lewis V. (2014). “Trends in Digital Scholarship Centers.” *EDUCAUSE Review*. Retrieved from <http://er.educause.edu/articles/2014/6/trends-in-digital-scholarship-centers>

¹² *ibid.*

projects; [and] provision of spaces, tools, equipment, and training for digital scholarship.”¹³

Several libraries are experimenting with offering web hosting, either by maintaining their own servers, buying server space in the cloud (often through Amazon), or by contracting with a vendor such as Reclaim Hosting (<https://reclaimhosting.com/>), which allows institutions to provide web hosting for large numbers of constituents.

Conceptualizing the Service Model

This section discusses three ways of conceptualizing the service model for a digital scholarship center. The first approach classifies centers on an axis from service to innovation. Will the center primarily act a support unit that takes charge of certain digital scholarship infrastructure and empowers scholars to develop technology skills? Or will it engage directly in collaborating on, and even leading the development of innovative digital projects, tools, and software? The second approach concerns tiers of service, from the bedrock of education and basic infrastructure to the pinnacle of bespoke digital projects and R&D. The third approach situates services in relation to the research lifecycle, mapping opportunities for library intervention to the various stages of developing a digital project.

Service or Lab?

Based on deep-dive visits and conversations with numerous digital scholarship centers in academic libraries, Nancy Maron identified three distinct approaches, which she terms the Service Model, the Lab Model, and the Network Model.¹⁴ Each model, with its attendant advantages and drawbacks, fundamentally influences the mission, activities, staffing, funding, and other aspects of the digital scholarship center.

As Maron describes, the **service model** “meet[s] faculty and students where they are—to offer courses, training, and some programming support for members of the campus community . . . The library or center following this model seeks to identify and respond to faculty needs.” This approach reaches a broad swath of the campus community and fills a niche that other campus units are rarely equipped to occupy. On the other hand, Miriam Posner summarizes the pitfalls that face a digital scholarship center that focuses exclusively on “support” or service. She writes, “Many of the problems we have faced ‘supporting’ digital humanities work may stem from the fact that digital humanities projects in general do not need supporters—they need collaborators. Libraries need to provide infrastructure (access to digitization tools and servers, for example) to support digital humanities work, but they need thoughtful, skilled, knowledgeable humanists to actually work on it.”¹⁵

The **lab model** positions the library as a site of active scholarly creation. The leaders of these centers “tend to be entrepreneurial, focus on identifying the next new product/service, and are clear regarding expectations about how that product or service will be funded, whether through grants and partnerships or a revenue model.” These centers may be led by or have significant involvement from faculty and often adopt the research and technology interests of that faculty member or group of faculty. These types of centers often produce innovative, world-class scholarship and contribute to raising the profile of the institution and showcasing its best research output. On the other hand, they do not necessarily provide “the softer training element or the sense of obligation to the broader preservation and access issues concerning work they do not initiate.”¹⁶ These types of centers may feel little inclination to serve users who aren’t tech savvy or who work on types of digital scholarship that fall outside of the center’s expertise.

Finally, the **network model** provides support services not through any individual unit, but through a network of affiliated units within and outside of the library. Maron explains, “A network model . . . may consist of a strong central hub, like a library or a DH center, with many spokes, or it may consist of an array of various units, none dominant, pooling resources across campus.”¹⁷

¹³ Cox, J. (2016). “Communicating New Library Roles to Enable Digital Scholarship: A Review Article.” *New Review Of Academic Librarianship* 22(2). <http://dx.doi.org/10.1080/13614533.2016.1181665>

¹⁴ Maron, N. (2015). “The Digital Humanities Are Alive and Well and Blooming: Now What?,” *EDUCAUSE Review*. Retrieved from <http://er.educause.edu/articles/2015/8/the-digital-humanities-are-alive-and-well-and-blooming-now-what>

¹⁵ Posner, 2013.

¹⁶ Maron, 2015.

¹⁷ *ibid.*

	Service Model	Lab Model
primary motivation	meeting faculty and students where they are; offering faculty and students basic training in new techniques; developing a DH community	being an innovator in digital tools, collections, and platforms
direction-setting	services are offered to suit the needs of faculty and students on campus	partners and new directions for development are identified
staffing	often run by library staff, as schedules allow; some staff may specialize in certain digital methods, such as GIS and text mining	developers, project and product managers, UX specialists
funding	library budget	grant funding; consulting fees
activities	training, workshops, consulting, coaching in new methods	project-oriented work to build digital initiatives; consulting
capacity	current staff work within time they have available	new staff can be hired as new projects are funded

Table 3. Adapted from Nancy Maron’s comparison of service and lab model digital scholarship centers (licensed under the Creative Commons Attribution-ShareAlike 4.0 International License).

Degrees of Capacity

A 2017 EDUCAUSE report, describes a framework that classifies digital scholarship/digital humanities centers into three stages of development—early, established, and high capacity—and makes recommendations for libraries looking to build their capacity.¹⁸ For example, in terms of education and training, in the early stage, “Individuals begin to form support groups and share ideas around DH. However, formal lines of communication are lacking, as is campus awareness of DH events and meetings.” Indicators of established DH communities include the appearance of formal user groups, “workshops and professional opportunities . . . promoted through formal communication channels,” and partnerships between campus units in support of DH. High capacity communities demonstrate more robust investment in DH, for example, in the form of funding for student fellowships, grants for faculty digital projects, and dedicated DH staff.

18 Kirk, A.M., et al. (2017). Building Capacity for Digital Humanities: A Framework for Institutional Planning. ECAR working group paper. Louisville, CO: ECAR. Retrieved from <https://library.educause.edu/~media/files/library/2017/5/ewg1702.pdf>.

Service Hierarchy

Jennifer Vinopal and Monica McCormick at NYU developed a widely cited and adopted service model for digital scholarship that classifies activities into four tiers of service. A digital scholarship center might engage equally in activities at each level of this hierarchy, only at certain levels, or unevenly across the different levels.

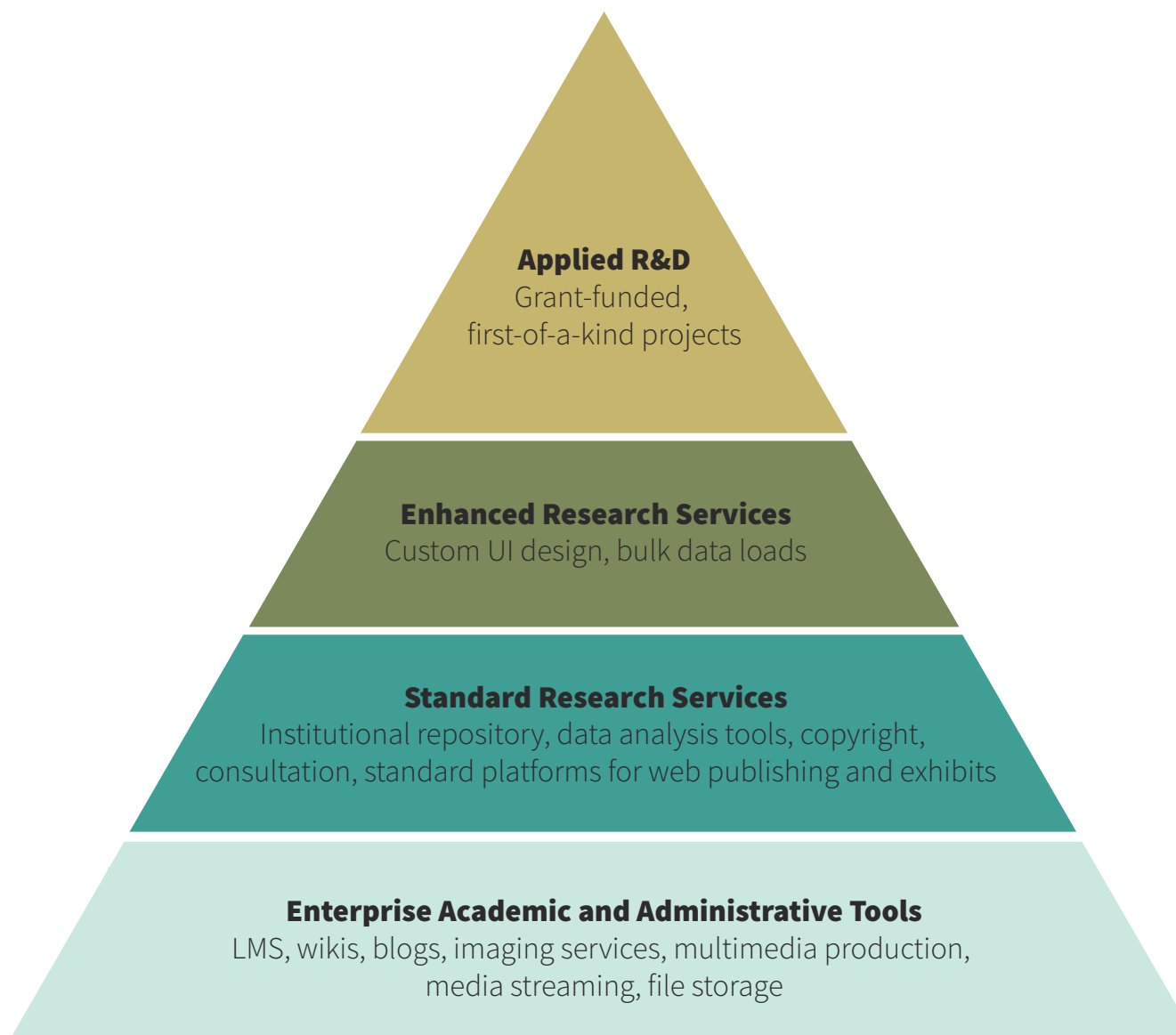


Figure 1. Tiered service model, adapted from Vinopal and McCormick.¹⁹

Services and the Research Lifecycle

Finally, the digital scholarship service model can be elegantly expressed in terms of how it relates to the different stages of the research lifecycle, from conceptualization through preservation and reuse. As Lippincott and Goldenberg-Hart advise, “Look for opportunities to partner with faculty within stages of the research cycle: one institution communicates directly to researchers what they offer relative to where they are in their cycle.”²⁰ Case Western Reserve University advertises its services in terms of beginning stage projects (“education and consultation”), mid-stage projects (“scholarly production”), and advanced-stage projects (dissemination through publication, curation & archiving”).²¹

¹⁹ Retrieved from https://archive.nyu.edu/bitstream/2451/31698/2/Vinopal_McCormick_Final.pdf (licensed under a Creative Commons Attribution-NonCommercial 3.0 Unported License).

²⁰ Lippincott and Goldenberg-Hart, 2014.

²¹ http://library.case.edu/media/kelvinsmithlibrary/freedmancenter/FC_WhitePaper_15_april_2013.pdf

Opportunities for Library Intervention in the

DIGITAL SCHOLARSHIP LIFECYCLE

	CONCEPTUALIZE	RESEARCH	IMPLEMENT	PUBLISH	PRESERVE
CONSULT	<p>general guidance on selecting the right tool, understanding what's possible, refining ideas</p> <p>advisory on grants & funding</p> <p>making connections with relevant individuals and programs on campus</p> <p>preservation and standards</p>	<p>advise on data acquisition methods and help scholars locate appropriate datasets</p>	<p>in-depth guidance and troubleshooting for specific software and methods</p> <p>data management, metadata, and standards</p> <p>referrals to trusted vendors & external partners, RFP advisory</p>	<p>basic advisory on scholarly communication, copyright, intellectual property</p> <p>guidance on digital publication venues and repositories</p>	<p>tailored guidance on data management, metadata creation, and digital preservation planning</p>
TRAIN	<p>fundamentals of DS, common tools & approaches</p> <p>introductory training in popular software, project management</p> <p>faculty showcases, lectures, forums, & networking</p> <p>web-based showcases, tutorials, & guidance</p>	<p>specialized training in data acquisition (including web harvesting methods); data analysis, visualization, and management; text mining</p> <p>referrals to other campus programs for in-depth training where appropriate</p>	<p>specialized training in common programming languages (R, Python); database development; data management and standards; web development; GIS and cartography, among other methods</p>	<p>specialized training in web development and content management systems, journal and monograph publishing software and ebook creation</p>	<p>specialized training on data management, metadata creation, and digital preservation planning</p>
PARTNER	<p>jointly submit grant proposals to external funders</p> <p>support thoughtful integration of technology in teaching and learning</p>	<p>work with collections unit to negotiate access to licensed datasets</p> <p>work with imaging services to create digitized collections</p> <p>provide equipment and workspace for digital projects</p>	<p>internal grants or fellowships for faculty and graduate students</p> <p>design and build custom UI, databases, or other digital projects</p> <p>design and build first-of-a-kind projects or software</p>	<p>provide or subsidize web hosting for DH projects</p> <p>publish or host digital journals, monographs, open educational resources, and other media</p>	<p>provide or fund long-term hosting/preservation for born digital & multimedia content, web archiving</p>

Staffing and Organization

Digital scholarship center staffing typically brings together professional librarians, faculty members; paraprofessionals and technologists, postdoctoral scholars, and graduate and/or undergraduate students to provide a range of technical, research, project management, and leadership skills (see **Table 4**).

	Librarians	Faculty	Technologists	Postdocs	Grad Students
Notre Dame	8		5	1	
McMaster	3	1	1	1	
Duke	14			2	>1
U. Washington	3	2	4		2
UIUC	2	2			>1
UVa	1	1	7		8
Yale	1		3	2	
Northeastern	3		3		3
Temple	1	1	1	1	5
U. Iowa	6		7		
Brown	3		4		

Table 4. Staffing distribution at eleven ARL library digital scholarship centers.

Professional Librarians

In a sample of eleven ARL libraries with digital scholarship centers, all employed at least one professional librarian. Duke reported the highest number of dedicated digital scholarship librarians at 14, far exceeding any other library in the sample. A librarian typically occupies a leadership role (e.g., director or co-director) at the center, and may oversee other librarians with titles such as:

- digital initiatives librarian,
- GIS librarian,
- e-research librarian,
- digital humanities/digital scholarship librarian,
- metadata and digital projects librarian,
- digital collections librarian,
- digital applications librarian, or
- scholarly communications librarian.

Centers may also directly employ subject specialists with titles like “English and digital humanities librarian” or “economics and social science data librarian”.

Faculty Members

Nearly half of the sample employs at least one faculty member, typically as the center’s director or co-director. Several also have close relationships with a subset of faculty who serve on an advisory board, mentor graduate student fellows, or receive grants and fellowships from the center. In the co-director model, the faculty member often bears responsibility for the center’s academic agenda, while the librarian focuses on day-to-day operations and infrastructure. At McMaster University, for example, “Academic Director Sandra LaPointe (Philosophy) focuses her attention on engaging the academic faculties in the Sherman Centre’s life. Administrative Director Dale Askey (associate university librarian for Library & Learning Technologies) oversees the delivery of services and sets the resource allocation priorities.”²²

²² Lippincott, Hemmasi, and Lewis, 2014.

Paraprofessionals and Technologists

Nearly all of the centers in the sample employ paraprofessional staff or technologists with titles such as:

- programmer,
- project manager,
- imaging specialist,
- data specialist,
- data visualization specialist,
- visual resources curator,
- digitization specialist,
- IT specialist,
- outreach and engagement coordinator,
- graphic designer,
- UX designer,
- metadata services manager,
- semantic data specialist,
- XML programmer,
- GIS specialist,
- (digital humanities) developer, and
- design architect.

Some technologist positions are permanent staff positions while others are term-limited and/or project-based.

Postdocs and Students

Half of the sample employs at least one graduate student. Similarly, 5 out of the eleven employ at least one postdoc. Two centers report that they employ undergraduate students. Graduate students are often employed as research assistants or fellows, who work on their own digital research while also providing consulting, training, and development support for faculty and other graduate students. Several libraries have taken advantage of CLIR's postdoc fellow program to recruit qualified postdocs.

Reporting Lines

Reporting lines and the number and type of staff positions in a digital scholarship unit vary widely. ARL's *SPEC Kit 350: Supporting Digital Scholarship* includes representative org charts for a number of digital scholarship centers at ARL libraries.²³

Skills and Responsibilities

Given the breadth of roles needed in a typical digital scholarship center, a 2015 CLIR report found it difficult to define one ideal skill set or background for staffing. Instead, the authors found that digital scholarship organizations “aim to hire well-rounded staff who bring together the ability to collaborate well and have an **open, curious mindset, basic domain knowledge, methodological competencies, and technical skills, as well as the ability to manage projects**. Since both disciplinary and technical knowledge can be important, digital scholarship research staff often occupy hybrid roles . . . Although research staff typically did not have the depth of domain knowledge in a particular subject that faculty members did, they usually knew enough to understand research methods and disciplinary concerns.”²⁴

Similarly, Calarco, *et al* (2016) found in a review of digital humanities librarian position descriptions that, “A base layer is typically advanced academic subject expertise and professional training in library and information science, particularly in scholarly communication and data management.” The authors found that job descriptions emphasize both holistic *competencies* and specific technical *skills*. They write, “many job descriptions note the emerging and evolving state of technology by requiring general competencies such as ‘demonstrated ability and interest in exploring and evaluating emerging technologies in support of digital humanities,’ and a ‘willingness to remain current with

²³ see <http://publications.arl.org/Supporting-Digital-Scholarship-SPEC-Kit-350/180>

²⁴ Lewis, V., Spiro, L., Wang, X., and Cawthorne, J.E. (2015). “Building Expertise to Support Digital Scholarship: A Global Perspective.” CLIR: Washington, D.C. <https://www.clir.org/pubs/reports/pub168/pub168>

changing technology and its applications” alongside technical skills such as “data visualization, text mining, metadata standards and schema, text markup and encoding, semantic web technologies.”²⁵

Naturally, required skills and responsibilities vary widely based on the type of position, the type and maturity of the digital scholarship initiative, and the existing staff. An analysis of nine digital humanities or digital scholarship positions in academic libraries posted within the last two years (performed for this report by the consultant) demonstrates the breadth of desired skills and responsibilities. The positions considered in this analysis can be broadly classified as leadership positions (e.g., Director of the Center for Digital Scholarship at Brown University), librarian positions (e.g., Digital Scholarship Librarian at New York University), and technologist positions (e.g., Digital Humanities Specialist at Johns Hopkins University). The **leadership positions** typically blend responsibility for shaping the vision and mission of digital scholarship services and spaces, supervising a team of technologists, leading outreach and advocacy, and managing a portfolio of digital scholarship projects. These positions emphasize collaboration with related units and individuals within the library, including the digital repository, data services, multimedia services, and special collections. The **librarian positions** tend to emphasize instruction and consultation and may include some liaison responsibilities. Both leadership and librarian positions often include responsibility for needs assessment and responsive service development. The **technologist positions** demand the highest level of software expertise and entail responsibility for both technology instruction and development/implementation.

All of the positions require some level of familiarity with digital tools and their scholarly applications and most cite specific tools or methods. They commonly request familiarity or demonstrated facility with one or more of the following:

- data visualization (10/10 positions)
- GIS/mapping (4/10)
- text analysis/encoding (4/10)
- programming languages (e.g., R, Python, Ruby) (4/10)
- metadata standards (4/10)

The positions also frequently request experience with or entail responsibility for:

- project management (7/10)
- outreach and communication (6/10)
- knowledge and tracking of digital scholarship trends (6/10)

Degree requirements vary. Three of the 10 positions require an ALA-accredited MLS degree, while an additional 5 will accept either an MLS or an advanced degree in a humanities discipline, humanities computing, or related field. Of the remaining positions, one specifies only an advanced degree in the humanities, while the other only requires a bachelor’s degree. The full text of these job postings are presented as **Appendix H**.

²⁵ Calarco, P.V., Schmidt, B., Kutchma, I., and Shearer, K. (2016). Time to Adopt: Librarians’ New Skills and Competency Profiles. F. Loizides and B. Schmidt (Eds.). *Positioning and Power in Academic Publishing: Players, Agents and Agendas*. IOS Press, 2016.. <http://scholar.uwindsor.ca/leddylibrarypub/42>

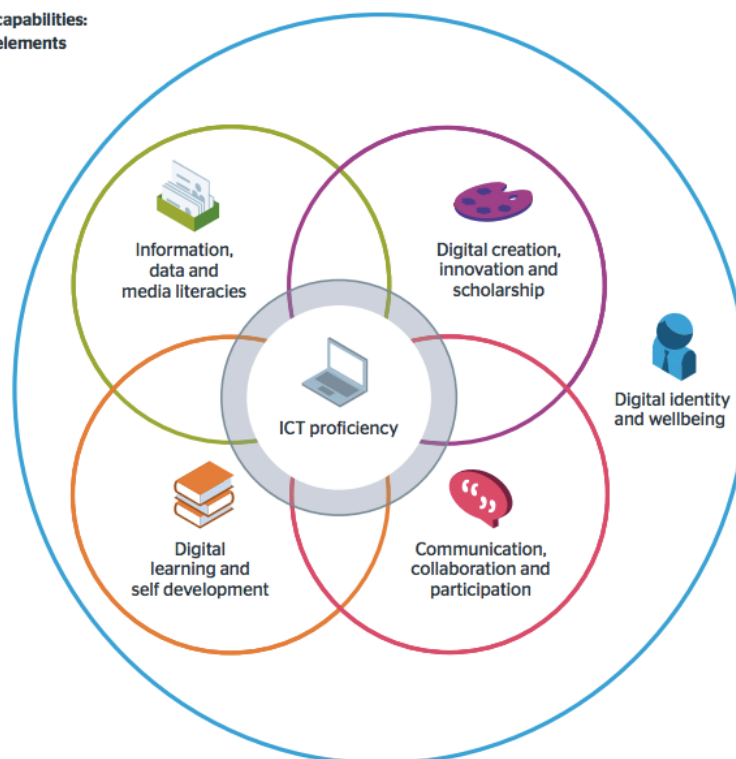
Professional Development and Cross-Training

Even the most well-resourced digital scholarship center cannot offer deep expertise in every discipline and experience with every digital scholarship method. Digital scholarship initiatives therefore rely on partnerships with disciplinary and technical experts from other library and campus units. Liaison librarians, in particular, show great potential as contributors to and ambassadors for digital scholarship services in the library. Liaisons possess excellent domain expertise and have their fingers on the pulse of scholarly activity in their departments. Anne Kenney emphasizes the importance of preparing librarians for a team-based approach to digital scholarship services in her influential report, *Leveraging the Liaison Model*, undertaken on behalf of Ithaka S+R. Kenney explains, “As demands and expectations rise, it is clear that no one liaison can do it all and research libraries have begun to pair disciplinary experts with functional specialists (such as those familiar with intellectual property issues) and are teaming up with others on campus, including information technologists and instructional designers.”²⁶ This approach, she continues, requires all collaborators to acknowledge “myriad expertise in addressing the changing nature of research and teaching.” Two conditions seem essential to creating an environment where liaisons and other librarians can support digital scholarship, the availability of professional development opportunities addressing core digital competencies and skills, and clear institutional expectations about evolving job responsibilities.

Digital Competencies and Skills

Professional development opportunities work best when they take advantage of librarians’ existing strengths and when they address the specific, concrete ways in which librarians’ roles are evolving. A number of organizations have produced valuable speculative research on the skill sets librarians will need over the next decade. JISC developed a useful framework of the six core “digital capabilities” for 21st century researchers, which readily translates to librarians.²⁷ JISC identifies indicators for each element. For example, competence in “digital creation, innovation, and scholarship” requires that researchers be able to “Use a range of digital media – text, images, video, audio, visualisations, infographics, presentations, podcasts and screencasts, blogs and web posts – to communicate research findings and scholarly ideas,” or to “Analyse data using qualitative and quantitative tools suitable to the research field and questions.”

Digital capabilities:
the six elements



²⁶ Kenney, A. (2014). *Leveraging the Liaison Model*. Ithaka S+R: New York, NY. http://www.sr.ithaka.org/wp-content/mig/files/SR_BriefingPaper_Kenney_20140322.pdf

²⁷ https://digitalcapability.jiscinvolve.org/wp/files/2015/11/Digital_capabilities_researcher_profile.pdf

A 2012 report prepared by RLUK identified 32 essential or desirable skills and knowledge sets that liaison librarians require to support 21st century scholars, highlighting those that have “potentially the most significant skills gap”.²⁸

Related to the subject/discipline	Related to the research process
<ul style="list-style-type: none"> • Deep knowledge of their discipline/subject • Excellent knowledge of content (in all relevant media) available to their discipline/subject • Excellent knowledge of bibliographic and other finding tools in the discipline/subject • Knowledge to advise on relevant archive and special collections locally and elsewhere 	<ul style="list-style-type: none"> • Awareness of current and changing local research interests • Understanding of a typical researcher’s experience, including their workflow, and how researchers access and use information, within a discipline and at different stages of a researcher’s career • Ability to gain an appreciation of individual researcher/project needs, including effective listening skills • Knowledge of sources of research funding to assist researchers to identify potential funders
Related to partnerships	Related to information
<ul style="list-style-type: none"> • Skills to build strong relationships with researchers and other campus professionals, and to establish collaborative partnerships externally, and to manage client relationships • Awareness and ability to recognise the value of services and opportunities provided by national and international collaborative initiatives and agencies • Skills to participate effectively in research projects, including identifying a role for the library in the project, and assisting with bid and report writing • Ability to proactively advise and market appropriate library services to researchers 	<ul style="list-style-type: none"> • Outstanding skills in information discovery, literature searching etc. • Ability to synthesise, analyse and provide digests of, “discovered” information • Knowledge to advise on the management of researchers’ information, including its portability • particularly for bibliographic management and referencing tools e.g. EndNote • Knowledge to advise on the manipulation and presentation of researchers’ information • Knowledge to advise on citing and referencing, and the use of bibliographic management software
Related to research data	Related to information literacy
<ul style="list-style-type: none"> • Good knowledge of data sources available in the discipline/subject • Knowledge to advise on data management and curation, including ingest, discovery, access, dissemination, preservation, and portability • Knowledge to advise on potential data manipulation tools used in the discipline • Knowledge to advise on data mining 	<ul style="list-style-type: none"> • Excellent skills to design information literacy training (both face to face and online) to meet the identified needs of different types of researchers
Related to scholarly communications	Related to funders’ mandates
<ul style="list-style-type: none"> • Ability to advise on current trends, best practice and available options in research publication and dissemination methods and models nationally and internationally, including scholarly communication and open-access publishing • Ability to advise on preserving research outputs • Ability to advise on the preservation of project records (e.g., correspondence) 	<ul style="list-style-type: none"> • Sufficient knowledge to support researchers in complying with the various mandates of funders, including open access requirements* • Understanding of author rights, copyright legislation and IP issues, and plagiarism to advise or refer as appropriate

²⁸ Auckland, M. (2012). “Re-skilling for Research.” RLUK. <http://www.rluk.ac.uk/wp-content/uploads/2014/02/RLUK-Re-skilling.pdf>

Related to metadata	Related to emerging and Web 2.0 technologies
<ul style="list-style-type: none"> • Knowledge to advocate, and advise on, the use of metadata • Skills to develop metadata schema, and advise on discipline/subject standards and practices, for individual research projects 	<ul style="list-style-type: none"> • Ability to advise on the value and use of mobile technologies, Web 2.0 and other communication tools (e.g. Mendeley, Virtual Research Environment) to researchers

Table 5. Skills identified by RLUK as essential or desirable for liaison librarians. Bolded items indicate areas identified in the report as “having potentially the most significant skills gap”).

Position Description Frameworks

Position description frameworks that specifically address digital scholarship or digital literacy provide needed clarity for librarians whose roles are evolving and can serve as a starting point for conversations between librarians and supervisors about performance goals and professional development. They can also aid in crafting new position descriptions and recruiting qualified new staff members. Several model position description frameworks follow.

University of Minnesota

The University of Minnesota was an early developer of new position description frameworks that emphasize liaisons’ changing responsibilities in the digital age.²⁹ The framework’s section relating to “eScholarship and Digital tools” includes the following responsibilities:

- *Identify areas where new online learning and digital tools can place the Libraries into the flow of teaching, learning and research.*
- *Collaborate in the design, implementation, and maintenance of online tools and services that meet the needs of discipline/interdisciplinary research communities.*
- *Actively participate in the coordination and integration of online tools in support of teaching, learning and research.*
- *Develop knowledge of current practice and future directions in e-scholarship and help to identify gaps in existing support.*
- *Participate in defining library roles in e-scholarship.*

Duke University

In 2011, the Duke University Library adopted responsibilities and best practices for its liaison librarians that include:³⁰

- *Identify areas where new online learning and digital tools can place the library into the flow of teaching, learning, and research.*
- *Participate in the coordination and integration of online tools in support of teaching, learning, and research.*

BEST PRACTICES INCLUDE:

- *Creating and maintaining appropriate online guides.*
- *Working with Instruction & Outreach and the Center for Instructional Technology (CIT) to ensure that online course and subject guides are integrated into learning management systems.*
- *Keeping up with emerging technology issues among faculty.*
- *Communicating with and learning from colleagues on emerging technologies.*
- *Keeping abreast of data management issues within assigned department(s) and being able to recommend consultants for referrals.*
- *Testing tools and working collaboratively to solve technology problems.*
- *Contributing to technology implementation efforts*

²⁹ Williams, K. (2009). “A Framework for Articulating New Library Roles.” *Research Library Issues: A Bimonthly Report from ARL, CNI, and SPARC* (265): 3–8. <http://www.arl.org/resources/pubs/rli/archive/rli265.shtml>.

³⁰ <https://library.duke.edu/sites/default/files/dul/about/subject-librarian-report-2011.pdf>

Florida State University

More recently, in 2014, Florida State University approved the following guidelines for subject librarians regarding the use of digital tools:³¹

- *The subject librarian promotes the use of subject-specific information resources and services to meet user needs and expectations, utilizing current technologies and digital information tools.*

Best Practices:

- *Promote new online learning and digital tools to place the library more deeply into the flow of teaching, learning and research.*
- *Engage in the coordination and integration of online tools in support of teaching, learning and research.*
- *Analyze emerging technology trends with faculty members, and the implications for teaching and research*
- *Collaborate with functional specialists within the libraries and beyond to provide effective digital tools for assigned subject areas.*
- *Provide consultation and referrals for interdisciplinary research teams.*
- *Promote the use of data management tools to faculty, researchers and students.*

Reskilling and Cross-Training

Literature and anecdotal evidence show that librarians at Harvard, like those around the country, often seek out opportunities to improve their skills related to digital scholarship, through library-sponsored workshops and events, workshops and courses offered by other campus units or academic departments, or through national professional associations. Library-sponsored workshop series oriented towards faculty and graduate students have proven arguably more popular among library staff at many institutions.

Workshop series and intensives have proven popular for teaching/introducing digital scholarship topics to librarians and scholars (see **Appendix D** for a number of local/regional workshop series available to Harvard Librarians). Examples of library-sponsored digital scholarship workshop series include:

- University of Michigan Libraries
<https://www.lib.umich.edu/digital-scholarship-support/digital-scholarship-workshop-series>
- Vanderbilt University Libraries
<http://www.library.vanderbilt.edu/scholarly/workshops.php>
- Boston University Library
<http://www.bu.edu/disc/2017/01/28/workshop-series/>

Appendix F presents a proposed professional development curriculum designed to give librarians an understanding of the fundamentals of digital scholarship. The curriculum description includes a rubric for evaluating levels of expertise as well as basic lesson plans for seven modules on digital scholarship topics.

Several libraries have experimented with programs that specifically aim to reskill their most enthusiastic or promising staff members, leveraging librarians' existing expertise in their disciplinary specialty, information management, metadata, and collections, to build the knowledge and confidence they need to deeply engage with digital scholarship. Columbia University and Indiana University Bloomington have both experimented with a cross-training program adapted from the Praxis Program model developed at the UVa Scholars' Lab.³² The Praxis Program, originally designed for graduate students in the humanities, engages participants in a longterm, interactive, collaborative project in order to teach digital and project management skills in context. These programs rely on the premise that librarians need to develop both technical skills and soft skills because "successful digital projects need partners with different skill-sets to work closely on teams."³³ They also emphasize the value of learning technology skills in context.

³¹ <https://fsu.digital.flvc.org/islandora/object/fsu:267017/datastream/PDF/view>

³² Bakalbasi, N. Jaggars, D., Rockenbach, B. (2015). "Re-skilling for the digital humanities: measuring skills, engagement, and learning", *Library Management* 36(3): 208-214. <https://doi.org/10.1108/LM-09-2014-0109>

³³ Humanities and History Team, Columbia University Libraries. (2013). "The Developing Librarian Project" [blog post]. Retrieved from <http://acrl.ala.org/dh/2013/07/01/the-developing-librarian-project/>

Case Studies and Site Visits

Yale DHLab

<http://web.library.yale.edu/dhlab>

Site Visit: April 5, 2017

Meetings with: Peter Leonard, Director, Yale DH Lab; Themba Flowers, Director of Digital Scholarship, Yale University Library; Catherine DeRose, Outreach Manager, Yale DH Lab

History and Mission

In 2013, Yale converted a Western Languages selector position into a “Digital Humanities Research Librarian” position and hired Peter Leonard. He was the sole DH-focused librarian from 2013 to 2015, at which time Yale received a multi-million dollar seed funding gift to start the DHLab. The seed money funded four additional staff positions to support DH; a renovated space (expected completion in 2019); a series of faculty and graduate student grants; as well as software development and other services. Seed funding will run out at the end of 2017, but the University Librarian has ensured the continuity of staffing. The Lab does not have a formal sustainability plan and may need to revise its service model over the next couple of years.

Space

Yale’s DH Lab currently occupies a temporary space in a two-room suite on the third floor of Sterling Library. One room houses a combined work area for the lab’s five staff members, a reception desk, and the lab’s small collection of practical and theoretical DH books and data (stored on hard drives). The second room offers conference tables and a portable TV cart for presentations and videoconferencing. Within the next two years, the Lab will move into a former reading room on the first floor of the library. The new 4,000ft² space will undergo a \$2million renovation to equip it with 1,000ft² of office space as well as equipment and workstations. It may also offer concierge service points for related services such as digital preservation and imaging.

Organization and Staffing

The Lab was deliberately set up as its own unit, outside of library IT and exempt from many of the library’s typical bureaucratic hurdles to allow it to function as a start-up. Peter Leonard directs the lab and supervises four professional staff members: a UX/UI designer, an outreach and engagement librarian, a developer (who also has an English PhD and came to Yale from ProQuest), and two postdoctoral fellows.

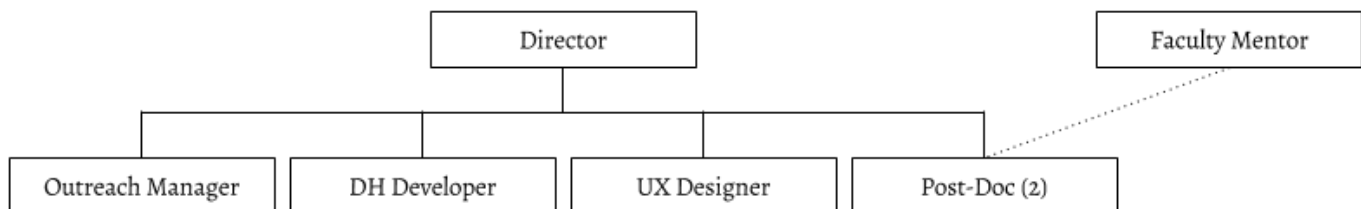


Figure 2. Yale DHLab Organizational chart.

The post-doctoral fellows are hired for twelve-month terms through a competitive application process. They work in the lab, but have a faculty mentor and are hired in conjunction with an academic department. This helps them on the job market in that they can represent themselves either as a DHLab post-doc or a postdoc with an academic department, and ensures that their work has both academic rigor and technical sophistication. While the postdocs have some level of technological know-how, they work closely with the developer and designer on-staff. They successful candidates are selected by the Lab’s faculty advisory board, which is convened by the Provost and chaired by the University’s Dean for Arts and Sciences. Peter and University Librarian Susan Gibbons also sit on the committee.

The Lab also currently funds DH teaching fellows, who are selected each semester based on an application process and primarily support small, seminar classes. Eventually, the Lab expects that the graduate school will fund the program, but that the Lab will continue to administer it.



Figure 3. Workstations, books and data collections on hard drives (top); Reception desk and entrance to seminar room (bottom) at Yale DHLab's temporary headquarters.

Flagship Initiatives

Faculty and Graduate Student Grants

The Lab has decided that faculty and grad students should determine the kind of work they should be doing. The Lab therefore redistributes much of its funding to faculty and graduate students in the form of grants ranging from \$500 to \$20,000. Faculty and graduate students are eligible for three levels of funding through the lab:

- \$500 for workshops (covers food, speaker fees);
- \$1500 for corpus creation (data cleaning, data acquisition); and
- \$3000 for programming (e.g., hiring an undergrad to build a proof of concept project).

Faculty are also eligible for \$20,000 grants to support full-fledged DH projects. These grants have been extremely sought-after, but may end in 2017 when the Lab's seed money dries up. The Lab's Faculty Advisory Board selects winning proposals. The Lab has deliberately modeled their application form and process on the NEH's DH Implementation Grants so that faculty who do not receive a grant through the Lab will have a workable application to submit to NEH or other funders.

Over the last couple of years, the Lab's staff have been very hands-off with grants. However, one perceived weakness of that approach is that proposals have tended to be conservative, focused more on access and convenience than on truly leveraging technology. They have primarily gotten proposals to create digital editions or research databases. The Lab would like to be engaged in more cutting edge work and may move towards a more proscriptive model, in which they only fund "needle-moving" projects.

Lab-Initiated Projects

The Lab's highest priority is serving scholars at Yale. However, when capacity allows, the Lab cultivates its own program of staff-initiated work. These projects typically illuminate digitized or digital collections or demonstrate the possibilities of working with library resources. For example, Robots Reading Vogue uses TEI XML from the full run of Vogue to demonstrate a variety of digital scholarship techniques, from topic modeling to analyzing imagery. The Lab wanted to prove that they could find ways to work with a copyrighted, licensed corpus in ways that remain in compliance with those restrictions. Staff-initiated projects focus on what the Lab can accomplish nimbly and successfully and that will "make the library look good." For example, another Lab-led initiative uses a neural net to create a discovery interface for finding similar images in a collection of 80,000 Civil War photographs. A third project was low-hanging fruit: creating a map-based discovery interface for a photograph series that already included geospatial metadata.

Other Services and Activities

Peter describes the Lab's service model in terms of three tiers of support. At the top level, the Lab actively supports between 8 and 15 full-fledged DH projects through 6-7 figure grants and tailored support. The second tier includes workshops, consultations, and events that reach a sizable audience. The third tier entails projects designed to help thousands of people a year, including building facilities, creating LibGuides and other web-based resources, and even the Lab's own projects that improve discovery of library collections.

Events, Office Hours, and Consulting

The Lab hosts lectures, workshops, and seminars and is considering more experimental, interactive offerings, such as week-long sprints or hackathon style events that would challenge participants to make meaningful progress in a condensed time frame. The Lab offers brainstorming, workshoping, and networking opportunities in the form of weekly "office hours," where scholars who are "looking to start a digital project but don't know where to begin," or who "need recommendations on programming languages or visualization fundamentals" can casually "exchange ideas, discuss methods, and form connections with colleagues from different programs and departments." They also offer walk-in and by-appointment research consultations. The Lab also anticipates an increasing role consulting with faculty about digital pedagogy, which is a growing administrative priority.

Hosting

The Lab does not maintain its own servers, but will pay for Amazon web hosting for projects that have received grants from the Lab, and will provide guidance to other faculty members about procuring their own web hosting.

Web and Software Development

They have shied away from becoming a hub for low-end web development services or other broad services. Instead, the Lab provides referral services to both internal and external services. For example, a faculty member who wanted to build a simple database with a web-based front-end might be referred on to Information Technology Services or to an outside vendor or freelancer. In some cases, the Lab might provide a small grant to fund hiring a contractor to build the project. Scholars who approach the Lab with inquiries about building static, Wordpress or Drupal websites are referred on to ITS, which has an existing infrastructure and workflow for these types of requests. Though they aim to be a service point at some level, the Lab also aspires to provide meaningful, challenging work for the team. Their litmus test for selecting projects tends to be: would this project be accepted at an international digital humanities conference?

Challenges

Setting Expectations

Even with exceptional staff, highly structured engagement with faculty, humanities faculty in particular typically lack any experience with software development. The Lab's staff have found it challenging to keep faculty on track, in scope, and to help them adapt to a software development workflow and mindset. Faculty want to "express in software their entire cognition," and may be resistant to keeping projects manageable. Whereas faculty understand they can't submit a 300,000 word journal article, they see no such limitations on their digital work, leading to scope creep and overly ambitious goals. The Lab has found that projects may meet with more success when scholars work with an outside vendor or contractor, where contracts have hard expiration dates and support will be cut off completely after the end of the development period. The Lab has placed increasingly strict limits on its grants and develops MOUs that explicitly state the time and service limitations.

Balancing Responsiveness and Innovation

The Lab aims to be responsive to current faculty needs, but also wants to follow trends and stay at the cutting edge of the field. Paraphrasing Henry Ford, Peter explained that the Lab subscribes to the sentiment that "if you ask your customers what they want, they'll say a faster horse."

Digital Preservation and Curation

Digital preservation and curation have also presented challenges for the Lab. They don't want to be in a position where projects in which they have invested significant amounts of money only last three years. They are working closely with head to digital preservation to develop a strategy for preserving born digital and digitized content. They use Preservica to preserve software, but lack a formal workflow or process and questions remains about how users would access the preserved objects. They also lack a research data repository or digital asset management system. The Lab's ultimate goal is to preserve the entire environment of a project, meaning its full functionality and appearance would be maintained over time.

Staff Development

The Lab has had mixed experiences with re-skilling subject specialists to be DH first responders. On the positive side, these librarians have unique expertise about collections and their discipline.

On the other hand, liaisons can end up more as clients than as ambassadors, which ends up creating more work for the Lab, rather than distributing it. The Lab does provide professional development stipends for library staff (on top of professional development support provided by their home department) and have found that staff often attend Lab-sponsored workshops. They have faced some challenge in ensuring that subject specialists' managers programmatically support and encourage participation in professional development activities.

Northeastern University NULab & Digital Scholarship Group (DSG)

<http://dsg.neu.edu/>

Site Visit: April 12, 2017

Meetings with: Julia Flanders, Professor of the Practice in English and Director, Digital Scholarship Group, Northeastern University Library

History and Mission

Northeastern University has two distinct but symbiotic units involved in digital scholarship. NULab is a faculty-driven digital scholarship lab founded by a group of humanities and social sciences professors. NULab organizes meetings and workshops, sponsors small seed grants, runs the digital humanities graduate certificate program, and hosts graduate student research fellows. The Lab came about in part as response to Northeastern's growing aspirations to be a top-tier research university. Seeking to capitalize on existing strengths in the quantitative humanities and social sciences, the institution is advancing initiatives that formalize and promote activity in those areas. NULab measures its success based on the number of faculty collaborating on funding proposals, publications, and projects. Northeastern University Libraries' Digital Scholarship Group (DSG) is the library's native digital scholarship unit. It frames its mission around data curation, expertise, and tools that create an "ecology in which digital tools can thrive in sustainable way." Julia Flanders has appointments in both the NULab and DSG and acts as a liaison.

Space

The DSG is located on the second floor of Snell Library, which has recently undergone a renovation to transform it into a digital media commons. The open area on the second floor has technology-rich work and study stations for students and a service desk for on-demand help with data visualization and GIS. The DSG offices are part of a restricted area that only faculty, graduate students, and staff can access. They are co-located with offices for the university's teaching and learning center and the academic technology group. The DSG hoped that this suite would become a center for faculty engagement, where professors could come to participate in workshops and lectures or collaborative work on digital scholarship projects. Instead, it has gained popularity as a study space for graduate students.



Figure 4. Open area of Digital Media Commons, including service point and group study rooms.



Figure 5. Seating and workstations in the faculty and graduate student area of Snell Library Digital Media Commons (top); Seating and meeting/seminar areas at far end of faculty and graduate student area (bottom).

Eventually, the DSG will move to the fourth floor of the library, where they will be co-located with NULab and the library's research and instruction group. They hope that this new space will foster more productive collaboration and a quieter, more private environment that might attract more faculty use. They also hope their new space will accommodate additional staff workstations for their growing team.

Organization and Staffing

The DSG and NULab have a symbiotic relationship. DSG depends on NULab to provide the scholarly substance for its projects and to cultivate a community of practice for digital scholarship among faculty and graduate students. NULab depends on the DSG to develop and maintain infrastructure, train up and mentor graduate students to work on faculty projects, and support broad-based training and consulting. NULab also spawns some projects that “need a home.” DSG has been working with those projects regarding their infrastructure and other support needs.

The DSG has eight staff positions, which were all absorbed from other units. No new positions were created to support their work. Julia Flanders acts as the unit's director and also plays a role in NULab, acting as a liaison between the two entities. The staff reflects the DSG's strong emphasis on text encoding. Julia supervises an assistant director, two XML programmers, a semantic data specialist, and the assistant director of NULab. The DSG also has two relatively recent additions: a data visualization specialist and a GIS specialist. The DSG reports to the Associate Dean for Digital Strategies and Services, who also oversees the repository, the scholarly communication and publishing unit, and library IT, and has close connections to the research and instruction and archives units.

Finally, the DSG typically employs around 3 graduate students: one coordinator, who manages the DSG's portfolio of activities, and around 2 research assistants hired to work on specific initiatives. The graduate students also write documentation and provide basic consultations to faculty on topics such as data cleanup and project management.

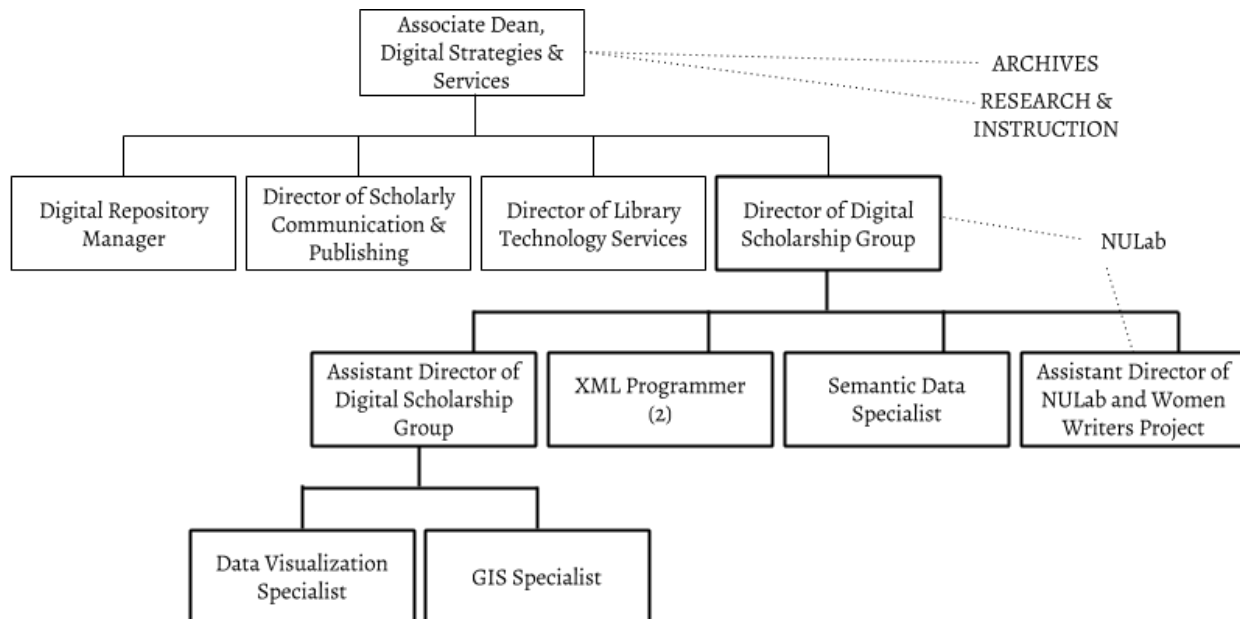


Figure 6. Northeastern University Libraries Digital Scholarship Group organizational chart.

Flagship Initiatives

Digital curation and text encoding projects comprise the bulk of DSG's work. Though they provide some level of support for other kinds of activities through workshops and consultations with their data visualization and GIS specialist, DSG invests heavily in building infrastructure that supports TEI XML projects and the creation of digital exhibits. Other groups on campus, including NULab, provide in-depth support for visualization tools, GIS, and other out-of-the-box tools.

The cornerstone of the DSG's infrastructure initiatives is the CERES repository, a digital publishing infrastructure that allows faculty to build customized, curated websites. Julia observed that the DSG does not want to spawn hundreds of projects, each with their own unique needs and no hope of long-term preservation. Instead, the DSG “starts from a

position of curation,” investing in developing and supporting one flexible but limited software. DSG works closely with the library’s technology services unit, which performs the actual software development work.

