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Future Directions for Digital Humanities at CU Boulder

December 19, 2013

University Libraries Digital Humanities Task Force

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I. Executive Summary

Digital Humanities (DH) work harnesses digital technologies to disseminate, analyze and synthesize information in new and innovative ways, often to answer humanistic questions, and may make use of tools like visualization, text mining and statistical tools. The Libraries' Digital Humanities Task Force was formed earlier this year to investigate and report on DH activities and needs on campus and formulate recommendations for how the Libraries might help support these needs in tandem with campus partners. We take a broad view of DH and were as inclusive as possible in all of these activities – the disciplinary affiliation of the scholar engaging in these activities (humanities, social sciences or sciences) is irrelevant. In this context, DH is not a circumscribed concept but rather a broad set of methodologies and approaches that loom large in the realm of support and participation libraries and their staff can offer to users undertaking digital scholarship.

Since March the Task Force has undertaken several major activities to meet these goals. Among them are: an investigation of library-associated DH initiatives at other institutions; an environmental scan of campus facilities and services; a campus-wide survey (345 responses); in-depth interviews with 20 faculty, graduate students and other campus researchers; additional interviews with those involved in external DH initiatives; and presentations and feedback during the DH symposium and workshop held in August 2013 (highlights below). Our research showed that DH work was of broad interest to graduate students and faculty on campus across disciplinary boundaries.

The survey results and interviews revealed that a small but significant number of core faculty and graduate students are already active in employing DH in teaching and research. A much larger contingent from departments, schools and programs across campus is interested in doing so, suggesting that barriers and a lack of opportunity are inhibiting many from becoming involved. Graduate students were much more likely to fall into this group, suggesting a need for support of graduate student involvement in digital studies, as well as a potential for courses, fellowships, and other opportunities to encourage their involvement.

The environmental scan of campus facilities and services showed a (remarkable) variety of campus resources and services, with ASSETT, OIT and the Libraries as the most frequently utilized providers. The data, however, suggest a low rate of usage, which may be attributed to a lack of DH-specific support, the disparate nature of projects, individuals' level of localized support and technical knowledge, or services supporting only specific departments. DH support that crosses the boundaries of campus units is needed, as current practice tends to silo support networks and inhibit interdisciplinary collaboration. Community is especially vital to connect those rostered in disparate departments and colleges. Many digital humanists "go it alone" or seek support from DH, open-source and professional communities outside of CU. Some, however, consult CU colleagues, suggesting a budding DH community on campus.

The survey revealed strong interdisciplinary interest in DH in schools, colleges and programs across campus. Within the College of Arts & Sciences, where most interest resided, 50.8% were in arts and humanities, 28.9% in natural sciences and 20 (15.6%) in social sciences departments. Further, the interviews uncovered existing interdisciplinary partnerships among researchers on campus, and between researchers on campus and at other institutions. These findings are in keeping with the collaborative nature of the field and the involvement of librarians, technologists/computer scientists and researchers in various disciplinary fields on the teams undertaking research projects, all of whom bring necessary skills and experience to the table.

DH approaches and related technologies are also being implemented in the classroom as a means for faculty and graduate student instructors to create interactivity and engage students in the subject matter. Some are using resources such as ALTEC, ASSETT and OIT's Academic Technology Consulting Services to support their work. Some departments on campus are also beginning to see the necessity of incorporating these approaches and technologies into the graduate curriculum to produce graduates equipped for research and teaching in the digital age. The History Department, for instance, is piloting a digital history component in one of its courses in spring 2014.

A wide variety of methodologies are being employed or are of interest to campus constituents, including (in order of prevalence in survey and interview data): multimedia and digital publication; image, video and audio editing and manipulation; text mining and analysis; digital writing, storytelling and remixing; analysis of new and social media; visualizations, simulations and 3D modeling; social computing and crowdsourcing; digital editions and text encoding; geospatial analysis; and machine learning and computational linguistics.

Faculty and graduate students perceived several major barriers to activating or furthering their interest in DH. The most frequently cited service and resource gaps were lack of (in rank order): technology training, time, funding, technology support and infrastructure, coherent campus community, recognition in tenure and promotion, and referral services. Faculty most commonly requested more digital content, training and workshops, consultation services, and technology infrastructure. Graduate students favored many of the same objectives but found training and workshops along with technology infrastructure to be most important; they were also interested in a physical space for DH work. Both groups expressed a strong desire for cultivating a local DH community, with concomitant collaborative opportunities.