CERES has two major components that facilitate the development of media-rich, curated websites. The first is a WordPress plug-in that connects a web interface to the repository’s digital asset management system through an API. This allows projects to build exhibits and narratives around digital content that will dynamically re-populate as new content is added and that will remain stable over time. The second component will be a set of tools that support the integration of what Julia describes as “rich digital assets,” meaning not only embedded maps or images, but TEI encoded texts. The toolkit will support the workflow of ingestion, metadata assignment, transcription, annotation, translation, editorial review, and publication. They recently finished the specs for this component and expect to unveil it next year. The DSG builds or enhances a new feature of CERES each year. This year, they built more robust support for maps and GIS. Next year, they plan to develop better support for IIIF images.

They receive several dozen proposals per year from faculty who want to use CERES, and have produced over 20 projects for faculty in addition to several for the NU Archives and Special Collections. Common to all of these projects is the desire to combine media (images, page images, a/v, maps, soon datasets and marked-up full text) and contextualizing information into a dynamic digital portal. When DSG accepts a project, they roll out their vanilla site and the scholar (depending on their abilities and resources) can customize it. In a series of launch meetings, the DSG provides guidance on customizing and using the site responsibly, for example advising that the more the site is customized, the harder it will be to curate over time.

Other Services and Activities

The DSG deliberately shies away from describing itself as a “support unit,” though they do offer various kinds of support, from workshops and consultations to infrastructure. In avoiding the “support” designation, they hope to reshape faculty perceptions to position librarians as peers and collaborators. The lab is responsive, but not reactive, to faculty needs and aims to anticipate future directions and “create fertile conditions in which they can take shape.” They also work at the level of policy development, strategic planning, and thinking through the consequences digital scholarship on other library services like data management and scholarly communication. The DSG offers a variety of workshops aimed at general expertise building. They are particularly keen to support graduate students in the DH certificate program or in other programs, who may not receive the kind of sustained skills development they need from their home departments. In some cases, they co-teach or visit DH courses. They also focus on grad students in their role as research assistants, consulting with them on metadata standards and various aspects of data management.

Challenges

The DSG has encountered the predictable tension between the faculty’s research interests and the library’s interests, though Julia says this has gone relatively well at Northeastern because of the connection to NULab. Even so, faculty members who are “accustomed to getting their own way and have access to large quantities of funding,” can bristle when asked to compromise. Julia and the DSG have worked hard to articulate that what the library offers that is not “plumbing,” but is “directly and fascinatingly apropos to research questions.” They aim to convince faculty that the library’s expertise in information systems is “deeply continuous with scholarly interests.” In some ways, this requires the library to work against the grain of its own culture, in that there’s a safety in being reactive. Julia advises that a couple of pilot showcase projects run by people with “sympathetic brains,” can be a great boon in cultivating this mentality and demonstrating the strength of a library-faculty partnership. Finally, funding has been a challenge, despite significant administrative support for the DSG and NULab. The university has been reluctant to create new positions or provide hard money. The DSG therefore runs on lots of short-term, experimental funding from the Provost. Julia notes the challenge of running, let alone growing, an innovative unit like hers on soft money.

Staff Development

The DSG has not done any significant work around internal training, though they would like to do more, given the resources. They have had the most success with training librarians in data visualization and mapping, largely because the research and instruction librarians naturally get asked lots of questions about those technologies.

Temple University Digital Scholarship Center (DSC)

<https://sites.temple.edu/tudsc/>

Phone Call With: Peter Logan, Academic Director, Temple Digital Scholarship Center

History and Mission

Temple's Digital Scholarship Center launched in 2015 in a space on the ground floor of Temple's Paley Library. Peter Logan, the Center's Academic Director played a key role in its founding, pushing past institutional obstacles and eventually find a sympathetic and enthusiastic partner in the form of Temple's new dean of libraries. Several years prior to the Center's founding, Peter had assembled an interdisciplinary committee to write white paper planning the creation of a new digital scholarship center, but the vice provost rejected out of hand. With the arrival of a new library dean, however, Peter and his colleagues found a supportive partner to help provide the space, funding, staffing, and expertise to realize their vision. Their current home is a pilot for a new, greatly expanded space, that they will occupy after the library undergoes a major renovation. The major improvement in their new location will be an expanded makerspace, as critical making represents an important component of their activity.

Space

Peter emphasizes the importance of space, both for housing equipment loaded with specialized software and for creating a "presence" for digital scholarship on campus. A space, Peter explains, means faculty and students can walk in and see colleagues engaged in work, or get instantaneous assistance with a project. The center's temporary space houses workstations with various software for humanities applications as well as a seminar/conference room and office space for the center's staff.



Figure 7. Image of Temple DSC via <https://sites.temple.edu/tudsc/2015/07/15/doors-to-the-dsc-are-open/>.

Organization and Staffing

The DSC is led by a pair of co-directors. Peter Logan, the Academic Director, works closely with faculty and students and develops the center's academic programs. Matt Shoemaker, a librarian, runs the day-to-day operations and facilities and oversees the graduate students and one full-time IT staff member. Matt also acts as the interface with the library on joint initiatives. Peter finds that faculty leadership gives the Center a level of academic credibility that the library doesn't typically enjoy and allows him to cultivate an intellectual community for digital scholarship. The library's identity as a neutral hub, however, makes interdisciplinary work possible in ways that an independent or department-based center would not.

The DSC's other staff include one CLIR postdoc, and 6 doctoral students. Three of the doctoral students are fully funded through the DSC just like a research or teaching fellow. Two positions are split between the library and a college or school, and one is fully funded by the library. The graduate students run workshops, consult with students and faculty, and work on research projects sponsored by the DSC. Peter emphasizes the importance of having adequate staffing, noting that understaffing "becomes an achilles heel" for many digital scholarship centers.

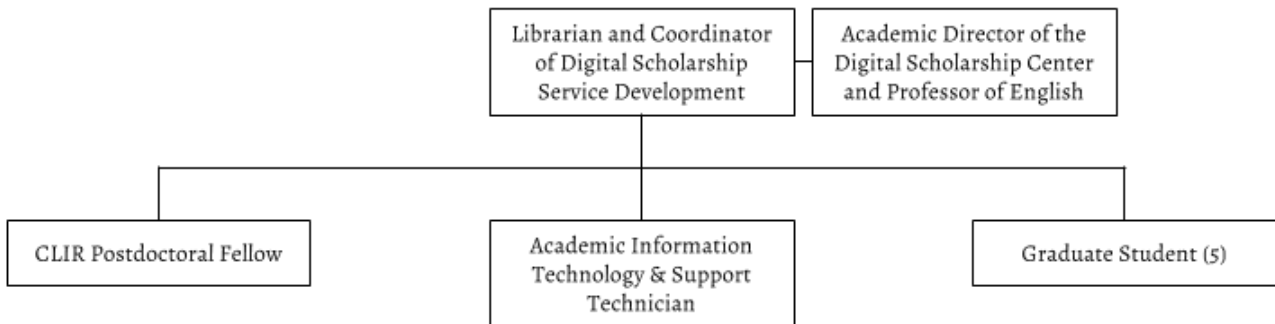


Figure 8. Temple Digital Scholarship Center organizational chart.

Flagship Initiatives

The DSC has a formal process for funding two faculty fellows per year. The fellows receive financial support and course release in exchange for leading a digital scholarship project that becomes a part of the DSC's portfolio. Fellows are selected through a competitive application process. By design, most of the projects that the DSC supports are, as Peter describes, projects with "research outcomes," such as scholarly editions, rather than "archival-oriented" projects such as databases and curated exhibits. However, Peter has increasingly felt they may be shortchanging these archival projects and they may broaden their focus. Projects have ranged from textual analysis to 3-D modeling (e.g., re-creating significant artifacts or buildings). One of this year's fellows is performing a textual analysis of Descartes while the other is creating an archive of LGBTQ characters in video games. The faculty fellows must have an interest in developing technical skills, but they receive significant support from a graduate student research assistant. Peter works with the faculty member to understand the principles behind digital methodologies. In theory, the DSC would consider a fellow who came in with no skills, but that individual would be expected to develop skills by the end of the fellowship year. The DSC will consider supporting any project they feel they have the skill set and expertise to support, though some types of highly-specialized work is better served by other units on campus. The DSC also leads a variety of staff-initiated projects. Matt manages a portfolio of library-related projects and Peter runs a project based on his own research interests.

Other Services and Activities

The Center invests heavily in graduate students, who increasingly require digital literacy to remain competitive for next generation academic and alt-ac jobs. They often work with faculty members to integrate digital tools into graduate-level instruction, offer consultation and training, and are leading a committee to create a graduate certificate in digital scholarship.

The Center does not invest significantly in walk-in support, focusing instead on the fellowship projects described above and on consulting for sophisticated digital projects. They offer three tiers of support, each articulated in a contract created by Peter and co-director Matt. At the first tier, they offer baseline advice, consultation, and training on specific tools as needed. Though having a contract at this level of service may seem excessive, the Center finds that a

contract makes it clear to faculty what they will get from the interaction and reassures faculty that their inquiries are not a burden on staff. At the second tier of support is a series of consultations for larger projects. The Center's staff will provide guidance and input at points throughout the process, from conceptualization through preservation. Finally, the top tier of service is reserved for faculty fellows. At this level of service, the faculty member receives a dedicated research assistant, has mandatory meetings with Center staff, and has a research budget. The Center will also consider being a co-PI on faculty grants related to digital scholarship on a case-by-case basis.

The Center plans to provide hosting support for a limited period of time (2 to 3 years) for faculty and graduate student projects in which the Center has played a role. After that, the faculty member will take responsibility for longer-term storage. Peter notes that this model is common, even in well-established digital scholarship centers, such as those at UVa and George Mason University. The library may preserve selected digital projects that align with its own interests and priorities. Temple has an institutional repository in the library, but it focuses on preservation, rather than access. The Center has also been in discussion with the Temple University Press about publishing and providing long-term access to content.

Peter emphasizes that the Center aims not to duplicate services that already exist within departments or from other service providers. The Center has become a hub for teaching foundational skills in a variety of technologies. More specialized centers and departments benefit from this baseline literacy support, which allows them to focus on more sophisticated support. For example, they focus on serving the humanities disciplines, which tend not to have robust technology support in their own departments. Temple already has a teaching and learning center and a GIS center so the Center generally demurs on digital pedagogy questions and advanced GIS applications.

Additional Case Studies and Planning Documents

A number of digital scholarship planning reports and case studies can be accessed online.

University of Colorado Boulder

http://scholar.colorado.edu/cgi/viewcontent.cgi?article=1033&context=libr_facpapers

Case Western Reserve University

<http://library.case.edu/media/kelvinsmithlibrary/services/digitalservices/Digital%20scholarship%20proposal-2-11-2014.pdf>

University of Houston

<https://uh-ir.tdl.org/uh-ir/bitstream/handle/10657/1623/DsstFinalReport.pdf?sequence=1>

University of Pittsburgh

<http://d-scholarship.pitt.edu/25034/>

University of Illinois Urbana-Champaign

http://www.library.illinois.edu/cms/committee/exec/supplement/2016-2017/Final_DHNeedsAssessment_Report_revised_draft.docx

ARL Digital Scholarship Support Profiles

<http://www.arl.org/focus-areas/scholarly-communication/digital-scholarship/digital-scholarship-support>

IV. Internal Context and Existing Services

Relevant Campus and Library Services

	Key Individuals	Key Services
Harvard Library		
<i>Services for Academic Programs</i>	Odile Harter	disciplinary expertise, consultation & advisory
<i>MMDGI</i>	Hugh Truslow, Marty Schreiner, Paul Worster, Bonnie Burns	mapping & GIS, multimedia, data visualization
<i>Library Technology Services DRS and Delivery Service</i> http://library.harvard.edu/lts/systems/drs	David Siegel	web hosting, metadata, software design, GIS
<i>User Research Center (Library UX)</i>	Kris Markman, Amy Deschene	UX, web design
<i>Technical Services</i>	Mark McGee, Danielle Brown	metadata, GIS
<i>Web Archiving Service</i>		preservation
<i>Data Services</i>	Ceilyn Boyd	data management, data visualization
<i>Office of Scholarly Communication</i>	Peter Suber, Kyle Courtney	web publishing & hosting, copyright
<i>Houghton Library</i>	Emilie Hardmann	metadata, digital collections, digital pedagogy, general DH support
<i>Harvard Yenching Library</i>	Sharon Yang	general DH support
<i>Fine Arts Library</i>	Shalimar Fojas White	digital image management, image annotation, manipulation, etc., digital pedagogy
<i>Frances Loeb Library (Design School)</i>	Janina Mueller	GIS
<i>Cabot Library</i>	Susan Bersler	data, general DS support
<i>Albach Astronomy Library</i>	Dana Bouquin	Python and R
Bok Center for Teaching & Learning	Adam Beaver	digital pedagogy
IQSS http://www.iq.harvard.edu/home		data analysis and visualization
Center for Geographic Analysis (CGA) http://www.gis.harvard.edu/	Wendy Guan	GIS and mapping, workshops
Harvard IT (HUIT)		
<i>FAS Academic Technology Group</i> http://www.atg.fas.harvard.edu/	Annie Rota	Omeka & Canvas support, digital pedagogy
<i>DARTH</i> http://www.darthcrimson.org	Rashmi Singhal	web development & coding, text analysis, faculty collaborations, workshops
FAS Research Computing https://rc.fas.harvard.edu/about/mis-sion/		training, data hosting, data visualization, coding

Harvard Informatics http://informatics.fas.harvard.edu/		training, data analysis
Departmental & School Programs		
<i>DiTF Program (History)</i>	Dan Smail	digital pedagogy
<i>Digital Scholarship Facilitator (History)</i>	Jeremy Guillette	Omeka, digital pedagogy
<i>Japan Digital Scholarship Librarian (Reischauer Institute)</i>		
<i>Visualization Lab, Department of Earth and Planetary Sciences</i>	Rus Gant	3D modeling, visualization
MetaLab	Jessica Yurkovsky	data visualization, faculty collaborations, web design & coding

Table 6. Key services provided by library and other campus units, as identified by the consultant.

V. Campus Digital Scholarship Practices and Needs Assessment

Introduction

This section summarizes the contents of 16 semi-structured interviews with faculty members in Harvard's Faculty of Arts and Sciences and the findings of a campus-wide web survey, which attracted responses from over 200 Harvard community members, primarily graduate students. Together, these results provide a high level overview of the digital scholarship practices and needs of the Harvard community and reveal opportunities for library action to address gaps and frustrations.

Digital Scholarship Practices of Harvard Faculty Members

This section describes the current and desired digital scholarship practices of 16 faculty members, from the very common, such as collecting data in Excel, to the highly sophisticated, such as using Python to visualize data. All of the faculty members interviewed are involved with at least one digital project. The interview asked faculty members to describe their digital scholarship practices and relate the challenges related to doing digital scholarship at Harvard. Interviewees came from the Classics, East Asian Languages and Civilizations, Slavic Studies, History, Music, Comparative Literature, Celtic Languages and Literatures, Astronomy, Anthropology, and Romance Languages and Literatures departments. The interview protocol is presented as **Appendix C**. The interviews conducted for this assessment included faculty members with significant technical expertise and deep interest in digital scholarship practices as well as with faculty members who are just beginning to explore the application of technology to their scholarship. The practices reported by faculty, each described in detail below, included corpus creation and management (e.g., building databases, digitizing media, and acquiring data); data analysis and visualization; GIS and mapping; text analysis and markup; annotation of text, images, and other media; web development and customization; digital publishing and creating online exhibits; coding and software development; multimedia content creation and analysis; and the use of digital tools for pedagogical purposes.

Corpus creation and management (including database development)

Of all digital scholarship practices interviewees discussed, data and database management came up most frequently by far. Nearly every faculty member I spoke to is developing, maintaining, or would like to develop relational or graph databases. Scholars have always collected evidence; it is only natural that they are increasingly turning to technology to help acquire, organize, and analyze it. Collections of data range from Excel spreadsheets that temporarily store information for a specific purpose to unique, world-class collections with significant scholarly or cultural value. In some cases, databases play a role in a scholar's research *process*, while in other cases, they may in fact constitute a research *product*.

Data acquisition and cleanup

Faculty members find it challenging to identify relevant, well-described datasets, particularly in the humanities. In some cases, they need guidance about whether specific datasets exist that match their research interests. In other cases, they need appropriate generic datasets that allow them to experiment hands-on with new tools. Other faculty members have corpora in mind, but encounter difficulty getting access to the underlying data they want from publicly available or subscription databases that only allow access through a proprietary interface or in formats that don't lend themselves to further analysis. As one faculty member observed, "I find a lot of places give you the information in a quote unquote "helpful" way that is in no way helpful or accessible because it's just a dump of everything they know without the mental model that organizes it." He described the painstaking process of downloading PDFs, converting them to text files, scraping them, and putting them back into a database model in order to analyze the data they contain. Several faculty members saw a potential role for librarians in locating and curating humanities datasets along with other digital scholarship resources. A number of faculty members are using or would like to use web scraping techniques to gather data (and in some cases to circumvent access limitations). Many of the humanities faculty interviewed (or their assistants) gather data much of their data through traditional methods, manually entering data from printed or PDF sources into an Excel spreadsheet.

Database construction and management

For some faculty members, spreadsheets, citation managers, and word processors aren't up to the task of managing all the information they need to collect and process. One faculty member described a moment while writing his dissertation when he realized that he was "going to fail miserably," if he couldn't get a handle on the huge amounts of archival material he needed to analyze and synthesize. His response was, as he describes, "to spend a few years digitizing the lot, building a pretty complicated database to allow me to interconnect all those things and use the computer to manage it so I wouldn't have to keep it all in my head, and be able to focus on interpretation."

In some cases, the data that faculty members gather for their own research may have broader applicability or value. A number of faculty members have created or would like to create publicly accessible interfaces that allow other scholars or the public to explore their data. For example, Professor Joshua Grindlay's DASCH Project, currently hosted in the Odyssey high-performance computing environment, aggregates digitized telescope images that document what the sky has looked like throughout the 20th century. The project team, which includes a database developer, maintains a public-facing website that allows users to explore the images and associated data and visualizations. The DASCH Project has stable hosting through Odyssey, but no formal data management plan. Professor Gary Urton would like to make the data from his Qipu Database Project, which has been designated a cultural heritage monument by UNESCO, openly available, but lacks the appropriate skills and funding to build a user interface for his data. The database is currently hosted on two Mac Mini drives in the Science Center, and is not being actively updated. Other faculty members interviewed are hosting (or plan to host) data and other projects in Dataverse, Harvard's Google Drive, Dropbox, Amazon AWS, their OpenScholar site (or other personal website), or on their own hard drives. When they have funding available, faculty members often turn to external vendors or project staff (paid for through grant funding, for example) to construct and manage databases, or to embedded staff where available (such as the History Department's Digital Scholarship Facilitator). Several expressed interest in training and advisory on available tools and best practices for constructing relational or graph databases, assigning metadata, and making databases or datasets publicly accessible.

Data analysis and visualization

Faculty members described a number of data-driven projects that they felt would improve with a better grasp of data visualization techniques and software. One faculty member Faculty members who are currently doing data visualization reported using software such as Gephi for network analysis, Excel for basic charts and graphs, and Tableau for more complex data visualization. Faculty members in the hard sciences and social sciences often use more sophisticated statistical analysis software.

GIS and mapping

GIS and mapping rivals database construction in terms of its popularity among Harvard faculty. Faculty members report using a wide range of GIS platforms and tools, including ArcGIS, CARTOdb, GeoJSON, Neatline, and the locally developed WorldMap. Several have taken advantage of training and advisory provided by the Center for Geographic Analysis. The mapping projects described by faculty include those that involve simple visualizations of data overlaid on a map, interactive or animated maps that illustrate changes over time, or that serve as discovery interfaces, allowing users to find geo-tagged content and annotations by clicking various locations on a map.

Annotation

Text, image, video, and sound annotation all came up over the course of the interviews. Faculty members are employing or are interested in using annotation for both research and pedagogical purposes. Some reported relative satisfaction with the tools available while others have developed or adapted their own custom annotation tools for specific research applications. Uses of annotation software ranged from having students comment on a passage of text to explicating specific passages of ethnomusicological recordings. The desired functionality of annotation software varied significantly based on the specific project, but included features like integration with the course management system and a display that prevents annotations from looking too cluttered.

Digital publishing and online exhibits

Three of the participants use Omeka in their research and teaching. Though they all found it relatively easy to get the sites set up through support from their department, seamless integration with digital collections remains a sticking point. One faculty member commented, “I find myself downloading digital content from our library, making sure I store all their metadata, and reuploading it to my own Omeka site and thinking, this is ridiculous.” Two of the faculty members interviewed are involved in the publication of (online-only) e-journals. Both used third party vendors to build the journal’s web infrastructure and both rely on financial support from private foundations to subsidize publication. One faculty member has experimented with creating interactive textbooks in iBooks.

Multimedia content creation and analysis

Several faculty members produce video, audio, and virtual or augmented reality. They occasionally have students produce video and audio content and take advantage of the library’s multimedia lab for equipment rentals and access to editing software. Augmented and virtual reality seems poised to increase in popularity. One interview participant has experimented with this type of technology and Professor Peter der Manuelian’s 3D Giza project came up in a number of conversations as an example of a successful DH initiative. Harvard also has a student organization (the Harvard AR/VR Alliance) dedicated to exploring these technologies.

Text mining, analysis, and markup

Text mining came up frequently as an example of digital scholarship techniques in the abstract, but very few of the faculty members interviewed actively employ it in their work. Some cited a lack of suitable material to text mine (e.g., a corpus that’s too small, or poor OCR), while others expressed skepticism about the use of advanced statistical techniques to provide reliable insights. One faculty member is teaching herself Python for the purposes of text mining. The exception is Harvard’s Center for Hellenic Studies, which is leading a number of text-based initiatives, including the Homer Multitext Project and A Homer Commentary in Progress. These two initiatives use text mark-up to isolate passages for the purposes of annotation and linking.

Coding, web and software development

Many of the digital projects faculty lead or participate in involve a public web presence, whether a public user interface for a database they created, a home for a visualization or mapping project, a digital publication like an ejournal, or a collection of annotated media. Many reported working with external vendors to develop websites and interfaces or with in-house support to customize locally supported platforms such as Omeka. Faculty members work in or are interested in working in other content management systems such as WordPress, Drupal, and Craft. Support for evaluating and improving usability and user experience of project websites also came up in several interviews. Very few of the faculty members interviewed reported being involved in complex web or software development. This holds true in a preliminary review of digital scholarship projects at Harvard. While the list features several custom-built websites with advanced functionality (such as the Homer Multitext Projects and the Japan Disaster Archive), these are outnumbered by relatively modest database-driven websites and digital exhibits. Development projects range from fairly simple static webpages, for which OpenScholar may be sufficient, to the website for the Digital Access to a Sky Century @ Harvard (DASCH) website, which offers sophisticated search and information display. Several of the faculty members who already engage deeply with digital scholarship expressed interest in learning or improving their facility with Python and/or R. These languages are the most popular choice for scholars who want to go beyond out-of-the-box tools for data analysis and visualization or to fully understand the mechanisms behind those tools.

Digital pedagogy

Faculty members incorporate technology in their pedagogy in a variety of ways, including using annotation tools, developing collaborative bibliographies in Zotero, building Omeka exhibits, and creating videos. Faculty members were enthusiastic about increased support for integrating technology into their teaching and learning. In particular, they want to design assignments that help students critically engage with technology. Some faculty members expressed reluctance about digital pedagogy because they do not feel confident using technology effectively in the classroom. As one faculty member commented, “we might be a little bit reluctant because we don’t want it to be a time-waster. We don’t want to say, oh we’re going to be doing digital humanities and just have students go out and make videos and not really learn from it . . . We want to know how we’re going to reach our learning objectives

through this digital project in a way that might be better or more engaging than what we're already doing." Several expressed interest in having expert guidance in creating effective assignments or in having technology experts available to consult with students or provided in-class instruction on a particular technology. One faculty member, however, pointed out that she prefers to fully understand and be able to teach any technology she uses in the classroom herself so that students know they can come to her with questions. The Digital Teaching Fellows (DiTF) program, which pairs a trained graduate teaching fellow with a faculty member to incorporate technology into the curriculum, has proven very successful in terms of providing faculty with the kind of embedded expertise they need. This type of program may warrant expansion beyond the History Department and its current capacity.

Which Platforms, Software, Digital Tools & Programming Languages do Harvard Faculty Employ?

Academia.edu	Django	Microsoft Access*	R*
Annotate.it	Edupuzzle	MySQL	Recogito
AnnotationX	Excel*	Nearpod	Socrativ
APIs	FileMaker*	Neatline	Tableau
ArcGIS*	Formativ	Omeka*	Timeline.js
Basecamp	Gephi*	ORCID	Voyant Tools
Canvas*	GeoJSON	Palladio	Wistia
CARTOdb*	Git Hub	PHP	Wordpress
Craft CMS	Google Docs/Drive	Powerpoint	WorldMap
D3.js	Graph databases	Python*	XML
Dataverse	iBooks	QGIS*	Zaption
Diigo	Keynote	Quizzlet	Zotero

* indicates multiple mentions.

Where Do Harvard Faculty Get Support?

Academic Technology Group	Harvard Research Computing
Bok Center for Teaching and Learning	HUIT
Center for Geographic Analysis (CGA) Wendy Kwon*, Jeff Blossom, Ben Lewis	MetaLab Jessica Yurkovsky
DARTH* Jud Harward*, Chris Morse*	External Vendors* Familiar (familiar-studio.com/)
Harvard Library Bonnie Burns*, Hugh Truslow*, Reed Lowrie, Kuniko McVey*, Wendy Gogol	Other Jeremy Guillette* (History Department)

* indicates multiple mentions.

Representative Digital Projects Led by or Involving Harvard Faculty

AfricaMap

worldmap.harvard.edu/africamap

Africa's Sources of Knowledge Digital Library Project

ask-dl.fas.harvard.edu

Animating Musical Analysis

harvardmagazine.com/2015/03/animating-music

Archimedes Project

archimedes.fas.harvard.edu/

The Charlie Archive at Harvard Library

darthcrimson.org/portfolio/the-charlie-archive-at-harvard-library/

China Biographical Database Project (CBDB)

projects.iq.harvard.edu/cbdb

Classics@ Journal

chs.harvard.edu/CHS/article/display/1167?menuId=66

critiquelt

richardkwolf.com/category/critiqueit/

Declaration Resources Project

declaration.fas.harvard.edu/

Digital Access to a Sky Century @ Harvard

dasch.rc.fas.harvard.edu/index.php

Digital Atlas of Roman and Medieval Civilizations

<http://darmc.harvard.edu/maps>

Digital Corpus for Graeco-Arabic Studies

www.graeco-arabic-studies.org/

Digital Giza

giza.fas.harvard.edu/

Digital Gordion Mapping Project

scholar.harvard.edu/pizzorno/dgmp

Fenian Folklore Database

scholar.harvard.edu/natashasumner/fenian-folklore-database

Harvard Iranian Oral History Project

ted.lib.harvard.edu/ted/deliver/home?_collection=iohp

Harvard Seismology Models

www.seismology.harvard.edu/resources.html

Homer Multitext

www.homermultitext.org/

German Administrative Data Project

economics.harvard.edu/german-administrative-data-project

Imperiia Project

dighist.fas.harvard.edu/projects/imperiia/

In Geveb Journal

ingeveb.org

Japan Disasters Archive

jdarchive.org/en

Khipu Database Project

khipukamayuc.fas.harvard.edu

The Life and Death of Data

lifeanddeathofdata.org/

Medieval Scrolls at Harvard

omeka.cga.harvard.edu/exhibits/show/medscrolls

Memtoolbox

scorsese.wjh.harvard.edu/George/Resources.html

Sounding China in Enlightenment Europe

www.hcs.harvard.edu/soundingchina/

Tephra Geochemical Data

scholar.harvard.edu/catryon/data

Villa i Tatti Online Exhibitions

itatti.harvard.edu/online-exhibitions

Visualizing Broadway

darthcrimson.org/portfolio/visualizing-broadway/

Qingming Scroll

ealc.fas.harvard.edu/qingming-scroll

Unmet Needs and Desired Services

Consultation and Advisory

Baseline advisory and referrals

Faculty reported an acute lack of opportunities to gain basic skills and knowledge. They find it difficult to become familiar with digital scholarship tools and approaches and to navigate Harvard's manifold decentralized services. As one faculty member observed, "People aren't oriented. They have a vague idea that digital scholarship tools are interesting and that there's a lot that can be done with them, they sometimes know one interesting example, also kind of vaguely, but they're not sure how much time investment it will entail [or] what the payoff will be."

Scholars want to be able to approach an expert with their research question and receive an explanation of the possibilities and limitations of various digital scholarship approaches and guidance about selecting the right tool for the job. As one faculty member explained, "Of course it's really important to have someone on campus, somewhere, who knows about the nitty-gritty, how to work with this kind of data visualization, how to work with this kind of data set, what kind of formats are the best for creating this or that kind of digital archive. But much more important is someone who can synthesize that information and send people on to the right person." There is a need for experts at Harvard who can "give people an overview, orient them, explain to them step by step, this is what you need to do for your project and this is who you would have to contact, and this is about how much time investment you should be thinking of, and a budget, and so on."

Scholars may feel overwhelmed by the sheer number of options available and the subtle differences between them. When should a faculty member use ArcGIS? In what cases is CARTOdb a better choice. A faculty member described the process of testing out multiple versions of a similar tool, "just to try to figure out, what is the difference between them, what features do they offer, why might one be better than another in a particular setting. The number of times I've put exactly the same stuff in three or four different tools to try to figure out the difference, it is time consuming." Another faculty member expressed a similar sentiment with obvious frustration. She shared, "I feel that there are probably more fine grained distinctions that I could make and more refined conclusions that I could reach if I had a better knowledge of say digital visualization techniques or GIS possibilities. But . . . I don't know what I don't know and I cannot spend three days going to a workshop and figuring it out. I need somebody in between me and that."

One-stop shopping

At least three faculty members used the phrase "one-stop shop" to describe their ideal digital scholarship service. They have had negative experiences being shuttled from one office to the next in search of the right person or resource, and want a robust and accurate referral service to be a core part of any new digital scholarship support service. Faculty responded well to the idea of having a physical service point or an obvious individual point of contact for digital scholarship. As one faculty member commented, "It would be great to be able to just walk into the library and walk up to the help desk, and say, 'Hi, how do I do this?' That would be very handy."

Though many commented on the helpfulness of librarians, they also expressed hesitation about approaching them with questions. They do not want to waste their time talking to the wrong person or getting an inadequate or incorrect response. One faculty member summarized, "I would go to the library to ask about metadata standards if I knew who to ask and if I knew that I'm going to get a useful answer." The ideal is an easily identifiable hub for all things digital, from general guidance to advanced instruction and services. One faculty member described wanting a place to send graduate students where they can come in with a grain of an idea and get support on finding similar projects, data sources, funding, and the right tools, along with basic instruction in various techniques and software.

Tailored, discipline-sensitive guidance and expertise

Several faculty members expressed frustration about a lack of workshops, consultations, and even web-based resources that address the unique needs of digital humanists. In their experience, even resources and events ostensibly tailored for the humanities (e.g., "Text Mining for Humanists") fail to genuinely understand humanistic scholarship. Rather, they perceive these types of trainings as attempts to teach humanists to be social scientists.

This approach may be appropriate or beneficial for some projects and some scholars. However, a holistic digital

scholarship advisory and training program should take into account that some humanists may want to explore, for example, creative approaches to data visualization, rather than intensive statistical calculations. Many scholars want room for creativity, experimentation, and rule-bending in their digital scholarship. As one faculty member observed, “The industry standard software was definitely not invented with historical sources in mind. Historical sources are by definition not very systematic, they’re incomplete, they are ambiguous and messy, and oftentimes don’t translate into points and lines on a map. But that doesn’t mean that historians can’t benefit from pushing and adopting the principles of spatial analysis.” The library might consider partnering specific departments to offer tailored sessions for faculty and students. These sessions might be co-taught by a digital scholarship specialist and a disciplinary specialist (e.g., a liaison librarian or even a faculty member or graduate student), and address the specific conventions, challenges, and goals of scholars in a given field.

In addition to needing technical guidance, faculty also indicated that they would benefit from working with an expert who could help them conceptualize and design projects that effectively leverage the digital medium to present an argument or reveal a new insight. One faculty member explained, “Sometimes there are visualizations that are gorgeous, but they don’t tell us anything we didn’t already know--and if they tell us something we already knew, but in a totally arresting way, that can actually be good even if there’s no new insight--but ideally we want to also have, whether it’s a visualization or whether it’s some text analysis, something that would reveal new things that we wouldn’t already figure out otherwise. I think [it would be useful] having somebody who can help a whole range of users get to that point.” This type of work requires not only technological know-how, but an understanding of the scholarly process, at a minimum, if not domain-specific knowledge.

The scholars interviewed during the needs assessment process work in a range of languages, many of which use non-Roman scripts. Even within the 15 faculty members interviewed, languages included Ancient Greek and Latin, Hebrew, Quechua, Chinese, Japanese, Gaelic, Russian, and Arabic. Supporting text-based methods such as text mining and markup poses a particular challenge for a centralized unit staffed by generalists. Close coordination and collaboration with liaisons, and a program of building liaisons’ digital literacy will be essential if the library wants to provide robust support.

Faculty also clearly appreciate a personal touch and building a relationship with trusted individuals. As one faculty member observed, it’s more appealing to email a specific person for help than to reach out to a generic help email account. Cultivating personal relationships gives faculty the confidence to reach out and is more convenient than trying to navigate Harvard’s complex organizational system. One faculty member succinctly described this phenomenon: “The Bok Center for example is a great resource . . . I can think of something I need and probably the Bok Center actually does it, but what do I do, do I go to their website? Do I try to figure out which member of the staff? These days I know Rob, who runs it, so that’s exactly what I do.”

Training, Workshops, and Bootcamps

Many faculty members currently employing digital approaches report that they are largely self-taught. Even those with significant technical facility may have gaps in their knowledge, especially in areas like best practices for data and information management and metadata standards.

Existing training opportunities suffer from some of the same gaps as consultation services: namely, a lack of sufficient beginner-level and discipline-specific training. A number of faculty members expressed interest in deepening their knowledge of digital scholarship practices, but found that workshops ostensibly pitched for beginners were still too advanced, too technology specific, or assumed too much prior technical knowledge. A faculty member who attended a workshop offered by the CGA, advertised as introductory, explained, “I found that it wasn’t for complete beginners. The people who were showing up there . . . were social scientists who understand this technology already, as opposed to someone like me who is pretty clueless, who understands that these things can be done, but that’s about it. It was introductory for someone who had some literacy in these things already but hadn’t seen that particular program. It wasn’t introductory for someone who had no literacy in those sorts of things.” Similarly, another faculty member related, “DARTH often offers afternoon events or talks about specific tools like Gephi or other data visualization tools. That’s interesting and important but . . . before people even know what Gephi is they need to know what data visualization is.” This was echoed by other faculty members who want to see workshops about specific tools offered alongside more general training on *approaches*, i.e., an “Introduction to Voyant Tools” workshop should

be complemented by a “Fundamentals of Text Mining” workshop. The library has an opportunity to fill this gap by offering baseline training, which would be complemented by more sophisticated workshops offered by the CGA, DARTH, and other campus units.

The History Department has adopted this approach, organizing a Fundamentals of Digital Scholarship workshop series with the goal “to introduce people to some of the very basic tools, but also to the conceptual framework.” They also offer a companion workshop on digital pedagogy and plan to organize “more advanced, specific workshops” that delve deeper into text mining, GIS, and data visualization. They plan to eventually offer a graduate certificate in digital scholarship for students who complete the fundamentals course, the teaching course, and several of the more advanced offerings.

Although many faculty emphasized that they have little time to devote to developing new technology skills, several commented that they felt they would more likely attend an in-person workshop than take advantage of asynchronous resources. As one faculty member explained, “Video tutorials are really useful, [but] I’m more likely to take the time if it’s an in-person event, or even if it’s a scheduled digital presentation. I’m more likely to book the time and take the time, rather than just bookmarking it.” In our digital era, another faculty member observed, “Everything is accessible, so things that are accessible for only a limited amount of time become more attractive.”

In describing effective workshops they have attended in the past, faculty emphasized the importance of hands-on learning. They appreciate workshops based on interactivity and particularly like when introductory material is followed by an opportunity for them to dig into their own project or dataset.

Though several faculty indicated they do not have time for multi-day commitments, for those faculty who are particularly motivated, bootcamp settings may be the ideal way to thoroughly pick up skills and jump-start projects. One instructor described a bootcamp that she found particularly effective, in which, “the first week you learn skills and the second week you work on your own material and you have the two instructors there to help you work through things.” Another faculty ran a bootcamp for a digital technology that was very well-attended. He attributes this not only to interest in the topic, but “more generally in having concentrated events where you get a substantive overview. You’re not going to become an expert, but you get a good sense of what to do . . . You come out with something you’ve made or something you think you can apply.”

Community

There does not appear to be a community of practice for digital humanists or digital scholarship practitioners at Harvard. Opportunities to showcase digital work and network with colleagues are few and far between. Several faculty members report that they are unaware of what colleagues are working on even in their department, let alone elsewhere on campus. They attribute this in large part to the autonomous, insular nature of Harvard’s culture. One faculty member described the most recent opportunity for networking with others in her department happened two years ago. She observed, “We had a group of faculty members come together and talk about what we were doing. And none of us had any idea what our closest colleagues were working on. It’s just a feature of Harvard . . . I know more people at other universities that work on [my area of digital scholarship] than I do at my own university, because I go to conferences and have structured conversations with those people.”

Faculty members were enthusiastic about the idea of the library creating a hub for networking, showcasing, and workshopping with other practitioners. They feel the need for a centralized entity to keep up with digital scholarship activities across the university and act as liaison, matchmaker, and guide. As one faculty member commented, “The dream would be if the library at least would be able to keep up with what’s going on and . . . if the new imperative were, if you show up with the word DH around campus, the library finds out about it immediately and adds your name to the website.” Several expressed interest in cultivating more of a culture of sharing, a “culture where these kind of examples are constantly in circulation and you can talk to people about, well, ‘this is fantastic, how long did it take?’”

Scholars seem to find collaborators or support providers largely by serendipity, rather than by design. For instance, one faculty member described a mapping project in which a graduate student in the department happened to be building a software for his own use that also served the faculty member’s purposes. Had that graduate student worked elsewhere at Harvard, the connection would not have been made.

One barrier to creating a digital scholarship community and increasing participation in digital projects is simply in how scholars perceive themselves and their work. According to Alex Zahlten, who conducted interviews with a number of faculty in the East Asian Languages and Civilizations department, the large majority of his colleagues said they didn't do any digital scholarship. As Professor Zahlten dug deeper however, he came to "eventually understand they're actually doing a lot of digital scholarship and even building databases and stuff like that, but they didn't have an understanding of that term or umbrella." Another faculty member warned that a digital scholarship community can too easily become a clique, dominated by scholars (often male) who have a high level of technical expertise. Ensuring that all faculty members feel welcome and supported, regardless of their level, matters to this scholar and likely to her peers.

Digital preservation and curation

Nearly all of the faculty members interviewed would like to see the library take responsibility for archiving and preserving digital projects. More precisely, they *expect* the library to take the lead on digital preservation. They feel the library is the natural home for digital scholarship, given its reputation as a secure, trustworthy repository. In addition, many faculty are eager for the library to advise on standards and best practices that will set projects up for long-term preservation from the outset (though several also cited the excessively rigid preservation standards as a barrier to digital scholarship). One History faculty member attributed that department's choice to champion Omeka as their platform of choice largely to preservation concerns. The faculty member explained, "Even though it's not the absolute perfect platform in certain respects, WordPress would be more flexible and let us create more appealing projects, but the reason we selected Omeka is that it's got a very robust metadata system at the back-end and our hope is that is going to help us sell to, say the library, the idea that this is in a format that you won't find absolutely unappealing [for longterm preservation]."

Views differed on whether preserving full functionality was important, or whether just storing an archival version (the underlying data and screenshots) was sufficient. One faculty member observed, "I'm a realist, so I understand that everyone who thinks about these things will acknowledge that you don't *expect* these things to be accessible for more than five years. But if I think about what constitutes the scholarly content of what I've produced, it's not just the existence of the dataset, it's the linkages between them, it's the way that I'm presenting them, it's the interpretive work that goes on top. So ideally I'd want the whole thing to function as I've designed it to function, because the design of it, that's the reason why I've done it digitally, rather than just writing a book or doing something print based. The design is part of the scholarship."

Long-term access is also important in raising prestige of DS and encouraging both faculty and students to invest in DS work. Until there is a robust commitment to preserving digital scholarship, one faculty member predicts that "faculty will work in their own little silos and whatever servers they can get access to, and students, for the most part, won't, and graduate students in particular, won't pursue a real serious embrace of digital methods because it really isn't in their best interests to do so, unless there's real infrastructure behind it." How long do scholars want the projects they and their students create to remain accessible? One faculty member commented, "Forever. No one wants to hear that, but it's the truth, a lot of it is forever."

Hosting, storage, and sandbox space

Faculty members find it challenging to find web hosting through Harvard's existing IT infrastructure. They are dissatisfied with the options available through Harvard, but do not necessarily feel well-served by other options. One faculty member expressed dissatisfaction with her commercial web hosting service, which has been unresponsive, particularly regarding keeping software up-to-date. Several faculty members referenced OpenScholar, which does not offer the requisite flexibility for their projects. A number of interviewees have simply circumvented official hosting and storage venues in favor of options that provide greater flexibility or are easier to navigate. They run their own servers, store data locally on external hard drives, or host their projects in the cloud through a commercial hosting service. One faculty member commented, "We have our departmental server and that solved a lot of problems for us because that way we didn't have to rely on HUIT or the Library or anyone else to do anything for us, because that just takes forever." Similarly, another faculty member who runs a large digital archive decided against pursuing hosting with the library because "it just seemed to be an easier and quicker route to get some space on Amazon." However, once projects are up and running and faculty members start thinking about long-term preservation, the library may begin to look like a

more attractive partner. The faculty member who hosts his project on an Amazon server commented, “in the long run, I would actually like to see this archive moved to be hosted at the library. I somehow feel that’s safer and more secure.”

Physical spaces and equipment

Physical spaces adapted to the needs of digital scholarship were a low priority. Few interview participants brought up space without prompting, and their physical space requirements were straightforward. One faculty member commented, “The ideal isn’t a fancy lab. The ideal is a room with a lot of outlets where people can come and sit and do their work and we know that from 1-4 on Friday is a humanities hacking hour and people there will be doing humanities projects and you can ask questions of each other if you want. There’s no formal presentation, there’ll be cookies and coffee, and it’s an open workspace for people who are doing this thing.” Space for networking and connecting, especially connecting across disciplines, makes sense for the library, “because no department has this focus, there’s no one place where that gravity is . . . that’s something a library space could serve.” A physical service point in the library where scholars know they can go for basic consultations and guidance (or where they can send their students) was an attractive proposal for several faculty members.

Faculty report that they like and take advantage of the newly created labs that some departments have built or have plans to build. For example, the Fung Library is also undergoing a transformation from a print resource center into a digital hub for scholars working in East Asian Studies. One faculty member who is involved in the process describes one goal as creating “a more curated space that invites people in and opens up all kinds of windows and rabbit holes for them to explore.” The History Department has developed its own digital scholarship lab for the department and the Reischauer Institute plans to do the same as it evolves its library into a digital scholarship hub. When it comes to space, convenience is key. These labs are appealing in part because they are embedded in the buildings where faculty members have their offices or spend a lot of time.

Similarly, one appeal of embedded staff members, such as the History Department’s Digital Scholarship Facilitator, is the convenience of accessing support. Alongside a variety of praise about his skills and creativity, faculty members praised the Digital Scholarship Facilitator’s “open door policy.” At least two interviewees mentioned how helpful it is when someone is willing to come to their office to assist them with technology.

All of the faculty members interviewed were generally satisfied with the hardware and computing power they have access to on campus.

Other Challenges and Barriers

Skepticism about digital scholarship

All of the faculty members interviewed are involved in some kind of digital scholarship, whether as a methodology that permeates their work or in the form of one or two discrete projects. However, I talked to a number of faculty members who expressed wariness about digital scholarship in general, and who expressed skepticism that digital scholarship can produce genuine scholarly insights. Several commented that digital scholarship can seem flashy and lacking in substance. DH skeptics continue to prefer to closely engage with source material, “rather than try to make strange assumptions based on statistical models about how literature works.”

Others simply question whether findings produced with the aid of technology were worth the trouble of learning to use a complex new tool or language. As one faculty member commented, “The potentials for digital scholarship and the imagined potentials for it in some way outrun what actually happens. Sometimes I think that there are visualizations that are gorgeous, but they don’t tell us anything we didn’t already know . . . ideally we want to also have, whether it’s a visualization or whether it’s text analysis, something that would reveal new things that we wouldn’t already figure out otherwise.”

Time and competing priorities

Digital scholarship will never become a high priority for junior faculty until changes in tenure and promotion practices and academic culture accord digital projects the same weight as traditional publications. Until that time, the question untenured faculty will continue to ask themselves is: “Should I be spending time learning Java or should I be spending time writing this book?” Even those who are highly motivated to pursue digital projects find it hard to justify the time investment and feel that work on digital projects comes at the expense of their other responsibilities. Responding to why she had not pursued further development of a digital project, one faculty member commented, “It’s the other projects on the plate. It’s the fact that me doing this [project] will count for next to nothing in my tenure track process, so it makes zero sense for me to do it right now, even though it’s what I would really like to be doing. It’s what will be of possibly most use to scholars.”

Faculty also need better upfront guidance on how much time they should expect to invest in learning and implementing technologies and a convenient hub for basic information and referrals so that they don’t waste time shuttling between various campus service providers. Lowering the barriers to entry and setting realistic expectations will help faculty members make informed choices about how to spend their time.

Navigating support networks

At least four faculty members specifically described Harvard as “decentralized” and therefore difficult to navigate. They find it difficult to keep up with all the activities, events, and services available on campus. In terms of digital scholarship, they lack a central hub, somewhere to turn to for advice no matter what their question. Several faculty members described their ideal digital scholarship support service as one that facilitates information flow. As one commented, “Harvard is very decentralized, so there’s often things going on and people don’t know that it’s going on somewhere else on campus, even though it would fit their needs perfectly or there would be great opportunities for collaboration and so on . . . Creating a real network structure where information flows in ways that make sense is really important.”

Funding and sustainability

Faculty members identified sustainability and funding sources as a challenge. Several have benefited from grant funding, including the campus Lasky-Barajas Grants and private foundation funds. Once grant funding for a project ends, scholars have found themselves without a source of ongoing technical support and labor to maintain and further develop their digital projects. Several said they had applied for or expressed interest in pursuing grants from the National Endowment for the Humanities and the Mellon Foundation among other sources of funding.