In addition to the current campus landscape, the Task Force also investigated the general characteristics of library-affiliated DH initiatives at other institutions to become acquainted with the range of existing models and best practices for DH on university campuses, and to locate where CU would fit in the constellation of institutions. The figures show that we are in the 36th percentile for staffing and 29th percentile for total expenditures among institutions that have Digital Humanities centers associated with the library. While we are below average among these institutions, we believe making strategic hires in digital scholarship will allow us to serve this important constituency while building our capacities in line with the Flagship 2030 plan. This is important as CU is above average in terms of the population served. It should provide hope, that we are comparable in these areas to Nebraska and Kansas, both peer institutions that have created robust DH initiatives.

At other institutions' DH centers a distributed support model is common, with the majority of libraries partnering with other campus units (colleges of arts and sciences, interdisciplinary humanities centers, central IT, etc.) to provide DH services. The most prevalent sources of support are the operating budgets of libraries and their partners, and grants. DH centers are often run by co-directors – one from the library and one from the teaching faculty, as in the case of Nebraska, Maryland and Kansas – with an advisory board including members from external units; and are staffed by a mix of librarians, teaching faculty, IT support staff and student assistants.

A center was often held up as the gold standard to which the Task Force believes CU can aspire, thus supporting Flagship 2030 goals. Two of its core initiatives seek to encourage interdisciplinary research and increase investment in both new technologies and interdisciplinary research and educational facilities. According to our external experts and interviewees, a successful center requires strong administrative support and dedicated staffing for continuity and stability, with campus partners contributing resources according to a “stone soup” model. It is housed in a neutral location like the library to foster interdisciplinary collaboration and not only offers training for DH scholars and staff, but also is integrated with the campus curriculum.

The Task Force recommends the following actions in support of DH at CU. The first section represents recommended actions by the Libraries to secure the necessary personnel and resources to move the initiative forward as well as its future relevance to digital scholarship on campus. The second focuses on the general needs of the community that can be met by the Libraries' actions. Phase I represents recommended immediate actions, phase II mid-term actions, and phase III longer-term actions that will meet goals specified by the campus community according to best practices.

Recommendations for Libraries' Action

Phase I

- Create successor to the DH Task Force sponsored by the Libraries, but with broader representation from other interested groups and potential partners.
- Add a DH Librarian to the faculty recruitment plan. This position will play a key role in continuing to build

partnerships and begin offering services for digital scholars. They will serve as the point person for moving forward most of the other recommendations outlined below.

Phase II

- Bring the DH Librarian on board
- Establish an administrative unit for DH within the Libraries that reports to an Associate Dean.
- Plan for a physical space for DH within the Libraries, which would include most importantly a technology lab. The space will serve as a collaboration hub and offer a natural location for technology support and workshops. There would be potential synergies in locating this space in physical proximity to archives and special collections materials, if possible.
- Consider co-locating related services in the technology lab in line with other digital efforts in the Libraries, for example data, assessment, usability testing, makerspaces, digitization, etc.

Phase III

- Open a DH space, including the lab planned in Phase II.
- Hire support staff, most importantly programmers but also possibly an outreach specialist and graduate assistants.

Goals and Outcomes Resulting from Libraries' Action

Strengthen Community - One of the strongest messages was that creating community to facilitate collaborations and intellectual exchange should be a high priority.

Develop Strategic Partnerships - The importance of campus partnerships to starting a DH initiative cannot be overemphasized according to the external experts and start-up interviewees.

Build Technical Infrastructure - Work with OIT to identify and acquire the necessary software, hardware and technical infrastructure to support DH work.

Develop and Provide Services - Develop and provide services, e.g., consultations, workshops, and access to digital content, based on demonstrated need that support targeted audiences.

Promote Guidelines for Evaluating Alternative Scholarly Outputs - Guidelines for evaluating digital scholarship for purposes of tenure and promotion were a high priority for faculty. Our research indicates that lack of recognition of alternative scholarly outputs plays a key role in inhibiting DH work.

Create a Campus Center for Digital Humanities - A center would create campus-wide visibility, as well as provide funding support for a range of faculty and graduate student activities.

II. Background and Context

IIA. What is Digital Humanities?

Digital Humanities (DH) is a fast-growing and exciting area of research, formed at the intersection of traditional scholarship and teaching, information organization and architecture, and digital technologies. DH projects commonly make use of visualization, text mining and statistical tools, Geographic Information Systems (GIS), and other digital technologies to harness information in ways that provide new insights into humanistic questions. Others focus on the creation of these tools, or the frameworks in which they are constructed.