Faculty Need	Library Response
Corpus creation	<p>Training and advisory</p> <ul style="list-style-type: none"> • available database software • fundamentals of database design • metadata • web scraping technologies • working with external vendors (e.g., creating RFPs & contracts) • personal digital information management (e.g., organizing the image files you use for your research) <p>Referrals</p> <ul style="list-style-type: none"> • Dataverse • trusted freelance database designers • imaging services and DRS • subject specialists to identify subject-specific datasets <p>Resources</p> <ul style="list-style-type: none"> • sample datasets for check-out • web-based resource guides <p>Partnerships</p> <ul style="list-style-type: none"> • Partner with scholars who have datasets of significant cultural or scholarly value to ensure the database is accessible (e.g., building a web-based front-end) and preserved
Data analysis & visualization	<p>Training and advisory</p> <ul style="list-style-type: none"> • fundamental concepts of data analysis and visualization • statistical analysis software • popular coding languages for data visualization (e.g., Python, R) • network visualization <p>Referrals</p> <ul style="list-style-type: none"> • Dataverse • IQSS <p>Resources</p> <ul style="list-style-type: none"> • specialized software and hardware • web-based resource guides
Text mining & markup	<p>Training and advisory</p> <ul style="list-style-type: none"> • fundamental concepts of text mining and markup • advanced techniques and software for text mining • popular coding languages (e.g., Python, R) <p>Resources</p> <ul style="list-style-type: none"> • specialized software and hardware • web-based resource guides <p>Partnerships</p> <ul style="list-style-type: none"> • collaborative text mining and markup projects with scholars • development of first-of-a-kind text mining or markup projects

Faculty Need	Library Response
Annotation	<p>Training and advisory</p> <ul style="list-style-type: none"> available annotation tools <p>Referrals</p> <ul style="list-style-type: none"> Academic Technology Group
GIS & mapping	<p>Training and advisory</p> <ul style="list-style-type: none"> fundamentals of GIS and geospatial analysis available GIS and mapping software <p>Referrals</p> <ul style="list-style-type: none"> MMDGI for in-depth guidance and instruction Center for Geographic Analysis for in-depth guidance and instruction and contract work
Web & software development	<p>Training and advisory</p> <ul style="list-style-type: none"> fundamentals of web development and content management systems available content management systems fundamentals of programming discipline-specific training (e.g., Coding for Classicists) fundamentals of UX crafting RFPs and contracts for digital projects <p>Referrals</p> <ul style="list-style-type: none"> commercial web development firms Harvard Web Publishing HUIT or Library IT User Research Center MetaLab <p>Resources</p> <ul style="list-style-type: none"> web-based guides for web development and customization, content management systems model RFPs and contracts for working with outside vendors guidelines for creating “preservable” websites and software database of trusted vendors <p>Partnerships</p> <ul style="list-style-type: none"> custom UI development first-of-a-kind web development projects provision of WordPress or other CMS hosting or preservation of websites
Multimedia content creation & analysis	<p>Referrals</p> <ul style="list-style-type: none"> Media production labs and multimedia librarians

Faculty Need	Library Response
Digital curation & publishing	<p>Training and advisory</p> <ul style="list-style-type: none"> • Available platforms for digital exhibits (e.g., Omeka, WordPress) • Digital curation in the classroom • Available platforms for digital publication (e.g., Open Journal Systems, Scalar, WordPress, Drupal) • Copyright and fair use <p>Referrals</p> <ul style="list-style-type: none"> • Office of Scholarly Communication for copyright guidance and hosting/archiving and OA publishing • DRS for digital content hosting • FAS Academic Technology Group for Omeka <p>Resources</p> <ul style="list-style-type: none"> • Model publishing contracts • Seamless integration of library digital collections with Omeka (or other digital exhibit software) <p>Partnerships</p> <ul style="list-style-type: none"> • Provision of Omeka infrastructure and customization services • E-journal hosting and infrastructure
Hosting, storage, preservation	<p>Training and advisory</p> <ul style="list-style-type: none"> • preservation best practices • metadata and standards • fundamentals of setting up web hosting <p>Referrals</p> <ul style="list-style-type: none"> • DRS • Harvard Web Archiving Service • Office of Scholarly Communication • Technical services librarians (metadata experts) • commercial web hosting services • Dataverse • subject repositories <p>Resources</p> <ul style="list-style-type: none"> • web-based resource guides <p>Partnerships</p> <ul style="list-style-type: none"> • provide A Domain of One's Own (service from Reclaim Hosting) or other web domain hosting service • provide short, medium, and long-term digital preservation for faculty digital projects
Physical spaces	<p>Partnerships</p> <ul style="list-style-type: none"> • partner with faculty and grad students to provide library space for community-building events and workshops

Faculty Need	Library Response
Community	<p>Referrals</p> <ul style="list-style-type: none"> • local and regional DH community (e.g., BostonDH) • potential collaborators <p>Resources</p> <ul style="list-style-type: none"> • guide to digital scholarship support at Harvard (e.g., Where to Go for Help with Text Mining, Data Visualization, etc.) • database of digital projects and practitioners at Harvard <p>Partnerships</p> <ul style="list-style-type: none"> • establish Faculty Advisory Board to provide input on digital scholarship activities and serve as library ambassadors • partner with departments or individual faculty to host meet-ups and social events around digital scholarship
Sustainability & funding	<p>Training and advisory</p> <ul style="list-style-type: none"> • grant-writing for digital projects • crafting RFPs and contracts for digital projects • preservation best practices <p>Referrals</p> <ul style="list-style-type: none"> • Office of Sponsored Research • data management librarian (for data management plans) • external vendors and freelancers • web hosting services <p>Resources</p> <ul style="list-style-type: none"> • model contracts • model data management plans <p>Partnerships</p> <ul style="list-style-type: none"> • seed grants funded by the library • graduate fellows funded through or managed by the library • long-term preservation of selected digital projects

Web Survey Findings: Aggregate Results

Survey Methodology

This survey was designed and conducted by Sarah Lippincott on behalf of the Harvard Libraries.³⁴ The survey was distributed through the Library's User Research Center, which maintains a pool of graduate student research participants, as well as through the Library's departmental liaisons, and through direct invitation to faculty members who participated in interviews with the researcher. The survey opened on April 17, 2017 and officially closed on May 19, 2017.

Respondents were asked to consider the following definition of digital scholarship when responding to the survey:

Digital scholarship includes the use of digital tools and methods to support research, teaching, content creation, and stewardship. For instance,

- *digitization and the use or creation of digitized collections;*
- *data acquisition, description, analysis, visualization, stewardship and curation;*
- *digital content creation and sharing, including digital publishing;*
- *GIS and mapping;*
- *text mining and analysis;*
- *and the hardware, software, and infrastructure to support all of the above.*

The survey comprised 22 questions about respondents' attitudes and practices regarding digital scholarship. The charts referenced in this summary of findings can be found in **Appendix A**.

Demographics

280 individuals responded to the survey, including 230 graduate students, 18 faculty members, 16 staff, 7 undergraduate students, 4 postdoctoral scholars, and 5 respondents who selected "other" (visiting fellow, Institute Executive Director, graduate student and staff, visiting graduate student, staff and extension school grad). The majority of respondents are affiliated with the Graduate School of Arts and Sciences (56%, n=154) or the Faculty of Arts and Sciences (24%, n=66). Respondents also came from six other schools, including the School of Engineering and Applied Sciences (6%, n=18), Harvard Medical School (5%, n=14), Harvard Graduate School of Education (3%, n=9), Harvard College (2%, n=6), the Harvard T.H. Chan School of Public Health (1%, n=4), and the Harvard Kennedy School (<1%, n=2). See **Charts 1 and 2 (Appendix A)** for visualizations of this data.

The survey received responses from 31 different departments, including African and African American Studies, American Studies, Anthropology Celtic Languages and Literatures, Chemistry and Chemical Biology, Comparative Literature, Computer Science, Earth and Planetary Sciences, East Asian Languages and Civilizations, Economics, English, Germanic Languages and Literatures, Government, History, History of Art and Architecture, History of Science, Human Evolutionary Biology, Linguistics, Molecular and Cellular Biology, Music, Near Eastern Languages and Civilizations, Organismic and Evolutionary Biology, Philosophy, Physics, Psychology, Religion, Romance Languages and Literatures, Slavic Languages and Literatures, Sociology, The Classics, and Visual and Environmental Studies. An additional 36 respondents selected "Other" as their departmental affiliation. See **Chart 3 (Appendix A)** for a breakdown of the number of respondents by department.

Digital Scholarship Adoption & Practices

Half of respondents (n=134) engage in digital scholarship in their research, including 51% of graduate students (n=111) and 11% of faculty members (n=2). Two percent of respondents (n=5) engage in digital scholarship just in their teaching. Nearly a quarter (n=65) of respondents engage in digital scholarship in BOTH their research and teaching, including 67% of faculty members (n=12) and 23% of graduate students (n=50). In aggregate, 76% of graduate student respondents (n= 165) and 78% of faculty member respondents (n=14) currently engage in digital scholarship in some way. Five undergraduate respondents (71%) said they engage in digital scholarship in their research, while the

³⁴ Some survey questions and the definition of digital scholarship used in the survey were adapted from CU-Boulder (<https://drive.google.com/file/d/0BxDeCluY6d8LTvPLM0hLWURiWnc/edit>) and the University of Illinois at Urbana-Champaign, courtesy of Harriett Green.

remaining two do not and are not interested in it. Eighteen percent of respondents (n=49) do not currently engage in digital scholarship but indicated they would like to, including 18% of graduate students (n=40) and 22% of faculty (n=4). In total, only 5% (n=15) of respondents said they do not engage in digital scholarship and are not interested in doing so. Of those respondents, 9 indicated that their lack of interest was because it is unclear to them what digital scholarship is. Another 9 reported that they feel digital scholarship does not pertain to their research and/or teaching. Two reported that they were uninterested because of a lack of clarity about how digital scholarship would be evaluated in the tenure/promotion process and one due to a lack of time to learn new tools and/or methods. These results are detailed in **Charts 4 and 5 (Appendix A)**.

General use of digital or digitized collections was the most common current digital scholarship practice (n=100); followed by data visualization (n=83); editing and manipulation of digital images, video, and audio (n=80); and annotation of digital texts, images, video, or audio (n=68). Many comments at the end of the survey addressed the significance of having convenient access to extensive, high quality digital collections. One respondent noted, “Access to digital resources have made it possible for me to complete an entire dissertation while living away from Cambridge. I’ve been very grateful for this access.” All of the 19 tools/methods listed in the survey were used by at least one respondent and current digital scholarship practitioners use an average of 3.5 different tools/methods.

Respondents would *most like to* visualize data (n=72); create online exhibits (n=66); perform computational text analysis or text encoding (n=60); and use geospatial analysis (n=53). Particularly large discrepancies between current and desired practices exist for creating online exhibits, computational text analysis and text encoding, machine learning and computational linguistics, and digital writing/storytelling/remixing. These areas may particularly benefit from added support and resources. The full comparison of current and desired practices is reported in **Chart 6 (Appendix A)**. **Chart 7 (Appendix A)** presents a breakdown of desired use of specific tools and methods by user type: users currently engaged in other forms of digital scholarship users who do not currently engage in any digital scholarship.

Barriers

Of those respondents who currently engage in digital scholarship or are interested in doing so, 88% (n=205) identified a lack of time to learn new tools and/or methods as a barrier. Another 42% (n=97) said a lack of campus support (e.g. training, consultations, assistance, partnerships) presented a barrier, and 36% (n=83) were put off by a lack of other resources (e.g., necessary tools, hardware, software, facilities). A smaller percentage identified a lack of clarity about how digital scholarship would be evaluated in the tenure/promotion process (28%, n=65), a lack of funding to support digital scholarship (27%, n=63), or a lack of collaborators (22%, n=50) as barriers. See **Chart 8 (Appendix A)** for a visualization of these data. Respondents who chose to enter a free text response added a lack of courses offered in their department, or a general lack of departmental support and resources. Two respondents indicated that they were previously unaware of digital scholarship or the specific tools and methods discussed in the survey. A lack of awareness of available resources can be just as frustrating for scholars as not having those resources at all. Several respondents specifically called out the difficulty of navigating Harvard’s decentralized system, and the lack of sufficient communication and outreach from support services. As one respondent observed, “It can be hard to figure out what resources are even available, there’s no good introduction to it or breakdown of what is available, to whom, and how to access it. The assumption seems to be that we all just figure it out, but how can I utilize a source that I don’t even know exists, and there is not even a hint that it exists?”

Current and Desired Support

The majority of respondents (54%, n=132) indicated that their department neither discourages nor encourages digital scholarship. Forty percent of respondents indicated that their department either encourages (n=58) or strongly encourages (n=29) digital scholarship, while 10% of respondents said their department either discourages (n=14) or strongly discourages digital scholarship (n=10). Graduate students, in particular, seem to suffer from this lack of clarity. On the one hand, they hear from faculty members and other students that digital skills will increasingly distinguish them in a competitive job market. On the other, they do not get the concrete support they need to build and exercise these skills. One respondent related the following anecdote: “I proposed a digital humanities project for funding and support early in my graduate work and got neither support nor funding. I was able to attend an in-person seminar to learn some skills, but the time commitment necessary to really put these skills to use was too much. I was also

worried about whether this project would be seen as ‘real scholarship’ . . . I gave up the project and did something much more traditional. I don’t think my advisors would have been against my pursuing that project, but it would have been something added onto the traditional dissertation, not a replacement of it.”

Scholars turn to a variety of individuals and campus units for help with their digital scholarship. Most commonly, they go to their Harvard colleagues (n=90), followed by external communities like professional/disciplinary associations or digital humanities groups (n=66). Nearly a quarter (n=41) say they do not get any support. Twenty-two respondents have sought help from Harvard Libraries. Respondents specifically named librarians Kang Mi-Kyung, Hugh Truslow, Odile Harter, Mary Dorothy Ronnie, and the Fine Arts Library, the Countway Library, Lamont Library, Widener Library, the Harvard-Yenching Library, Ernst Mayr Library, and the Museum of Comparative Zoology. Two respondents said they find support at IQSS. Other responses included professional editors and designers; project staff; Google and internet forums; centers and institutes (Reischauer Institute and Center for History and Economics); and friends in the software industry. **Chart 10 (Appendix A)** visualizes these results.

Respondents were asked to identify up to three support services or resources they would most like to have at Harvard. Online training, tutorials, and documentation (n=101) was the most popular response, very closely followed by in-person workshops (n=97) and campus technology infrastructure (n=90). Consultation services garnered 76 responses. Physical spaces (n=29), institutional commitment to digital scholarship (n=24), and events that showcase digital scholarship projects (n=19) rounded out the bottom of the list. Additional responses included two requests for more funding for digital projects, a request for course release to make time to develop digital projects, individual visits from digital experts, more campus support from existing IT groups. General comments at the end of the survey reflected the same trends. Respondents are eager for more training in digital scholarship methods, and often need to look beyond their department for support. Ideally, respondents want training that is specific and responsive to their needs. Several comments indicated that the currently available training is too broad or too advanced. As one respondent commented, “workshops I’ve attended for research computing have been badly mis-calibrated (way too advanced for an ‘introductory’ session).” In terms of campus technology infrastructure, the results of faculty interviews conducted alongside this survey indicate that web hosting and digital preservation are of particular interest.

Web Survey Findings: Results by Department

Demographics

The best represented department overall was Organismic and Evolutionary Biology, with 22 responses, followed by History (11), Chemistry and Chemical Biology (11), History of Art and Architecture (10). The survey also collected responses from 29 additional FAS departments, all with fewer than 10 responses each. The full breakdown of responses by department is detailed in **Chart 3 (Appendix A)**.

The status of the respondents from each department (faculty, postdoctoral scholar, graduate student, undergraduate student, staff, or other) is reported in **Chart Set 12 (Appendix A)**. The largest number of faculty responses came from History of Art and Architecture and English (both with 3 faculty responses), while Chemistry and Chemical Biology had the largest number of graduate student responses (10). Organismic and Evolutionary Biology supplied the most responses from both postdoctoral scholars (3) and staff (11). The largest number of undergraduate responses came from the Classics (2).

Digital Scholarship Adoption & Practices

Organismic and Evolutionary Biology had the largest number of digital scholarship practitioners, with 17 respondents saying they engage in digital scholarship in their research, teaching, or both. They are followed by History of Art and Architecture (10) and the Classics (8). Celtic Languages and Literatures, Comparative Literature, Germanic Languages and Literatures, History of Art and Architecture, Music, Philosophy, Visual and Environmental Studies all tied for the highest proportion of respondents (100%) who indicated they currently engage in digital scholarship. Sociology (29%) and Physics (25%) had the highest proportion of respondents who indicated they are not interested in digital scholarship. See **Chart 13 (Appendix A)** for a full breakdown of interest by department.

East Asian Languages and Literatures, Government, and Visual and Environmental Studies boasted the largest spread

of current and desired use of digital scholarship tools and methods. Respondents in these departments each use or would like to use 18 different tools and methods. Departments reported currently employing an average (mean) of 8 different methods. **Chart Set 14 (Appendix A)** details current and desired use of specific digital tools and methods by department.

Departmental Support

Respondents from the Psychology department were most likely to say their department strongly encourages digital scholarship (4 respondents). Six departments had one respondent, respectively, indicate that their department strongly discourages digital scholarship: Classics, Comparative Literature, East Asian Languages and Civilizations, History of Art and Architecture, Organismic and Evolutionary Biology, and Psychology. See **Chart Set 15 (Appendix A)** for full details.

Desired Support

Chart Set 16 (Appendix A) breaks down desired support services by department.

V. Recommendations

Goals and Outcomes Resulting from Library Action

Position the Library as a Digital Scholarship Hub.

- develop a reputation as a place where disciplinary expertise, world-class print and digital collections, and technology support come together
- raise the visibility of the existing skill sets and resources available in the Library
- develop user-oriented services informed by ongoing input from scholars
- transform the library into a “one-stop shop” for digital scholarship, where users can receive assistance and/or reliable referrals and orientation to other campus resources along with access to the Library’s digital collections

Strengthen Community.

- build a vibrant community of digital scholarship practitioners that includes faculty members, students, and librarians, and staff
- provide resources (e.g., spaces, funding, expertise) that support creation, collaboration, and knowledge-sharing

Strengthen and Expand Technical Infrastructure.

- develop systems that allow scholars to build, manage, and preserve digital scholarship in a variety of forms

Streamline Digital Scholarship Support.

- develop outreach mechanisms that help scholars navigate the range of services available on campus
- form strategic partnerships with other campus units

Improve Communication and Outreach.

- create web and other media that highlight available and emerging services and showcase the possibilities of digital scholarship
- develop mechanisms for librarians to communicate with one another about digital scholarship and act as “intake” for new digital projects

Recommendations for Library Action

Recommendations for library action are organized into three phases, an approach inspired by the University of Houston Libraries.³⁵ This phased approach encourages the Library to work towards longterm goals that require additional time and resources while simultaneously addressing immediate needs and clarifying existing structures. These phases could unfold sequentially, but will likely overlap.

Phase 1: Consolidating and Marketing (6-12 months)

Recommendation 1: Establish a Digital Scholarship Advisory Board

The campus needs assessment and external scan demonstrate the importance of developing close, ongoing relationships with digital scholarship champions at Harvard. An advisory board comprising faculty and library leadership (potentially alongside graduate students and representatives from other campus partners such as the FAS Academic Technology Group) provides a forum to develop these connections. The advisory board helps guide mission and service development and members function as ambassadors for the library’s digital scholarship initiatives.

Recommendation 2: Develop a Unified Web Presence for Digital Scholarship

Scholars need clear and comprehensive information about the resources and services available to them. Harvard’s decentralized structure, cited by many interview and survey participants, makes it difficult to discover the wealth of support the university has to offer. An effective website for digital scholarship should include two major components: a **showcase of digital projects** and a **detailed guide to service providers** at Harvard.³⁶

³⁵ see <https://uh-ir.tdl.org/uh-ir/bitstream/handle/10657/1623/DsstFinalReport.pdf?sequence=1>

³⁶ A guide created by Harvard’s Faculty of Arts and Sciences offers an excellent starting point. See <http://www.fas.harvard.edu/~socsci/Documents/DigitalHumanitiesResourceGuide2010.pdf>.

Additional content might include:

- an events calendar
- web-based tutorials and other instructional resources
- links to campus centers and service providers and a description of their offerings
- links to external DH communities (e.g., professional associations, regional interest groups)
- a database of campus digital scholarship projects (ideally with options for sorting and searching by discipline, method/tool, and contributors)
- a blog documenting digital scholarship activities in the library or on campus
- a list of trusted external vendors
- links to LibGuides or websites for specific departments/schools (e.g., the Harvard Yenching Library's East Asian Digital Humanities Lab research guide³⁷)
- a portal for open and licensed data sets available to researchers

Examples of effective digital scholarship websites are presented as **Appendix G**.

Recommendation 3: Develop an Identity for Library Digital Scholarship Services

It's never too early to think about identity and branding. A name, a clear mission statement or tag-line, and a visual identity (e.g., a logo) are crucial for building visibility and credibility on campus. Successful digital scholarship initiatives have memorable names (e.g., NULab, Scholars' Lab, DARTH) and many have developed eye-catching branding.³⁸ Even without a dedicated space or a formal administrative designation, branding and identity development indicate an organized, serious commitment to digital scholarship.

Phase 2: Responding to Current Needs (6-18 months)

Recommendation 1: Launch Fundamentals of Digital Scholarship Workshop Series for Scholars and Librarians

Respondents to the digital scholarship survey overwhelmingly requested in-person workshops on digital scholarship topics. They want both elementary workshops that help them understand the variety of tools and approaches and their relevance to their research interests, as well as tailored, discipline-specific instruction that acknowledges their unique needs. Ideally, the library would provide both of these types of workshops. General introductory workshops could be taught independently or in partnership with other units on campus (e.g., CGA, DARTH), while discipline-specific workshops could be co-taught by a technologist and a subject specialist. The library seems well-positioned to begin offering a "Fundamentals of Digital Scholarship" workshop series in the near future. These topics would be appropriate for faculty members, graduate students, and librarians. Full descriptions, learning outcomes, and links to module materials for a suggested workshop series for librarians are compiled as **Appendix F**.

Recommendation 2: Launch a Graduate Student Fellowship Program

Graduate student fellowships, like those described in detail in the case studies in **Section III**. Graduate students bring disciplinary and research expertise as well as a network of peers and colleagues. Fellows typically work on their own digital scholarship (which may become part of the digital scholarship center's "collection"), as well as teaching workshops and offering consultations. Fellows may be funded entirely through the library, or jointly with a department or center. Not only can graduate students help diversify the skill set available in the library, they also bring the potential of digital scholarship to life, helping create a vibrant community of practice.

Recommendation 3: Hire a Director of Digital Scholarship

The Director of Digital Scholarship becomes the go-to individual for advanced consultations, acts as an ambassador for digital scholarship activities, leads professional development efforts for librarians, and builds the library's profile as digital scholarship hub. Model position description and a brief analysis of typical responsibilities and qualifications follows as **Appendix H**.

³⁷ <http://guides.library.harvard.edu/c.php?g=608708&p=4224591>

³⁸ see, for example <http://dhrees.yale.edu/wp-content/uploads/2016/08/dh-lab-1-300x169.jpg>, http://dhasia.org/wp-content/uploads/2015/06/DHAsia_Logo1-980x980.jpg, <http://www.ucl.ac.uk/dh/images/ucldh-logo>, <https://static1.squarespace.com/static/58b4c9125016e12e671e074f/t/58ba028cd482e9728b7ea99a/1488585399118/>

Recommendation 4: Launch Digital Scholarship Office Hours

Launching a schedule of regular drop-in office hours is a great way to test the market for formal support services and gather further data about the types of projects scholars would like to undertake. Office hours can be staffed by graduate students, the Director of Digital Scholarship, and/or other librarians who have completed the digital scholarship professional development curriculum.

Phase 3: Taking the Lead (12-18 months)

Recommendation 2: Expand Services and Staffing

The “Faculty Needs/Library Response” table in **Section V** describes specific opportunities for the library to provide consulting, training, referral, and infrastructure resources for a variety of digital scholarship methods, from text analysis to GIS. In order to fully implement these services, the Director of Digital Scholarship position will need to be complemented by technology specialists and trained graduate students. A formal digital scholarship unit might adopt the following responsibilities:

- establishing policy for units across campus;
- providing high-level skills and expertise for sophisticated users as well as providing non-judgmental space for novice users to get training and guidance;
- acting as an information clearinghouse, policy-making body, communication office;
- providing project management;
- determining the types of projects the library should support and running pilots;
- negotiating change in status of library from “service” to “partner”
- continually define literacy level for staff, provide training that helps staff achieve those levels

Recommendation 2: Build Technical Infrastructure

Implement “A Domain of One’s Own” from Reclaim Hosting or other web hosting system

Partner with Academic Technology Group to support campus-wide Omeka implementation, customization, and training and streamlining integration of digital collections with Omeka.

Recommendation 3: Run Pilot Projects, Launch Digital Scholarship Incubator

A full-fledged digital scholarship program involves active partnerships with scholars. This can be accomplished through:

- starting a digital scholarship incubator program that gives individual or teams of scholars an opportunity for intensive guidance, project planning, workshopping, and peer review³⁹
- providing competitive grants to faculty members
- hosting a digital-scholar-in-residence
- or “acquiring” existing or emerging projects to be hosted and maintained by the library

Recommendation 4: Expand Professional Development for Librarians, “Launch DS First Responders”

A 2015 CLIR report on digital scholarship centers advises leaders to “cultivate your ‘stars’ selectively (offer deep opportunities to those who are the most receptive).”⁴⁰ To build on the “Fundamentals of Digital Scholarship” professional development curriculum, which aims to raise technology literacy across the board, the library might consider more intensive training to prepare selected librarians to become point-persons for different types of digital scholarship practices. The success of Kyle Courtney’s Copyright First Responders program recommends this approach. A cohort-based, intensive digital scholarship training institute based, such as those being deployed at Indiana University and Columbia University (based on the Praxis Model developed at the UVa Scholars’ Lab) provides the environment and type of training these librarians would need. Also promising are co-learning groups such as Advent of Python a virtual “co-learning group” for librarians who want to learn Python, which encourage librarians to develop skills collaboratively over the course of several months.⁴¹

³⁹ for a description of how the incubator model is being implemented via a 7-week program at Florida State University, see https://docs.google.com/forms/d/e/1FAIpQLSeNl6iGUdwCoBdWu_93k4bLi5SrChOnbbrsqzncbssU19_jw/viewform?c=0&w=1&fbzx=5755419485909581000

⁴⁰ Lewis, V., Spiro, L., Wang, X., and Cawthorne, J.E. (2015). “Building Expertise to Support Digital Scholarship: A Global Perspective.” CLIR: Washington, D.C. <https://www.clir.org/pubs/reports/pub168/pub168>

⁴¹ details at <https://docs.google.com/document/d/1XYzQrudhCTG0m1CxEWelBQhFAj7CwDUvsIom-OXbv3c/edit>. See also de la Cruz, J. and Hogan, JD. (2016). “Hello, World!”: Starting a Coding Group for Librarians” AUC Robert W. Woodruff Library Staff Publications. Paper 9. <http://digitalcommons.auctr.edu/libpubs/9>

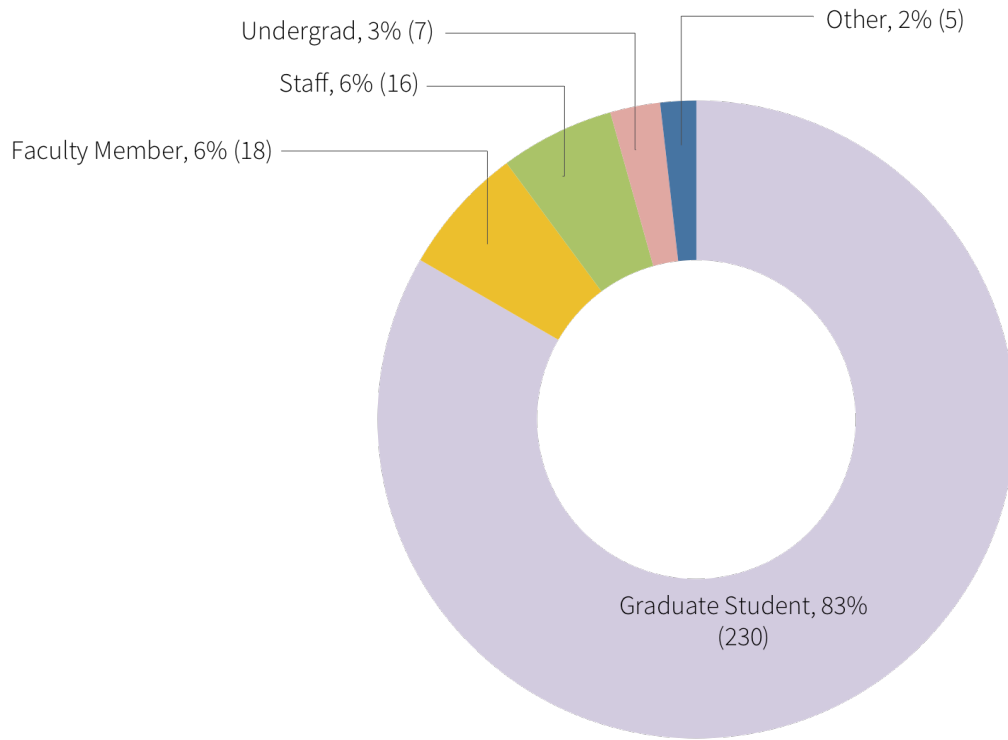
Recommendation 5: Establish Dedicated Space for a Digital Scholarship Center

A 2015 CLIR report succinctly explains the rationale for creating a dedicated physical space for digital scholars, observing that, “It was suggested [by staff at digital scholarship centers] that one of the goals of the digital scholarship center or the scholars’ lab was to effectively make itself obsolete.” As one interviewee in the report elaborated, “Digital Scholarship Centers are being added to the work of libraries. In order to take steps into this space in a substantive way, many organizations need to deliberately identify and define what these centers offer. While some of what digital scholarship centers do will eventually become a broader library service, defining it separately now helps to create attention and clarity which is needed by library users, staff, and administrators.”⁴² Based on interview and survey results, such a space at Harvard need not have an abundance of high-end technology. Rather, a space for gathering, hosting workshops or seminars, and collaborative work, as well as a staffed service desk, would more appropriately serve current needs. In the future, the library might consider augmenting the physical space with technology such as powerful computers preloaded with appropriate software, large high-resolution screens for visualizations, and studios for multimedia content creation and editing.

42 http://digitalpreservation.gov/meetings/dcs16/DChudnov-MGallinger_LCLabReport.pdf?loclr=blogsig

Appendix A: Web Survey Charts

Chart 1 & 2. Respondent status and school affiliation



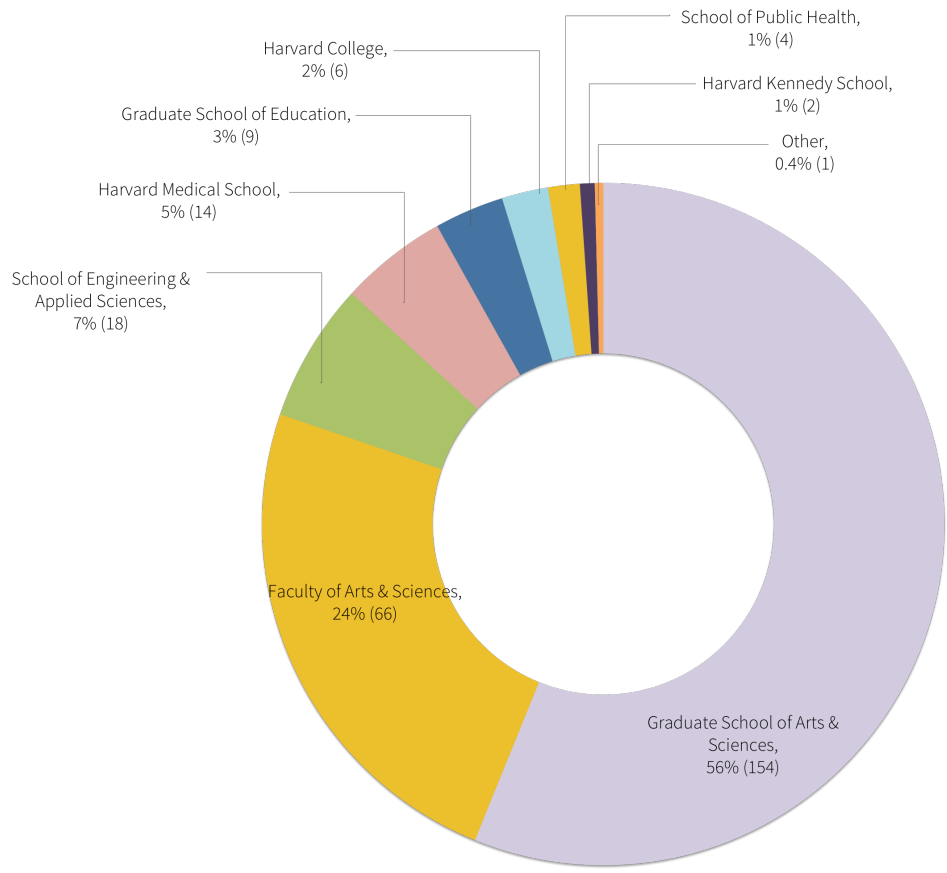


Chart 3. Respondent departmental affiliation

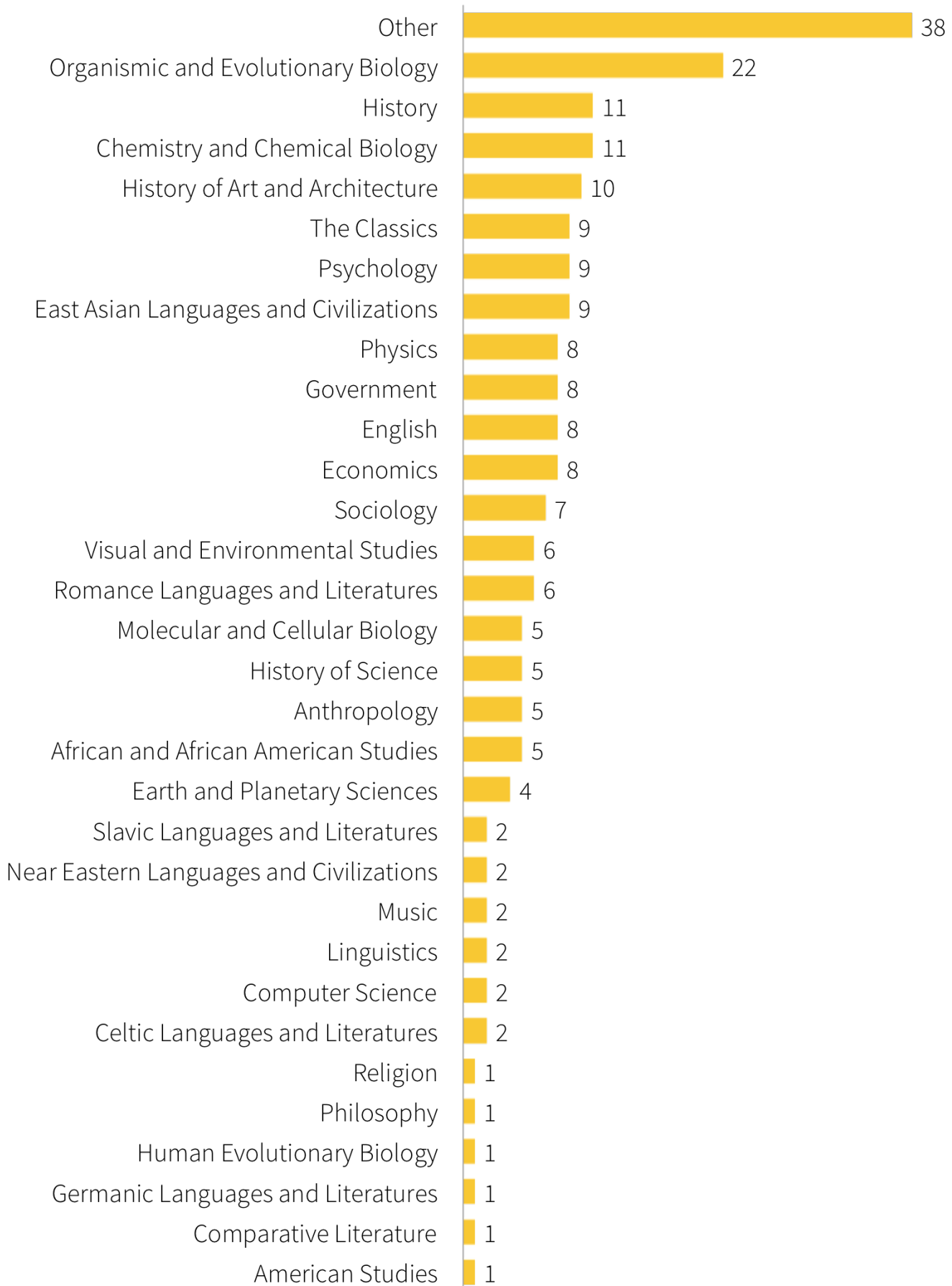
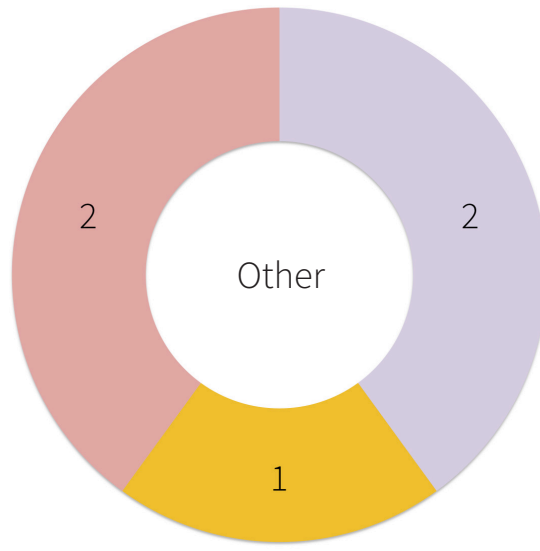
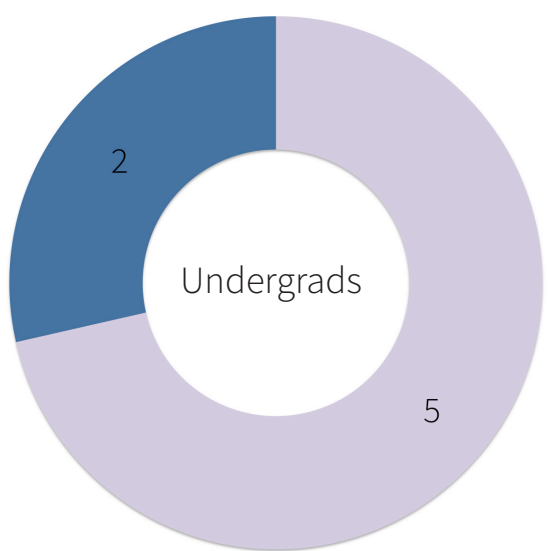
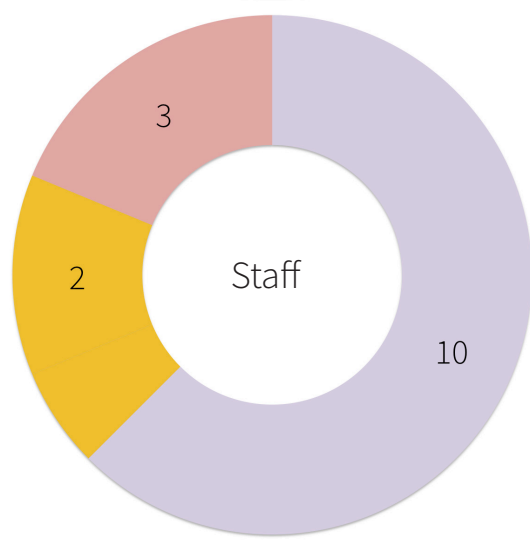
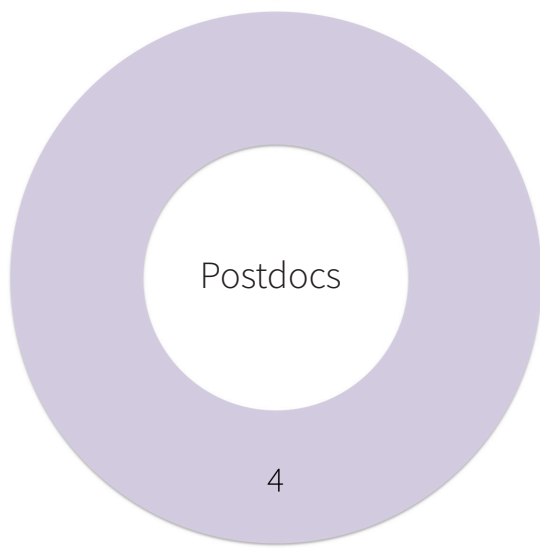
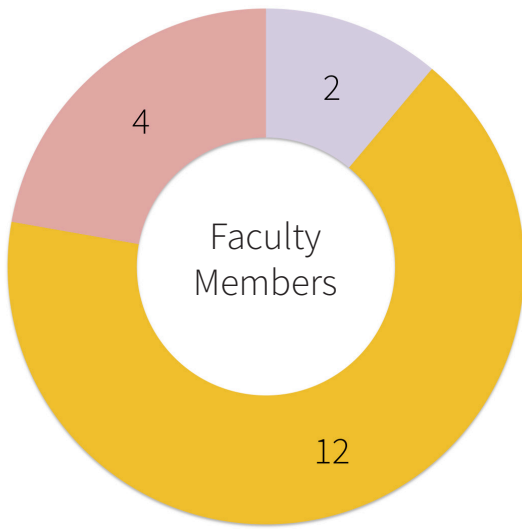
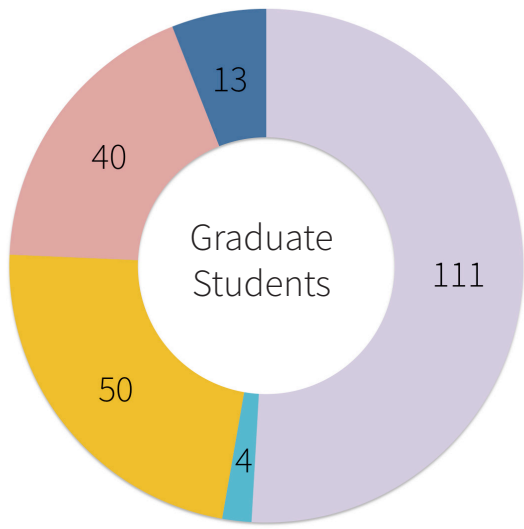
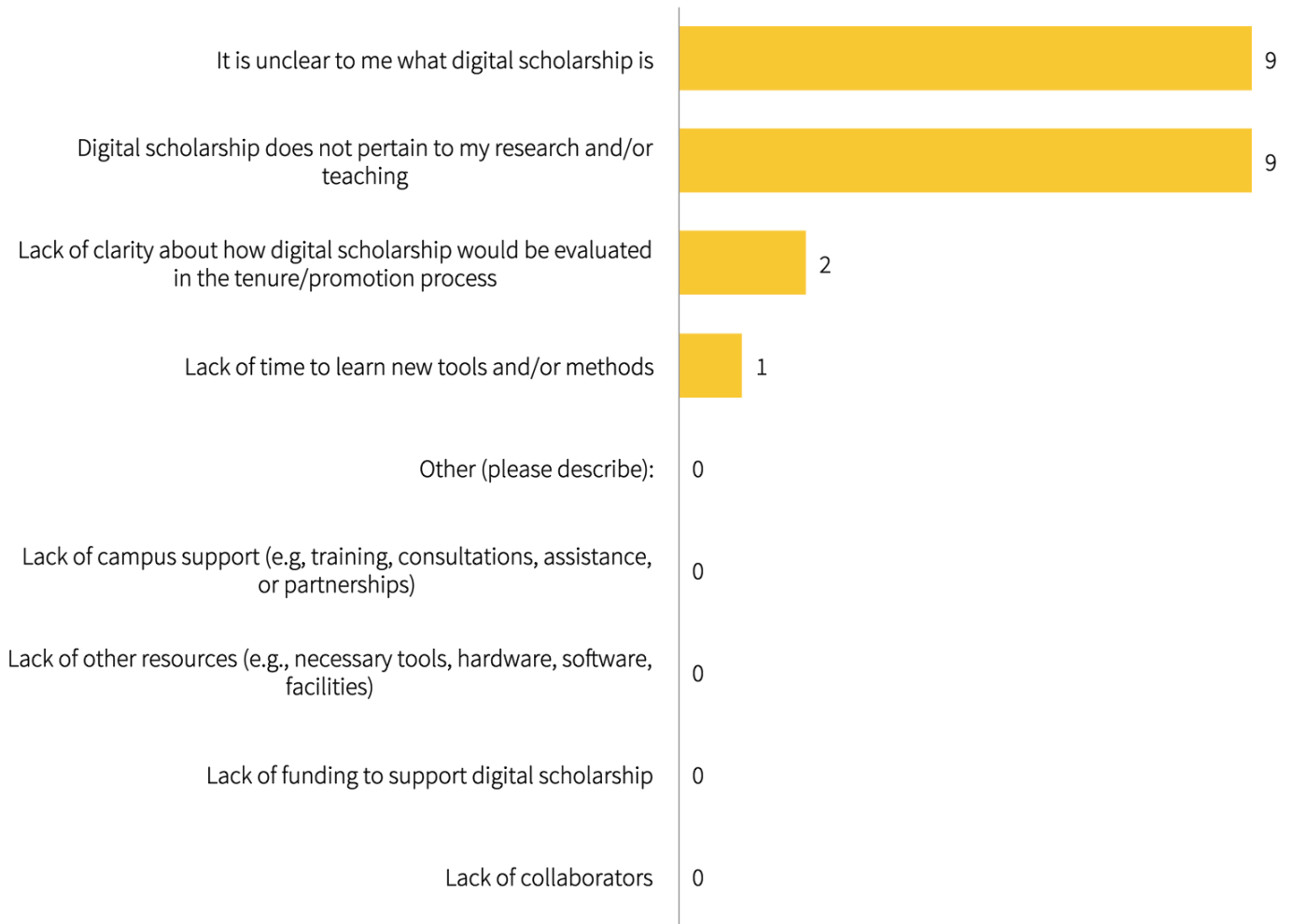


Chart 4. Current engagement with digital scholarship by status



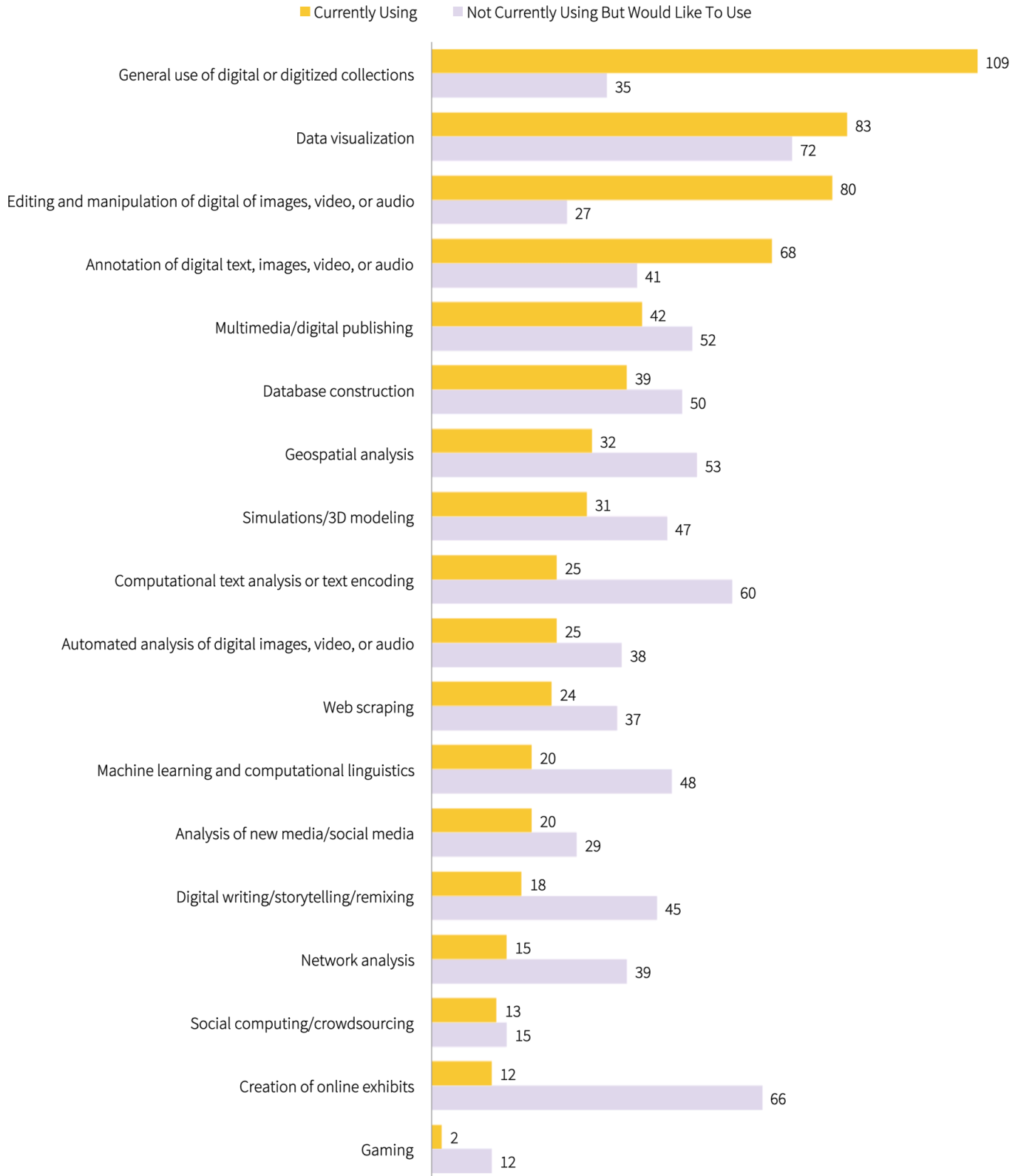
■ Yes, in my research.
 ■ Yes, in my teaching.
 ■ Yes, in both my research and teaching.
 ■ Neither, but I would like to.
 ■ Neither, and I am not interested.