An early application of DH was the use of tools and datasets to provide researchers with new ways of studying old texts, a natural intersection of archival scholarship and electronic technology. Several pioneering projects were initiated by faculty and initially funded by grants from bodies like the National Endowment for the Humanities (NEH) and Andrew W. Mellon Foundation, but broadened and eventually were moved to a home in the library. But one example is the Women Writers Project (wwp.brown.edu), which began encoding the writings of early women writers using the Text Encoding Initiative (TEI), an XML schema for textual documents. This corpus offers scholars extremely granular computational access to texts, allowing the documents not only to be read, but also to be analysed, tested and dissected in ways that were previously impossible. The encoded texts also permit revolutionary ways of presenting and teaching the texts. The explosion of encoded texts, not to mention the colossal body of scanned texts with optical character recognition (OCR) provided by sources such as HathiTrust, makes the potential for new research using digital techniques seem limitless.

DH can be understood as an umbrella for a much broader field of scholarship, with potential applications in every discipline; thus it often goes under different names such as "digital scholarship". The recent DH2013 conference held at the University of Nebraska-Lincoln, for example, included papers discussing work being done in areas as diverse as archaeology, theatre, ontology, music, sociology and computer science, in addition to the traditional realms of literature, history and other traditional humanities disciplines. As scholars in different fields grow more familiar with available technologies, they are finding increasingly novel ways to apply them. Where TEI was created for modeling textual documents, for example, the Music Encoding Initiative (MEI) attempts to do similar things for music notation, allowing scholars to create critical editions which include embedded alternate interpretations, references to early materials, variant publications, etc. What DH work has in common is the harnessing of digital technologies to make information available as well as to analyze and synthesize it in new and innovative ways, often through a humanistic lens.

IIB. Digital Humanities and Libraries

Digital modes of teaching and research are steadily increasing in the higher education environment, and are clearly here to stay. Libraries are playing a key role in many of the DH and digital scholarship initiatives that have been started at universities around the world.

In recognition of the strength of this trend, a variety of initiatives are underway in the library world to meet the demand, acquire skills, and share expertise. ACRL's Digital Humanities Discussion Group, for instance, formed only a year ago, but it now has 745 members on its discussion list and is in the process of becoming an ACRL interest group. The frequent listings of new positions for librarians with DH responsibilities is a further indication of libraries' commitment to meeting these needs on their campuses. At THATCamp Digital Humanities & Libraries, which took place in Denver in November 2012 alongside the Digital Library Federation (DLF) Forum, one of the best-attended sessions was that organized by two future Task Force members on how a DH initiative might be started, a further indication of libraries' interests in this area.

IIC. University Libraries' Digital Humanities Task Force

Recognizing the growing importance of DH in the academic setting, the University Libraries' Executive Committee, with support from the Management Team, appointed a Digital Humanities Task Force (DHTF) in late January 2013 to investigate and report on DH activities and needs on campus and formulate recommendations for how the Libraries might help support these needs, hopefully in tandem with other units on campus, as well as contribute to scholarship in this area. The Task Force members began meeting in March, and was joined by two colleagues from the Office of Information Technology (OIT) and one from the Department of Art & Art History in April. Together we have undertaken

several major activities to meet these goals, among them:

- Environmental scans of campus facilities and services and external DH initiatives associated with libraries
- Participatory design through a campuswide survey and interviews with faculty, graduate students and those involved in external DH initiatives
- DH symposium and workshop events for campus faculty, graduate students, administrators and support staff with three invited external DH experts
- Creation of a [DH subject guide](#) to establish a virtual presence and provide the CU community with information about the Task Force, symposium and workshop, and available DH resources (they can contact us at digital.humanities@colorado.edu)

The definition of DH is multifaceted and rarely agreed upon. In discussing it throughout this report, however, the Task Force takes a broad view of DH as the application of technology to humanistic questions in teaching and research. Whether the scholar engaging in these activities is considered to be from a humanities, social sciences or sciences discipline is irrelevant. In fact, the Task Force's research showed that DH work was of broad interest to graduate students and faculty on campus across disciplines. Thus in making our recommendations, we are referring to engaging with all of these users and drawing on a broad base of support in the Libraries, regardless of department. In this context, DH is not a circumscribed concept but rather a broad set of methodologies and approaches that loom large in the realm of support and participation libraries and their staff can offer to users undertaking digital scholarship.