Chart 5. Reasons for lack of interest in digital scholarship



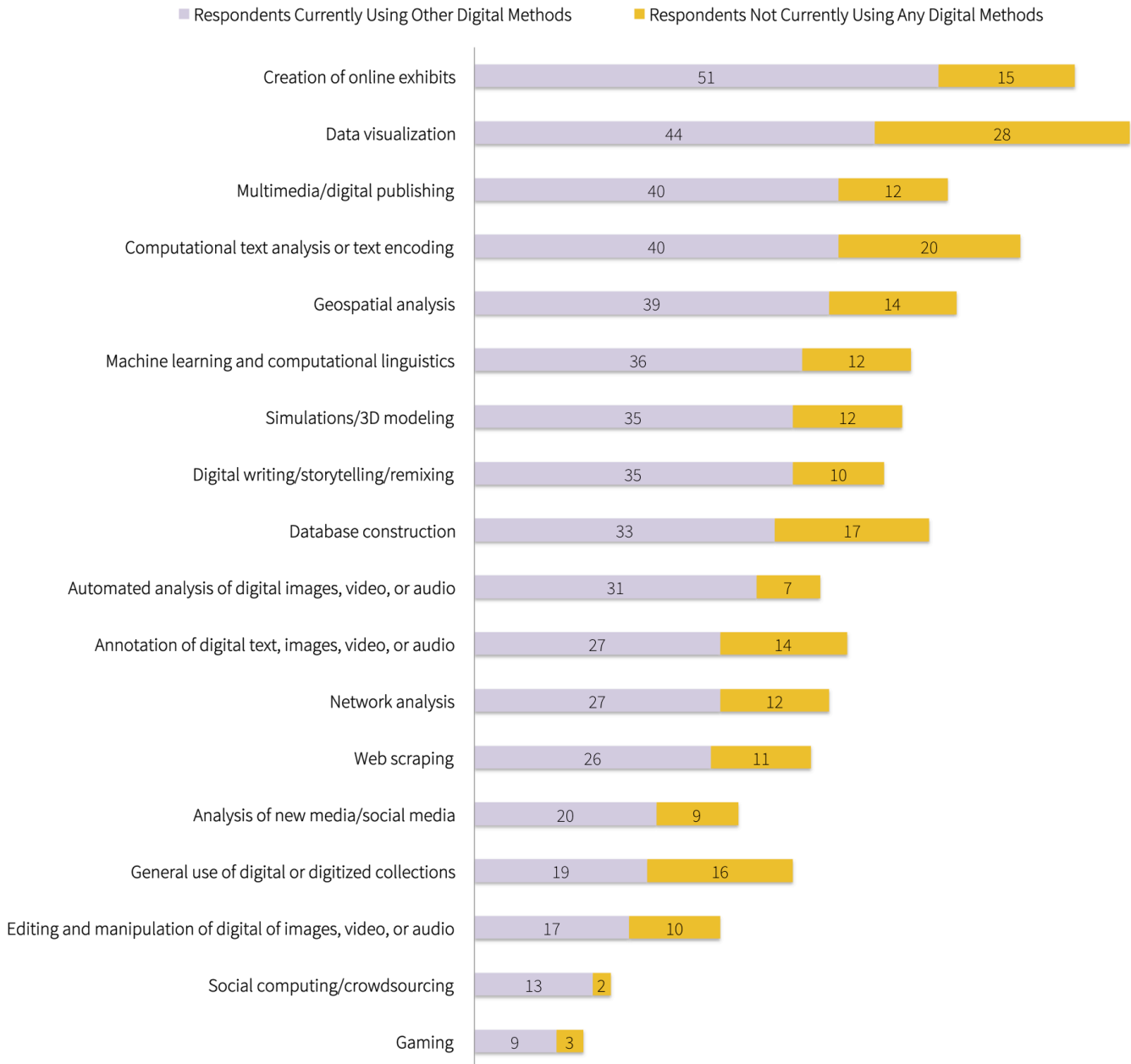
Note: Data gathered from question 3.1 from respondents who indicated that they do not currently use digital tools or methods and are not interested in learning more about them.

Chart 6. Current and desired engagement with digital scholarship tools



Note: Data gathered from questions 3.1, 5.1, and 5.2. Responses include those who are currently using some digital scholarship methods and those who say they do not use digital scholarship methods. The survey design did not preclude respondents from selecting the same method for questions 5.1 and 5.2 (i.e., a respondent could say she both currently uses “Network analysis” and *would like to use* “Network analysis”). These redundant responses were excluded from the numbers presented here.

Chart 7. Current and desired engagement with digital scholarship tools by DS practitioners and non-practitioners



Note: Data gathered from questions 3.1 and 5.2. The survey design did not preclude respondents from selecting the same method for questions 5.1 and 5.2 (i.e., a respondent could say she both currently uses “Network analysis” and *would like to use* “Network analysis”). These redundant responses were excluded from the numbers presented here.

Chart 8. Barriers to engaging in digital scholarship

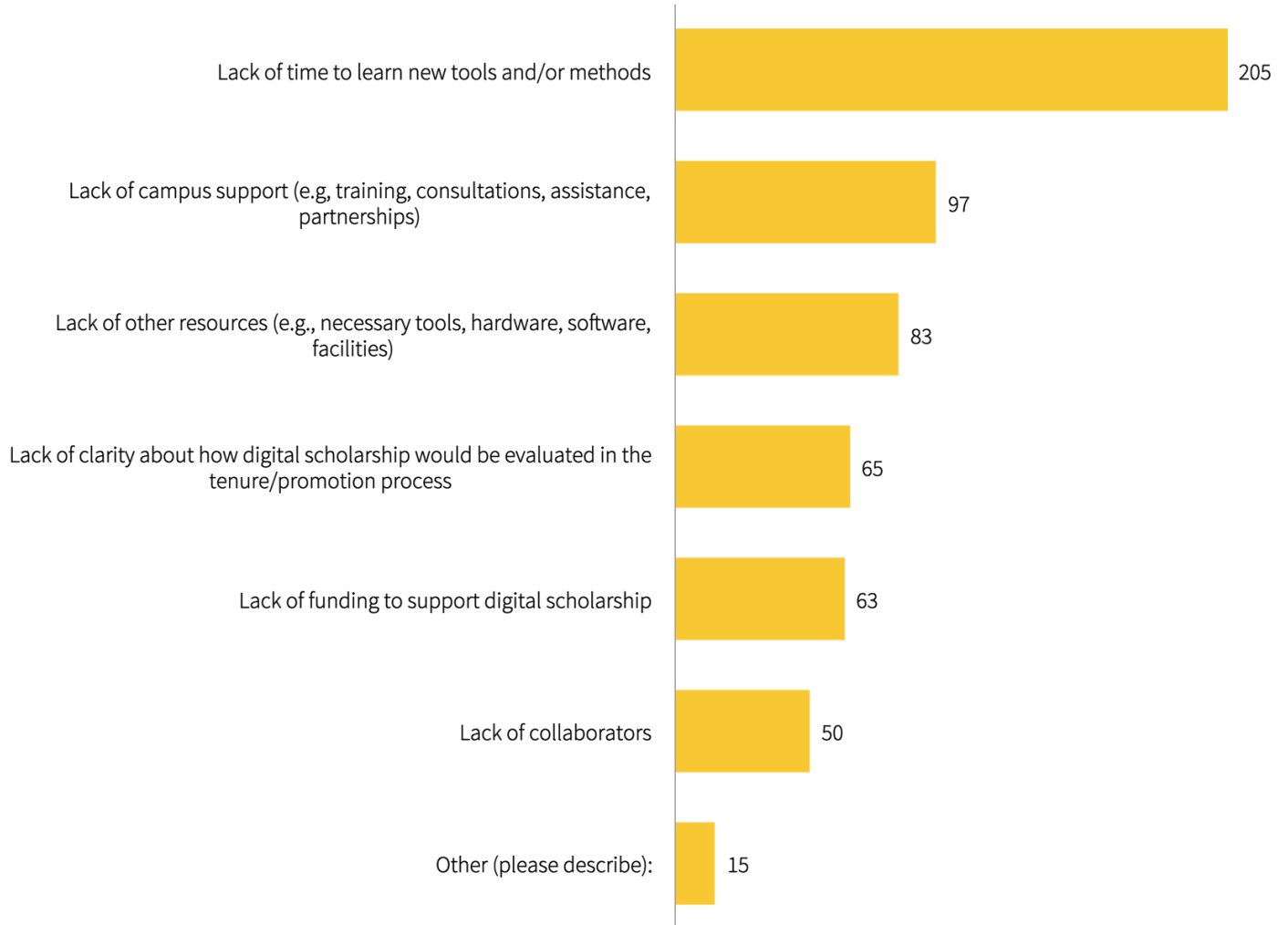


Chart 9. Perceptions of Departmental Support for Digital Scholarship

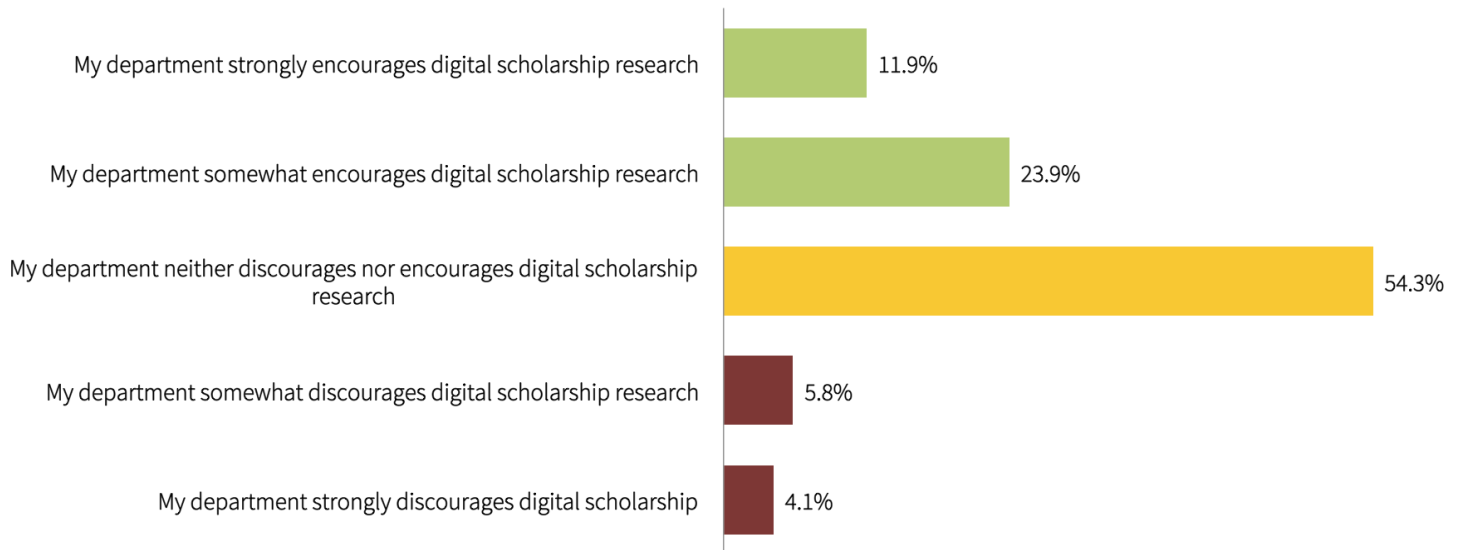
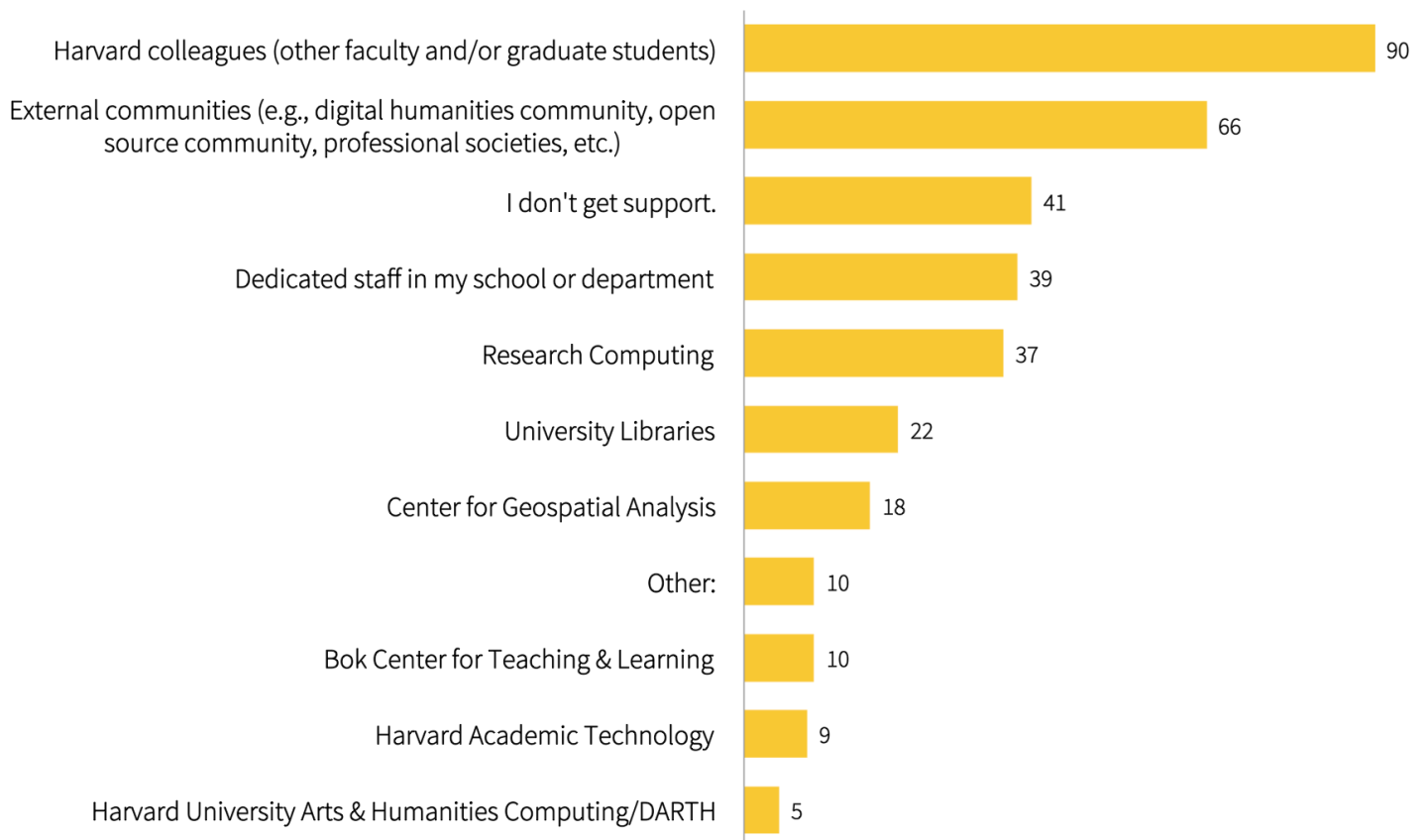


Chart 10. Current Sources of Support for Digital Scholarship



Other: professional editors and designers; my own project staff; Reischauer Institute staff; IQSS (2); Center for History and Economics; Google (2); “Friends in the software industry”; “I honestly find forums more helpful than asking people. I’m part of that ‘tech’ generation that find it more productive to do things myself.”

Chart 11. Types of Support Identified as Most Useful to Scholars

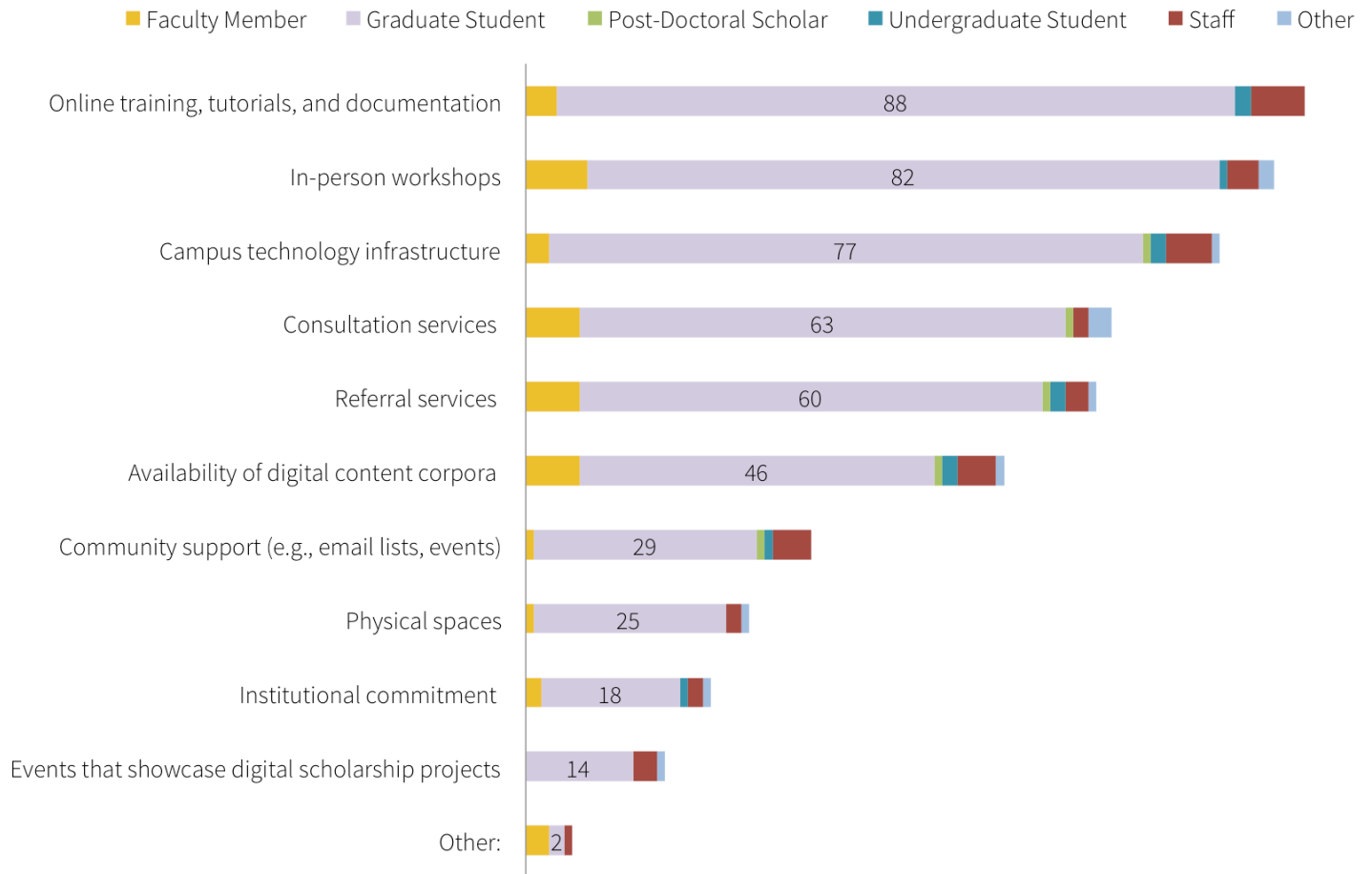
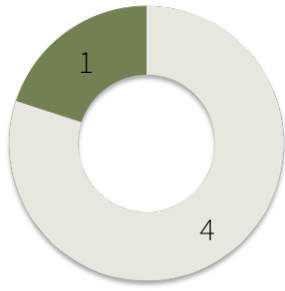


Chart Set 12. Breakout of respondent status by department

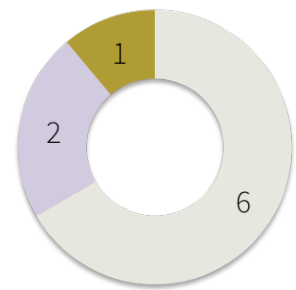
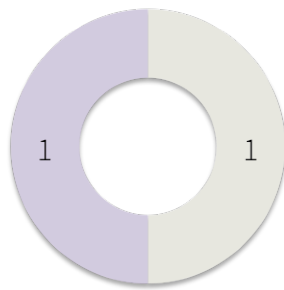
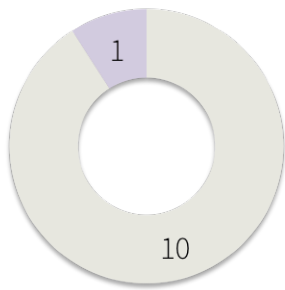
■ Faculty Member
 ■ Graduate Student
 ■ Post-Doctoral Scholar
 ■ Undergraduate Student
 ■ Staff
 ■ Other



Chemistry and Environmental Science

Computer Science

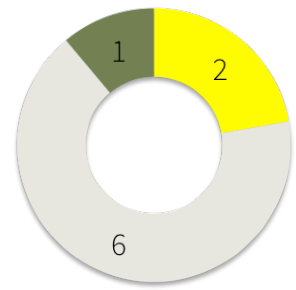
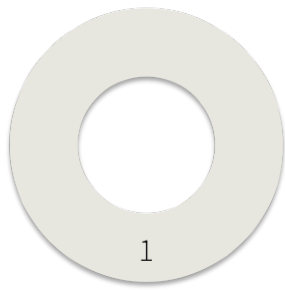
Fine Arts



Comparative Literature

Earth and Planetary Sciences

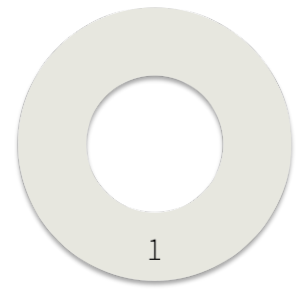
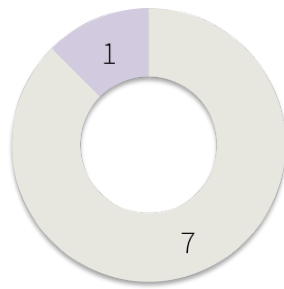
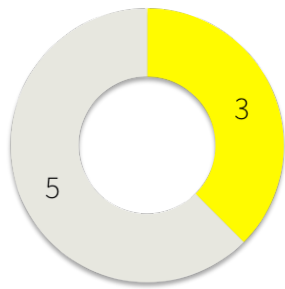
East Asian Languages and Civilizations



English

Economics

Germanic Languages and Literatures

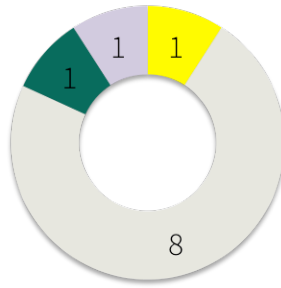


Faculty Member Graduate Student Post-Doctoral Scholar Undergraduate Student Staff Other

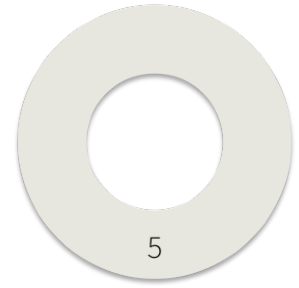
Government



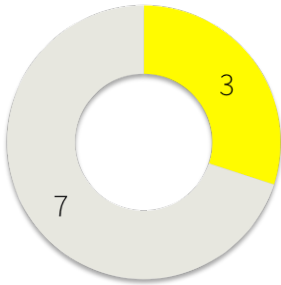
History



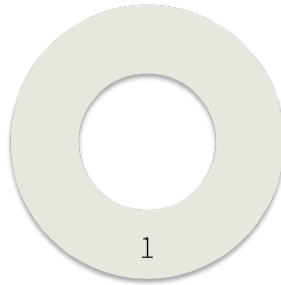
History of Science



History of Art and Architecture



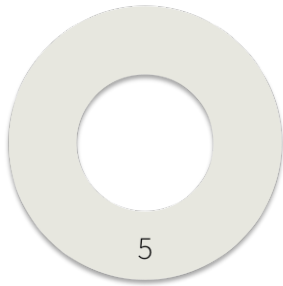
Human Evolutionary Biology



Linguistics



Molecular and Cellular Biology



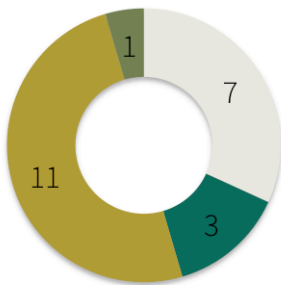
Music



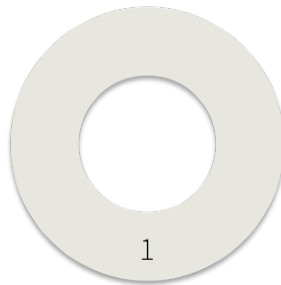
Near Eastern Languages and Civilizations



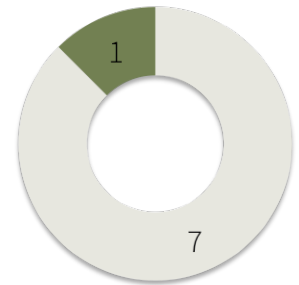
Organismic and Evolutionary Biology



Philosophy



Physics

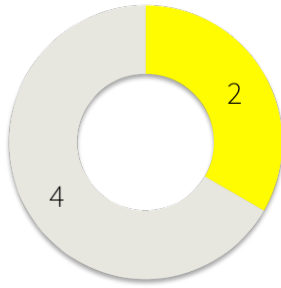


■ Faculty Member ■ Graduate Student ■ Post-Doctoral Scholar ■ Undergraduate Student ■ Staff ■ Other

Psychology



Romance Languages and Literatures



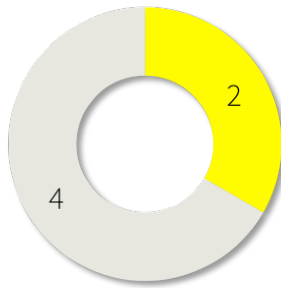
Slavic Languages and Literatures



Sociology



Visual and Environmental Studies



Other

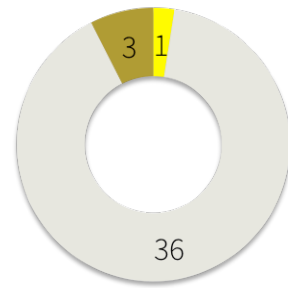


Chart 13. Breakout of DS Practitioners by Department

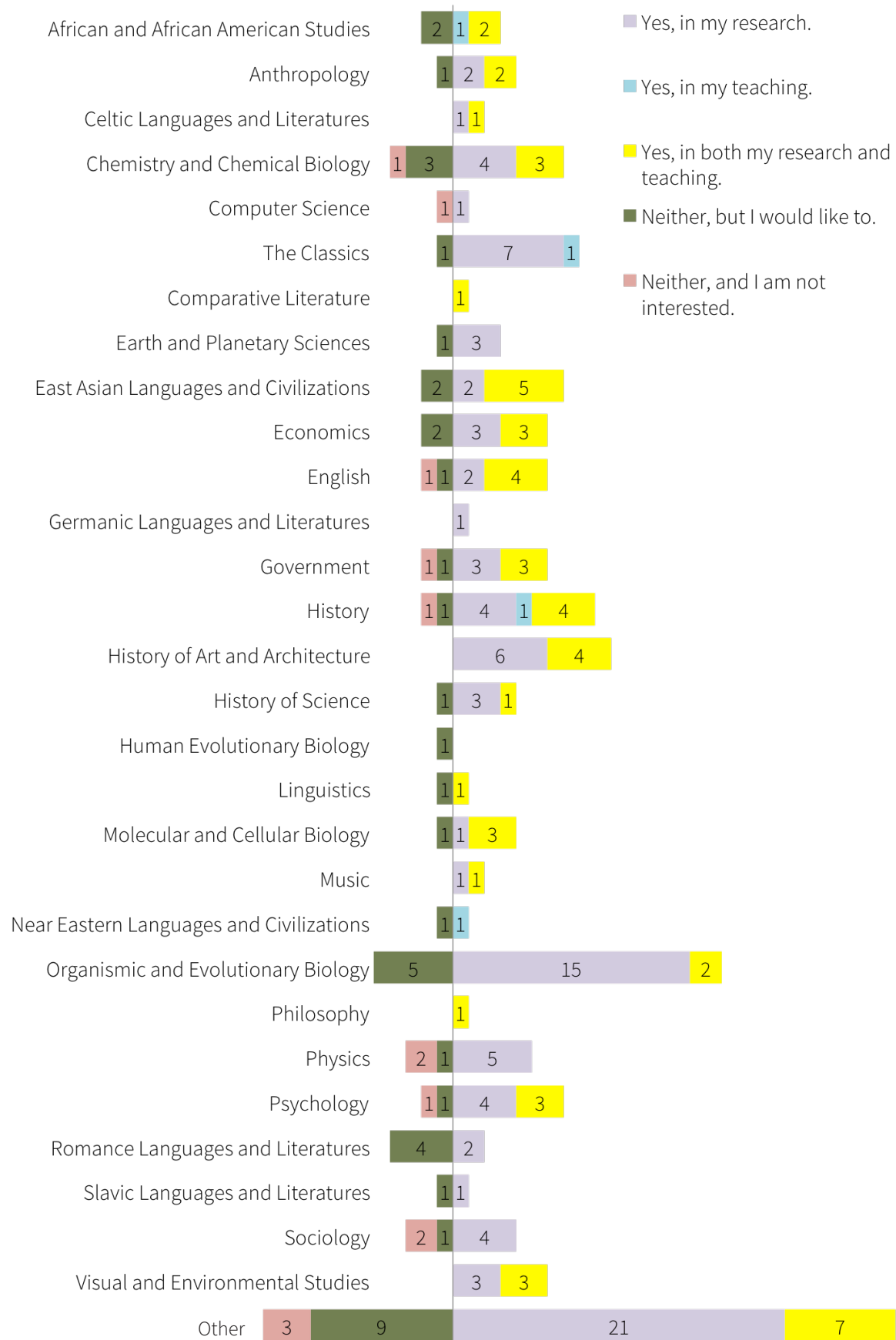
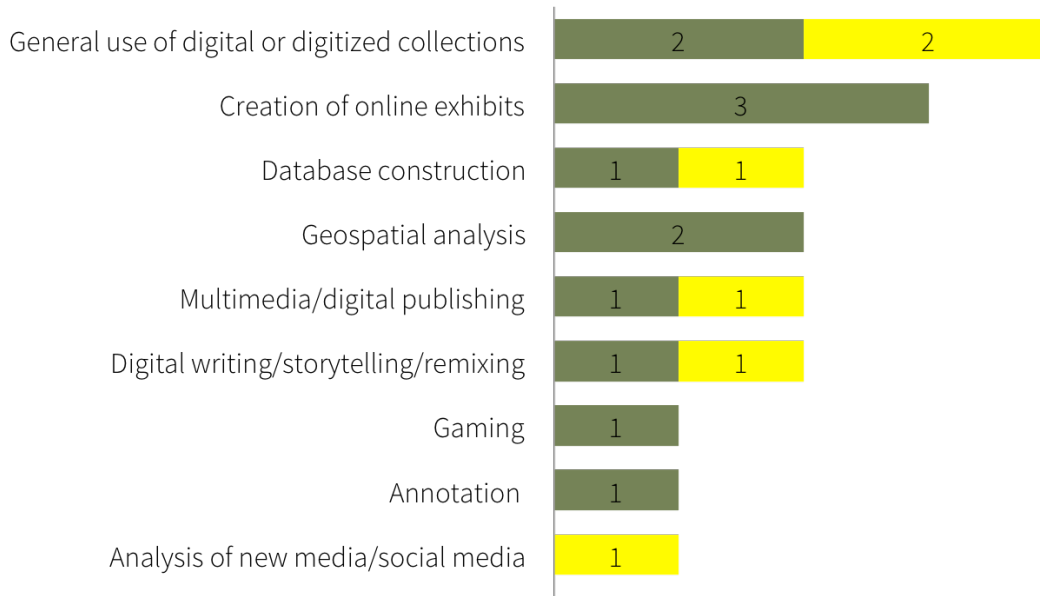


Chart Set 14. Current and desired practices by department

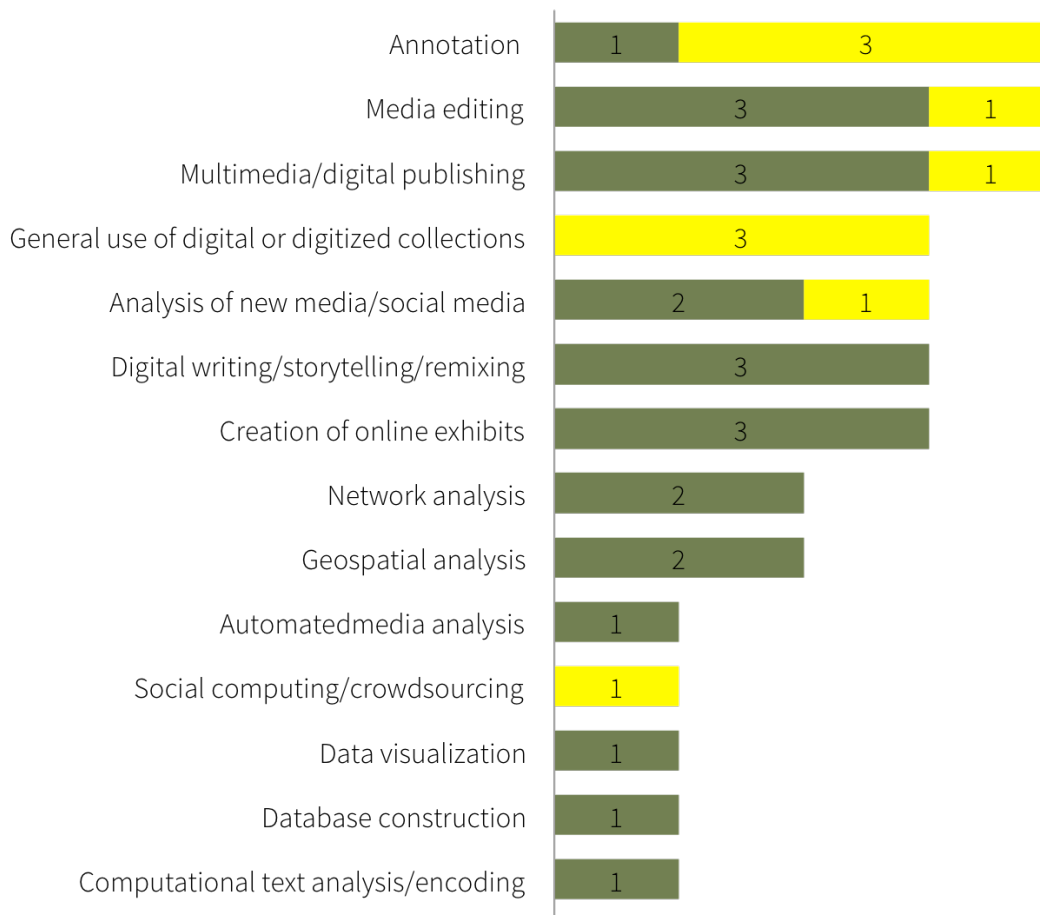
African and African American Studies

■ Would Like to Use ■ Currently Using



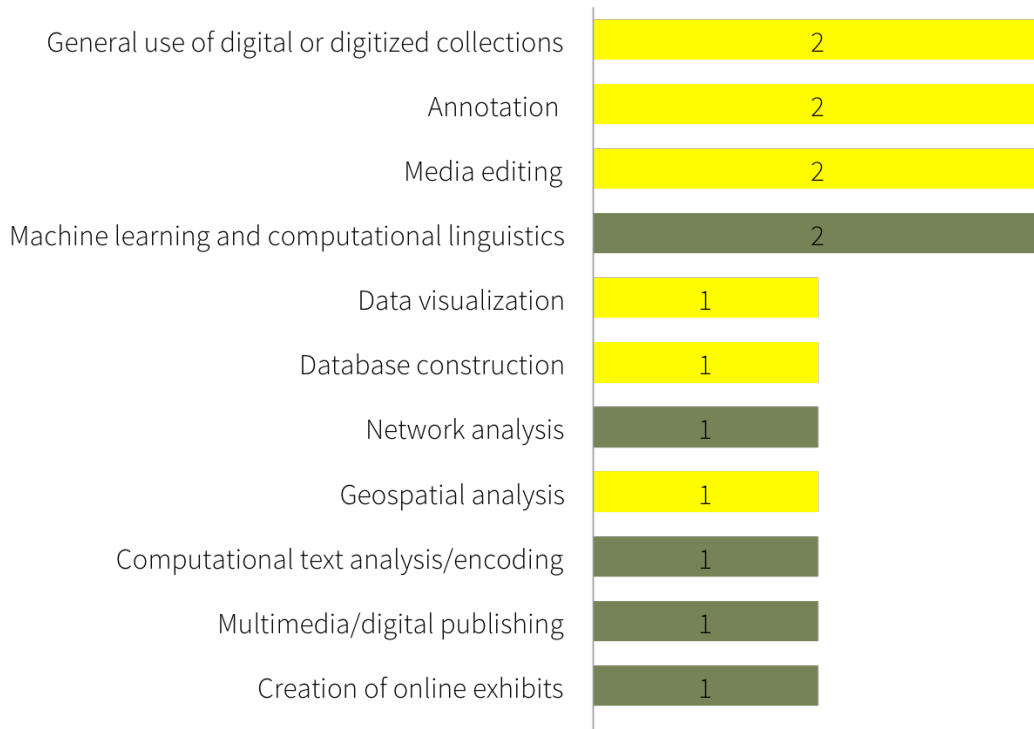
Anthropology

■ Would Like to Use ■ Currently Using



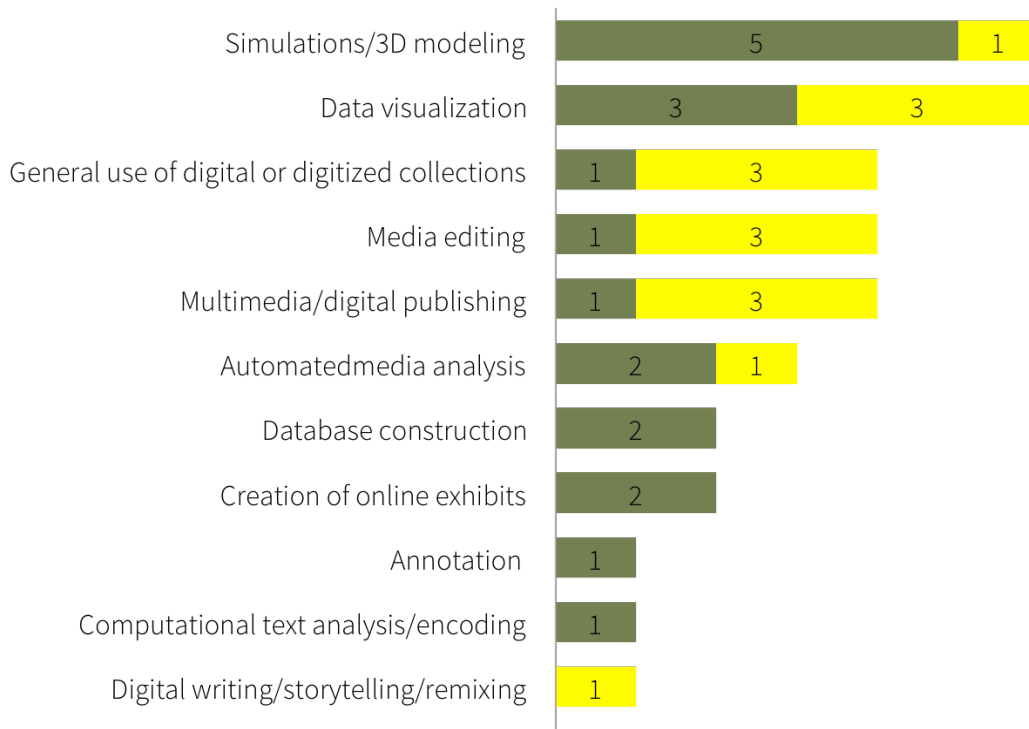
Celtic Languages and Literatures

■ Would Like to Use ■ Currently Using



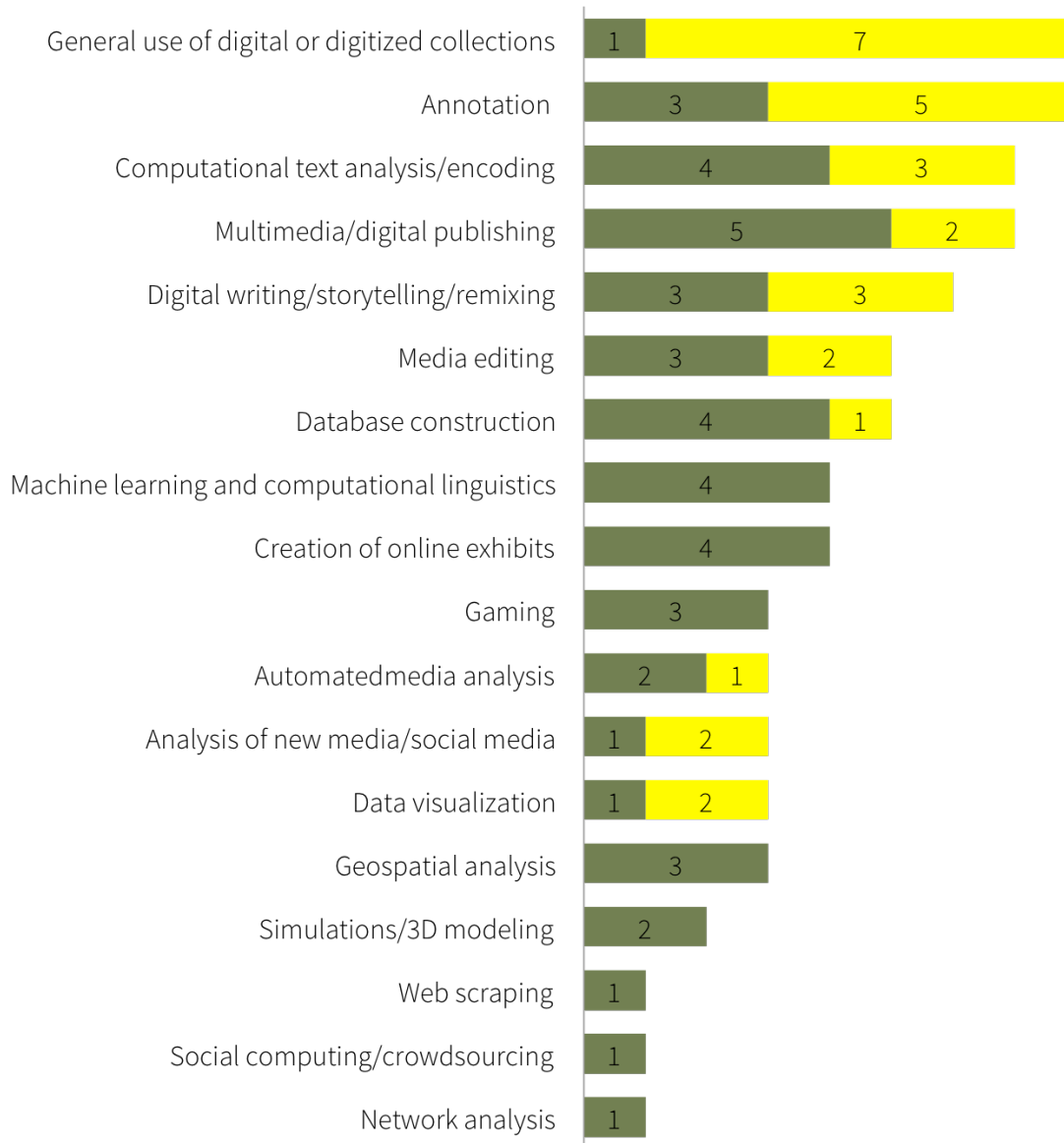
Chemistry and Chemical Biology

■ Would Like to Use ■ Currently Using



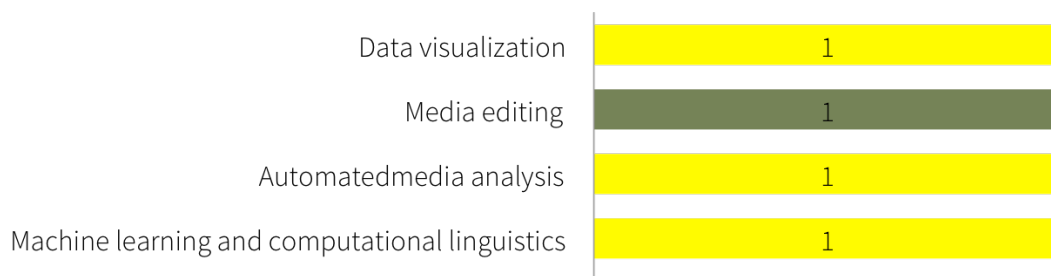
The Classics

■ Would Like to Use ■ Currently Using



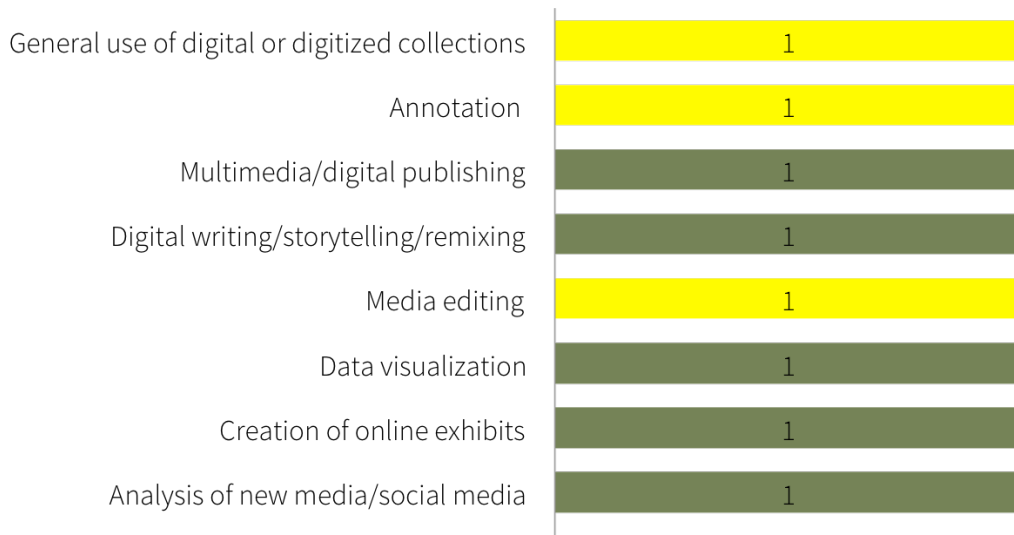
Computer Science

■ Would Like to Use ■ Currently Using



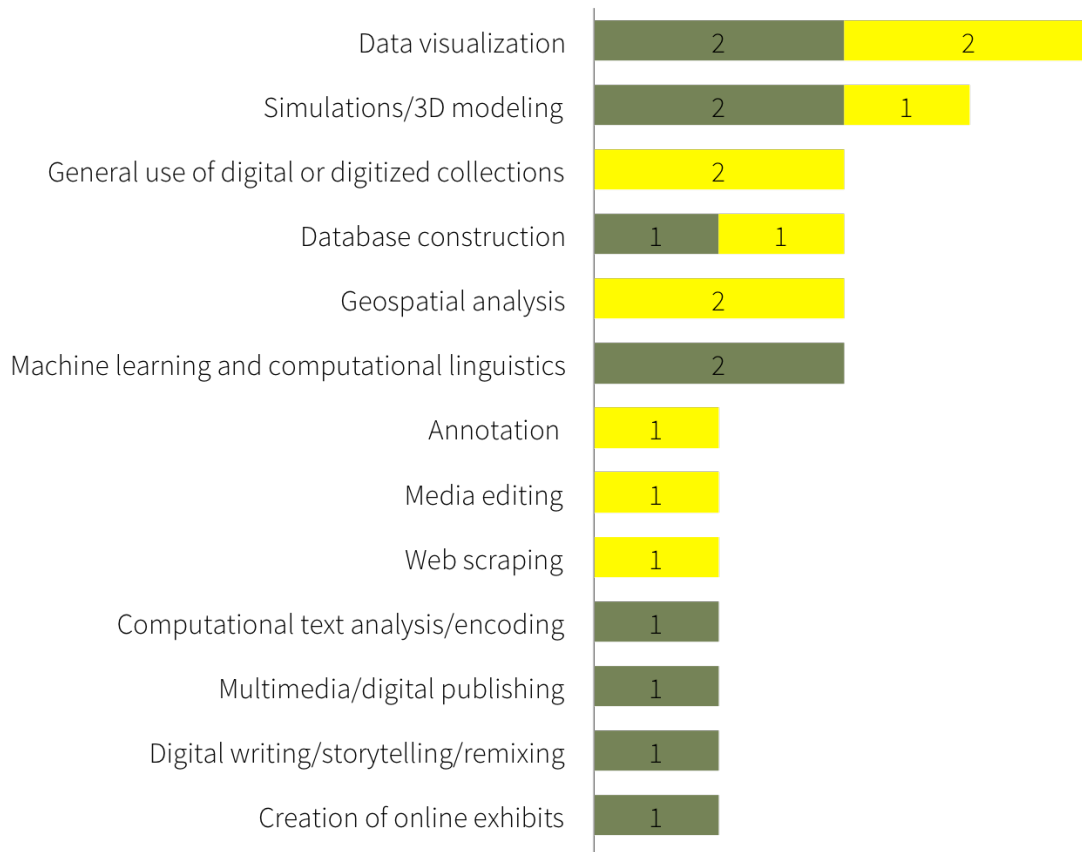
Comparative Literature

■ Would Like to Use ■ Currently Using



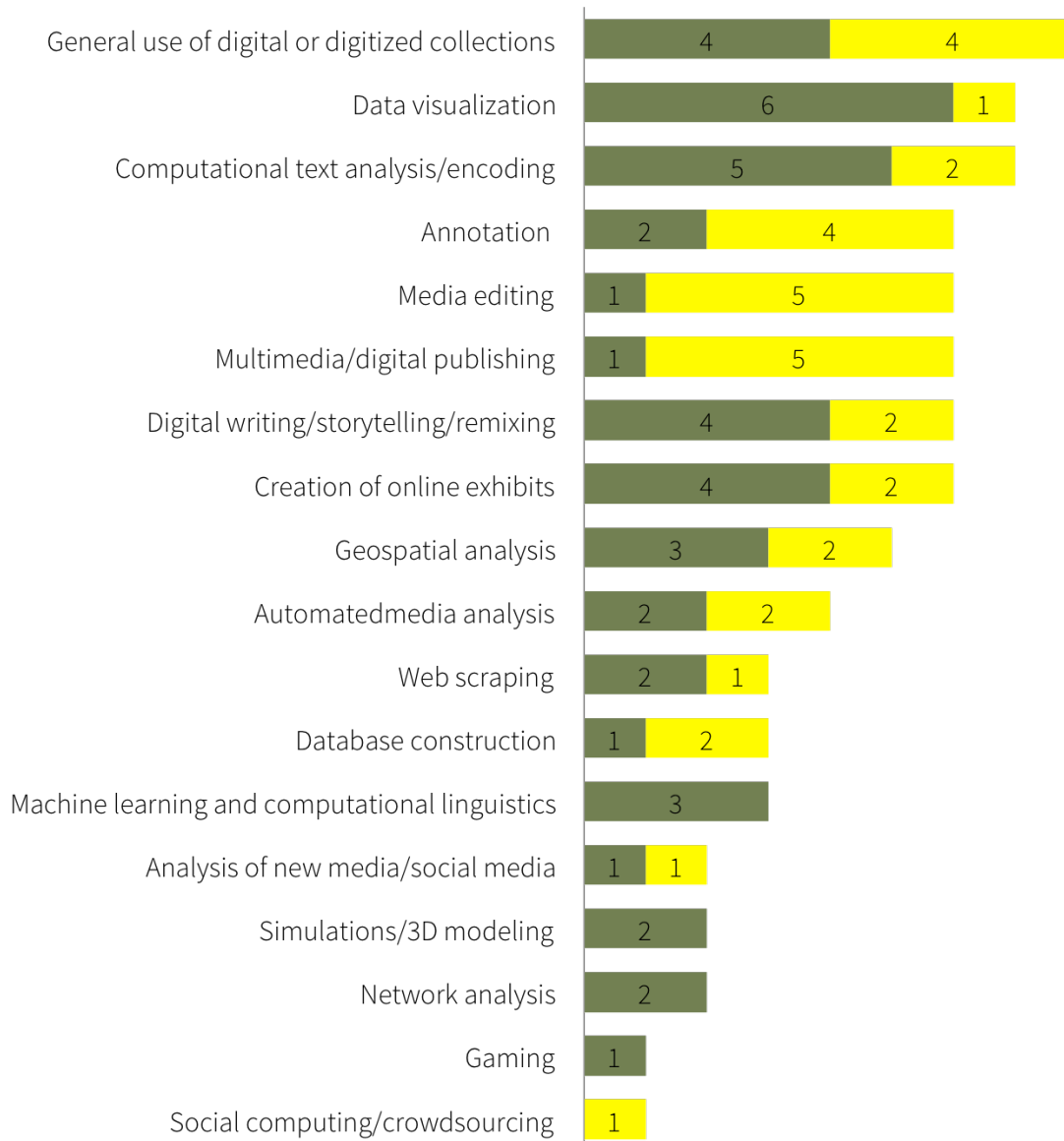
Earth and Planetary Sciences

■ Would Like to Use ■ Currently Using



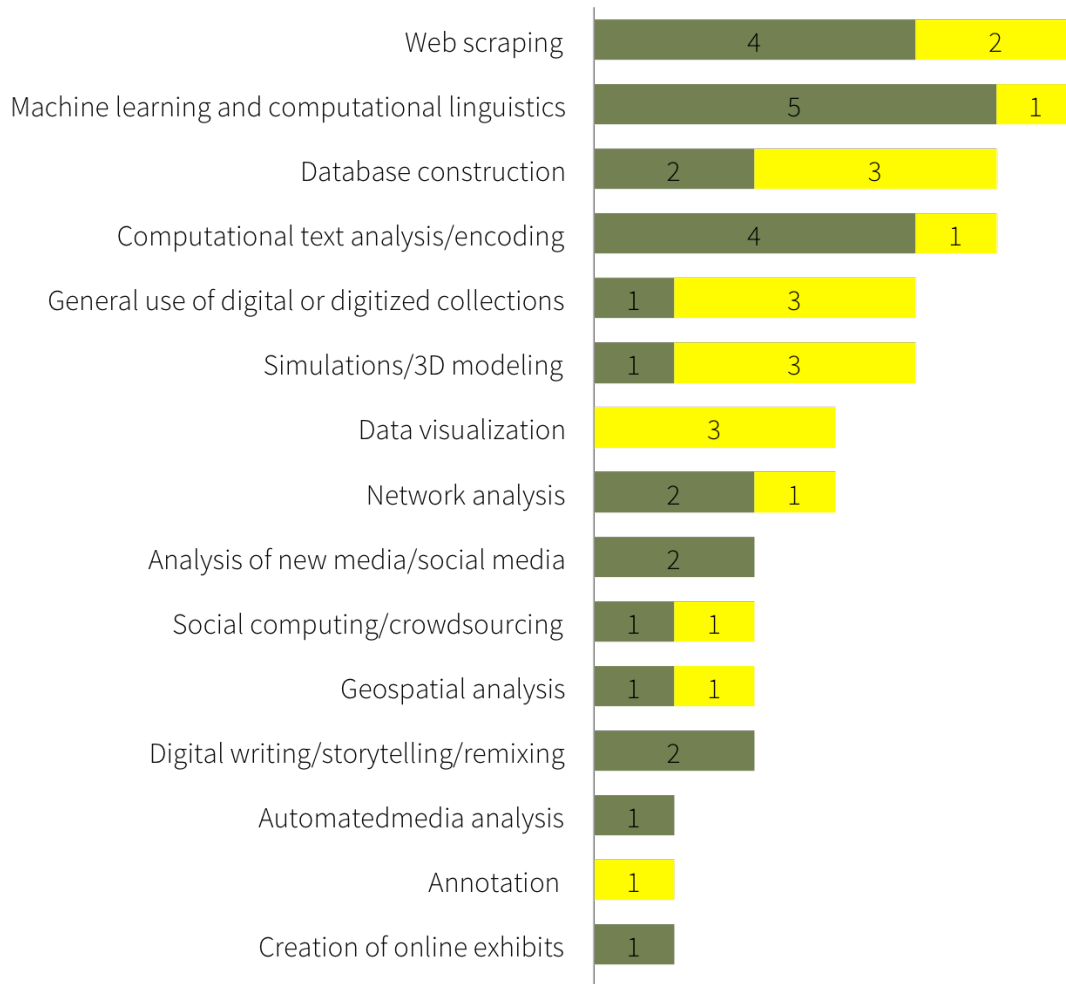
East Asian Languages and Civilizations

■ Would Like to Use ■ Currently Using



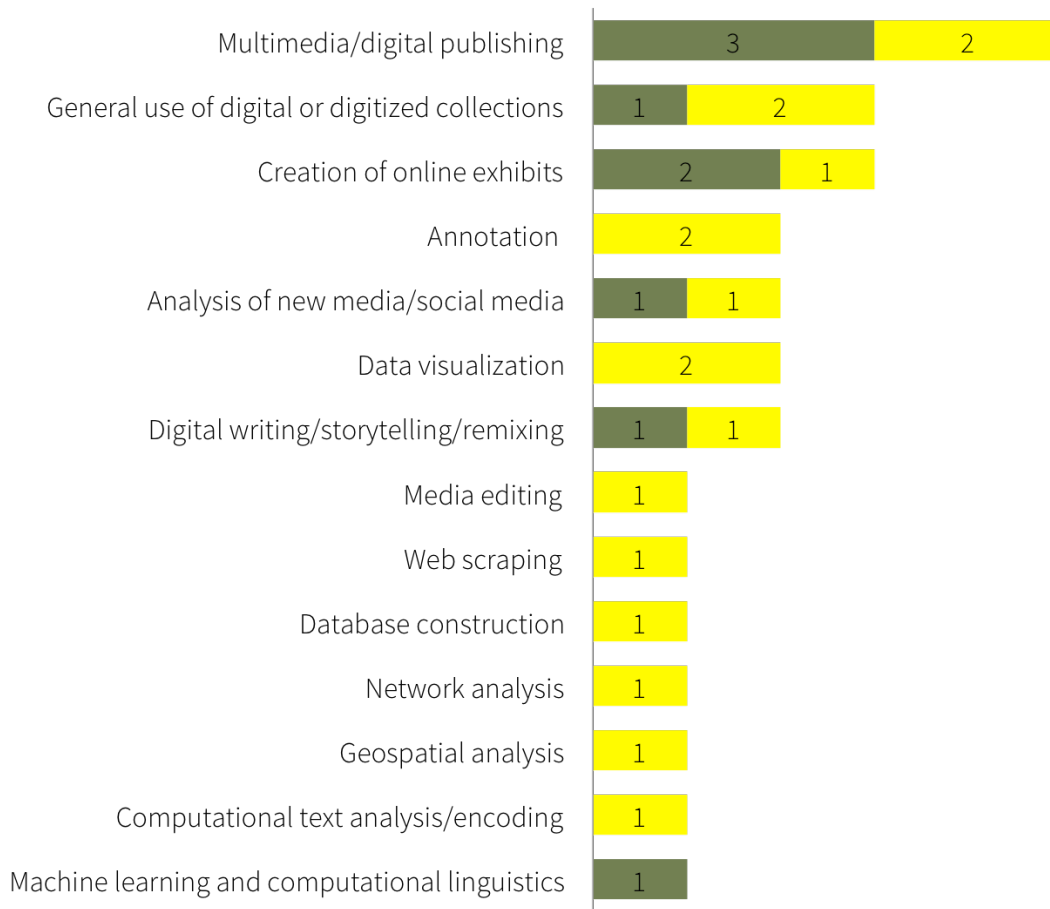
Economics

■ Would Like to Use ■ Currently Using



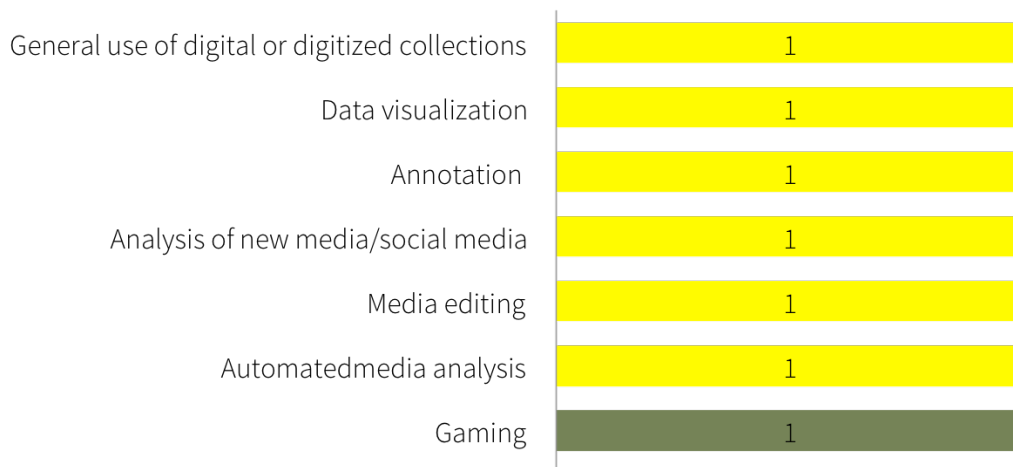
English

■ Would Like to Use ■ Currently Using

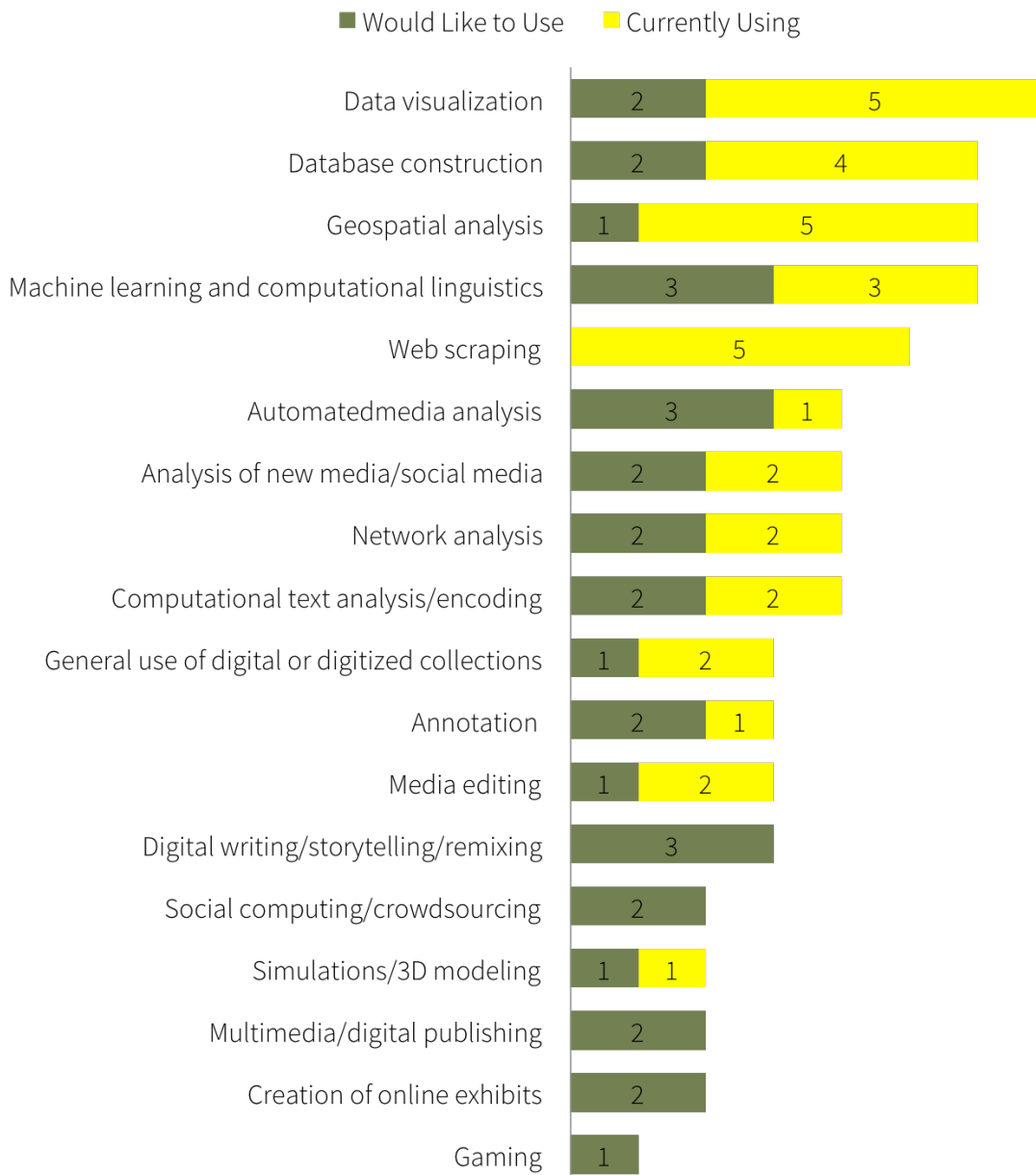


Germanic Languages and Literatures

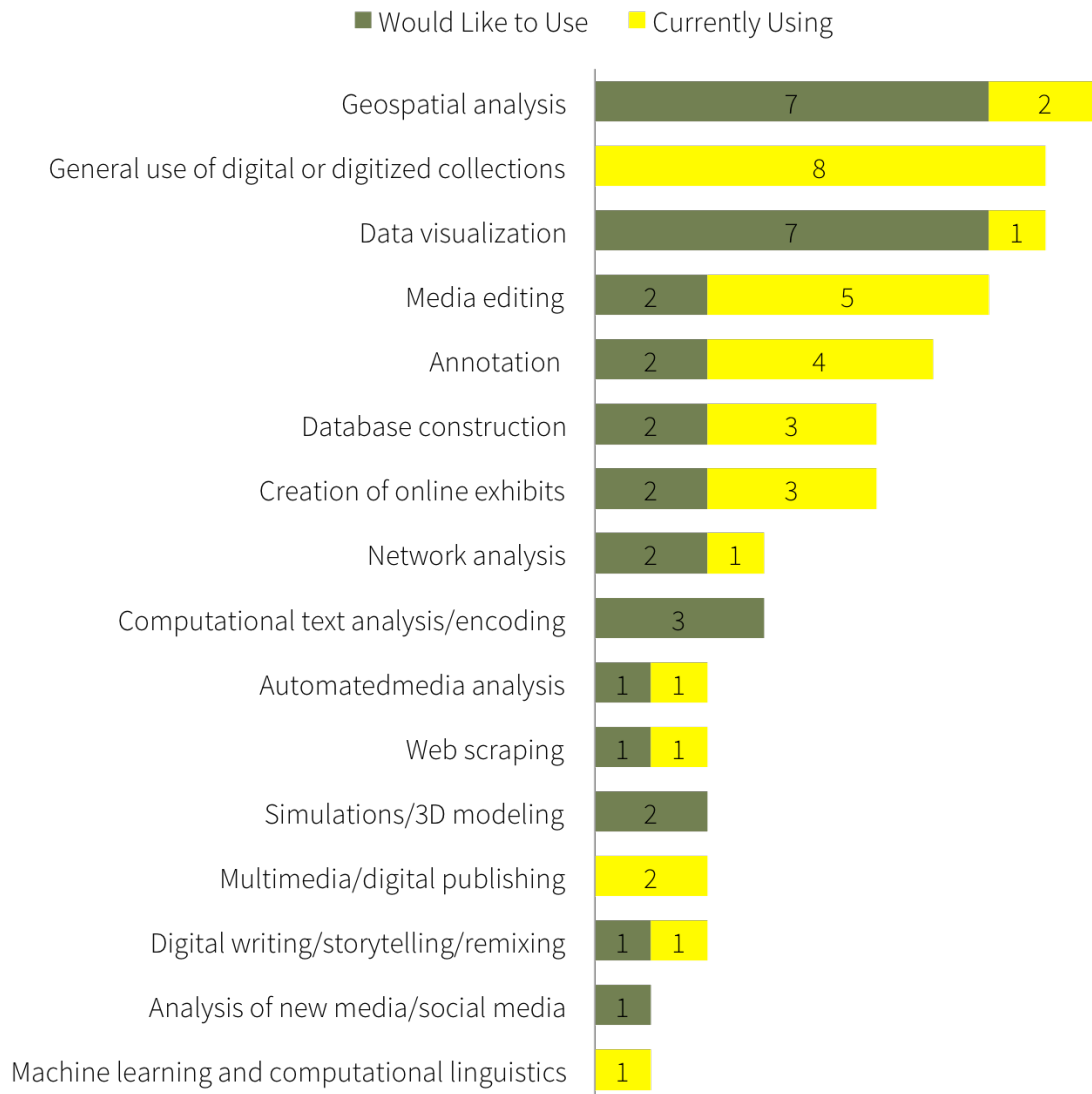
■ Would Like to Use ■ Currently Using



Government

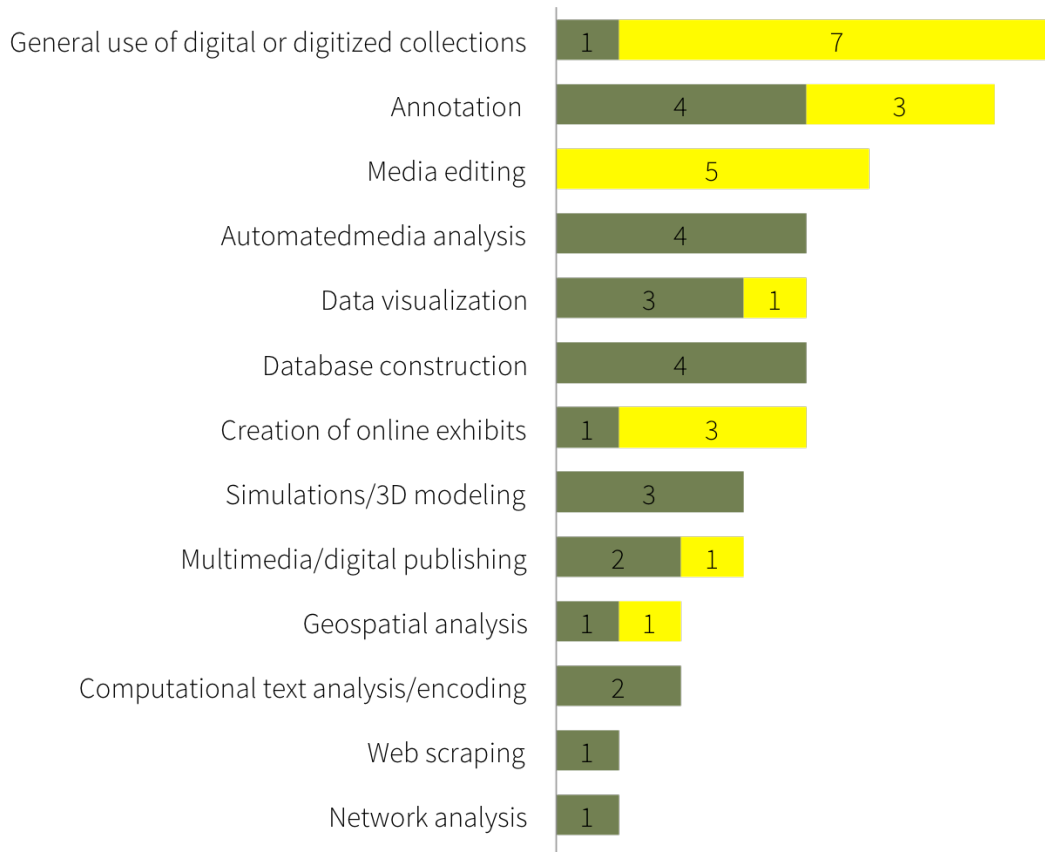


History

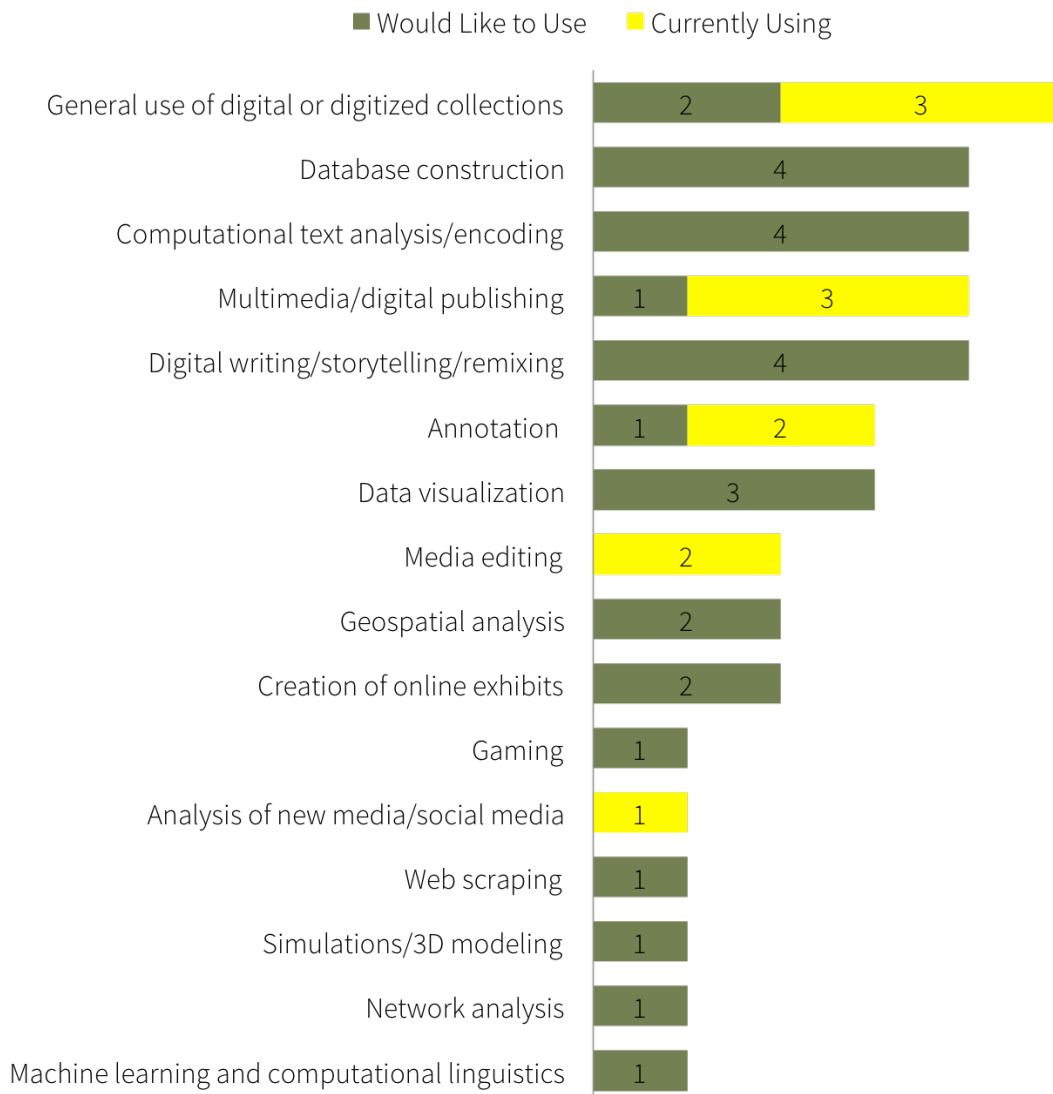


History of Art and Architecture

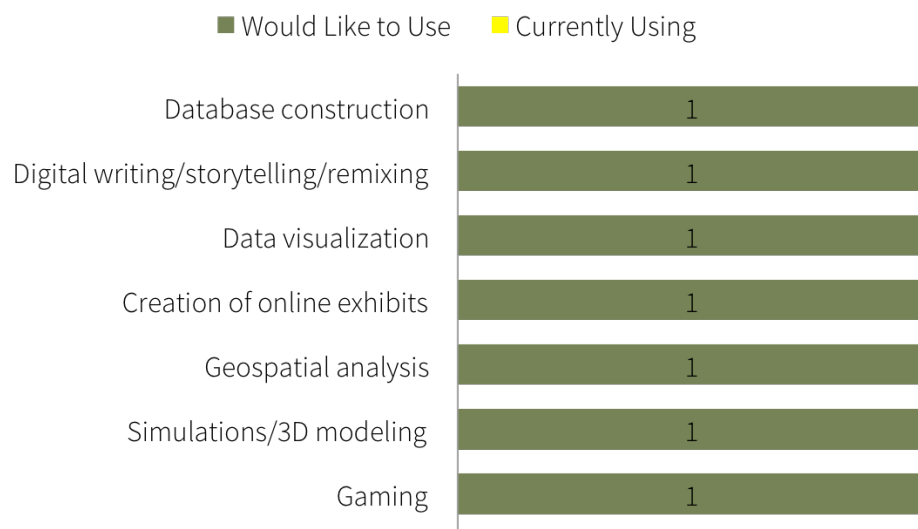
■ Would Like to Use ■ Currently Using



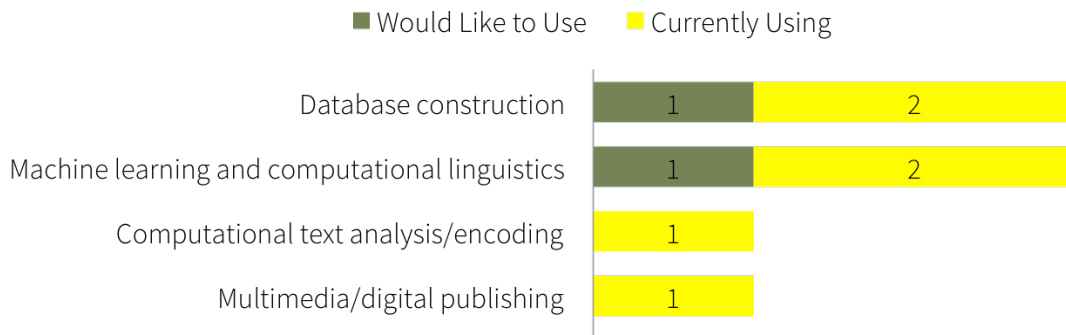
History of Science



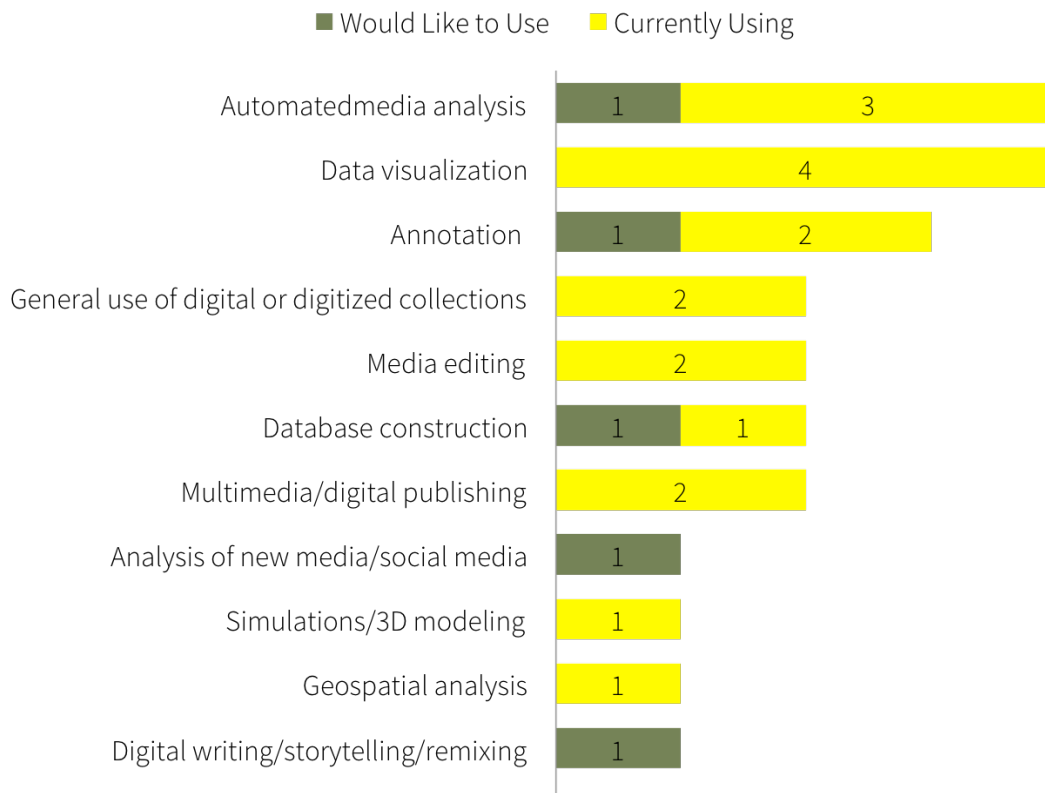
Human Evolutionary Biology



Linguistics

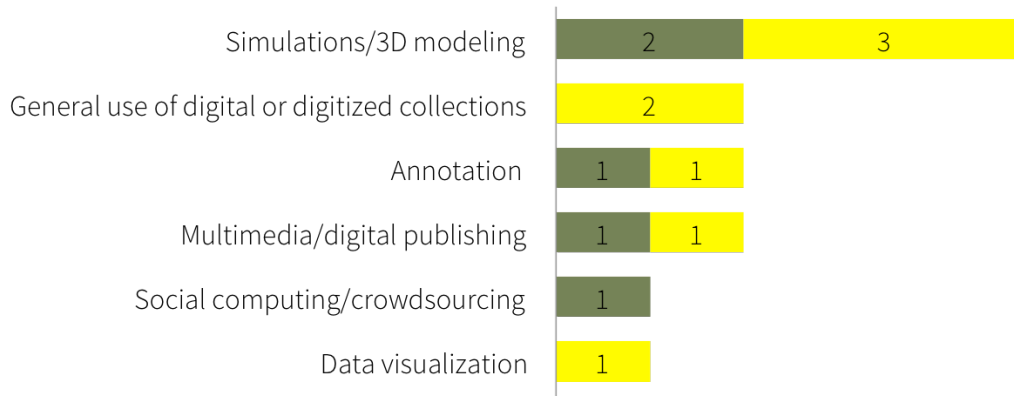


Molecular and Cellular Biology



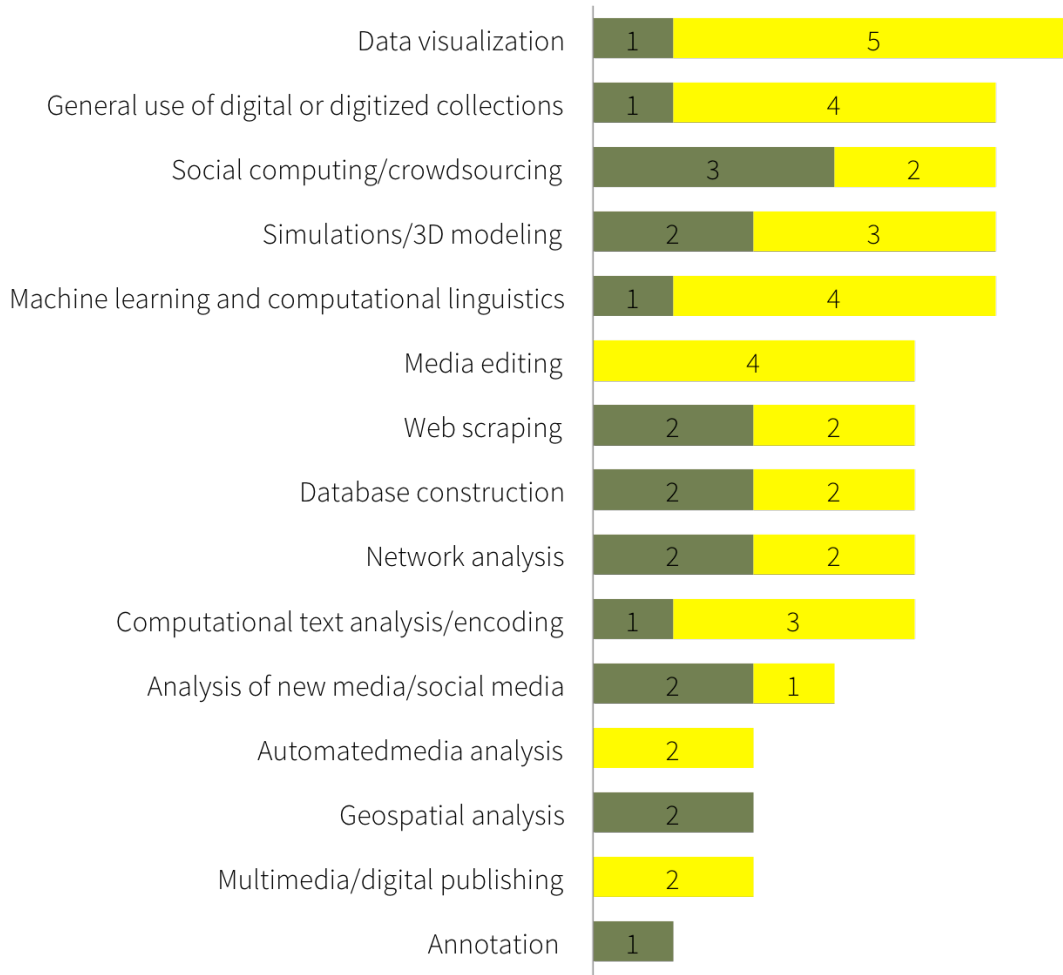
Physics

■ Would Like to Use ■ Currently Using



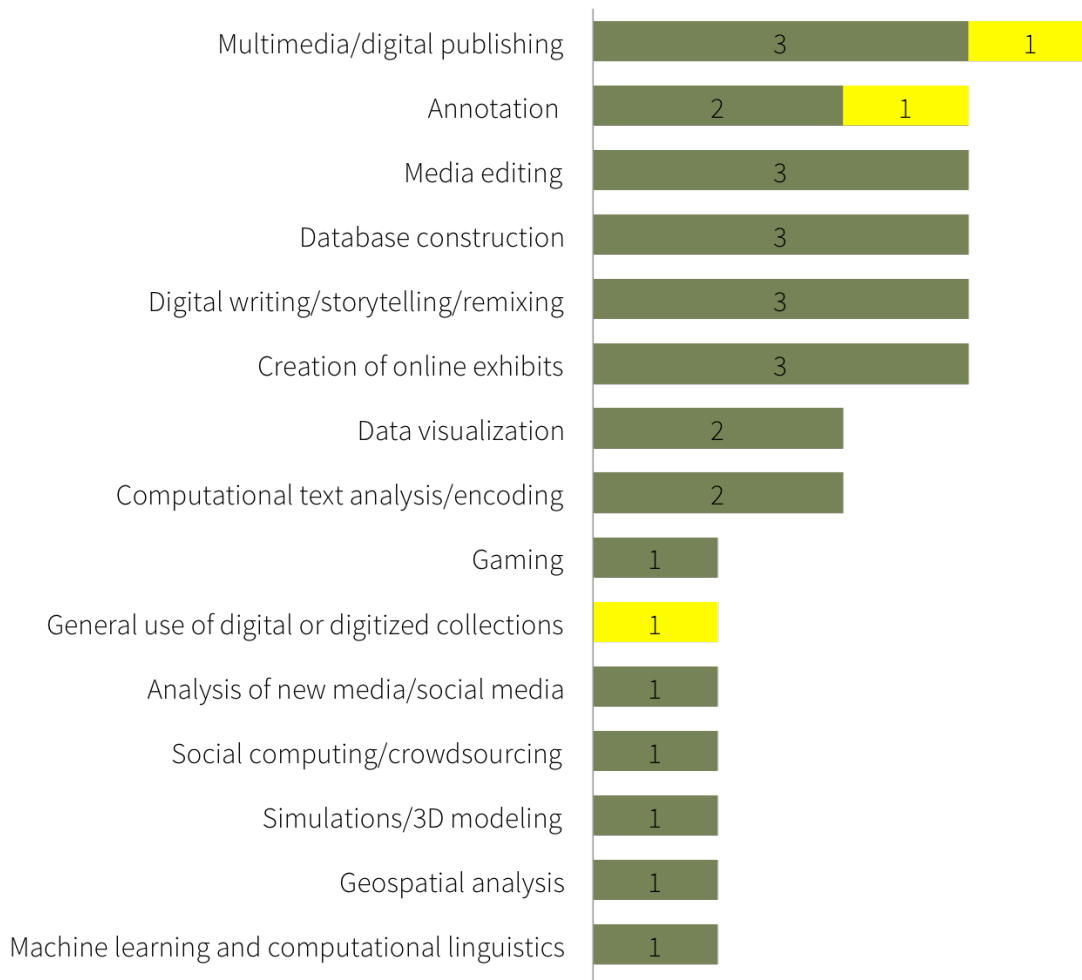
Psychology

■ Would Like to Use ■ Currently Using



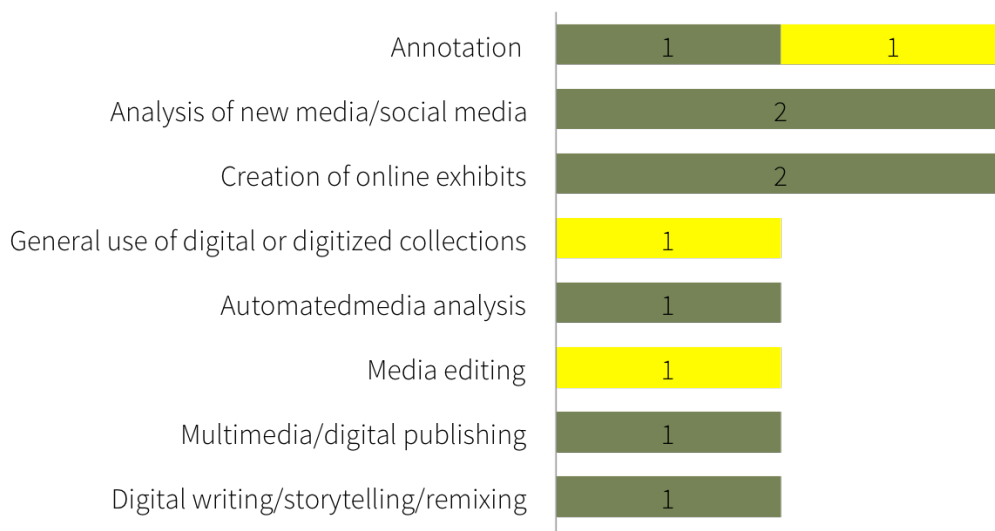
Romance Languages and Literatures

■ Would Like to Use ■ Currently Using

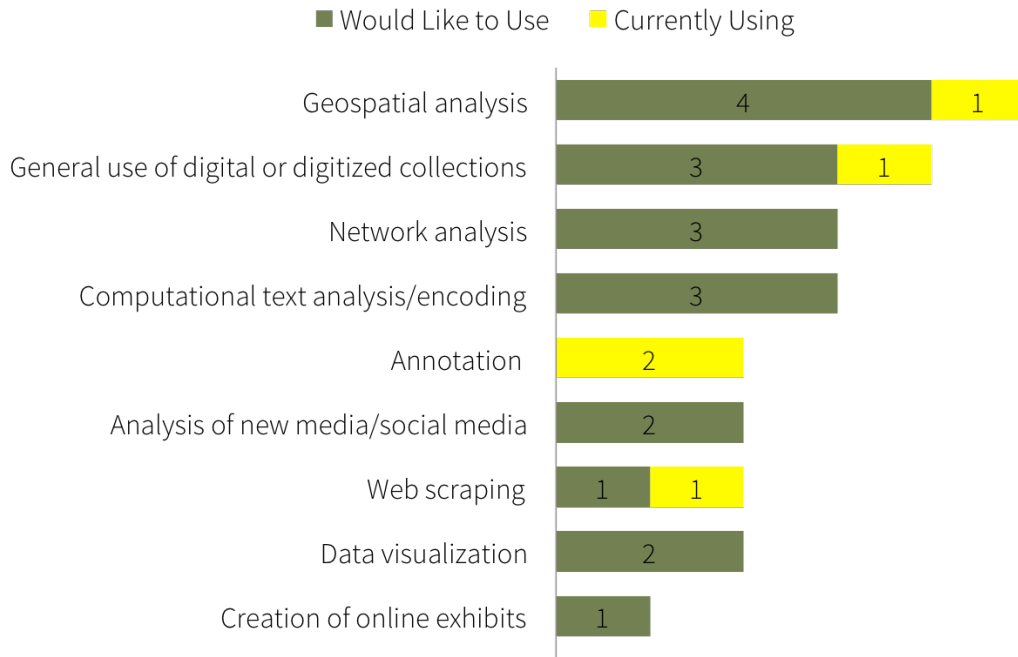


Slavic Languages and Literatures

■ Would Like to Use ■ Currently Using



Sociology



Visual and Environmental Studies

■ Would Like to Use ■ Currently Using

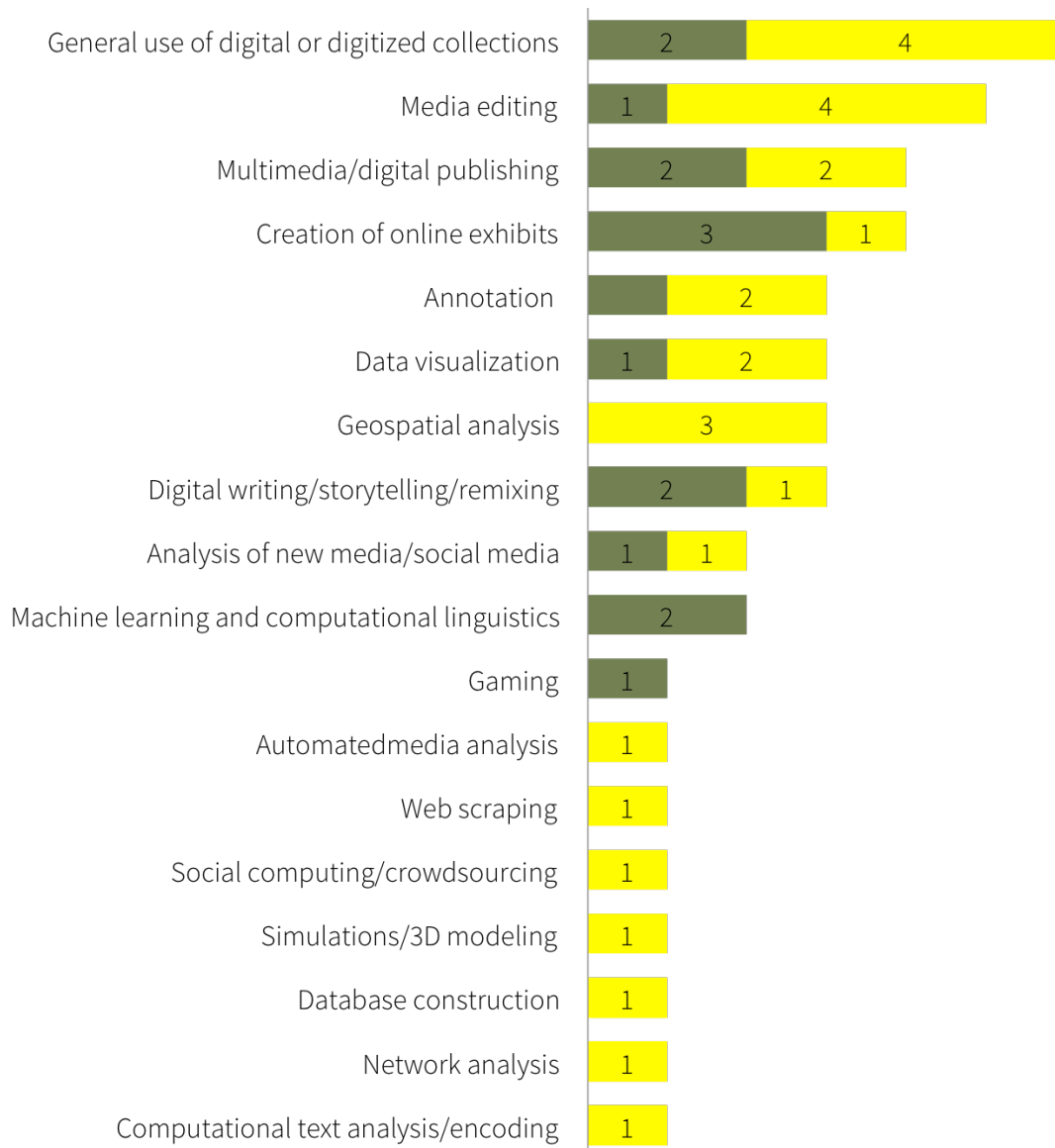
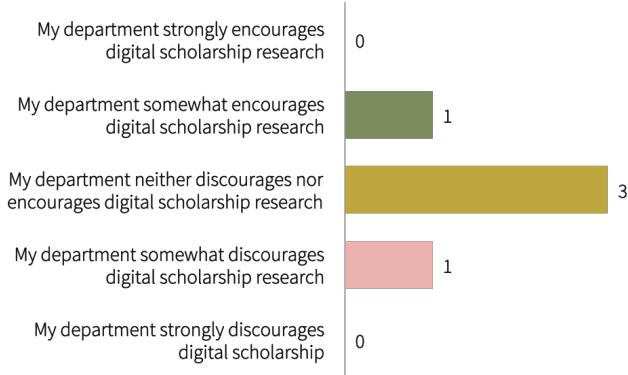
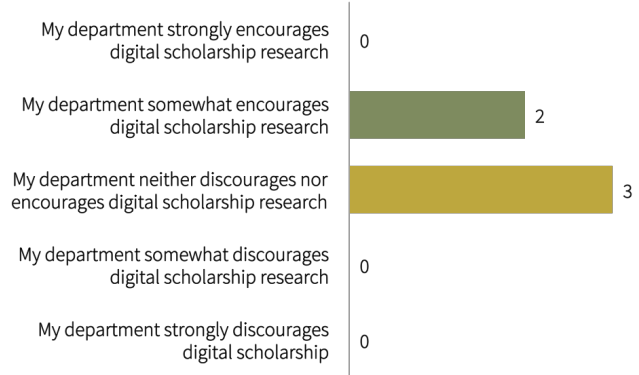