III. Major Sources of Information and Methodologies Employed

IIIA. Environmental Scans

IIIAi. External Scan Methodology

A Task Force subgroup conducted an environmental scan to identify and analyze information about library-associated DH initiatives in the U.S. and abroad. This scope was selected since these initiatives are most likely to be structured and operate in a manner from which the CU Libraries can learn for the purposes of the Task Force's charge. The list of potential institutions to investigate was culled from several reports and surveys, including the Association of Research Libraries' (ARL) [SPEC Kit 326: Digital Humanities](#), as well as from members' knowledge of the existence of library-based DH initiatives, including both physical centers and collaboratories. The group reviewed these initiatives' websites to collect data on the following points: services, staffing and funding models, representative projects, date of establishment, and assessment data. Of these we were able to reliably collect information on services, staffing, and representative projects. Also we drew upon statistics about the affiliated libraries from sources such as the [ARL Statistics](#), [LibQual Statistics](#), [DBS: Deutsche Bibliotheksstatistik](#) and university webpages, which offered information such as budget figures, number of volumes held, staffing levels, and the parent institution's student enrollment and number of faculty. Further, in two cases where initiatives are just getting off the ground at peer institutions - Indiana University, Bloomington, and Pennsylvania State University - we conducted in-depth interviews with the initiatives' organizers. These interviews gave valuable insight into how each initiative started and was developing on the respective campuses. The results of the external scan are detailed in [Section IV](#) below.

IIIAii. Internal Scan Methodology

Working in parallel, another Task Force subgroup undertook an initial environmental scan of DH activities on the CU campus, with the goal of identifying associated people, projects and resources that are currently available for this type of work. As this effort was preliminary, the focus was on identifying DH activity online to seed the campus assessment

described in [Section IIIB](#). We searched VIVO faculty profiles to find individuals involved or potentially involved in digital scholarship using a variety of keywords. The websites of likely departments were also investigated for projects or departmental resources of interest (e.g., computer labs). Campus-wide services such as those offered by OIT were analyzed to identify those of potential use to digital scholars. The information gathered is intended to serve as the foundation of a centralized knowledge base that can be expanded upon in future by the successor group to the Task Force and supplemented by the DH community on campus. The results of the internal scan are covered in [Section VA](#) below.

IIIB. Campus Assessment

Data from four major sources were drawn upon for the assessment of DH interests and needs on campus. These are: interviews with campus faculty, graduate students and other researchers we identified as conducting DH work or interested in applying DH to their teaching or research; a campuswide survey of campus faculty, graduate students and other researchers regardless of interest or involvement; discussions with campus participants and external experts at the dh+CU symposium and workshop; and interviews with those involved with starting new DH initiatives at peer institutions. The results are synthesized in the topical presentation in [Section V](#).

IIIBi. Interview Methodology

A Task Force subgroup interviewed 17 faculty and three graduate students who are either conducting DH work or interested in applying DH to their teaching or research. We devised a list of questions to elicit information about the services, resources and methodologies they have utilized as well as about service gaps and barriers that they have encountered. The questions used to guide the interviews are listed in [Appendix A](#). To facilitate identification of themes and trends in the data, the notes and audio files from the interviews were coded and analyzed in NVIVO qualitative data analysis software.

IIIBii. Survey Methodology

At the same time another Task Force subgroup created a survey in Qualtrics that was distributed to campus faculty, graduate students and other researchers regarding their interest and involvement in DH in June 2013. The survey questions are available in [Appendix B](#). In keeping with the broad view of DH we had initially set out to capture, we wanted to ensure that all had a chance to respond regardless of departmental or disciplinary affiliation. The survey went out to approximately 8,000 CU affiliates, and we received 345 responses from participants in programs, schools, institutes, departments, schools and colleges across campus. These survey responses provide a rich source of data informing this report and its recommendations.