Chart Set 15. Perceptions of departmental support by discipline

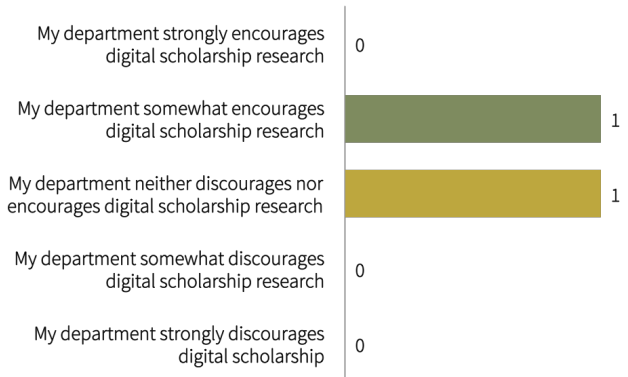
African and African American Studies



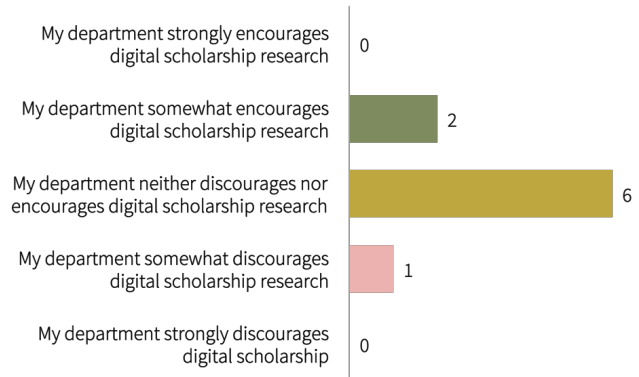
Anthropology



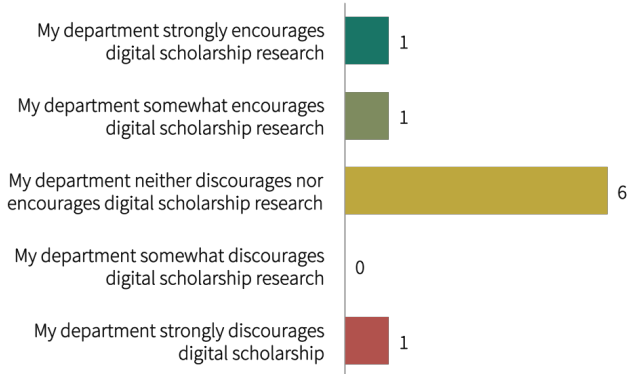
Celtic Languages and Literatures



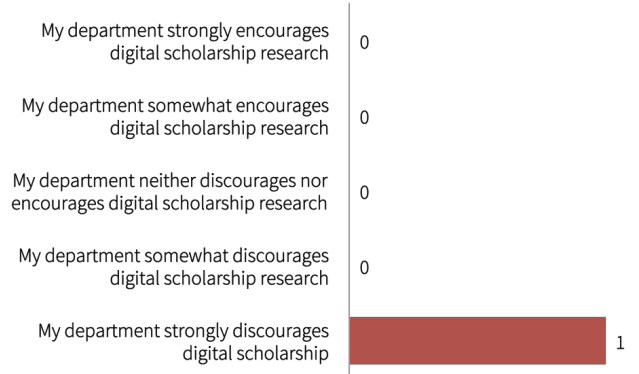
Chemistry and Chemical Biology



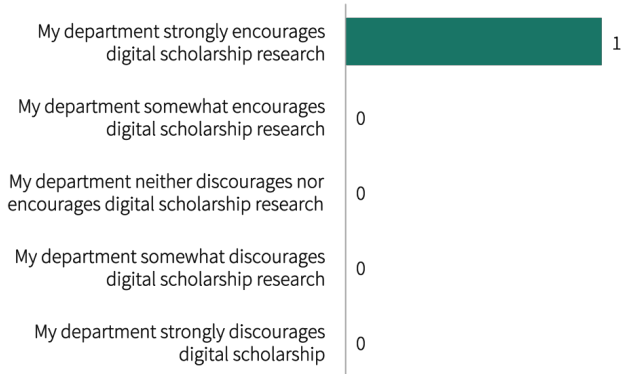
The Classics



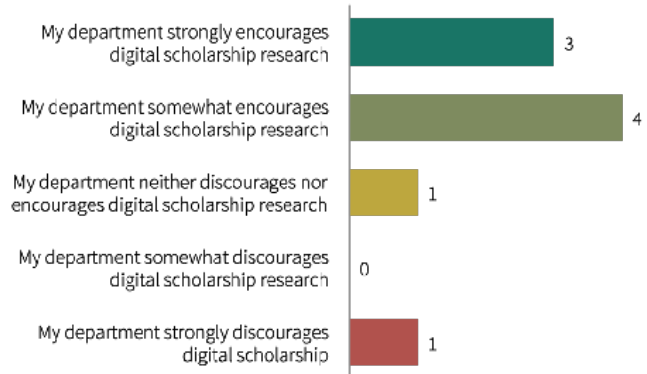
Comparative Literature



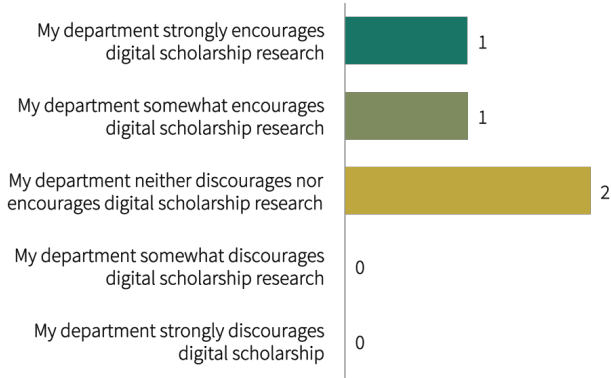
Computer Science



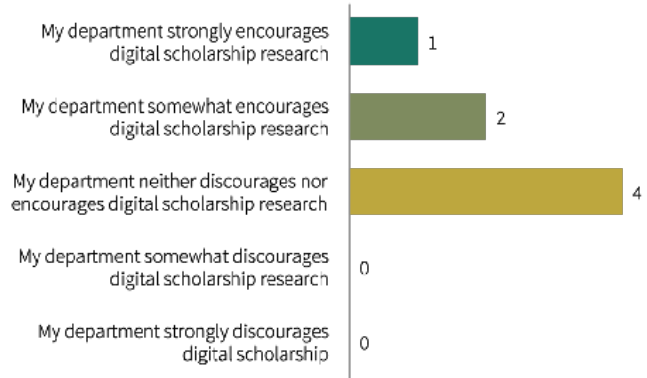
East Asian Languages and Civilizations



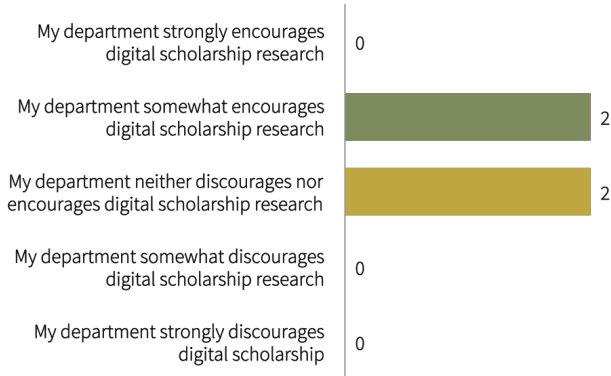
Earth and Planetary Sciences



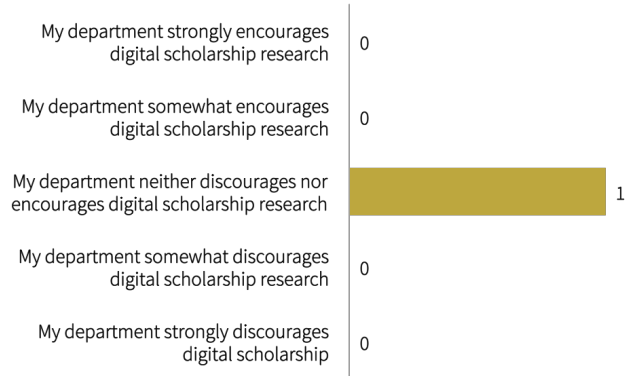
Economics



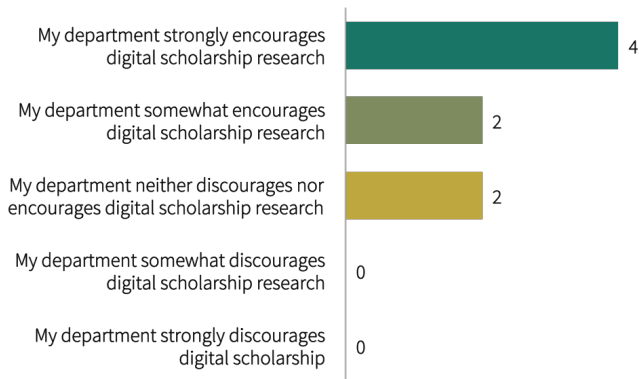
English



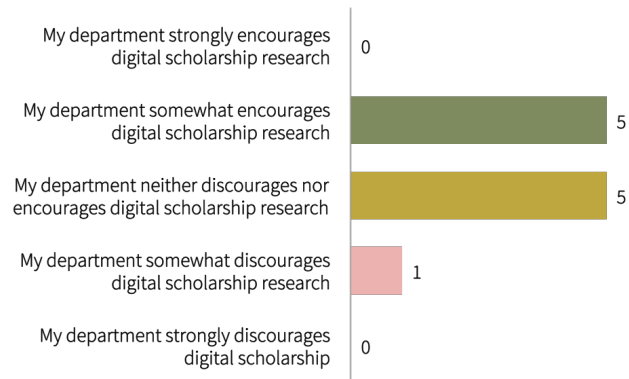
Germanic Languages and Literatures



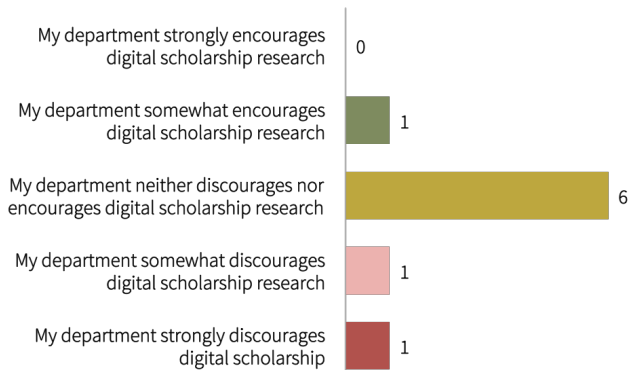
Government



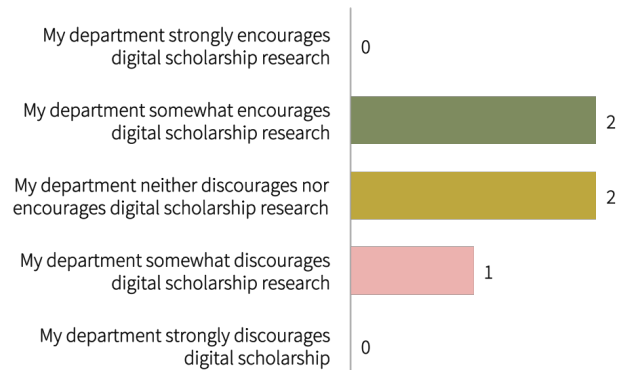
History



History of Art and Architecture



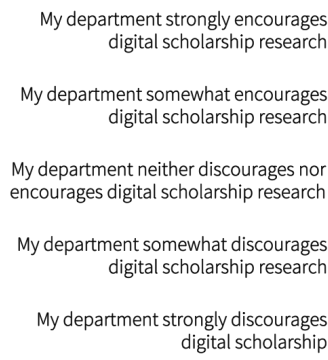
History of Science



Human Evolutionary Biology



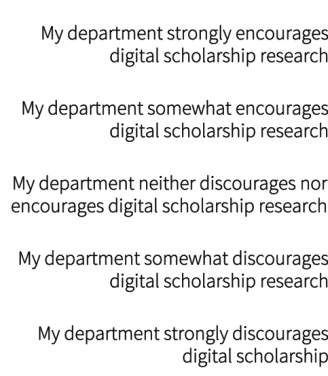
Linguistics



Molecular and Cellular Biology



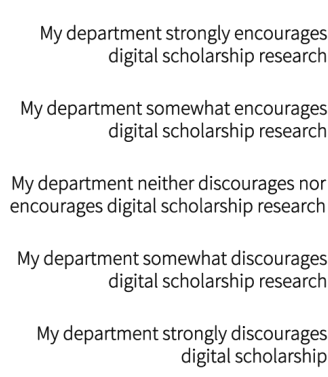
Music



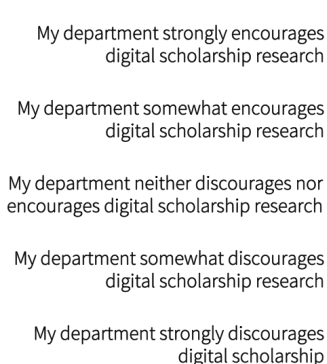
Near Eastern Languages and Civilizations



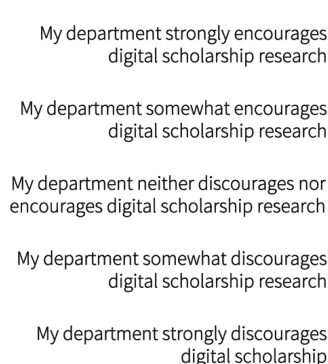
Organismic and Evolutionary Biology



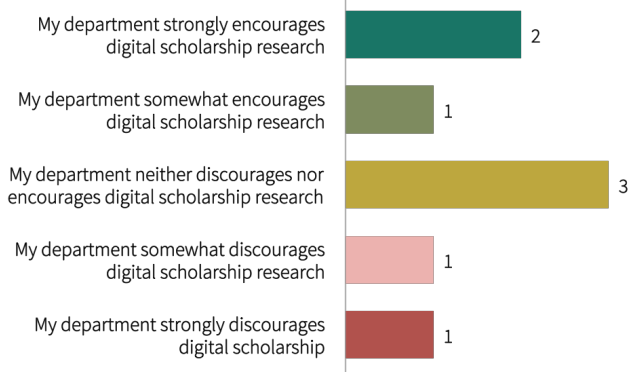
Philosophy



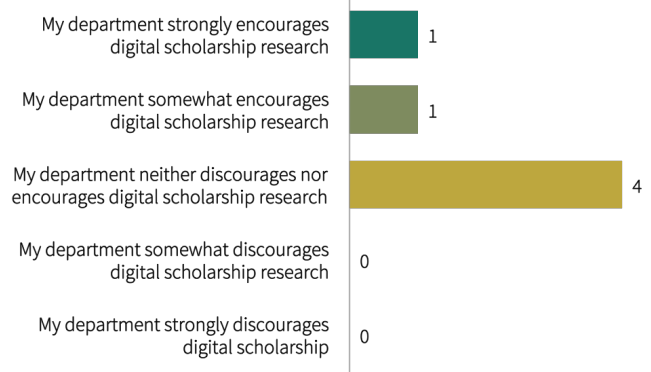
Physics



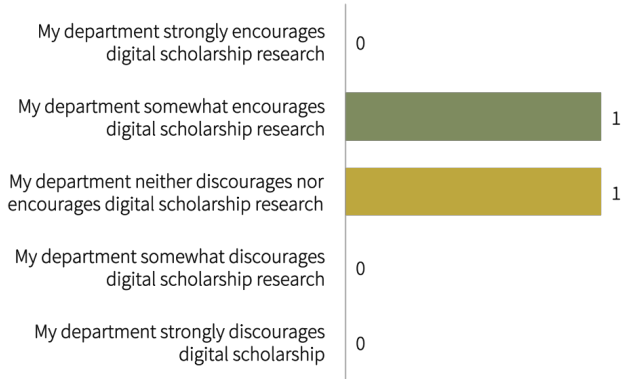
Psychology



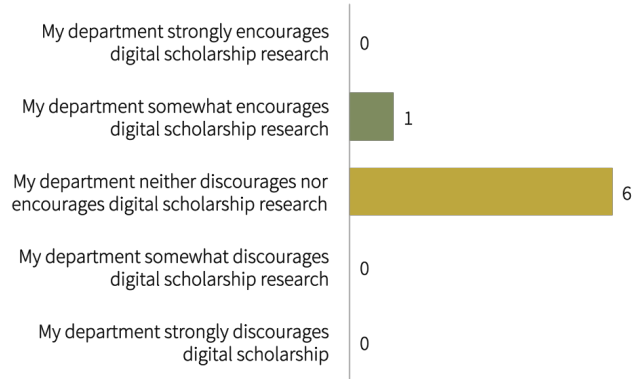
Romance Languages and Literatures



Slavic Languages and Literatures



Sociology



Visual and Environmental Studies

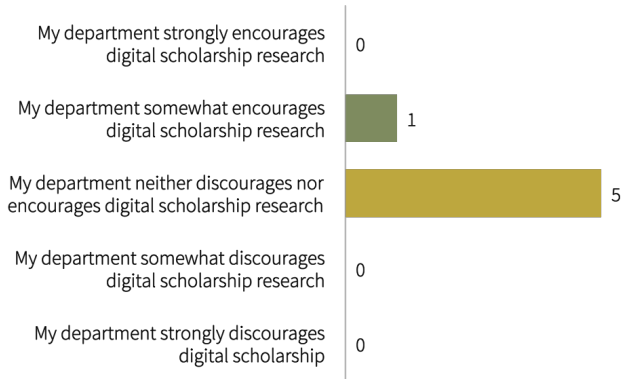
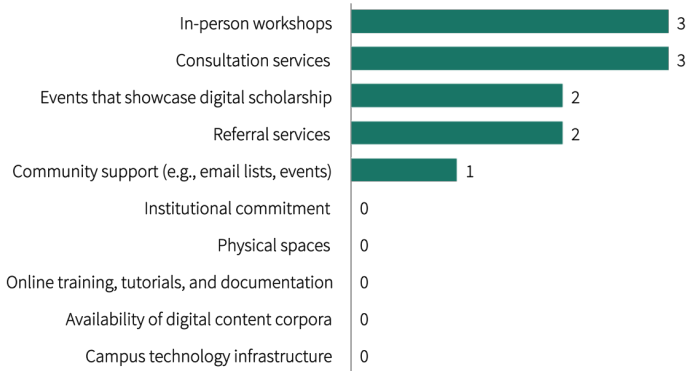
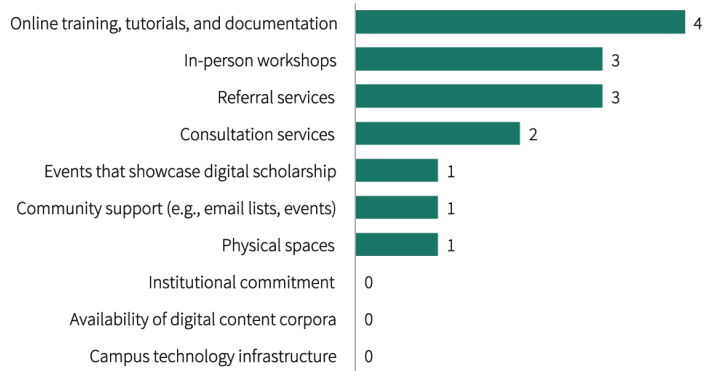


Chart Set 16. Types of support identified as most useful to scholars by department

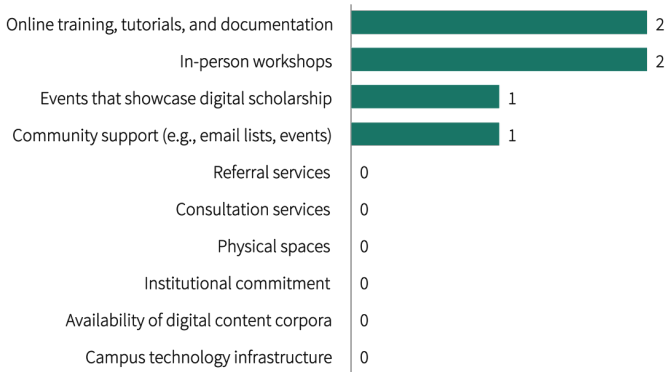
African and African American Studies



Anthropology



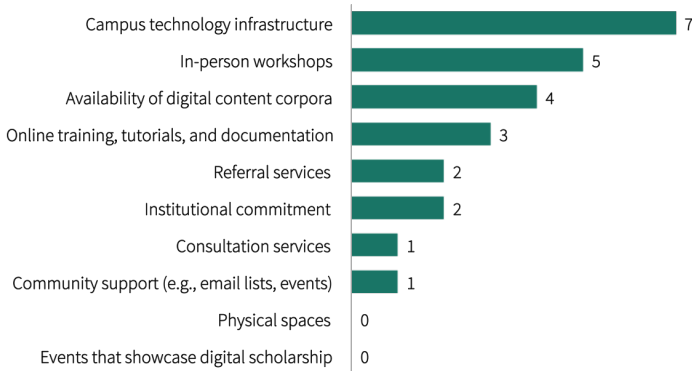
Celtic Languages and Literatures



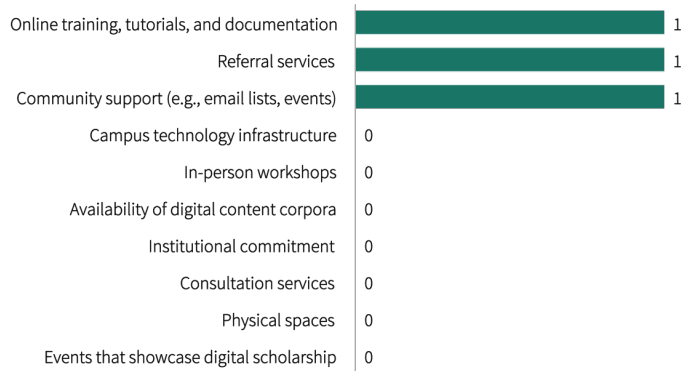
Chemistry and Chemical Biology



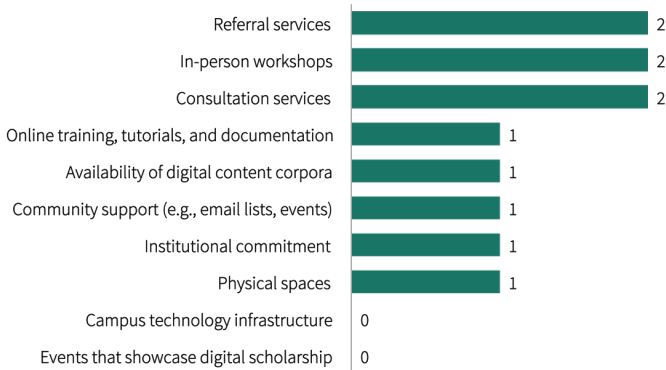
The Classics



Comparative Literature



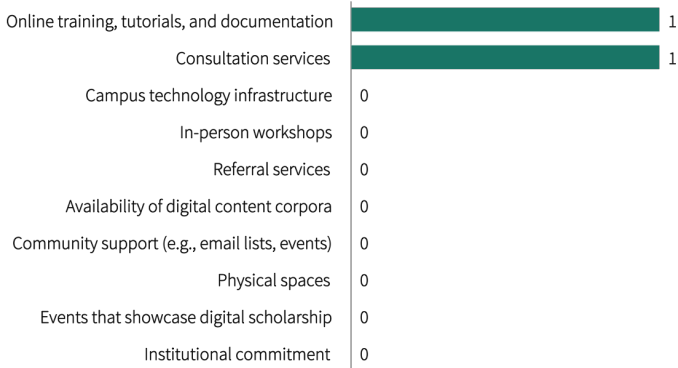
English



Germanic Languages and Literatures



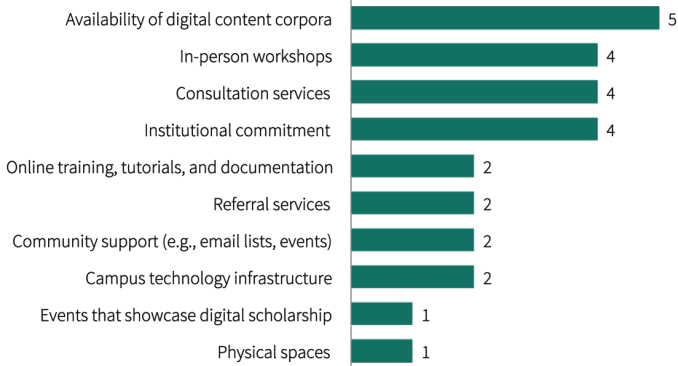
Computer Science



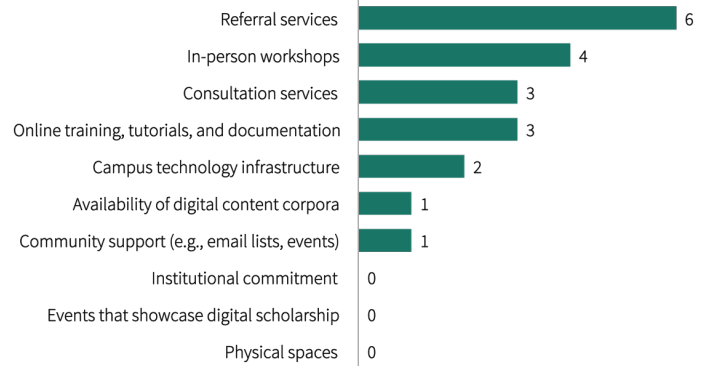
Earth and Planetary Sciences



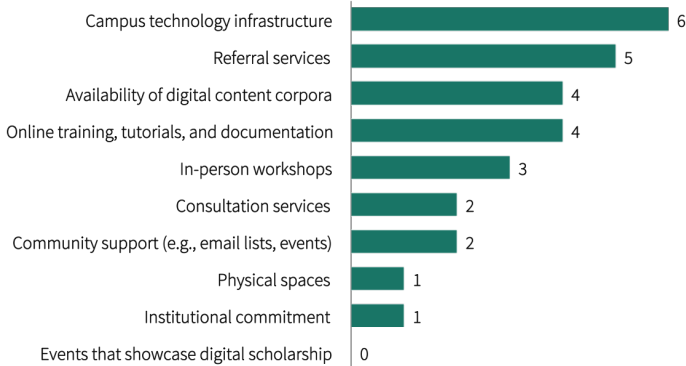
East Asian Languages and Civilizations



Economics



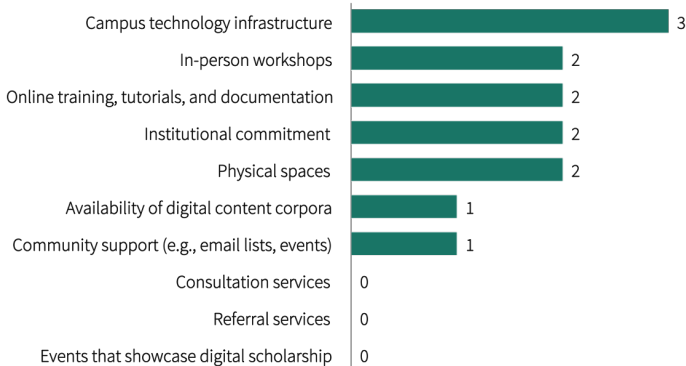
History



History of Art and Architecture



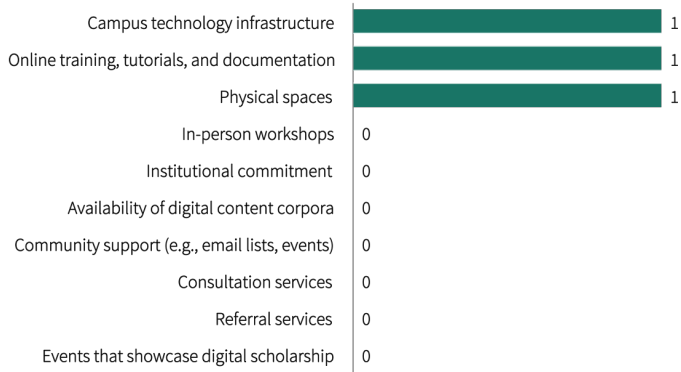
History of Science



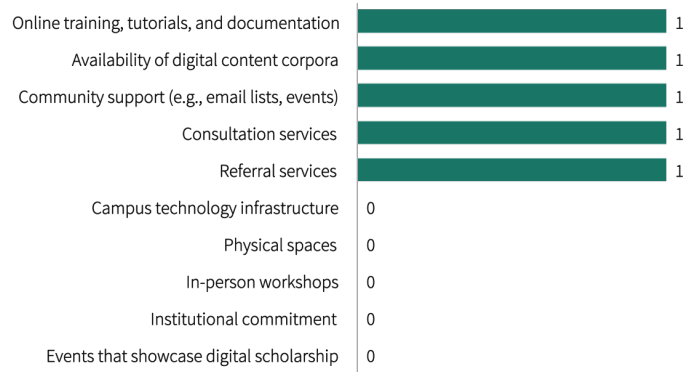
Government



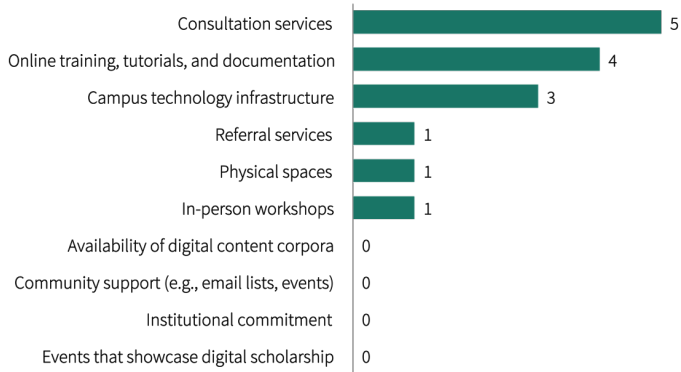
Human Evolutionary Biology



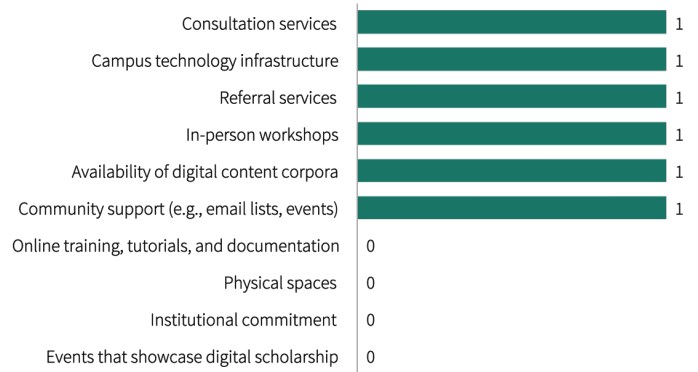
Linguistics



Molecular and Cellular Biology



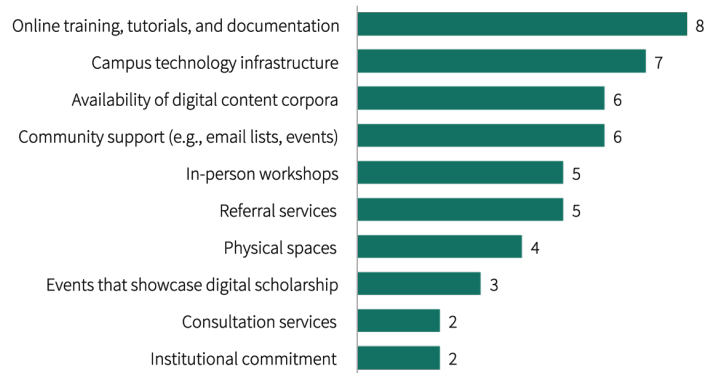
Music



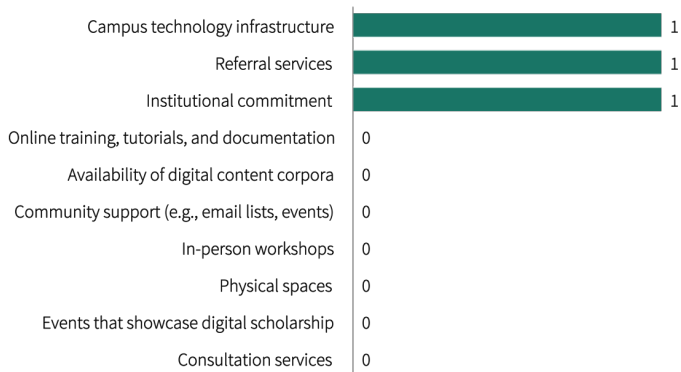
Near Eastern Languages and Civilizations



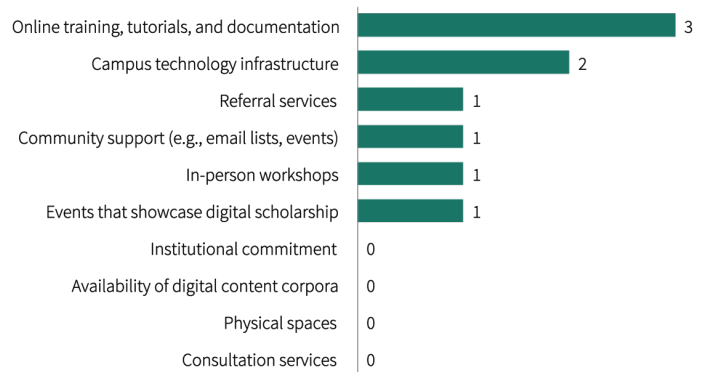
Organismic and Evolutionary Biology



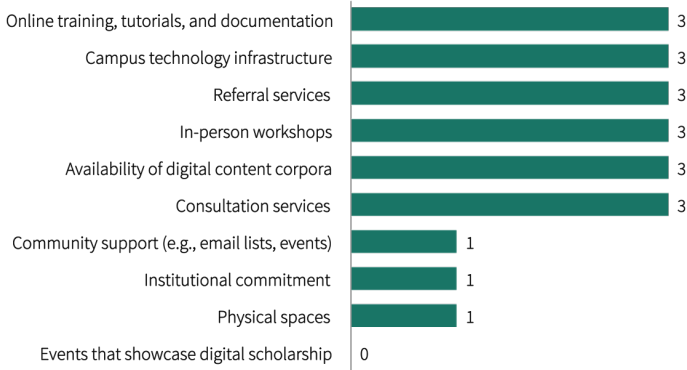
Philosophy



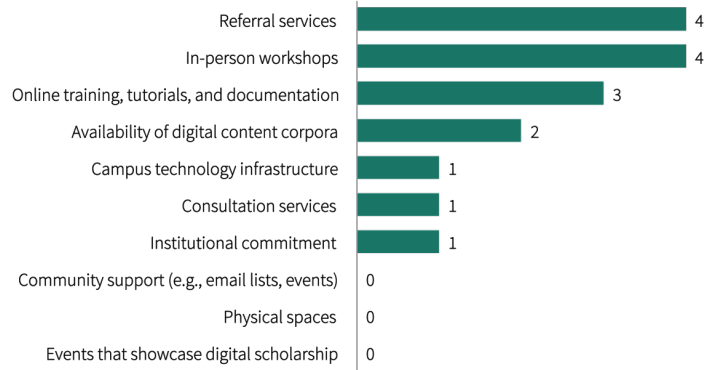
Physics



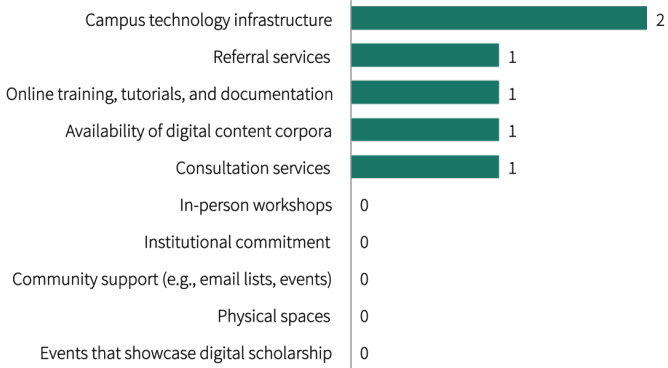
Psychology



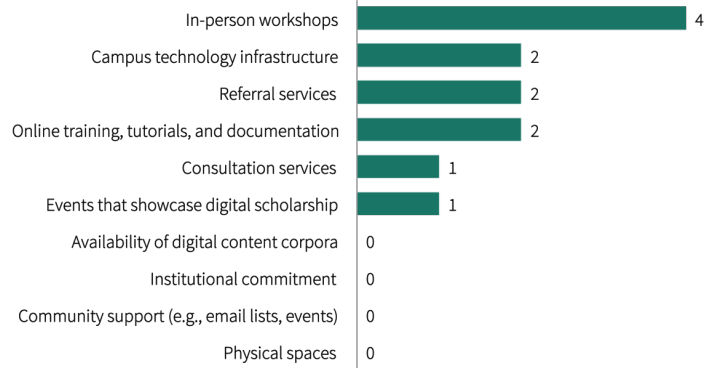
Romance Languages and Literatures



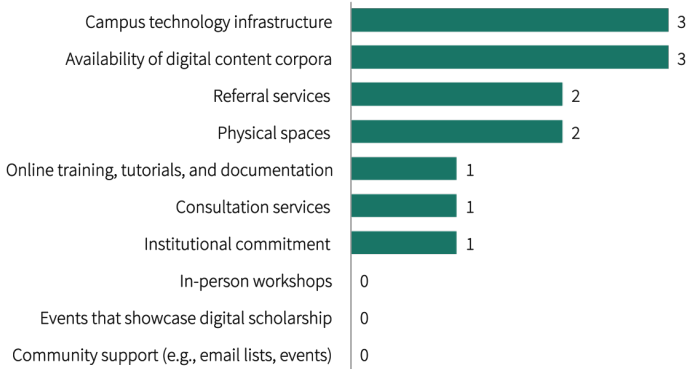
Slavic Languages and Literatures



Sociology



Visual and Environmental Studies



Appendix A.1: Survey Comments

Respondents were asked to share any additional experiences or comments about engaging in digital scholarship at Harvard. Comments ranged from requests for more introductory training in digital scholarship methods, to calls for greater communication and collaboration among campus units. These responses, quoted and paraphrased in the preceding summary of results, are grouped thematically and printed here in their entirety.

Communication and Awareness

- I'm noticing that there are multiple units on campus that are engaged in some aspect of digital scholarship but that communication among these units and from there to the wider community is lacking. Perhaps this is the nature of communication/organization at a institution as decentralized as Harvard. BUT if more attention and resources will now be dedicated towards digital scholarship, communication about these developments and access points is an important part of this process.
- Not clear where I can get resources even though I know there are many
- I feel that there is a lot of support (GIS workshops etc), the problem is that it is hard to take advantage of all those resources while you do not know exactly how they will add to your projects.
- It can be hard to figure out what resources are even available, there's no good introduction to it or breakdown of what is available, to whom, and how to access it. The assumption seems to be that we all just figure it out, but how can I utilize a source that I don't even know exists, and there is not even a hint that it exists?
- I still don't really know what digital scholarship is

Training and Consultation

- More training please!
- Workshops on this would be great!
- Because I'm in the natural sciences, we rely on our data collection methods, but essentially all of the data that we analyze/use/publish is digital. It would be nice to have more training or resources for various ways of analyzing/storing/interpreting digital data.
- I attended a GIS workshop for the humanities and social sciences and this was extremely helpful! However, I think it would be helpful for there to be workshops at the ed school for researchers doing place-based analyses - there are quite a few of us!
- There should be more done to help graduate students incorporate digital scholarship into their research, because I think it will be very valuable on the job market. Our advisors should not be the ones to do this, because in most cases they won't!
- Please offer short courses in quantitative text analysis for social scientists! I would love to participate and am unable to acquire these skills through my department.
- I learn new tools very quickly if I can spend even just 10-15 minutes with someone who is very familiar with the tool. So I consider in-person consultation to be the most valuable resource.
- The GIS workshops offered are great I only wished they were in Longwood instead of Cambridge more often.
- workshops I've attended for research computing have been badly mis-calibrated (way too advanced for an "introductory" session)

Staffing

- The personnel services are inadequate: people appointed to these positions disappear when they should proactively visit each faculty member.
- Professors less experienced in the use of media benefit hugely from TF's able to lend expertise on a variety of digital scholarship tools. Ensuring that Professors are aware of the workload put on TF's required to teach using these methods is important in maintaining efficacious relationships between teachers and their TF's.

- I'm conflicted. I love digital scholarship, but I very rarely ask for help because I don't have an enormous amount of confidence in the staff here. (I should mention, here, that I do not blame them. I guess I'm just a tech-savvy person. I'd be more inclined to contact HUIT for help or the good folks at ILL, who are magnificent at tracking down rare materials.)
- Faculty often have ideas for use of digital media in teaching and research, but lack the skills and infrastructure to implement even relatively simple projects, like a searchable database of texts related to a topic. Academic Technology and DARTH simply don't have anything like enough developers. Even if there is funding for a project, I don't think most faculty (at least in Humanities) would know how to go about determining the right tools to use and then finding an outside developer to work on it. It would be nice if there could be some sort of list of freelance developers who have experience working with academics, the kinds of projects they've worked on, and a consulting service to help find suitable developers for particular projects.
- Every IT dept dedicated to digital scholarship is willing to help, but there needs to be a willingness to push out experimental in-house tools for classes that want to push the boundaries of digital scholarship. Without further technical support we'll still be using Google Docs to pretend to annotate and call it the digital humanities for the foreseeable future

Digital Collections and Access

- The most useful tool for my research (an institutional subscription to the Thesaurus Linguae Graecae) is STILL something that Harvard does not have. It would be great if we could access this resource institutionally, especially as I'm currently a travelling scholar and do not have access to the few computers on campus on which this resource is installed.
- strongly wish more periodicals in FAL were scanned and available for download
- There are SEVERAL ancient text databases available to scholars of ancient Chinese like myself -- all of them, unfortunately, have aporia (blind spots) somewhere. I need to know what those blind spots are, and how different databases might compensate for others in this respect.
- Having collections digitized is incredibly helpful as a remote graduate student that cannot come to the libraries to view the primary source document, or publications in physical form. Additionally, it is important to note that digitization of collections should NEVER be a substitute for the employment of qualified library personnel. Library personnel are invaluable to researchers: they are able to easily navigate the system, they are able to provide search criteria that may not be as obvious, they are able to further accumulate helpful data found digitally and are able to provide very helpful insights to access, use, analyze and store data now in digital form. In short, digital scholarship requires qualified library personnel due to their expertise and more widely available access of digitized materials.
- Please add more engineering resources. Many at the engineering school depend on MIT so heavily because the resources at Harvard for engineering is so scarce. Given Harvard's growth in Engineering, we need an Engineering library with digital resources devoted to Engineering students and faculty
- Access to digital resources have made it possible for me to complete an entire dissertation while living away from Cambridge. I've been very grateful for this access.
- I am studying Korean linguistics. I am using corpora which have been built by National Institute of Korean Language. I have no idea whether Harvard has built Korean language corpora. If so, I would like to look at it, but I don't know where I can find them. And if Harvard doesn't have Korean language corpora, I am curious whether you are interested in building corpora.
- Appreciate Harvard's willingness to digitize books or get access to journal articles quickly when not currently held by library or in digitized collections elsewhere
- as an art historian, the visual sources are most common and useful, however because we are more familiar with resources like VIA, Artstor, etc, there is a lack of clarity on the other types of digital media available to either consult or develop
- Web access to library periodical subscriptions.
- the new Harvard Map Library database makes printing a map and Especially A Close Up Of A Map Detail well-nigh

impossible.

Institutional and Departmental Support

- There should be a clearer show of support for digital scholarship in the humanities (not just data analysis or visualization-type work)-- especially work that mixes digital production methods and artistic practices with scholarly work. For example, why not lessen the rift between the Film Study Center, MetaLab, and other related entities instead of conceptualizing of them as different “approaches” to media”?
- It would be helpful if non-tenured faculty had access to at least some of the trainings, services, funds and tools that are available for tenured faculty.
- There are currently a lot of unresolved issues about digital scholarship in humanities in the academic community. In general, there is a lot of pressure to use digital tools in one’s scholarship, but it is plainly clear from numerous cases even here at Harvard that scholarship primarily based on digital humanities methods is NOT considered tenure-worthy. While I wish that I had used methods like GIS, network visualization, etc, more effectively in my dissertation project (now finished), I never felt like I really had an incentive to invest that much time, money, and energy in learning to create things that ultimately would not be treated as anything more than ornamentation on my underlying research.
- Promotion of digital scholarship must come from the departments, and increased use of shared digital platforms (for things like digital exhibits) would make this much easier.
- Despite having been engaged with the digital humanities at Harvard for over a decade, I think that it has in all fairness to be said that there is essentially no support for them. The Digital Humanities Committee, which, given a lack of funding, was never terribly effective, is now defunct. There is effectively no way for the faculty to represent its desires, views, opinions, needs related to this issue to the administration. There isn’t even a way for faculty to archive any digital projects on which they happen to have worked. There is not nearly enough funding even for relatively simple tasks, let alone anything as ambitious as the creation of new software tools. MetaLab is well and good, but it doesn’t service or respond to the community in any real way. In short, Harvard remains way behind the curve on this front, and at present I see no sign of any serious effort to catch up, let alone lead.
- It is very difficult to do this by oneself, especially if one is not a computer scientist. I proposed a digital humanities project for funding and support early in my graduate work and got neither support nor funding. I was able to attend an in-person seminar to learn some skills, but the time commitment necessary to really put these skills to use was too much. I was also worried about whether this project would be seen as “real scholarship,” as some of the survey questions implied. Given the constraints of time and the need to produce scholarship, I gave up the project and did something much more traditional. I don’t think my advisors would have been against my pursuing that project, but it would have been something added onto the traditional dissertation, not a replacement of it.

Other

- Digital scholarship seems to be an area with great potential for collaboration across university units and programs. It is also something that Harvard could bring to other partnerships.
- I hope to see more discussions and opportunities for humanities majors (history especially) in learning and engaging in digital scholarship.
- There is a lot of discussion about “digital humanities” but not a lot of clarity about the relationship between the tool, as a tool, and the research goals. Maps, for instance, have always been basic to historical research. Maps can become the SUBJECT of the research, however, as well as a tool for understanding another topic. They can also become a mode of presentation. These uses of “digital” tools are related, but not identical, and probably require different forms of collaboration and support. I am interested in all three.
- An important project!
- People say that print is king and then dismiss digital scholarship. Perhaps we can find a way to balance this.
- I didn’t see any question focused specifically on digital art, and digital art is in my experience one of the things that interest people the most in the VES department, especially the students.

Appendix B: Survey Instrument

Q1.1 This is a survey conducted by the Harvard Library to assess the activities, interests and needs related to digital humanities/digital scholarship at Harvard. For the purposes of this survey, “digital scholarship” includes the use of digital tools and methods to support research, teaching, content creation, and stewardship. For instance,

- digitization and the use or creation of digitized collections;
- data acquisition, description, analysis, visualization, stewardship and curation;
- digital content creation and sharing, including digital publishing;
- GIS and mapping;
- text mining and analysis; and the hardware, software, and infrastructure to support all of the above.

This survey should take approximately 15 minutes to complete. Your responses to this survey will help the Library develop more robust support for digital scholarship at Harvard. We thank you for your participation.

Q2.1 Which best describes your role at Harvard?

- Faculty Member
- Graduate Student
- Post-Doctoral Scholar
- Undergraduate Student
- Staff
- Other _____

Q2.2 With which school are you affiliated?

- Harvard Business School
- Harvard College
- Division of Continuing Education
- Harvard School of Dental Medicine
- Harvard Divinity School
- Faculty of Arts & Sciences
- Harvard Graduate School of Design
- Harvard Graduate School of Education
- Graduate School of Arts & Sciences
- School of Engineering and Applied Sciences
- Harvard Kennedy School
- Harvard Law School
- Harvard Medical School
- Radcliffe Institute for Advanced Study
- Harvard T.H. Chan School of Public Health
- Other

Display This Question:

If With which school are you affiliated? Faculty of Arts & Sciences Is Selected

Or With which school are you affiliated? Graduate School of Arts & Sciences Is Selected

Or With which school are you affiliated? Harvard College Is Selected

Q2.3 With which department are you affiliated?

- African and African American Studies
- Anthropology
- Applied Mathematics
- Applied Physics
- Astronomy
- Bioengineering
- Celtic Languages and Literatures
- Chemistry and Chemical Biology

- Computer Science
- The Classics
- Comparative Literature
- Earth and Planetary Sciences
- East Asian Languages and Civilizations
- Economics
- Electrical Engineering
- English
- Environmental Science & Engineering
- Germanic Languages and Literatures
- Government
- History
- History of Art and Architecture
- History of Science
- Human Evolutionary Biology
- Linguistics
- Materials Science & Mechanical Engineering
- Mathematics
- Molecular and Cellular Biology
- Music
- Near Eastern Languages and Civilizations
- Organismic and Evolutionary Biology
- Philosophy
- Physics
- Psychology
- Romance Languages and Literatures
- Slavic Languages and Literatures
- Sociology
- South Asian Studies
- Statistics
- Stem Cell and Regenerative Biology
- Visual and Environmental Studies
- Other

Q2.4 Do you currently employ digital scholarship tools or methods in your research OR in your teaching at Harvard?

- Yes, in my research.
- Yes, in my teaching.
- Yes, in both my research and teaching.
- Neither, but I would like to.
- Neither, and I am not interested.

Display This Question:

If Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Neither, but I would like to. Is Selected

Q3.1 You indicated that you do not currently employ digital scholarship methods, but would like to learn more. Please select the tools or approaches in which you are most interested.

- Creation of online exhibits (e.g., Omeka)
- Digital writing/storytelling/remixing
- Multimedia/digital publishing
- Machine learning and computational linguistics
- Computational text analysis (e.g., text mining) or text encoding
- Geospatial analysis (e.g., GIS, mapping)
- Network analysis
- Database construction
- Data visualization

- Simulations/3D modeling
- Social computing/crowdsourcing
- Web scraping
- Analysis of new media/social media
- Editing and manipulation of digital of images, video, or audio
- Annotation of digital text, images, video, or audio
- Automated analysis of digital images, video, or audio
- General use of digital or digitized collections
- Gaming
- Other (please describe): _____

Display This Question:

If Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Neither, and I am not interested. Is Selected

Q4.1 You indicated that you are not interested in digital scholarship. Please tell us why (select all that apply to you).

- Digital scholarship does not pertain to my research and/or teaching
- It is unclear to me what digital scholarship is
- Lack of time to learn new tools and/or methods
- Lack of collaborators
- Lack of funding to support digital scholarship
- Lack of other resources (e.g., necessary tools, hardware, software, facilities)
- Lack of campus support (e.g, training, consultations, assistance, or partnerships)
- Lack of clarity about how digital scholarship would be evaluated in the tenure/promotion process
- Other (please describe): _____

Display This Question:

If Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in my research. Is Selected
Or Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in my teaching. Is Selected
Or Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in both my research and teaching. Is Selected

Q5.1 What types of digital scholarship methods do you currently employ in your research and/or teaching? Please select all that apply.

- Creation of online exhibits (e.g., Omeka)
- Digital writing/storytelling/remixing
- Multimedia/digital publishing
- Machine learning and computational linguistics
- Computational text analysis (e.g., text mining) or text encoding
- Geospatial analysis (e.g., GIS, mapping)
- Network analysis
- Database construction
- Data visualization
- Simulations/3D modeling
- Social computing/crowdsourcing
- Web scraping
- Analysis of new media/social media
- Editing and manipulation of digital of images, video, or audio
- Annotation of digital text, images, video, or audio
- Automated analysis of digital images, video, or audio
- General use of digital or digitized collections
- Gaming
- Other (please describe): _____

Display This Question:

If Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in my research. Is Selected Or Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in my teaching. Is Selected Or Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in both my research and teaching. Is Selected

Q5.2 What types of digital scholarship methods would you like to employ in your research and/or teaching? Please check all that apply.

- Creation of online exhibits (e.g., Omeka)
- Digital writing/storytelling/remixing
- Multimedia/digital publishing
- Machine learning and computational linguistics
- Computational text analysis (e.g., text mining) or text encoding
- Geospatial analysis (e.g., GIS, mapping)
- Network analysis
- Database construction
- Data visualization
- Simulations/3D modeling
- Social computing/crowdsourcing
- Web scraping
- Analysis of new media/social media
- Editing and manipulation of digital of images, video, or audio
- Annotation of digital text, images, video, or audio
- Automated analysis of digital images, video, or audio
- General use of digital or digitized collections
- Gaming
- Other (please describe): _____

Display This Question:

If Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Neither, and I am not interested. Is Not Selected

Q6.1 What are the barriers to adopting digital scholarship tools and methodologies in your research or teaching at Harvard? Please select all that apply.

- Lack of time to learn new tools and/or methods
- Lack of collaborators
- Lack of funding to support digital scholarship
- Lack of other resources (e.g., necessary tools, hardware, software, facilities)
- Lack of campus support (e.g, training, consultations, assistance, partnerships)
- Lack of clarity about how digital scholarship would be evaluated in the tenure/promotion process
- Other (please describe): _____

Display This Question:

If Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in my research. Is Selected Or Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in my teaching. Is Selected Or Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in both my research and teaching. Is Selected

Q7.1 Do you collaborate with other faculty, graduate students, or staff on your digital scholarship?

- Yes, I collaborate.
- No, I don't collaborate.

Display This Question:

If Do you collaborate with other faculty, graduate students, or staff on your digital scholarship? Yes, I collaborate. Is Selected

Q7.2 Please select all options that apply to describe your collaborators.

- My collaborators are all affiliated with Harvard.
- Some of collaborators are affiliated with the Harvard, and others are not.
- None of my collaborators are affiliated with Harvard.

Q8.1 To what degree does your department or college encourage digital scholarship research methods?

- My department strongly discourages digital scholarship
- My department somewhat discourages digital scholarship research
- My department neither discourages nor encourages digital scholarship research
- My department somewhat encourages digital scholarship research
- My department strongly encourages digital scholarship research

Display This Question:

If Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in my research. Is Selected Or Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in my teaching. Is Selected Or Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Yes, in both my research and teaching. Is Selected

Q9.1 Where do you currently get assistance/support for your digital scholarship work? Assistance/support may include, but is not limited to, training, consultations, funding, and other resources. Please select all that apply.

- Dedicated staff in my school or department
- Harvard colleagues (other faculty and/or graduate students)
- External communities (e.g., digital humanities community, open source community, professional societies)
- Bok Center for Teaching & Learning
- Harvard Academic Technology
- Harvard University Arts & Humanities Computing/DARTH
- Research Computing
- Center for Geospatial Analysis
- University Libraries (please specify if a specific library or librarian if possible) _____
- I don't get support.
- Other: _____

Display This Question:

If Do you currently employ digital scholarship tools or methods in your research OR in your teaching... Neither, and I am not interested. Is Not Selected

Q9.2 What types of support and services would potentially be MOST helpful for your digital scholarship work? Please select up to three (3).

- Referral services (e.g., assistance finding support services on campus, potential collaborators, or potential funding opportunities)
- Community support (e.g., email lists, events, online environments)
- Campus technology infrastructure (e.g., purchase and support of hardware, software licenses, web hosting services, institutional repository)
- Availability of digital content corpora (e.g., data sets, texts and images collections)
- Consultation services (e.g., best practices, use of tools, new forms of digital publishing, project planning/management, copyright, metadata, digital asset preservation and access, grant development, website development)
- Online training, tutorials, and documentation
- In-person workshops
- Physical spaces (e.g., scholars' commons, makerspaces, visualization labs)
- Institutional commitment (e.g., clarity on promotion/tenure criteria for digital scholarship, articulated support for digital scholarship from campus leadership)
- Events that showcase digital scholarship projects
- Other: _____

Q10.1 Have you ever used any of the following types of digital materials from digital/digitized collections in your research and/or teaching? Please select all that apply.

- Texts
- Images
- Audio
- Video
- Maps

- None of the above
- Other: _____

Display This Question:

If Have you ever used any of the following types of digital materials from digital/digitized collect... Texts Is Selected

Q10.2 Think about a time when you used a digital collection of TEXTS. What features of the collection made it an effective research resource (e.g., ability to export files, detailed metadata, full-text search)?

Display This Question:

If Have you ever used any of the following types of digital materials from digital/digitized collect... Images Is Selected

Q10.3 Think about a time when you used a digital collection of IMAGES. What features of the collection made it an effective research resource (e.g., viewing and zooming tools, ability to tag files, and so on).

Display This Question:

If Have you ever used any of the following types of digital materials from digital/digitized collect... Audio Is Selected

Or Have you ever used any of the following types of digital materials from digital/digitized collect... Video Is Selected

Q10.4 Think about a time when you used a digital collection of MULTIFORMAT MEDIA (e.g., audio, video). What features of the collection made it an effective research resource (e.g., annotation tools, detailed metadata, and so on).

Q11.1 Please share any additional experiences or comments about engaging in digital scholarship at Harvard.

Q12.1 Please let us know if you would be willing to be contacted for a follow-up interview and/or if you are interested in entering a drawing to win a Bluetooth speaker or an iPad Mini.

- I am willing to be contacted for a follow-up interview.
- I would like to be entered into the prize drawing.

Display This Question:

If Please let us know if you would be willing to be contacted for a follow-up interview and/or if you are interested in entering a drawing to win a Bluetooth speaker or an iPad Mini. I am willing to be contacted for a follow-up interview. Is Selected

Or Please let us know if you would be willing to be contacted for a follow-up interview and/or if you are interested in entering a drawing to win a Bluetooth speaker or an iPad Mini. I would like to be entered into the prize drawing. Is Selected

Q12.2 Please provide your email address so that we may contact you regarding the interview and/or prize drawing.
Email

Appendix C: Faculty Interview Protocol

Introduction

Faculty, graduate students, and undergraduates at Harvard increasingly employ an array of digital tools and computer-aided methodologies in their research and learning. These tools permit, for example, analyzing large corpora of text for linguistic patterns; creating interactive maps that visualize migration of populations over time; or publishing scholarly articles augmented with multimedia on the web. We refer to these and other activities as “digital scholarship” or “digital humanities” (more narrowly). As digital scholarship is a burgeoning area of work for our faculty and students, the Library has undertaken to develop a three-year road map towards creating a Digital Scholarship unit in the Library that will allow us to enhance our support and to better meet the needs of our scholars in this area. This interview is part of a broader environmental scanning and needs assessment process that will inform the development of these services.

The interview should take approximately one hour. Only summary data will be reported and no individual names or other identifying information will be used, unless you give explicit permission to use portions of this interview with attribution. For the purposes of this interview, we are using the following definition of digital scholarship: “Digital Scholarship leverages digital technology and media to conduct research and to disseminate, access, and/or reuse it via primarily electronic methods.”

General Information

1.1 What are your major areas of expertise? Current projects?

Collaboration

2.1 Do you collaborate with others at Harvard? Elsewhere?

Your Research

The next set of questions are about the tools you use (software, hardware, etc.) as they relate to your research. For these questions, please focus on those used to acquire, organize, manage, analyze, publish, or communicate digital information relevant to your work. (Possible examples here: wikis, blogs, shared storage, scanning, OCR, image processing, text encoding, text analysis, geocoding/georeferencing tools, data visualization, audio/visual hardware, large format printing, large monitors/projectors, etc.)

3.1 What are the software tools and/or methods that you currently use in your research?

Prompts: Could you tell me the names of the specific tools you use?
How do you find out about tools to use for your digital scholarship work?
Where do you learn to use the tools you employ in your digital scholarship work?

3.2 What campus resources or services (including training and support) do you use to support your research activities?

3.3 Are there any software tools or methods that you do not currently use, but which you have an interest in? Are any of those not available or well supported here?

3.4 Do you use digital or digitized collections in your research?

Prompts: What are the important attributes for a digital collection of texts, images, a/v to have for the collection to be an effective research resource (that is, capability to export files, detailed metadata, and so on)
What functionalities and features would compel you to use digital collections more frequently in your research?

3.5 Do you have a need for specific hardware or physical space for your research that is not met by your personal devices?

Prompts: If so, is it met by an existing lab or facility here at Harvard? Somewhere else?
If your need is not met, please describe the need in detail and estimate how often you might use it.

3.6 What has been most frustrating/the biggest challenge to your efforts to pursue digital scholarship research at Harvard?

Prompts: Could you tell me about places where you get stuck in your pursuit of digital scholarship at Harvard?

3.7 What, in your opinion, are the greatest assets on the Harvard campus for conducting digital scholarship research?

Prompts: Where does Harvard excel in the area of digital scholarship?
Are the key people or centers you can identify as particularly effective at advancing digital scholarship at Harvard?

Your Teaching

The next set of questions are again about software tools, hardware, and space, but now as they relate to you teaching. Once again, please focus on those used to acquire, organize, manage, analyze, publish, or communicate digital information relevant to your work.

(Possible examples here: wikis, blogs, shared storage, scanning, OCR, image processing, text encoding, text analysis, geocoding/georeferencing tools, data visualization, audio/visual hardware, large format printing, large monitors/projectors, etc.)

4.1 Describe your teaching responsibilities.

4.2 Have you incorporated digital scholarship tools or methodologies into your teaching?

Prompts: What are the software tools and/or digital methods that you use in your teaching?
If you have not, could you talk about why you have not incorporated digital methods into your teaching?
What do you think is the role of digital methods in teaching?

4.3 What tools and methods do you expect your students to use or have facility with?

4.4 Are there any software tools or methods that you or your students do not currently use, but which you have an interest in? Are any of those not available or well supported here?

4.5 Do you have a need for specific hardware or physical space for your teaching that is not met in your standard classroom? If so, is it met by an existing lab or facility here at Harvard? Somewhere else? If your need is not met, please describe the need in detail and estimate how often you might use it.

Training and Support

5.1 What skills and knowledge do you need to have in order to advance your project? How have you developed these skills and knowledge?

5.2 To what extent has your academic training prepared you to do digital scholarship?

5.3 Have other units on campus prepared you for or supported development of the skills you need to do digital scholarship? What support has been most important?

5.4 Where would you go (or who would you turn to first) for advice on digital tools and methods?

5.5 What training programs have you participated in or outside of the university? How effective were these programs?

5.6 Are there areas of training in support of digital scholarship that would be useful in supporting your research?

5.7 Are there any specific kinds of training in support of digital scholarship that would be useful in supporting your teaching (these could be for your own teaching practice/assignments, or directly supporting your students)?

Data Management

6.1 How do you acquire data that you use in your research and teaching?

6.2 How do you store the data/resources associated with your research and teaching? Do you place your data in any repositories? Which ones? Do you receive assistance?

6.3 Do you need to comply with any mandates for publication or data sharing/management issued by, for example, funders from which you receive support?

6.4 Are you interested in support around aspects of data management?

Prompts: This might include creating a data management plan, determining appropriate data formats, using/creating a metadata schema, the application of vocabularies and ontologies, storage resources, sharing (e.g. having a persistent URL for data set), long-term management, reuse.

Publishing and Sharing Research Outputs

7.1 Do you place your publications in any repositories? Which ones?

7.2 Do you use tools to track citations or assess the impact of your publications?

7.3 Do you have an interest in hosting / support for digital journal or monograph publishing?

7.4 Other tools for personal / collaborative communication (e.g., wikis, blogs, project web sites)?

Other

8.1 Do you see a role for the Harvard College Library in supporting digital humanities research?

Prompts: Have you ever approached the library or a librarian for assistance with your digital scholarship?

8.2 Is there anything else you would like to mention?

8.3 Do you have colleagues that would be instructive for me to speak with?

Appendix D: Professional Development & Training Resources

Workshop Series

Harvard Workshop Series and Resources

Harvard IT Academy

<http://itacademy.harvard.edu/>

IT courses curated and offered through Harvard Training Portal

ABCD GIS Workshop Series, Center for Geographic Analysis

<http://gis.harvard.edu/events/seminar-series/abcd-gis>

Data Scientist Training for Librarians [defunct]

<http://altbibl.io/dst4/current-course/>

A five-session, “experimental” course for librarians; a joint initiative of the Harvard-Smithsonian Center for Astrophysics John G. Wolbach Library and the Harvard Library.

DARTH Workshops

<http://darthcrimson.org/learn/>

Institute for Qualitative Social Sciences Workshops

<https://www.iq.harvard.edu/calendar>

Center for Workplace Development

<https://hr.harvard.edu/training-courses>

A variety of computer and project management courses may be relevant to librarians looking to improve skills related to digital scholarship, including courses in Microsoft Access database software, the Adobe Suite, Microsoft Excel, HTML, and Wordpress.

Regional Workshop Series and Resources

Boston University Digital Scholarship Center Workshop Series

<http://www.bu.edu/disc/2017/01/28/workshop-series/>

Ongoing workshops series targeted towards faculty and librarians, offering workshops in DH tools and techniques and project management. Curriculum outline and instructional materials at <https://github.com/tech-at-arl/Digital-Scholarship-Institute>.

NULab Workshops, Northeastern University

<http://www.northeastern.edu/nulab/events/events-all/>

Ongoing workshop and lecture series showcasing innovative projects and introductions to digital humanities tools and techniques, such as Gephi and TEI.

Boston DH Consortium

<http://bostondh.org/>

Informal community for Boston-area DH practitioners, hosts a list-serv, meet-ups, and events.

Upcoming Intensive Trainings & Conferences (Spring/Summer 2017)

Local/Regional

New England THATCamp, Wentworth Institute of Technology, Boston, MA

<http://newengland2017.thatcamp.org/register/>

ARL Digital Scholarship Institute, Boston College

<http://www.arl.org/news/arl-news/4173-save-the-date-arl-digital-scholarship-institute-to-offer-first-session-at-boston-college-june-5-9-2017#.WH-ETlMrLctBoston>. Curriculum outline and instructional materials at <https://github.com/tech-at-arl/Digital-Scholarship-Institute>.

New Media Consortium Summer Conference, Hyatt Regency Cambridge

<https://www.nmc.org/events/2017-nmc-summer-conference/>

National/International

Humanities Intensive Teaching and Learning 2016, Indiana University-Purdue University Indianapolis (IUPUI) in Indianapolis, IN

<http://www.dhtraining.org/hilt2016/>

“Textual Embodiments,” the Society for Textual Scholarship’s International Interdisciplinary Conference for 2017, University of Maryland

<http://mith.umd.edu/sts2017/>

Digital Humanities 2017, Montreal, QC

<https://dh2017.adho.org/>

Kairos Camp: A Digital Publishing Institute for Authors and Editors, West Virginia University

<http://www.kairos.camp/author-workshops/>

Eighth International Conference on Digital Archives and Digital Humanities, Taipei, Taiwan

<http://www.aiecon.org/conference/DADH2017/cfp.htm>

Digital Humanities Summer Institute, Victoria, BC

<http://www.dhisi.org/>

Online Resources

General Digital Scholarship, DH, and Technology

LITA online courses

<http://www.ala.org/lita/learning/online>

Webinars and online courses that cover a variety of IT topics, including digital scholarship. Current courses include, for example, Introduction to Git and GitHub.

Lynda.com Tutorials

<http://www.lynda.com>

Introduction to Digital Humanities for Librarians [not currently offered]

<http://libraryjuiceacademy.com/112-digital-humanities.php>

A Library Juice Academy course aimed at librarians in which participants will “read and discuss DH scholarship, learn about frequently-used software, and think about why and how libraries and librarians engage DH.”

British Library Digital Scholarship Training Programme

<http://britishlibrary.typepad.co.uk/digital-scholarship/2014/10/british-library-digital-scholarship-training-programme-round-up-of-resources-you-can-use.html>

Round-up of resources recommended by the British Library as further reading for their DH training program.

Getting Started in the Digital Humanities

<https://digitalscholarship.wordpress.com/2011/10/14/getting-started-in-the-digital-humanities/>

Temple Digital Scholarship Center How-Tos

<https://sites.temple.edu/tudsc/ds-how-tos/>

Useful round-up of LibGuides from Temple University's Digital Scholarship Center, featuring advice on a variety of DH methods, from network visualization to 3D historical reconstruction.

dh+lib

<http://acrl.ala.org/dh/>

Excellent resource for the latest DH news, events, CFPs, and more.

Data Management and Visualization

Resources for “Data Visualisation for Analysis in Scholarly Research”

<http://www.miaridge.com/resources-for-data-visualisation-for-analysis-in-scholarly-research/>

Links curated by Mia Ridge, instructor for the British Library's DH training program.

Kyle Broman Tutorials

<http://kbroman.org/pages/tutorials.html>

Professor Kyle Broman has tutorials on basic data management and visualization, including an introduction to R and a primer on best practices for organizing data in spreadsheets.

Data Analysis and Visualization Using R

<http://varianceexplained.org/RData/>

Open web-based course from data scientist David Robinson.

Do-It-Yourself Research Data Management Training Kit for Librarians

<http://datalib.edina.ac.uk/mantra/libtraining.html>

Library Carpentry

<https://librarycarpentry.github.io/>

Traveling data management workshops targeted at libraries. One of several off-shoots of the popular Software Carpentry program.

Digital Humanities Data Curation

<http://guide.dhcurator.org/>

Flowing Data

<http://flowingdata.com/>

Data visualization blog that is also a great source of pointers to interesting data sets to experiment with and quick coding/data/digital literacy tutorials (e.g., <http://flowingdata.com/2017/03/24/fastest-way-to-alphabetize-your-bookshelf/>).

Digital Exhibits

Omeka Sugar

<https://jaguillette.github.io/omekaSugar/>

Advanced Omeka tutorials by Harvard's own Jeremy Guillette, including integration with mapping application Neatline.

Up and Running with Omeka

<http://programminghistorian.org/lessons/up-and-running-with-omeka>

Web tutorial from UCLA's Digital Scholarship Coordinator, Miriam Posner

Amanda French's Introduction to Omeka Lesson Plan

<http://amandafrench.net/2013/11/12/introduction-to-omeka-lesson-plan/>

Text Mining and Encoding

Scholarly Editions: TEI Text Encoding and Publishing

<https://iu.app.box.com/s/bvbdsjqmx4cdcjp320upvzp0i44ykth9>

Slides by Michelle Dalmau from ARL Digital Scholarship Institute.

Introduction to Text Analysis: A Coursebook

<http://walshbr.com/textanalysiscoursebook/>

Excellent introduction to the theory and practice of text analysis and encoding, with interactive exercises.

Command Line and Coding

Advent of Python (Summer 2017)

<https://docs.google.com/document/d/1XYzQrudhCTG0m1CxEWELBQhFAj7CwDUvslom-QXbv3c/edit>

“Co-learning group” for librarians who want to learn Python.

The Programming Historian

<http://programminghistorian.org/lessons/research-data-with-unix>

A series of web-based tutorials for using digital humanities methods for historical research.

Teaching Yourself to Code in DH

<http://scottbot.net/teaching-yourself-to-code-in-dh/>

Introduction to the Command Line

<http://praxis.scholarslab.org/resources/bash/>

Learn command line basics from the Praxis Program at UVA’s Scholars’ Lab.

Web Development and Content Management Systems

Introduction to Wordpress

<http://praxis.scholarslab.org/resources/intro-to-wordpress/>

Appendix E: Digital Scholarship Courses Offered through FAS

A brief survey of the Harvard course catalog reveals at least 28 current, recent, or upcoming FAS courses that explicitly reference digital humanities, digital scholarship, or a specific tool or method in their course description. These courses include nine general digital methods or digital humanities courses, four data visualization and analysis courses, 11 courses that incorporate GIS or mapping, one text mining course, two coding/programming courses, and two courses whose primary goal is the analysis of new media.

General Digital Humanities or Digital Methods

History Lab	HIST 92R	Gabriel Pizzorno
	CHNSHIS 202	Donald Sturgeon
What should or could (scholarly) knowledge look like in the 21st Century? A Knowledge Design seminar	COMPLIT 279	Jeffrey Schnapp
Introduction to Digital Humanities	EAFM 160	Shigehisa Kuriyama, Alex Zahlten
Methods in the Digital Humanities	ENGLISH 298DH	Derek Miller
Questions of Theory	GERMAN 291	John T. Hamilton, Jeffrey Schnapp
Digital Humanities 2.0: a metaLAB(at)Harvard seminar	ROM-STD 219	
Japan's 2011 Disasters and Their Aftermath: A Workshop on Digital Research	ANTHRO 1923	Theodore Bestor, Andrew Gordon, Ryo Morimoto
Introduction to Digital History	HIST 1993	Gabriel Pizzorno

Data Visualization and Analysis

Visualization	CS171	Hanspeter Pfister
Data Science 2: Advanced Topics in Data Science	APCOMP 209B	Hanspeter Pfister, Mark Glickman, Verena Kaynig-Fittkau
Environmental Modeling	E-PSCI 236	Steven Wofsy, Daniel Jacob
Methods for Quantitative Data Analysis	SOCIOL 218	

Mapping and GIS

GIS & Spatial Analysis In Archaeology	ANTHRO 2020	
Introduction to African Languages and Cultures	AFRAMER 20	
Spatial Analysis of Environmental and Social Systems	ENG-SCI 103	
Mapping Social and Environmental Space	GOV 94DN	David Strohschein
Introduction to Geographical Information Systems	GOV 1008	David Strohschein
Spatial Models for Social and Environmental Policy	GOV 1016	
Mapping History	HIST 1952	Kelly A. O'Neill
Natural Disasters	SCIPHUNV 12	Brendan Meade
The Fall of the Roman Empire	SOCWORLD 53	Michael McCormick
Cartography and Early Modern Literature	COMPLIT 249	

Mapping the Slavlands: Central Europe in the Middle Ages	MEDVLSTD 110
--	--------------

Coding and Programming

Computational Music Theory	APMTH 141R 002	Elizabeth Chen
Advanced Statistical Modeling and Psychometrics Using R	PSY 349	

New Media

Exploring Race and Community in the Digital World	AFRAMER 108X	
Sampling Media: Narratives of Identity in Contemporary Spain	SPANSH 83	Vanessa Ceia

Appendix F: Professional Development Curriculum

Curriculum Description

This proposed curriculum comprises six modules⁴³ designed to give librarians a fundamental understanding of digital scholarship. Each module comprises three hours of in-person instruction (with the exception of the text analysis module, which comprises five hours of instruction) and can be taken individually or as a complete track. They assume little prior technical knowledge. The Introduction to Digital Scholarship module provides a thematic overview and a framework for understanding specific approaches to the use of digital tools. Five subsequent modules focus on specific digital scholarship approaches and tools. Graduates of all six modules will gain enough understanding of digital scholarship methods and tools to provide basic reference and referral services to faculty and students. All modules require participants to work hands-on with software or engage with digital projects. Each module:

- combines conceptual knowledge (e.g., applications of text analysis) with a basic introduction to one or more popular technologies (e.g., Voyant Tools).
- takes the Harvard context into account, encouraging participants to think about the landscape of digital scholarship at Harvard, including scholarly practices and available support services
- embeds a user-centered approach to supporting digital scholarship, through a focus on the practical application of knowledge gained to librarians' daily activities and interactions with scholars
- supports a "train the trainer model," in which workshop participants learn effective ways of teaching or advising on concepts and tools that they can reuse in their own work with faculty members and students
- provides numerous concrete examples so that participants can answer questions like, "What do I need to know/do in order to create this type of project?"

Module Theme	Possible Instructor(s)	Description
<i>Introduction to Digital Scholarship</i>	Hugh Truslow, Sarah Melton & Chelcie Rowell (Boston College)	This module introduces participants to the theory and common practices of digital scholarship, including text analysis, mapping/ GIS, multimodal publishing, digital exhibits, and information visualization.
<i>Digital Archives & Exhibitions</i>	Odile Harter, Enrique Diaz, Jeremy Guillette	This module introduces participants to the practice of creating digital archives and exhibits, with a focus on the fundamentals of Omeka.
<i>Multimodal Online Publishing</i>		This module introduces participants to the practice of multimodal publishing, with a focus on the fundamentals of Scalar.
<i>Geospatial and Temporal Mapping</i>	Scott Walker, Bonnie Burns	This module introduces participants to the theory and practice of working with geospatial data, with a focus on creating and styling maps in Carto. <i>*(lesson plan incomplete)</i>
<i>Information Visualization</i>	Ceilyn Boyd	This module introduces participants to the theory and practice of visualizing data through charts, graphs, and other means. <i>*(lesson plan incomplete)</i>
<i>Text Analysis, Manipulation, and Visualization</i>	Vika Zafrin (Boston University); Stephen Osadetz (Professor, Harvard English Department)	This module introduces participants to the theory and practice of computer-aided text analysis, from tools that assist the process of close reading to those that facilitate examination of large quantities of textual data.

⁴³ Series of modules adapted from the ARL Digital Scholarship Institute curriculum.

Core Competencies and Levels of Expertise

The professional development curriculum aims to build digital literacy among librarians at Harvard and help them develop the competencies⁴⁴ required to successfully support digital scholarship at Harvard. The table below proposes a competency-based rubric for evaluating levels of digital scholarship expertise among librarians at Harvard. The professional development curriculum described in this appendix aims to take librarians from the novice to intermediate level. Future professional development programs might endeavor to build skills in the most promising or enthusiastic staff members from intermediate to advanced level. Dedicated digital scholarship staff would be expected to perform at the expert level.

<p>EXPERT Confident, experienced, & savvy user and developer</p> <ul style="list-style-type: none"> • Demonstrates exceptional knowledge of the theory and practice of digital scholarship, including the range of available tools and methods for research, teaching, and creative work • Adeptly employs, troubleshoots, and provides training and guidance on basic and advanced features of a wide variety of tools and methods • Confidently employs, adapts, and/or builds tools or methods to create knowledge, solve problems, and to innovate processes and products • Continuously develops awareness of new tools, methods, and best practices • Confidently evaluates the usefulness and potential applications of new tools • Continuously enhances current skills and learns new ones • Leads or contributes extensively to groundbreaking digital scholarship projects and explores research interests through computational methods • Works effectively as part of a team with a diverse skill set • Understands the limits of their own digital competence and supports others with their digital competence development • Confidently informs users about relevant considerations for starting or advancing a digital scholarship project at Harvard 	<p>ADVANCED Confident and experienced user and teacher</p> <ul style="list-style-type: none"> • Demonstrates deep knowledge of the theory and practice of digital scholarship for research, teaching, and creative work • Adeptly employs, troubleshoots, and provides training on basic features of one or more tools and methods • Confidently employs tools or methods to create knowledge, solve problems, and to innovate processes and products • Continuously develops awareness of new tools, methods, and best practices • Confidently evaluates the usefulness and potential applications of new tools • Continuously enhances current skills and learns new ones • Contributes extensively to digital scholarship projects • Works effectively as part of a team with a diverse skill set • Understands the limits of their own digital competence and supports others with their digital competence development • Confidently informs users about relevant considerations for starting or advancing a digital scholarship project at Harvard
<p>INTERMEDIATE Proficient user and teacher</p> <ul style="list-style-type: none"> • Understands basic terminology and applications of digital scholarship and/or a specific tool or methodology • Confidently advises on appropriate tools or technology for a given project • Demonstrates proficiency in the basic applications of one or more digital tool or method • Adeptly troubleshoots and provides training on basic features of specific tools or methods • Confidently refers users to appropriate campus units or individuals for further assistance • Continuously develops awareness of new tools, methods, and best practices • Continuously enhances current skills and learns new ones • Understands the limits of their own digital competence • Confidently informs users about relevant considerations for starting or advancing a digital scholarship project at Harvard 	<p>NOVICE Curious and enthusiastic, but inexperienced, adopter</p> <ul style="list-style-type: none"> • Demonstrates awareness of a variety of digital scholarship tools and methods and their basic applications • Understands and can discuss terminology, concepts, principles, and issues related to digital scholarship • Confidently refers users to appropriate campus units or individuals for further assistance • Continuously develops awareness of new tools, methods, and best practices • Continuously enhances current skills and learns new ones • Confidently informs users about relevant considerations for starting or advancing a digital scholarship project at Harvard

⁴⁴ The European e-Competence Framework (e-CF) defines competence as the “demonstrated ability to apply knowledge, skills and attitudes to achieve observable results.” A competence embeds both the skills and mindsets needed to successfully perform tasks and solve problems. See <http://www.ecompetences.eu/e-cf-founding-principles/>.

Supplemental Professional Development

Librarians should also be made aware of the myriad professional development opportunities made available by professional associations, universities, and individual scholars, both in-person and online. An inventory of such opportunities is presented in this report as **Appendix D**. Librarians may also wish to audit courses offered through the Faculty of Arts and Sciences at Harvard, with the instructor’s permission. Courses in FAS relating to digital humanities or digital scholarship are listed as **Appendix E**.

Module 1: Introduction to Digital Scholarship

This module introduces participants to the theory and common practices of digital scholarship, including text analysis, mapping/GIS, multimodal publishing, digital exhibits, and information visualization.

Learning Outcomes

Participants will develop:

- a basic understanding of the theory and practice of digital scholarship
- a sense of challenges presented by digital scholarship, including concerns about preservation and evaluation (and impact on tenure and promotion)
- familiarity with a range of common digital tools/methods and their basic scholarly applications
- an understanding of how digital scholarship manifests differently in the humanities, sciences, and social sciences
- an understanding of the role of librarians and identify the specific skills and knowledge they can leverage in support of digital scholarship
- awareness of project management best practices for digital scholarship
- awareness of the landscape of digital scholarship at Harvard

Participants will be able to:

- define “digital scholarship” and identify examples of digital scholarship
- develop a project charter for a digital scholarship project
- make informed decisions about appropriate digital tools for a variety of projects
- critically discuss the merits of digital scholarship and specific projects

Time	Format	Content
20 min	Lecture/Demonstration: <i>What is Digital Scholarship?</i>	<ul style="list-style-type: none"> • Definition of digital scholarship • Exemplary digital scholarship projects • Introduction to the range of common tools and methods (text analysis and encoding, GIS/mapping, data visualization, digital exhibits, multimodal publishing) and examples of each • “First-order” and “second-order” digital scholarship projects⁴⁴
20 min	Small Group	<ul style="list-style-type: none"> • Explore and critique a digital scholarship project <i>in order to</i> identify and describe affordances and constraints of digital scholarship. <ul style="list-style-type: none"> • Who is the intended audience of this project? How can you tell? • What is the thesis? Does this project effectively make an argument? • How does the use of media support (or not support) the thesis? • How did the project use digital space to accomplish something not possible in an analog environment? • Where did the information in this project come from? Are academic sources cited (if relevant)? Are images properly credited? • What is the emotional affect of the project, if it has one? What elements of the project (text, media, layout) help to create it? How does it make you feel to interact with it? • What is the user experience of the project? Do you understand how to navigate through the project? Do buttons/links/arrows do what you think they’re going to do? Is using it intuitive?

45 Katie Gibson, Marcus Ladd, and Jenny Presnell (2015) describe this distinction as follows: “first order content projects are a digital re-creation of already existing materials such as digitized collections of letters. Little or no analysis of the materials is included. Second-order content projects take digital materials and enhance them, using any of a variety of digital tools and techniques to more fully understand a research question: for example, mapping where a letter in a collection of correspondences was written to better understand the geographical context in which it was written, or correlating literacy rates with the locations of libraries and bookstores. In some cases the end product of such research is a traditional journal article or monograph that analyzes the primary source material in ways that would have been impossible in the pre-digital age. In other cases, the final result of the project is a digital object, a collection, an online presentation of scholarship, or some combination of these, even though articles and other publications might be written about the project and process.”

Time	Format	Content
10 min	Break	
15 min	Lecture/Demonstration: <i>Considerations for Starting a Digital Scholarship Project</i>	<ul style="list-style-type: none"> • What should scholars consider before starting a digital scholarship project? • What resources are needed to produce effective, durable digital scholarship projects? • Constructing a DH project charter (see examples and best practices at https://docs.google.com/document/d/1Csylr_xPFEL3auFRy3k6Kv3cnXCie8Vt6LlaBoRxtKM/edit, https://scholarblogs.emory.edu/pm4dh/creating-a-project-charter/, http://www.loc.gov/catworkshop/courses/digitalprojplan/pdf/Instructor-Final.pdf) • Indiana University Libraries' Planning Digital Projects Checklist https://libraries.indiana.edu/file/planning-digital-projects-pdf • Boston College Libraries' Intake Form for New Digital Projects https://docs.google.com/document/d/1Csylr_xPFEL3auFRy3k6Kv3cnXCie8Vt6LlaBoRxtKM/edit
20 min	Small Group	<ul style="list-style-type: none"> • Working in small groups, participants select a digital scholarship project and produce a (retroactive) project charter
20 min	Lecture/Demonstration: <i>Digital Scholarship at Harvard</i>	<ul style="list-style-type: none"> • Where do faculty members go to get support for various kinds of digital scholarship? • How can • Where can faculty members send their students for help with digital scholarship?
20 min	Small Group	<ul style="list-style-type: none"> • In pairs or small groups, participants complete the following scenario exercise: <i>Professor K from the History department is researching the globalization of the United States between 1780-1880.</i> <i>Professor K is consulting historical maps and atlases during this time period and compiling data that track military deployment, diplomatic missions, commerce/trade, largely from secondary publications, mainly monographs.</i> <i>Professor K would like to analyze and visualize the data he's compiling to help him with a book he's writing. He would also like create a digital archive of the secondary sources he's referencing for data collection, which would include his online visualizations as a companion to his published open-access book.</i>
10 min	Break	
15 min	Whole Group	<ul style="list-style-type: none"> • Debrief on scenario exercise
15 min	Small Group	<ul style="list-style-type: none"> • In small groups, participants discuss how digital scholarship fits into their own work. <ul style="list-style-type: none"> • Do you know of any faculty, students, or courses who are currently engaging in or would like to engage in digital scholarship? • What are the skills and expertise a project team would need to have to engage in digital scholarship? • What skills and expertise would you bring to a digital scholarship project (aside from what you have learned today)? What skills would you most like to develop? • What are possible skill gaps for which your project team might need to skill up or recruit additional members with complementary knowledge and skills?
15 min	Open Q&A	<ul style="list-style-type: none"> • Opportunity for follow-up questions and discussion

Module 2: Digital Archives & Exhibits

This module introduces participants to the practice of creating digital archives and exhibits, with a focus on learning the fundamentals of Omeka.⁴⁶

Learning Outcomes

Participants will develop:

- an understanding of why and how scholars and students use Omeka
- an understanding of the ecosystem of Omeka development (themes, plugins)
- the confidence to contribute to or lead an Omeka project and/or respond to inquiries from their constituents about digital exhibits and Omeka

Participants will be able to:

- identify Omeka flavors (Omeka.net, Omeka.org, OmekaS, Omeka.org + CurateScape)
- identify Omeka genres (thematic digital collections, digital exhibits, course-based digital projects, community digital history projects)
- sketch the information architecture of an Omeka project
- understand the utility of key Omeka plugins
- structure a metadata spreadsheet and batch import items
- create items, collections, and exhibits
- identify the individuals and services available to scholars at Harvard to support digital exhibits and Omeka

Preparation and Materials

- Participants should create an account on Omeka.net prior to the session. Navigate to <http://www.omeka.net>, click “Sign Up”, choose “Basic plan,” fill in the sign-up form, and check your email for an activation link.
- Participants should bring their laptop to the session.
- Instructor should provide paper and writing utensils for sketching/wireframing exercise.
- Participants may want to browse Omeka’s project showcase at <http://omeka.org/showcase/> prior to the session.

Suggested Lesson Plan

Time	Format	Content
20 min	Lecture/Demonstration: <i>Introduction to Omeka</i>	<ul style="list-style-type: none"> • Introduction to Omeka, its applications, and its major features • Exemplary Omeka projects (http://omeka.org/showcase/) • Omeka use cases (http://omeka.org/codex/How_Might_You_Use_Omeka)

⁴⁶ This lesson plan was largely adapted from Chelcie Juliet Rowell and Sarah Melton’s course for the ARL Digital Scholarship Institute (<https://github.com/tech-at-arl/Digital-Scholarship-Institute/blob/master/Archives%20and%20Exhibitions/INTRO.md>); Miriam Posner’s “Up and Running with Omeka” web tutorial (<http://programminghistorian.org/lessons/up-and-running-with-omeka>), and Amanda French’s Introduction to Omeka lesson plan (<http://amandafrench.net/2013/11/12/introduction-to-omeka-lesson-plan/>).

Time	Format	Content
20 min	Small Group	<ul style="list-style-type: none"> Explore and critique existing Omeka projects <i>in order to</i> identify and describe affordances and constraints of Omeka as a platform. <ul style="list-style-type: none"> Who is the intended audience of this project? How can you tell? What is the thesis? Does this project effectively make an argument? How does the use of media support (or not support) the thesis? How did the project use digital space to accomplish something not possible in an analog environment? Where did the information in this project come from? Are academic sources cited (if relevant)? Are images properly credited? What is the emotional affect of the project, if it has one? What elements of the project (text, media, layout) help to create it? How does it make you feel to interact with it? What is the user experience of the project? Do you understand how to navigate through the project? Do buttons/links/arrows do what you think they're going to do? Is using it intuitive?
10 min	Break	
15 min	Lecture/Demonstration: <i>Information Architecture</i>	<ul style="list-style-type: none"> How is an Omeka site constructed? How do you customize the look and functionality of the site? How can plug-ins enhance the site?
20 min	Small Group	<ul style="list-style-type: none"> Sketch information architecture of an exhibition <i>in order to</i> link conceptual process of exhibit theme & content development to technical process of creating in Omeka. Create an Omeka site and change its theme
15 min	Lecture/Demonstration: <i>Items, Collections, & Exhibits</i>	<ul style="list-style-type: none"> Creating and describing items, collections, and exhibits and batch importing items in Omeka Brief introduction to Dublin Core for Omeka
20 min	Small Group	<ul style="list-style-type: none"> Working individually or in small groups, participants practice creating and describing items, collections, and exhibits, and batch importing items <i>in order to</i> understand the building blocks of an Omeka project.
10 min	Break	
20 min	Lecture: <i>Omeka at Harvard</i>	<ul style="list-style-type: none"> Where do faculty members go to get an Omeka site set up? Where do faculty members go to get help customizing an Omeka site? Where can faculty members send their students for help with Omeka? How do faculty members populate an Omeka site? How can they integrate Harvard's digital collections?
15 min	Small Group	<ul style="list-style-type: none"> In small groups, participants discuss how digital exhibits and/or Omeka fit into their own work. <ul style="list-style-type: none"> Do you know of any faculty, students, or courses who are currently using or would like to use Omeka? What are the skills and expertise a project team would need to have to create an Omeka project? What skills and expertise would you bring to an Omeka project (aside from what you have learned today)? What are possible skill gaps for which your project team might need to skill up or recruit additional members with complementary knowledge and skills?
20 min	Open Q&A, Practice	<ul style="list-style-type: none"> Opportunity for follow-up questions and discussion Opportunity for participants to continue to work with the platform and receive instructor feedback and troubleshooting

Module 3: Multimodal Online Publishing

This module introduces participants to the practice of multimodal publishing, with a focus on learning the fundamentals of Scalar.⁴⁷

Learning Outcomes

Participants will develop:

- an understanding of why and how scholars and students use Scalar
- an understanding of the ecosystem of Scalar development
- an understanding of how Scalar differs from other digital publishing platforms such as Wordpress and Omeka
- the confidence to contribute to or lead a Scalar project and/or respond to inquiries from their constituents about multimodal publishing and Scalar

Participants will be able to:

- evaluate the merits of Scalar as a platform and of individual multimodal publishing projects as scholarly artifacts
- create a new Scalar “book” (project) and modify its privacy and other settings
- create and edit new pages
- add images and multimedia content to pages
- annotate images
- modify page layout options
- create linear and non-linear navigation pathways through the “book”

Preparation and Materials

- Participants should create a Scalar account prior to the workshop. The instructor may either create a practice book and add users to it or ask participants to create their own books.
- Participants should bring their laptop to the session.
- Instructor should provide paper/sticky notes and writing utensils for sketching/wireframing exercise.
- Harriett Green and Dan Tracy have published an excellent set of slides that could be easily adapted for this lesson plan: <https://github.com/tech-at-arl/Digital-Scholarship-Institute/blob/master/Multimodal%20Online%20Publishing%20with%20Scalar/Activities%20Multimodal%20Publishing.md>

Suggested Lesson Plan

Time	Format	Content
20 min	Lecture/Demonstration: <i>Introduction to Scalar</i>	<ul style="list-style-type: none"> • Introduction to multimodal publishing • Exemplary multimodal publishing projects <ul style="list-style-type: none"> • eLife: https://elifesciences.org/articles/26775 • Georgia Coast Atlas: http://georgiacoastatlas.org/ • Practical Matters journal: http://practicalmattersjournal.org/2016/06/29/root-of-the-route/ • Knotted Line: http://knottedline.com/ • Hearing the Music of the Hemispheres: http://scalar.usc.edu/anvc/music-of-the-hemispheres/index • Introduction to Scalar, its applications, its major features, and use cases

⁴⁷ This lesson plan was largely adapted from Harriett Green and Dan Tracy’s course for the ARL Digital Scholarship Institute (<https://github.com/tech-at-arl/Digital-Scholarship-Institute/tree/master/Multimodal%20Online%20Publishing%20with%20Scalar>); and Brendan O’Connell’s Introduction to Scalar lesson plan (<http://www.tinycc.scalar>).

Time	Format	Content
20 min	Small Group	<ul style="list-style-type: none"> Explore and critique an existing Scalar project (from list below or another source) <i>in order to</i> identify and describe affordances and constraints of Scalar as a platform. <ul style="list-style-type: none"> Who is the intended audience of this project? How can you tell? What is the thesis? Does this project effectively make an argument? How does the use of media support (or not support) the thesis? How did the project use digital space to accomplish something not possible in an analog environment? Where did the information in this project come from? Are academic sources cited (if relevant)? Are images properly credited? What is the emotional affect of the project, if it has one? What elements of the project (text, media, layout) help to create it? How does it make you feel to interact with it? What is the user experience of the project? Do you understand how to navigate through the project? Do buttons/links/arrows do what you think they're going to do? Is using it intuitive? Exemplary Scalar projects <ul style="list-style-type: none"> Journal of American Lit.: http://scalar.usc.edu/maker/record/index Vectors: http://vectors.usc.edu/projects/index.php?project=12 (Don't use Firefox to view!) Black Quotidian: http://blackquotidian.com/anvc/black-quotidian/index Fulcrum: https://www.fulcrum.org/concern/monographs/bz60cw269 Performing Archive: http://scalar.usc.edu/works/performingarchive/index Media & the Movement: http://mediaandthemovement.unc.edu/about/ "Bad Object 2.0: Games and Gamers": http://scalar.usc.edu/works/bad-object-20-games-and-gamers/index Southern Spaces journal, "Public Health": https://southernspaces.org/2016/public-health-us-and-global-south Digital TV: http://scalar.usc.edu/works/complex-television/index Walker Art Center catalog: http://www.walkerart.org/collections/publications/performativity/experiential-turn/
10 min	Break	
10 min	Lecture/Demonstration: <i>Information Architecture</i>	<ul style="list-style-type: none"> How do you create a new Scalar book? How do you customize the look and functionality of the book?
20 min	Small Group	<ul style="list-style-type: none"> Create a Scalar site and change its settings (modify privacy settings, add users, customize theme)
15 min	Lecture/Demonstration: <i>Items, Collections, & Exhibits</i>	<ul style="list-style-type: none"> How do you create and edit new pages? How do you add images and multimedia content to pages? How do you annotate images? How do you modify page layout options?
15 min	Lecture/Demonstration: <i>Site Navigation</i>	<ul style="list-style-type: none"> Linear and non-linear pathways: tags, paths, visualizations, and other options for navigating the book
10 min	Break	

Time	Format	Content
20 min	Small Group	<ul style="list-style-type: none"> • Working individually or in small groups, participants select text and images from one or more of these open digital collections/exhibitions: <ul style="list-style-type: none"> • https://www.lib.umich.edu/diversity-desert/welcome.html • https://www.lib.umich.edu/radical-responses-great-depression/ • https://www.lib.umich.edu/enchanting-ruin-tintern-abbey-romantic-tourism-wales/ • https://digital.library.illinois.edu/collections/810eac30-e3fb-012f-c5b6-0019b9e633c5-e • Browse through these example digital exhibitions, and select sample text and media content from them to use in a digital publication site on a focused topic. • Map out the structure of the site using paper and pencil or sticky notes. Use smaller sticky notes to represent different types of content—different colors for different types of content (media, annotation, main body text). • Represent distinct pages. • Represent connections between pages.
10 min	Lecture: <i>Scalar at Harvard</i>	<ul style="list-style-type: none"> • Where do faculty members go to get help creating a Scalar book or using Scalar in the classroom? • Where can faculty members send their students for help with Scalar? • How do faculty members populate a Scalar site? How can they integrate Harvard's digital collections?
15 min	Small Group	<ul style="list-style-type: none"> • In small groups, participants discuss how multimodal publishing and/or Scalar fit into their own work. <ul style="list-style-type: none"> • Do you know of any faculty, students, or courses who are currently using or would like to use Scalar? • What are the skills and expertise a project team would need to have to create a Scalar project? • What skills and expertise would you bring to a Scalar project (aside from what you have learned today)? • What are possible skill gaps for which your project team might need to skill up or recruit additional members with complementary knowledge and skills?
15 min	Open Q&A, Practice	<ul style="list-style-type: none"> • Opportunity for follow-up questions and discussion • Opportunity for participants to continue to work with the platform and receive instructor feedback and troubleshooting

Module 4: Geospatial and Temporal Mapping

This module introduces participants to the theory and practice of working with geospatial data, with a focus on creating and styling maps in Carto.