IIIC. dh+CU Symposium on Future Directions and Expert Workshop

The initial goal of the [dh+CU Symposium on Future Directions](#) was to generate momentum for DH on campus by facilitating transformative and cross-disciplinary digital research. However it also proved a rich source of information about DH activities, resources and needs on campus to supplement that gathered through the survey and interviews. The event convened guests comprising CU faculty, librarians, IT professionals, and other administrative and support staff, as well as three invited [DH experts](#) from outside institutions:

- Trevor Muñoz, Associate Director of the [Maryland Institute for Technology in the Humanities](#) (MITH) and Assistant Dean for Digital Humanities Research at the University of Maryland Libraries
- John Unsworth, Professor of English, Vice-Provost for Library and Technology Services and Chief Information Officer at Brandeis University and NEH Board Member

- Katherine Walter, Professor and Chair of Digital Initiatives & Special Collections in the University of Nebraska-Lincoln Libraries and Co-Director of the [Center for Digital Research in the Humanities](#) (CDRH)

The symposium began with an expert panel on the future of DH in higher education, followed by [CU presenters](#) showcasing their own projects. There was ample opportunity for discussion, particularly during the open session at the end of the day. The CU presenters were also asked to touch on support that would like to see for digital scholarship on our campus.

During the workshop on the second day, the Task Force and a small group of campus partners discussed avenues for technical and research assistance for DH, informed by the previous day's presentations and conversations. The outside experts shared their candid assessment of faculty and graduate student needs and offered models for how the Libraries and campus could support and participate in existing and future DH efforts.

IV. Broader Landscape of Digital Humanities

IVA. Results of External Scan

In order to become acquainted with the range of existing models for DH on university campuses, the Task Force undertook a survey of the general characteristics of DH initiatives. Based on a recent [spreadsheet of DH centers](#) compiled for a MITH, CDRH and [MATRIX](#) (Michigan State's Center for Humanities & Social Sciences) project, nearly half of the nearly 100 centers recently identified by Chris Sula have some sort of relationship with a library.

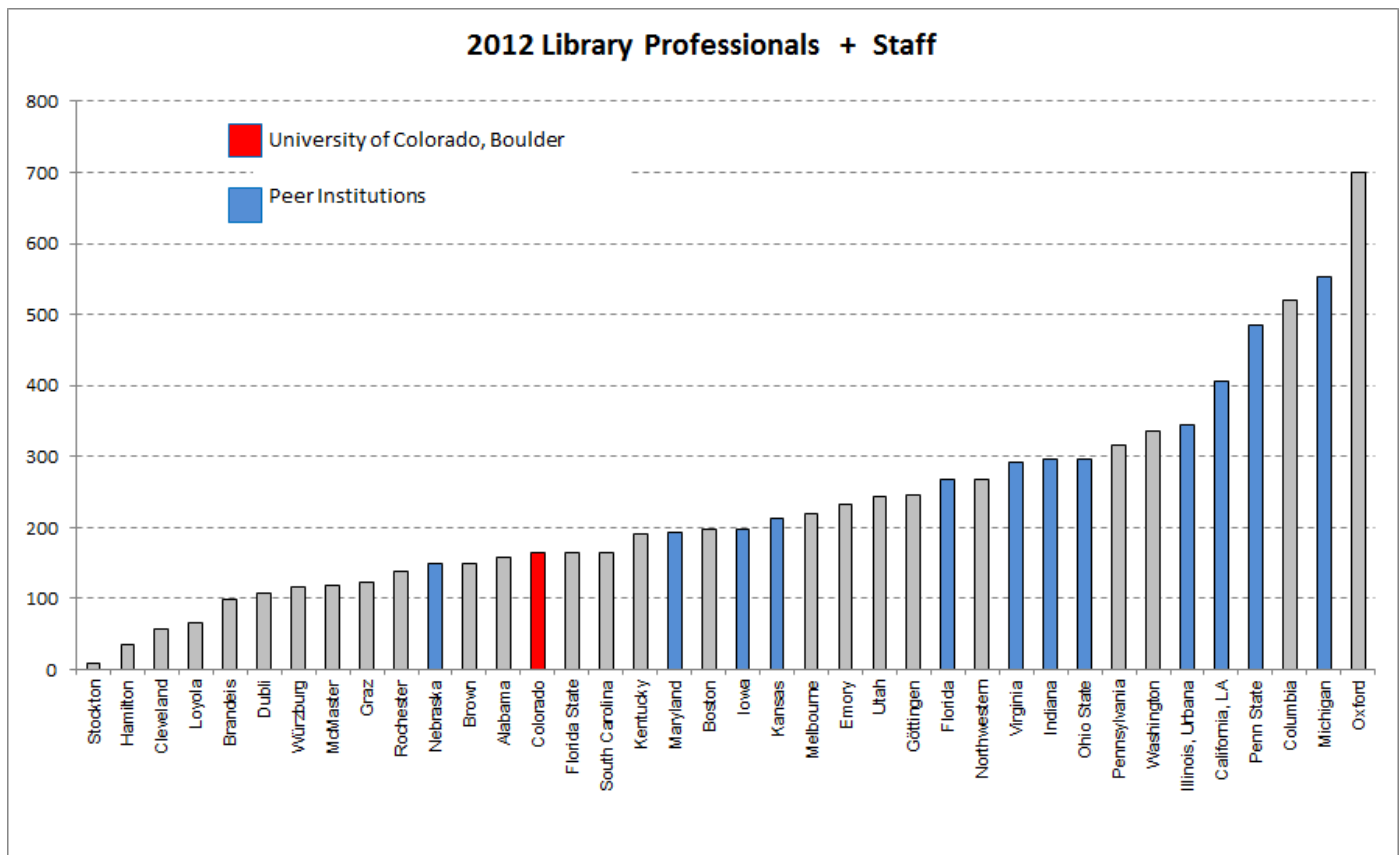
DH initiatives associated with libraries that were located both in the U.S. and abroad were included in our scan. Among the sources of information consulted were: ARL's [Spec Kit 326: Digital Humanities](#), which examined support services provided by libraries for DH at a number of institutions in 2011; [centerNet's list of DH centers](#); the aforementioned spreadsheet compiled for MITH, CDRH and MATRIX; reports from DH task forces in libraries at other institutions; and interviews with and commentary from those who are involved in building DH initiatives at other institutions.