Learning Outcomes

Participants will develop:

- an understanding of why and how scholars and students use GIS and mapping in their work, and how this varies across disciplines
- an understanding of the types of geospatial data (i.e., spatial, vector, and raster data) and data formats (e.g., CAD, KML, ESRI, image formats)
- an awareness of common tools for mapping (e.g., ArcGIS, Google Maps, Carto)
- an awareness of useful sources for geospatial data
- an understanding of fundamental components of mapping projects, including polygons, points, lines, and layers
- an understanding of how GIS can be used for visualization, modeling, analysis

Participants will be able to:

- critique a GIS/mapping project based on its scholarly merit and effective use of technology
- use Carto to create, style, and publish a map, including uploading and editing data

Preparation and Materials

- Participants should bring their laptop to the session.

Suggested Lesson Plan

Lesson plan to be determined by instructor. Suggested resources include:

- Compilation of digital humanities GIS projects
<http://anterotesis.com/wordpress/mapping-resources/dh-gis-projects/>
- Introduction to GIS from MIT Open Courseware
<https://ocw.mit.edu/resources/res-str-001-geographic-information-system-gis-tutorial-january-iap-2016/introduction-to-gis/>
- Carto Map Academy modules
<https://carto.com/academy>

Module 5: Information Visualization

Learning Outcomes

Participants will develop:

- an awareness of the types of information visualization (e.g., charts and graphs) and their uses
- an understanding of common software for data visualization and their respective advantages

Participants will be able to:

- identify the appropriate types of visualizations for a range of data sets
- identify common data visualization softwares and their applications
- use OpenRefine to clean data in preparation for visualization
- use basic features of Excel, Tableau, and/or other common data visualization softwares

Preparation and Materials

- Participants should bring their laptop to the session.

Suggested Lesson Plan

Lesson plan to be determined by instructor. Suggested resources include:

- Miriam Posner's DH 101 (section on Visualizing Data with Charts and Graphs)
<https://docs.google.com/document/d/1Z-14hgZPMliAzT6vx1mVg5l60zkRVU9EHgZgK9HHdU4/edit>

Module 6: Text Analysis, Manipulation, and Visualization

This module introduces participants to the theory and practice of computer-aided text analysis, from tools that assist the process of close reading to those that facilitate examination of large quantities of textual data.⁴⁸

Note: This module comprises five hours of instruction and should include a longer (lunch) break or be implemented over the course of two sessions.

Learning Outcomes

Participants will develop:

- an understanding of why and how scholars use text analysis (particularly in the humanities)
- awareness of the various approaches to text analysis and their use cases
- awareness of the available tools for text analysis (from freely available web-based tools to programming languages like Python)

Participants will be able to:

- use the basic features of Prism and Voyant
- locate machine readable texts on the web
- perform a basic TEI markup of a text

Preparation and Materials

- Participants should read Ted Underwood’s article, “Seven Ways Humanists are Using Computers to Understand Text” <https://tedunderwood.com/2015/06/04/seven-ways-humanists-are-using-computers-to-understand-text/>
- Participants should create a Prism account prior to the workshop (http://prism.scholarslab.org/users/sign_in)
- Participants should bring their laptop to the session

Further Reading

- Library Carpentry course on regular expressions <https://data-lessons.github.io/library-data-intro/04-regular-expressions/>
- The Programming Historian’s Python tutorials (e.g., Normalizing Text Data with Python) <http://programminghistorian.org/lessons/normalizing-data>
- Duke University Library resource guide for text mining and analysis <http://guides.library.duke.edu/c.php?g=289707&p=1930856>

Suggested Lesson Plan

Time	Format	Content
20 min	Lecture/Demonstration: <i>Introduction to Text Analysis</i>	<ul style="list-style-type: none"> • Introduction to text analysis http://walshbr.com/textanalysiscoursebook/book/issues/why-read-with-a-computer/ <ul style="list-style-type: none"> • How can computers help us understand traditional reading processes in new ways? • How can we find new ways of reading through technology? • How can machines facilitate new types of collaborative reading? • How can we use computers to understand complicated categories like emotions and themes? • Use Case: Close reading (and Introduction to Prism) http://walshbr.com/textanalysiscoursebook/book/close-reading/ http://walshbr.com/textanalysiscoursebook/book/close-reading/prism-part-one/

⁴⁸ This module is based on Brandon Walsh and Sarah Horowitz’s excellent online coursebook, *Introduction to Text Analysis*, which can also be used independently by motivated learners. The coursebook is available at <http://walshbr.com/textanalysiscoursebook/>

Time	Format	Content
15 min	Small Group	<ul style="list-style-type: none"> Individually or in pairs, participants complete close reading exercise http://walshbr.com/textanalysiscoursebook/book/close-reading/exercises/ <ul style="list-style-type: none"> Read the excerpt and write a few sentences interpreting it Complete the highlighting activity in Prism and reflect on the results (How did you read differently when using Prism? Say something interesting about the results that Prism gives you. What new insights does it give you into the text?)
10 min	Break	
20 min	Lecture/Demonstration: <i>Introduction to Text Encoding</i>	<ul style="list-style-type: none"> Introduction to TEI: “describing texts in a way that can be processed by software” http://walshbr.com/textanalysiscoursebook/book/archives/tei/ Considerations for creating and maintaining digital text collections http://walshbr.com/textanalysiscoursebook/book/archives/nines/
15 min	Small Group	<ul style="list-style-type: none"> Individually or in pairs, participants complete TEI exercise http://walshbr.com/textanalysiscoursebook/book/archives/exercises/
15 min	Lecture/Demonstration: <i>Introduction to Natural Language Processing</i>	<ul style="list-style-type: none"> How do computers read? http://walshbr.com/textanalysiscoursebook/book/cyborg-readers/computer-reading/ Introduction to Voyant http://walshbr.com/textanalysiscoursebook/book/cyborg-readers/voyant-part-one/
15 min	Small Group	<ul style="list-style-type: none"> Individually or in pairs, participants complete the Voyant exercise http://walshbr.com/textanalysiscoursebook/book/cyborg-readers/exercises/
10 min	Break	
20 min	Lecture/Demonstration: <i>Introduction to Distant Reading</i>	<ul style="list-style-type: none"> Examining large quantities of text to identify patterns and trends http://walshbr.com/textanalysiscoursebook/book/reading-at-scale/distant-reading/ Using Voyant for distant reading/ http://walshbr.com/textanalysiscoursebook/book/reading-at-scale/voyant-part-two/
20 min	Lecture: <i>Introduction to Topic Modeling</i>	<ul style="list-style-type: none"> Identifying themes in large quantities of text: the Bag of Words Model http://walshbr.com/textanalysiscoursebook/book/topic-modeling/bags-of-words/ Topic modeling, unsupervised classifiers http://walshbr.com/textanalysiscoursebook/book/topic-modeling/topic-modeling-case-study/
20 min	Small Group	<ul style="list-style-type: none"> Working individually or in pairs, participants complete the topic modeling exercise http://walshbr.com/textanalysiscoursebook/book/topic-modeling/exercises/
10 min	Break	
20 min	Lecture/Demonstration: <i>Supervised Classifiers and Machine Learning</i>	<ul style="list-style-type: none"> What are classifiers and how do they relate to text analysis? http://walshbr.com/textanalysiscoursebook/book/classifiers/supervised-classifiers/ http://walshbr.com/textanalysiscoursebook/book/classifiers/classifying-texts/
20 min	Small Group	<ul style="list-style-type: none"> Working individually or in pairs, participants use AICBT’s online authorship attribution tool to determine the author of a sample text http://walshbr.com/textanalysiscoursebook/book/classifiers/exercises/
10 min	Break	
20 min	Lecture: <i>Introduction to Sentiment Analysis</i>	<ul style="list-style-type: none"> “How do we map complicated abstract ideas like emotion in a way that computers could understand them?” http://walshbr.com/textanalysiscoursebook/book/sentiment-analysis/sentiment-analysis/

Time	Format	Content
20 min	Lecture: Advanced Options for Text Analysis	<ul style="list-style-type: none">• Very brief introduction of Python as a tool for text analysis• Additional resources for deepening knowledge and skills http://walshbr.com/textanalysiscoursebook/book/conclusion/resources/
15 min	Small Group	<ul style="list-style-type: none">• In small groups, participants discuss how text analysis fits into their own work.<ul style="list-style-type: none">• Do you know of any faculty, students, or courses who are currently using or would like to use text analysis in their work?• What skills and expertise would you bring to text analysis projects (aside from what you have learned today)?• What are possible skill gaps for which your project team might need to skill up or recruit additional members with complementary knowledge and skills?
15 min	Open Q&A	<ul style="list-style-type: none">• Opportunity for follow-up questions and discussion• Opportunity for participants to continue to work through exercises and receive instructor feedback and troubleshooting

Appendix G: Effective Digital Scholarship Website Examples

Project Inventories

<http://digitalhumanities.yale.edu/projects>

<http://digital.humanities.ox.ac.uk/people-projects>

<http://digitalscholarship.emory.edu/projects/featured/index.html>

Service Portfolios

<http://library.brown.edu/cds/activities/>

<https://library.uoregon.edu/digital-scholarship-services>

<https://www.lib.fsu.edu/drs/portfolio>

Resources

<https://sites.temple.edu/tudsc/ds-how-tos/>

Appendix H: Digital Scholarship Position Descriptions

Director of the Center for Digital Scholarship, Brown University

The Brown University Library is delighted to announce a new position: the Director of its Center for Digital Scholarship (CDS). CDS is a locus for digital activities at Brown, providing expertise and training in text analysis, text encoding, data management, geospatial analysis and data, digital publishing and scholarly project management. Members of CDS partner with faculty and students on developing and sustaining digital projects. They work closely with Library staff and other groups on campus to develop digital projects and support scholarly communication. The Library recently created the Digital Scholarship Lab and Digital Studio -- collaborative spaces for faculty and students to engage in visualization, video and audio production, 3D printing, and creative teaching and research -- which is managed by CDS. We seek an enthusiastic, strategic, and well-organized leader to provide vision for the Center as well as direction and oversight for the Library's digital scholarship services, spaces, and operations. As the direct supervisor of the Data Visualization Coordinator, Digital Humanities Librarians, the Social Sciences Data Librarian, and the Scientific Data Management Specialist, the Director manages and coordinates CDS outreach and work on research projects across the disciplines. The Director develops and promotes the Library's intellectual programming related to digital scholarship and partners with members of the Library's leadership team and specialists throughout the library to integrate CDS's goals and activities into the overall services and strategic directions of the Brown University Library.

Qualifications

- Advanced degree preferred (or equivalent experience) in the humanities, social sciences, or library or information science with a focus on digital scholarship or data curation.
- Minimum of 3 years of experience in an administrative position that includes successful management and supervision of personnel, as well as demonstrated leadership, problem-solving, and decision-making skills.
- Significant and progressively responsible experience engaging with and managing digital scholarly projects at a major academic institution.
- Ability to work cooperatively and maintain effective working relationships with colleagues, faculty, staff, and students.
- Demonstrated organizational skills and ability to manage multiple priorities.
- Excellent analytical, oral, and written communication skills.
- Experience with current technologies for digital scholarship and the ability to advise on hardware and software purchasing and implementation.
- Demonstrated understanding of the scholarly applications of digital tools, metadata standards and data encoding standards.
- Evidence of research or publication on topics relating to digital scholarship as well as participation in national or international committees and collaborative efforts.
- Familiarity with recent scholarship and understanding of emergent best practices in digital scholarship.
- Familiarity with data curation and data management practices across the disciplines.
- Successful experience with grant writing and management.
- Demonstrated commitment to diversity.

Head, Digital Scholarship Services, University of Oregon

Position Summary

The Head of Digital Scholarship Services (DSS) is charged with developing DSS policies and procedures; coordination and management of DSS projects, budgets, and departmental workflow; and supervision of DSS personnel and Digital Scholarship Center (DSC) operations. The Head collaborates with others to strengthen library programs related to: digital scholarship services, digital collections, open access publishing, the institutional repository, and digital preservation. The incumbent coordinates work of the DSC with other departments and functional areas of the Libraries, including Collections and Metadata Services, Library Systems, Special Collections and University Archives, the Center for Media and Educational Technology, etc., and serves as the primary contact between the department and external organizations involved in digital initiatives.

Minimum Requirements

- Graduate degree is required. An ALA-accredited master's degree in library and information science/studies (MLIS), or a related terminal degree is required for appointment as NTTF Librarian.
- 3 years' of academic library experience
- 3 years' of supervisory experience

Professional Competencies

- Technical knowledge and/or experience with system administration, database management, server-side programming, and library-related platforms and technologies
- Ability to support and enhance a diverse learning and working environment

Preferred Qualifications

- Experience managing large portfolio of projects
- Experience managing budgets
- Demonstrated knowledge in the fields of digital scholarship, digital collections, and/or digital preservation
- Demonstrated ability to work collaboratively across disciplines and library departments
- Demonstrated knowledge of text-encoding and metadata schemas
- Experience working with digital collections and digital preservation strategies
- Grant writing and management experience
- Experience with digital humanities and/or digital social sciences projects
- Demonstrated software lifecycle development and management experience
- Familiarity with Hydra and Linked Open Data
- Knowledge of best practices in information architecture, instructional design, and/or user experience/user testing
- Experience with the Text Encoding Initiative (TEI) Guidelines and one or more of the languages needed to work with TEI data (e.g., XSLT or XQuery)
- Experience with statistical and data analysis tools (e.g. R, SPSS, Stata, LIWC, and Nvivo)
- Experience with data visualization tools and methods
- Experience with relational databases (e.g. MySQL)
- Experience with server-side web-development (e.g. PERL, PHP, Java, JavaScript, ASP)
- Experience with UNIX/Linux operating systems
- Teaching experience

Digital Scholarship Librarian, Boston College

Job Description

The Digital Scholarship Librarian will employ both experience with History research methods and technical expertise to advance the integration of library liaison responsibilities and digital humanities to the History Department. We are seeking a creative librarian familiar with History collections and instruction who is motivated to investigate new tools and collaborate with faculty, students, and other librarians to initiate and support digital projects. This Digital Scholarship Librarian / Bibliographer advances digital scholarship by providing research services, technical support, and project management assistance, focusing on applications in the humanities, as well as providing liaison services for the History Department.

S/he maintains knowledge and practical expertise in an evolving interdisciplinary landscape of digital scholarship tools and methods. S/he works with researchers and the Digital Scholarship Team to define the scope, methodology, technology, and specifications and/or design of digital projects; collaborates with librarians and other campus agencies to develop outreach strategies and partnerships with History faculty and students supporting digital research projects; assesses trends in digital scholarship, identifying priorities for the attention of BC Libraries; and effectively deploys technical, scholarly, and project management skills to bring digital projects to completion.

This position is the primary liaison to the History Department, offering research support and library instruction; apprising faculty of new resources, evolving services and research tools; as well as introducing relevant technologies. Working with faculty, graduate and undergraduate students, s/he effectively responds to requests, offers instruction, and manages the English collections, evaluating and selecting monographs and journals to support research and teaching needs.

Reporting to the Head of Digital Scholarship, the Librarian makes significant contributions to library digital initiatives through development of the digital scholarship program and by acting as a model and a resource for other Reference Librarian/Bibliographers. Supports History Department faculty, as well as post-docs, graduate students, and undergraduate students in their research and teaching. Provides direction for some student employee work activities.

Requirements

- Master's Degree in Library Science from an ALA-accredited institution
- The Digital Scholarship Librarian role requires at least two years of directly related experience with digital humanities and subject liaison responsibilities; the Senior Digital Scholarship Librarian role requires a minimum of five years of directly related experience.
- Demonstrated application of digital humanities methods and technologies to investigate research questions, including but not limited to data visualization, mapping, statistical analysis, text mining and encoding, and other computational methods.
- Practical knowledge of and experience with a range of established and emerging technologies, such as website creation, online exhibitions, social media, digitization and OCR, data visualization, geospatial analysis, encoding and text mining, programming and scripting languages, format conversion and editing protocols and tools, graphic design, relational databases, metadata schema, and open web standards.
- Demonstrated knowledge of and experience supporting academic departments, including developing and managing research collections, providing research assistance, and teaching library instruction sessions.
- Must have a commitment to responsive and quality library services.
- Must be able to work collaboratively within a team environment.
- Superior oral and written communication skills across service, scholarly, and technology domains.

Digital Scholarship Librarian, NYU

NYU Division of Libraries seeks a Digital Scholarship Librarian to support the service portfolio of our Digital Scholarship Services team. The ideal candidate will provide client service, technical expertise, training, and support for tools and practices used by faculty and researchers engaged with digital scholarship and publishing, with a particular focus on the digital humanities. The candidate will join a highly collaborative team comprised of members from throughout NYU Libraries and NYU Information Technology Services, including Data Services, Scholarly Communication, Digital Library Technology Services, Digital Studio, Libraries' subject specialists, and the NYU Abu Dhabi and Shanghai Libraries.

This position reports to the Head of Digital Scholarship Services and will also work under the guidance of the Program Officer for Digital Scholarly Publishing. This position is a non-tenure-track faculty appointment.

The mission of the Digital Scholarship Services is to provide engaging, responsive, and human-centered services connecting the global NYU community to the resources they need for digital scholarship and publishing. In support of that mission, the Digital Scholarship Librarian will work with the team to:

- Act as primary service contact for NYU's DSpace institutional repository, the Faculty Digital Archive.
- Advise patrons on website development, including content production, website architecture, hosting platforms, content migration, etc.
- Provide consultation for digital publishing software and methods, including WordPress, Omeka, ARTstor/Shared Shelf, open access, and open educational resources
- Help scholars use common digital humanities tools and methods, such as text analysis; web scraping; GIS; scanning and OCR; data visualization; audio and video production; etc.
- Provide training in digital scholarship tools and methods.
- Manage projects to deploy new tools and services.
- Advise on metadata creation related to publishing and repository services.
- Evaluate user needs and service gaps; test new tools, platforms, and software with an eye to potential deployment at NYU; stay current on tools, trends, and methods to enhance services.
- Participate in outreach and promotional events, maintain our web presence for digital scholarship services using social media, etc.

Qualifications

Required:

- Master's degree in Library Science or equivalent and 2 years' relevant experience in an academic environment supporting Digital Scholarship, Digital Humanities, or related areas such as repository services, digital publishing, or scholarly communication; or equivalent combination of education and relevant library experience
- Excellent interpersonal and communication skills
- Evidence of strong public service orientation and experience
- Knowledge of digital scholarly technologies and methods, and experience supporting information technology and training
- Experience with or knowledge of the digital humanities
- Must have experience in two or more of the following areas: web publishing platforms (e.g. WordPress, Omeka), repository tools (e.g. DSpace, Fedora), using project management skills, teaching in academic setting, and HTML/CSS.

Preferred:

- Second master's degree in relevant subject area
- Data curation and metadata use in libraries or digital humanities contexts
- Tools and techniques such as text analysis, web scraping, GIS, media digitization (images, audio, video), data visualization
- Some knowledge of programming and scripting languages (e.g., Python, R, JavaScript, Ruby, MySQL, PHP)
- Experience with or knowledge of social media and tools for outreach

Digital Scholarship Librarian, Georgetown University

The Digital Scholarship Librarian, innovative, collaborative information professional, serves in a forward-looking, transformative role requiring a passion for range of cutting-edge activities within digital scholarship, including building new digital projects, developing digital scholarship services in support of research, teaching and learning, and collaborations with faculty, researchers, students, and other partners.

Advances digital scholarship initiatives at Georgetown University by providing consultation, technical support, and project management for faculty, researchers, and students engaged in technology-rich scholarly projects.

Works directly with faculty, students, researchers in identifying and deploying appropriate tools and technologies to meet research or publication needs in conjunction with Digital Scholarship Group, subject librarians, technology librarians and staff, scholarly communications and digital collections librarians, and others.

Engages with faculty and students to foster digital collections, tools, and services integration into the scholarly enterprise as appropriate.

Maintains knowledge and practical expertise in an evolving interdisciplinary landscape of digital scholarship tools and methods and assesses trends in digital scholarship, identifying priorities for the attention of Georgetown University Library.

Effectively deploys technical, scholarly, and project management skills to bring digital projects to completion.

Makes significant contributions to digital scholarship initiatives through development of the digital scholarship support at the Library.

Requirements

- Master's degree in library and/or information science from an ALA-accredited program or related degree or a Master's degree in a computational, technology, digital humanities or a similar program
- 2 - 3 years of experience in academic libraries in digital initiatives
- Demonstrated experience in the use and application of one or more of the following digital scholarship/research tools and approaches (expertise in at least one is required): text mining and analysis, image analysis, digital scholarship platforms, publishing platforms and/or data management
- Experience with web application development
- Experience or familiarity with data encoding standards Extensive technology skills, creativity, and communication skills, and an understanding of discipline-specific and interdisciplinary research methodology
- Knowledge/familiarity Data Visualization, 3D visualization, and modeling geospatial analysis tools and methods
- Knowledge of format conversion and editing protocols and tools
- Ability to listen, articulate problems, and find effective technology solutions across a variety of disciplines, while working with a range of clients from novice scholars to senior faculty
- Ability to collaborate and manage projects across departments and divisions
- Preferred Qualifications
- Experience with some digital asset management platforms or extensible services such as DSpace, Islandora, Omeka, and/or Blacklight
- Experience in OJS or e-prints
- Experience with quantitative and qualitative software tools or languages/libraries
- Excellent written and verbal communication skills
- Ability to manage fluid projects and priorities

Digital Scholarship Librarian, UCLA

The UCLA Library seeks an innovative and collaborative information professional to serve as Digital Scholarship Librarian within the Digital Library Program. This is a forward-looking, transformative role for an individual with a passion for range of cutting-edge activities within digital scholarship, including building new digital collections, developing services in support of research, teaching and learning, and managing digital projects and project teams, including collaborations with faculty and with partners nationally and internationally, and with Library staff responsible for metadata creation, data curation, collection development, and Web services development. The Librarian also leads the Program's outreach and social media presence, and participates with colleagues in ongoing collaboration with campus partners such as the Center for Digital Humanities, Institute for Digital Research and Education, Social Sciences Computing, and the Department of Information Studies.

Position Duties

Reporting to the Head of the Digital Library Program, the Digital Scholarship Librarian (DSL) is a member of a highly motivated and integrated team of digital project managers and developers that initiate and collaborate on digital library and scholarship initiatives throughout the UCLA Library, with UCLA faculty partners and partners UC-wide, and beyond. The DSL is knowledgeable of contemporary digital library standards for the creation, management, description and preservation of digital objects in all formats, both simple and complex, and tracks development of standards and community practice in emerging areas of digital library engagement, such as data management/curation and linked data. The DSL is familiar with the use of technology, digital analytical and processing techniques and markup standards used by faculty instructors and researchers in the Digital Humanities, and engages with faculty in the social sciences and sciences to foster Digital Library integration into the scholarly enterprise as appropriate. Working with both permanent and ad hoc, project-specific teams the DSL provides expert advisory and management services for digitization and online publication projects, coordinates metadata creation with the Head of Metadata Services and content experts, and works with Digital Library developers and external vendors to develop innovative platforms for dissemination of and interaction with digital collections and digital environments of various types. The DSL works with other Digital Library staff to integrate digital collections and services into the instructional and research activities of UCLA faculty and users worldwide.

The DSL is expected to have knowledge and/or experience in one or more areas of emerging importance for digital libraries and digital scholarship, such as: maps and geographical information as it relates to digital libraries; data and data management services; non-traditional digital library content (e.g. social media and other ephemeral materials, both digital and digitized); the integration and interoperability of digital library services through linked data; the integration of digitized and born-digital materials; publication and visualization services in digital libraries.

The position responsibilities are in the following major areas:

Project Management

Assist faculty and other clients to plan effective, innovative and sustainable digital projects. Engage library staff experts in metadata, preservation, in projects as appropriate. Develop and document project plans and workflows to meet defined objectives. Initiate work of project implementation team. Work with Head, UCLA Digital Library Program and Head Software Development and Project Management to ensure project goals are met in a timely fashion. Train, supervise and evaluate student employees. Engage with software designers and developers, both internal employees and external contractors to develop engaging, informative and effective user interfaces. Employ effective review and evaluation of projects upon completion.

Outreach, Promotion and Instruction

Manage the Digital Library Program web site and social media presence. Participate in social media activities to promote projects and initiatives. Coordinate the DLP blog. Solicit contributions from DLP colleagues, Library and campus partners. Write promotional, instructional and informational as appropriate to support the activities of the Program. Seek out and develop opportunities for partnerships with faculty and academic units on campus. Provide orientation and instruction to project participants and others as needed to support Digital Library and partner projects. Participate in national and international meetings, symposia and projects in support of the Library's and the University's research and instructional mission. Maintain knowledge of developments in digital libraries and digital scholarship including both infrastructure and standards developments.

Infrastructure, Standards and Workflow Development

Participate with information technology and academic colleagues in the development of infrastructure and standards to support digital collections and scholarship. Develop new workflows to support innovative scholarship around a variety of digital content, including traditional library content, born-digital material, research data and other digital products of scholarship, and other digital materials utilized by faculty in their research. Develop new workflows to accommodate emerging data discovery and exchange standards, such as the Resource Description Framework and Linked Open Data.

Required Qualifications

- ALA-accredited Master's Degree in Library or Information Science OR an advanced degree in an appropriate subject discipline with relevant special collections or archival training.
- Excellent written and oral communication skills.
- Knowledge of national digital library standards for digitization and metadata creation across all standard formats (images, moving images, audio, video, text) and metadata domains (descriptive, technical, administrative).
- Knowledge of and demonstrated experience working with library XML standards such as MODS, EAD, TEI.
- Experience managing digital library or digital humanities projects in an academic setting.
- Ability to effectively lead teams with participants with a range of technical abilities.
- Ability to initiate and maintain cooperative working relationships with co-workers, supervisors, and managers
- Ability to work harmoniously and as a team player, thrive in a team-based environment, and skill in fostering teamwork among others.
- Ability to follow directions from supervisors (and to provide clear directions to staff and student employees).
- Experience with one or more digital library management systems (e.g. ContentDM, Islandora, Hydra).
- Ability to get to work reliably and on time and to be present in the workplace during normal working hours.

Desired Qualifications

- Experience developing user interfaces for digital library content or digital humanities projects.
- Experience with post-completion project review and evaluation.

Digital Arts & Humanities Specialist, Tufts University

Description

Tufts Technology Services (TTS) is a university-wide service organization dedicated to the strategic planning, implementation, and support of technology products and services that anticipate and meet the academic, research, clinical and business needs of the Tufts community. TTS offers technical leadership and services to our customers with a focus on providing innovative solutions, delivering exceptional customer service, and creating a reliable infrastructure that demonstrates value to the students, faculty, staff, and alumni of Tufts University. TTS works in partnership with schools, business units, and other academic support organizations to provide campus-wide IT services in the areas of academic and research technology, enterprise application systems and services, networking and telecommunications, information security, data center operations, web services, classroom and computer lab technology support, and user support, training and outreach.

Reporting directly to the Associate Director of Geospatial Technology Services, the Digital Arts & Humanities Specialist is responsible for working closely with a diverse client base comprised of faculty and students to help them utilize innovative Digital Humanities methods and technologies to achieve their scholarly teaching and research goals. Key responsibilities of this position include providing Digital Humanities consulting services to faculty, students, and staff from a wide range departments and academic disciplines; assisting them in the design and development of complex Digital Humanities projects from initial concept to delivery; providing support, education, and outreach; coordinating faculty, students, and staff from around the University to advance Tufts Digital Humanities program and research; and developing process improvements to continually enhance and the delivery and support of Digital Humanities solutions to the Tufts community. The Digital Arts & Humanities Specialist also helps coordinate the Digital Humanities service portion of the Tufts Data Lab, a state-of-the art teaching and research space for data analysis and visualization, and other instructional and research computing environments across all campuses. This includes software, basic system trouble-shooting, and software maintenance.

Qualifications

Basic Requirements:

- Bachelor's Degree in related field and 1-2 years of work experience within the Digital Humanities.
- Strong background and understanding of Digital Humanities and related concepts with strong knowledge and ability to use Digital Humanities methods and technology in a variety of research areas and applications.
- Strong programming skills with experience in web programming and associated technologies.
- Demonstrated ability to build and engage an active intellectual community, including working collaboratively and building partnerships across disciplines.
- Works well under pressure and under tight deadlines, and produces quality deliverables to clients on time and in accordance with functional specifications.
- Strong commitment to teaching excellence and demonstrated experience designing, developing and delivering Digital Humanities education and training.
- Must possess advanced analytical and innovative problem solving skills. Strong written and oral communication skills. Strong presentation skills.
- Ability to communicate effectively and tactfully with a wide variety of stakeholders, including faculty, students, and staff in a team environment.
- Strong track-record of exemplifying customer service excellence and accountability.

Preferred Qualifications:

- Master's Degree in related field and 1-2 years Digital Humanities work experience delivering training in a higher education environment
- Experience with text analysis: text encoding, text mining, natural language processing, etc.
- Experience with image analysis and image processing.
- Experience with visualization: humanities data visualization, 3D visualization, geospatial visualization.
- Experience with digital storytelling and game design.
- Experience with programming languages, such as Ruby, Python, or R.
- Knowledge of statistics and experience with statistical software packages such as R.
- Experience with data visualization tools, such as D3.js, GGplot, etc.
- Knowledge of one or more content management or digital scholarship platforms such as Wordpress or Drupal.

Digital Scholarship Specialist, UNC-Chapel Hill Libraries

Description

The University of North Carolina at Chapel Hill Library invites applications for the position of Digital Scholarship Specialist in the Digital Research Services department. We are seeking a creative and collaborative individual to provide technical support for digital scholarship projects and to guide the selection, enhancement or creation of new tools and workflows to support scholarly research. The successful applicant will serve as the contact point for Digital Humanities efforts for the University Libraries and will maintain communication with the Carolina Digital Humanities Initiative and the Digital Innovation Lab. Based in the Davis Library Research Hub, the Digital Scholarship Specialist will facilitate the use of Library collections in new ways by supporting researchers with projects such as online exhibits, digital maps, and text mining. The librarians and technology experts in the Davis Library Research Hub work as a team to support scholars with research and teaching. Staff members work collaboratively to meet exciting research challenges, support learning communities, and introduce and support innovative technologies through consultation and instruction. We are seeking a flexible, curious innovator who thrives on learning new technology and solving problems, and is committed to advancing research.

The Digital Scholarship Specialist:

- Works directly with UNC researchers, providing technical consultation and support for digital scholarship projects.
- Builds community by developing relationships with other campus units supporting digital scholarship, including the Carolina Digital Humanities Initiative and the Digital Innovation Lab.
- Identifies, evaluates and recommends new and emerging digital research tools and methods for the Libraries and UNC research community.
- Provides assistance using and extending the functionality of digital scholarship applications, and works with others in the Library to help develop scalable, sustainable research solutions.
- Cooperates with the Library and Information Technology department to design and implement workflows, tools, and infrastructure to support digital scholarship.
- Develops services in response to current trends, campus needs, and Library priorities.
- Is committed to providing meaningful contributions to digital scholarship generally, through sharing code, publishing, presenting, or collaborating with scholars from other research institutions.

Qualifications

Required

- ALA-accredited master's degree in Library or Information Science, or a related advanced degree.
- Demonstrated experience with web development tools such as HTML, CSS, and JavaScript.
- Proficiency with at least one programming language (such as Python, Ruby, JavaScript, Java, or R).
- Demonstrated proficiency with digital scholarship tools, such as those used for digital humanities, data visualization, text mining, and mapping.
- Demonstrated aptitude for quickly learning new tools and technologies.
- Experience working effectively with a team to plan and complete projects.
- Excellent communication and interpersonal skills.
- Strong customer service orientation.

Preferred

- Experience supporting digital scholarship in a library or research setting.
- Project management experience.
- Experience teaching technology, either one-on-one or in a classroom setting.
- Proficiency using tools and programming libraries to support text analysis.
- Geospatial technology skills.
- Background working in a large academic library.

Digital Scholarship Specialist, Johns Hopkins University

General Description:

The Sheridan Libraries of Johns Hopkins University seeks a creative, technologically-savvy, and visionary person to establish and grow a dynamic, multifaceted program to address the increasing demand for digital scholarship support. S/he must have an interest in the artifacts of scholarship, such as books, manuscripts, or maps, and an understanding of how the traditional research methods applied to these artifacts can benefit from the application of digital tools, particularly in the areas of linguistic, spatial and visual research. S/he will look holistically across the university to identify faculty and programs that would benefit from the application of digital tools to advance scholarly investigation. The Specialist will work collaboratively with liaison librarians, curators, and GIS and data specialists involved in facilitating faculty and student digital projects, and will conduct regular environmental scans of the campus environment to identify emerging areas of interest. The Specialist will also be an active scholar and teacher in his/her area with good publication and teaching records. S/he will thus lead by example in creating innovative teaching methods and carrying out original scholarship in a digital environment. This is an evolving specialization that requires a combination of strong academic background in the humanities with technical knowledge and curiosity about how technology affects research, to build a vibrant future for the humanities.

Primary Duties and Responsibilities:

- Advocate for the application of digital scholarship approaches to research.
- Coordinate information about digital scholarship across the university to connect scholars and facilitate interdisciplinary research.
- Coordinate events and meetings to connect scholars and technologists and create meaningful dialog to foster projects in the digital humanities.
- Attend conferences in her/his field, digital humanities, and library technology, and present regularly at these conferences advocating for the research being carried out here at Hopkins.
- Liaise with academics and librarians at other institutions to create cross-institutional collaborations, helping to de-silo repositories and enable robust infrastructure to be built and maintained.
- Working closely with the information fluency librarian, develop workshops to help students acquire skills and understanding of basic tools for, and approaches, to digital scholarship.
- Serve as a strategist and resource person for the Libraries on trends in digital scholarship.
- Keep abreast of developments in digital scholarship to investigate and recommend adoption of appropriate complementary and successor technologies.
- Explore opportunities to teach intersession, summer session and/or semester courses that incorporate digital scholarship.
- Carry out original digital scholarship in his/her area of specialism, thereby leading the way in library-based digital scholarship.

Qualifications:

- Advanced degree in the humanities.
- Ph.D in a humanities discipline
- Experience in developing a multifaceted program for an interdisciplinary constituency preferred.
- Proven broad knowledge of technologies and methods appropriate to digital scholarship. Demonstrated experience working in a digital scholarship research context.
- Demonstrated knowledge of most of the following; mastery of at least one is required:
 - Text-mining, encoding, and analysis tools and methods
 - GIS tools and methods
 - Network analysis (familiarity with graph theory and use of analytical tools, e.g. GEPHI) Ability to work dynamically, effectively and successfully within a team structure
 - Familiarity with data visualization tools and techniques applied to humanities research
 - Demonstrated ability to work collaboratively with faculty, students and colleagues to advance digital scholarship

Digital Scholarship Coordinator, University of Houston

Job Description

Reporting to Head of Digital Research Services, the coordinator will partner with colleagues and units within the Libraries to advance digital research services and activities, including: providing services to publish, archive, and make accessible research data and scholarship; marketing UH Libraries' digital scholarship expertise; and collaborating with Libraries' stakeholders to enhance programming in the Digital Research Commons.

Primary duties include: coordinating digital scholarship activities within UH Libraries and serving as a resource for UH Libraries' employees who are engaged in digital scholarship; collaborating with UH Libraries' employees to provide digital scholarship instruction, training, and consultations; administering, expanding, and promoting digital repositories, including the Texas Data Repository and UH Libraries' Institutional Repository, for disseminating and archiving research data and scholarship; collaborating with the UH Graduate School and UH colleges to archive and make accessible electronic theses and dissertations.

Minimum Qualifications

- Demonstrated knowledge of research and digital scholarship trends, principles, and tools, including familiarity with data mining and data visualization research tools
- Experience in capturing, curating, or sharing the scholarly record and research outputs of a University
- Demonstrated project management experience
- American Library Association (ALA)-accredited Master's degree
- Excellent oral and written communication skills.
- Ability to work in team-based environment, both within the Libraries and with faculty, staff, and students
- Preferred Qualifications
- Experience with administering digital scholarship platforms and online collaborative research environments (e.g. DSpace, Omeka, Getty Scholar's Workspace, etc.)

Appendix I: Digital Projects Curation Workflow Models

Defining Services and Levels of Commitment

Hosting and preservation of digital content (from relatively simple datasets to dynamic digital collections) is one of the most frequently desired services among faculty and one of the thorniest challenges for libraries. The level of capacity for hosting and digital preservation services depends on the library's resources (funding, staff expertise, staff time). For many scholars, the ideal service would provide hosting and digital preservation/migration/emulation in perpetuity. Realistically, libraries provide one or more the following:

- Provide permanent, stable hosting and URIs for digital objects (e.g., image files) and/or the data underlying complex digital scholarship projects
- Provide web archiving services
- Provide basic web hosting services and domains through Reclaim Hosting or other service
- Consult with scholars on external hosting options, advise on working with freelance web developers
- Assist scholars with customizing externally hosted websites and projects
- Host and preserve *select* faculty-affiliated website for up to five years
- Host and preserve any faculty-affiliated website for up to five years
- Host and preserve *select* faculty-affiliated website (content and full functionality) for five or more years (or indefinitely)
- Host and preserve any faculty-affiliated website (content and full functionality) for five or more years (or indefinitely)

The following case studies illustrate how these services may be combined and expressed in practice.

Case Study 1: University of Rochester

“At the University of Rochester we consider the goals of the faculty member and the scope and scale of the project. For long-term research projects we offer full hosted support through our Library IT/Digital Scholarship Team. This usually involves writing a Memorandum of Understanding upfront that makes the terms transparent, such as ‘We will continue to provide access to the digital project as long as the platform is viable, and will commit to archiving through our ArchiveIT database at such a time as it cannot be hosted.’ For a course project, such as online exhibits, etc., we are moving to Reclaim Hosting’s Domain of One’s Own—they will provide us with a U of R branded environment for digital scholarship for a very reasonable price, allowing us to offer Scalar, Omeka, Wordpress, Drupal or Wikimedia sites for student and faculty work with very little support from IT staff.”⁴⁹

Case Study 2: Northeastern University

“At Northeastern, we are addressing sustainability by offering a repository-based WordPress environment called CERES. It’s our own special flavor of WordPress, with a theme and plugins customized to work with our repository API. Scholars first store digital assets in the repository (ensuring that those at least are preserved with their metadata) and then use WordPress to pull in those assets, via the API, to create online exhibits, maps, and timelines. When scholars choose to use CERES, they agree to first put all possible assets in the repository and then use the specific WordPress installation we host on our servers. Users frankly have much less freedom in terms of design -- they are restricted to our theme, though have a bit of layout and font freedom within that -- but we haven’t found that many groups actually have the continuing CSS/design skills to maintain a highly customized design. We’ve found that most groups are happy to give up some design freedom in order to better ensure long-term sustainability. At least a few groups have come to us because their locally-hosted, highly designed sites have gone down when the student(s) with the relevant skills graduated. We have more info about CERES here: <http://dsg.neu.edu/ceres/>. In terms of framing their ephemerality, we say that the digital assets in the repository will be preserved as long as we are able, to the highest archival standards we can muster. We also promise to keep the lights on for their websites: keep the URLs active, WordPress codebase up-to-date, etc. We also crawl all the CERES sites with Archive-It, so that HTML and interactive display features that aren’t (currently) preservable in the repository will be captured (however imperfectly) that way.”

⁴⁹ Retrieved from ACRL-DHIG list-serv discussion (<http://lists.ala.org/sympa/arc/acrldigitalhumanitiesig/2017-04/msg00022.html>)

Contracts and MOUs

Many libraries formalize their commitments with a contract or MOU. One example, developed by UT-Austin is reprinted in full below.

MOU Template

[DESCRIPTIVE TITLE OF PROJECT]

MEMORANDUM OF UNDERSTANDING (MOU)⁵⁰ between

[PARTNER]

and

[Institution]

This is an agreement between [PERSON (“HOW REFERRED TO IN THE DOCUMENT”)] and [Institution] (“The Library”) on the [SHORT TITLE]

I. Purpose & Scope

The purpose of this MOU is to clearly identify the roles and responsibilities of each party as they relate to the [TITLE]. This also serves as a planning document for the project.

II. Definitions

[Jargon as relating to an academic discipline, library jargon, software, or etc.]

III. Background

[Background that led to the project including all work already completed by partner or library. All contextual information goes here.]

IIIA. Limitations of Software and Hardware [(OPTIONAL)]

[Describe limitations of software or hardware]

IIIB. Continuation of the Project [(OPTIONAL)]

IIIC. External Funding

If [PARTNER] applies for external funding, The Library requests to be listed as an investigator on the grant application. This ensures our participation as technical advisers and support. The Library will advise on

all relevant matters, which may include technological limitations, amount of time required, and aspects of the budget. When The Library employee is listed as an investigator, then The Library will commit to all requirements as laid out in the grant.

IV. PARTNER'S responsibilities under this MOU

[PARTNER] shall:

- Conform to the Collaborators' Bill of Rights Listed in Addendum 1
- [Abide by the previously agreed upon timeline in Addendum 2]
- [List everything here]
- [Scope Creep Management language included here]

V. [Institution]'s Responsibilities under this MOU

The Library shall:

- Conform to the Collaborators' Bill of Rights Listed in Appendix 1
- [Abide by the previously agreed upon timeline in Addendum 2]
- [List everything here]
- [Scope Creep Management language included here]

VI. Contingencies [(OPTIONAL)]

Both parties recognize that deadlines are critical to the project's success, however both parties recognize that missed deadlines may occur. If either party misses a previously agreed upon deadline, then the other party has the option to extend the timeline. A mutually agreed upon adjusted timeline will replace Addendum 2.

VII. It is mutually understood and agreed by and between the parties that [(OPTIONAL)]

[If we are willing to establish workflows, document workflows. Establish limits of workflows]

VIII. Archive and Preservation [OPTIONAL]

IX. Ownership

[Libraries] are owners of the database, web site and all items, whether in physical or electronic format. [PARTNER] may request, and the Library shall provide, a copy of the database and web site contents for her own personal research.

X. [Anything Else?] [Optional]

XI. Effective Date and Signature

This MOU shall be effective upon the signature of Parties A and B authorized officials. It shall be in force from DATE to DATE.

[PARTNER] and the Libraries indicate agreement with this MOU by their signatures.

[Library representative's name]
[Title]

Date

[Partner Name]
[Title]

Date

Addendum 1: Collaborator's Bill of Rights⁵¹

1) All kinds of work on a project are equally deserving of credit (though the amount of work and expression of credit may differ). And all collaborators should be empowered to take credit for their work.

2) The community should default to the most comprehensive model of attribution of credit: credit should take the form of a legible trail that articulates the nature, extent, and dates of the contribution. (Models in the sciences and the arts may be useful.)

a) Descriptive Papers & Project reports: Anyone who collaborated on the project should be listed as author in a fair ordering based on emerging community conventions.

b) Websites: There should be a prominent link to another webpage, e.g. "About Us" page, from the main website or homepage which credits with PIs or project leads listed first. This should include current staff as well as past staff with their dates of employment.

c) CVs: Your CV is your place for articulating your contribution to a collaboration. All collaborators should feel empowered to express their contributions honestly and comprehensively.

3) Universities, museums, libraries, and archives are locations of creativity and innovation. Intellectual property policies should be equally applied to all employees regardless of employment status. Credit for collaborative work should be portable and legible. Collaborators should retain access to the work of the collaboration.

51 Adapted from Media Commons Press. (2011). Collaborators' Bill of Rights. Retrieved 2015, from <http://mcpress.media-commons.org/offthetracks/part-one-models-for-collaboration-career-paths-acquiring-institutional-support-and-transformation-in-the-field/a-collaboration/collaborators'-bill-of-rights/>

Addendum 2: Calendar [(Optional)]

Addendum 3: Project Recommendations [[(Optional)]

Addendum 4: Upfront Costs [(Optional)]

Addendum 5: Estimate of Institutional Support [(Optional)]

Addendum 6 (and Beyond): OTHERS [(Optional)]

[Anything discussed but not included in the MOU that you would otherwise want documented]

<https://uta-ir.tdl.org/uta-ir/handle/10106/25646>

Project Guidelines and Ingest Questionnaires

Ingest questionnaires and published project guidelines help scholars think through all aspects of their digital project from the outset. If properly constructed, ingest questionnaires can be used to automatically populate a preliminary project charter.

Model 1: University of Ottawa Ingest Questionnaire⁵²

1. What is the name of the project?
2. Does someone working on the project have technical skills?
3. Any other collaborators involved in the project (institutions or individuals)?
4. Is this a grant-funded project? If so, for how long is the project currently funded?
5. What type of assistance are they seeking for this project?
6. Ask them to describe conceptually the project's final product:
7. What will it include?
 - a. A database
 - b. A website
 - c. An online exhibit
 - d. An application to be used by external users
 - e. Online data visualizations
 - f. Maps
 - g. Online timeline displays
 - h. Audio/visual storytelling
 - i. Collection - types of objects?
 - j. Community space for users (including discussion space)
 - k. Other
8. Who is the audience of the final product? Describe the users of the final product.
9. If applicable, how do they foresee the site being used?
10. What type(s) of data/content does the project have? (Describe and list any file formats).
11. Is the content/dataset complete or in progress?
12. Is the content copyrighted? If yes, do they have copyright clearance or permission to reproduce the content?
13. Does the content have descriptions? What types of fields do the object descriptions include? What type of metadata will the content have - if any?
14. Will the site be open to the public or restricted to certain users? If restricted, who will the site be restricted to?
15. How large is the data/content (i.e. GB or TB)? (You may need to calculate this for them)
16. What type of tools/applications have they investigated so far (if any)?
17. Is there a particular tool or application that will be essential to this project?
18. How would they define the "completion" of the project completion (consider this project in phases and describe the "completion" of the current project phase)
19. What is the expected date for the project to be in a completed state (i.e. in production as a website)

⁵² Questions authored by Nancy Lemay, University of Ottawa

Model 2: Boston College Intake Form⁵³

Describe the Project:

- Name of project:
- Project sponsors/partners:
- Is this project being funded? If yes, for how long:
- List all funding sources:
- What is the anticipated timeframe for the project?
- Brief description of project:
- Can you provide examples of existing projects that might be used as a model in terms of content, design, or both?

Project Goals:

- What impact do you want your project to have?
- Who is the audience for this project?
- How does this project contribute to or complement existing projects?
- How will the success of the project be measured or identified?

Infrastructure:

- What is the proposed software for this project? (list all that apply)
- What is the proposed hardware for this project? (list all that apply)
- What is the underlying infrastructure for this project? (i.e. Drupal system)
- What is the proposed repository or data storage for project objects?
- Where will the project be hosted, if applicable?

Content:

- What is the content of the resource?
- Who is creating the content or in the case of primary sources, where is it being drawn from?
- When and how often will new content be added?
- What metadata needs to be captured, and what is the preferred metadata schema?

Access and Discovery:

- How long will the project be available online?
- How will users find the resource?
- How will the resource be promoted?
- How will the project be preserved or archived?
- What kind of copyright or licensing will be used for the project?
- Do any rights need to be negotiated before moving forward with the project?

Project Staff and Management:

- Who will be the project manager and/or lead?
- Who will be the project staff?
- Identify roles and activities:
- What is the timeframe for the staff to work on the resource?
- What other BC departments or external partners will be part of the project?
- Will BC students be employed for the project?
- Are you looking for staffing support from the BC libraries to complete the project?

Funding: Please provide a budget overview

- How will activities for this project be paid for?
- How long will the project and activities be funded for short-term and long-term?
- What alternatives are there once the funding ends?
- What might be provided by your institution?
- What might come from a grant agency or partner?

53 https://docs.google.com/document/d/1Csylr_xPFEL3auFRy3k6Kv3cnXCie8Vt6LlaBoRxtKM/edit

Model 3: Bates College Digital Project Guidelines⁵⁴

- Does your project support [the university's] mission?
- Who are your users and stakeholders?
- Could you find project partners or models?
- What relevant standards will you use?
- What hardware/software will you require?
- Where will your project be hosted?
- Does the project involve any copyright, intellectual property, or privacy concerns?
- Have you considered website accessibility?
- How will users find your project?
- How will you promote and evaluate your project?
- Will the project require ongoing support?
- Should the project be archived?⁵⁵

Model 4: Baker Library, Harvard Business School

Baker Library uses a Qualtrics form to capture data about ideas for new digital projects and services. The form can be completed by the individual proposing the project or may be completed by (or in collaboration with one of the Baker Library staff). The goal is to gather enough information to vet the project in terms of feasibility and significance. The form also serves as a simple way to generate a project charter if the proposal is accepted. The form requires the following information (paraphrased):

- how did project originate (is this a staff member idea, customer proposal)
- description of the need
- proposed solution
- project timeframe
- priority (e.g., did this project originate from a high-priority client like the Dean's Office?)
- does project align with Library's strategy and fiscal year priorities, and how
- tools, skills, collections needed to execute project
- resources and services that apply (multiple choice form)
- high-level deliverables (e.g., online tool)
- key project stakeholders (internal/external)
- budgetary needs, existing funding sources, revenue generating potential
- how will success be measured and by whom (or opportunity for library as formal partner)

⁵⁴ See full details at <http://www.bates.edu/digital-campus/guidelines/#where-will-your-project-be-hosted>

⁵⁵ <http://www.bates.edu/digital-campus/guidelines/>