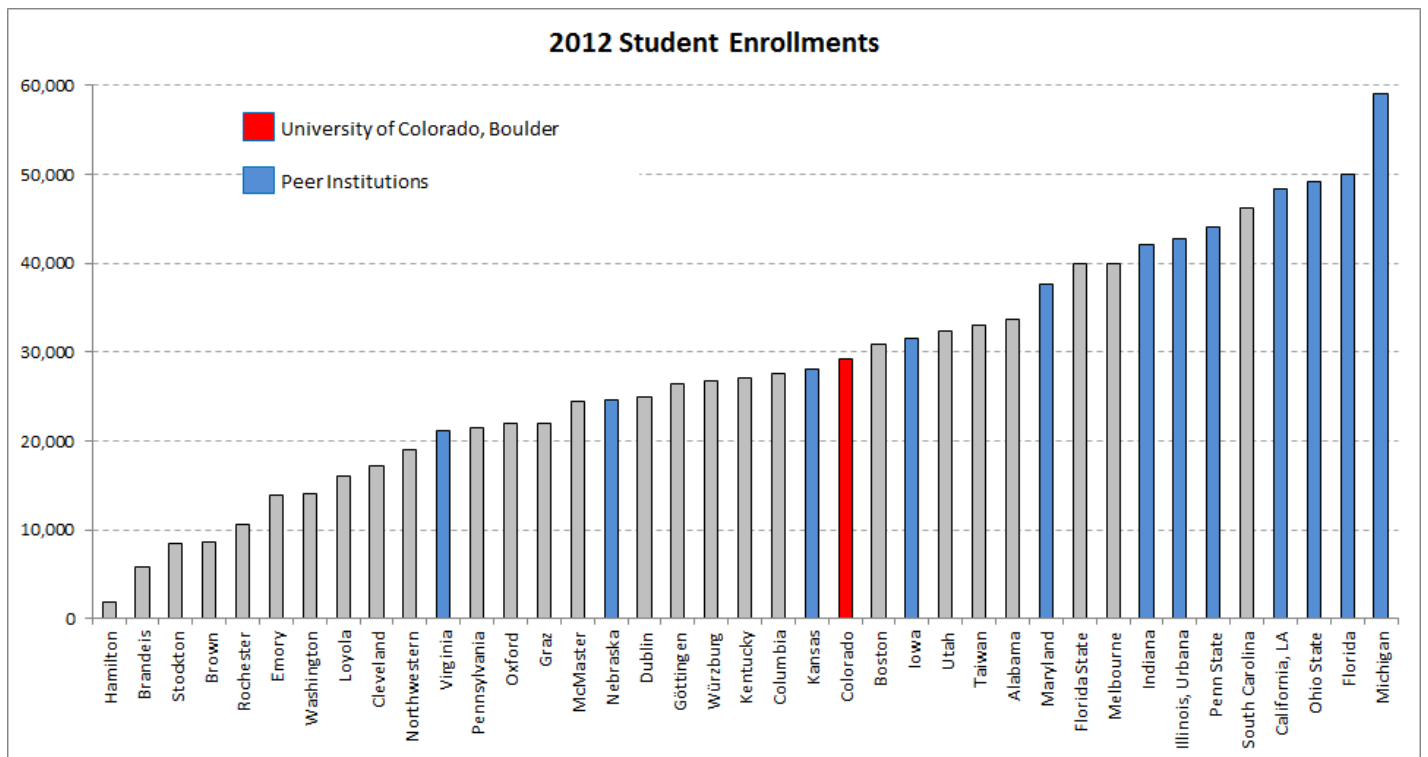
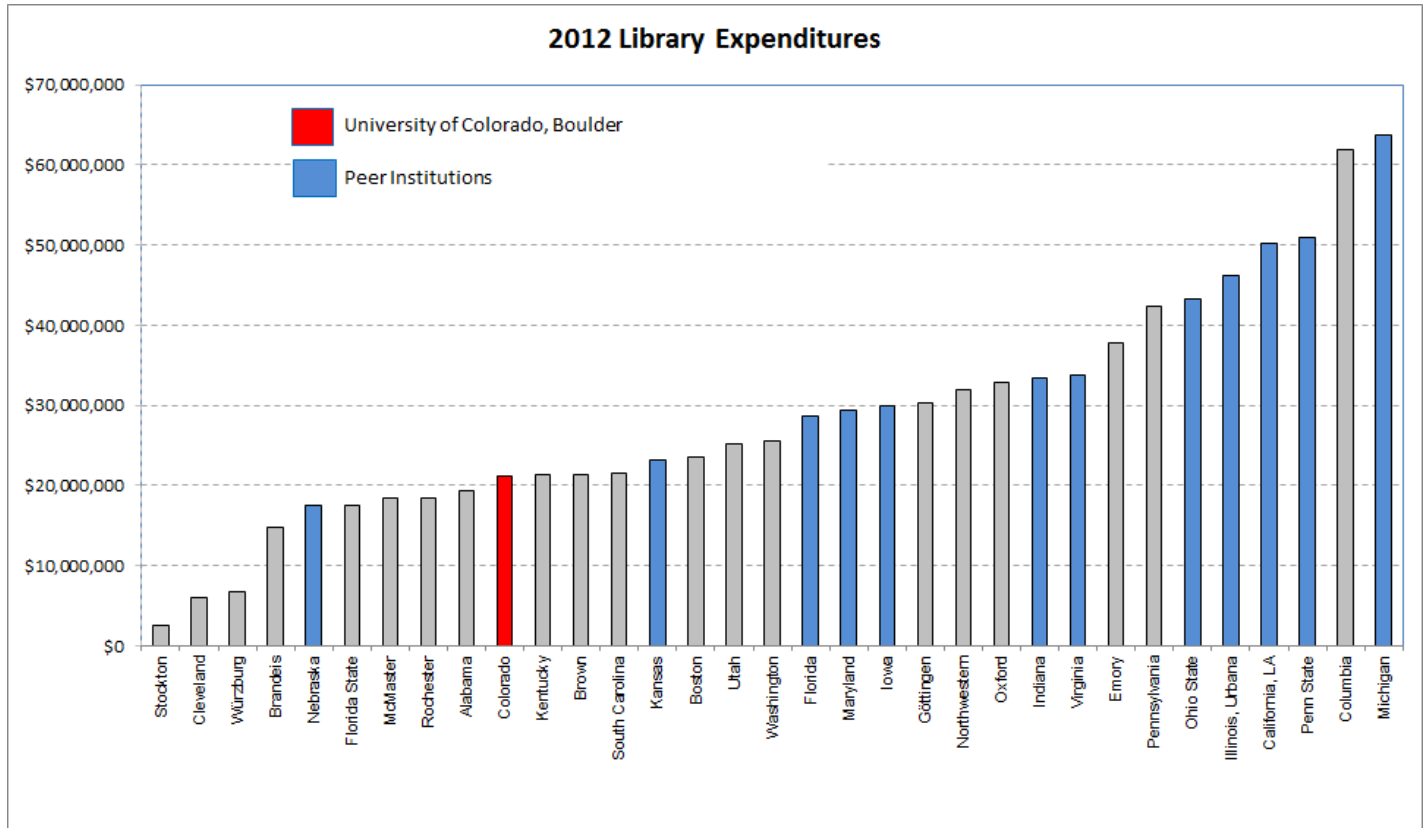
Of the 38 institutions we identified as hosting these initiatives, 29 were U.S. institutions, and 12 are considered peers. (A list of institutions with library-affiliated initiatives is available in [Appendix C](#). Those that are considered peers are in [Appendix D](#). A comprehensive list of peer institutions is [here](#).) Each institution's website was reviewed and the following information gathered, where available:

- Basic statistics on:
 - Student enrollment
 - Total volumes held
 - Number of library staff (FTE)
 - Total library expenditures
- Name of DH initiative
- Date of establishment
- Services offered
- Exemplary projects
- Staffing and organizational models
- Funding information

The basic statistics were gathered in order to locate where CU and the Libraries would fit in the constellation of institutions with library-affiliated DH initiatives. The figures for 2012 show that we are below average in terms of staffing (in the 36th percentile) and total library expenditures (29th percentile) among these institutions. However we are above average in terms of the population served, since our student enrollment is in the 60th percentile. These figures may raise questions about how we could support a center, but we are roughly comparable in these areas to

Nebraska and Kansas, both peer institutions that have created robust DH initiatives. These institutions show that centers can be successful with an informed approach tailored to local needs, careful planning and outreach, and the necessary visibility and commitment at higher levels of library and campus administration.





Of 27 initiatives for which we had data on their main affiliation, almost all were mainly affiliated with the library

(11), colleges of arts and sciences/arts and humanities (11), or both (2). Of the remaining three, two were mainly affiliated with departments (English on the one hand, History on the other) and one with the Office for the Vice Chancellor for Research. Two had a secondary affiliation with departments of computer science.

A broad range of services are offered by the DH initiatives we surveyed, including support for teaching, research and training, physical spaces and more specialized services.

Summary of Services & Resources Offered by DH Initiatives at Other Institutions

<p>Services associated with teaching include:</p> <ul style="list-style-type: none"> • Integration of DH tools in teaching • Instructional technology support • Student fellowships • DH credit courses or degree programs 	<p>Services associated with research include:</p> <ul style="list-style-type: none"> • Integration of DH tools in research • Seed grants for projects • Scholarly publishing and repository submission services • Professional evaluation and review consultation • Professional networking 	<p>Services associated with training include:</p> <ul style="list-style-type: none"> • Lectures and symposia • Workshops • Training grants • Web publications such as DH guides, resource lists and blogs
<p>Specialized services provided include consultations and support for:</p> <ul style="list-style-type: none"> • Project development and management • Text encoding and analysis • Geospatial analysis • Statistical analysis • Graphic design • Data services (data conversion, management plans, etc.) 	<p>Specialized services cont'd</p> <ul style="list-style-type: none"> • Intellectual property • Grant writing • Web development and content management systems • Software coding and development • Digital asset access and preservation 	<p>Other resources that are made available for DH work include:</p> <ul style="list-style-type: none"> • Space, often couched as collaborative spaces, work areas or scholars' commons • Community support • Software • Equipment • Access to the library's digital resources

The SPEC kit indicates that in 2011 the majority of responding libraries did not have a dedicated space for DH work, and that this work often took place in staff offices and other informal spaces. However, other sources, like the spreadsheet of DH centers mentioned above, indicate that in 2013 dedicated space is becoming increasingly the norm.

A variety of models emerged when the organizational or administrative home for the identified initiatives was considered, among them: library-run initiatives; initiatives run by library and teaching faculty co-directors; and initiatives located in outside institutes, colleges, schools or departments (usually a college of arts and sciences/arts and humanities) with some sort of library involvement. The majority of libraries (75% according to the SPEC kit) partner with other campus units to provide DH services, indicating that a distributed support model is common. Support for this new area of work comes from a variety of sources, but the most prevalent are library operating budgets and grants.

Though data on staffing was incomplete, some conclusions can still be drawn. None of the initiatives was staffed by only one person. Many evidence a mix of librarians, teaching faculty, IT support staff and student assistants who are involved in some capacity. Often an advisory board including members from external units exists to guide the initiative.

IVB. Specific Initiatives

Detailed information from those who are involved in building DH initiatives at other institutions provided a valuable source of information to supplement the data we were able to gather through the external scan. Several critical threads run throughout their responses that informed the Task Force's recommendations, namely, the importance of the following factors to a successful initiative:

- Strong administrative support
 - Sustained commitment was seen as key to building an informal into a formal initiative like a center
- The library as a neutral space fostering interdisciplinary collaboration
- Collaboration and partnerships
 - In the library - interest from colleagues across the organization in becoming involved
 - On campus - "stone soup recipe"
 - Involvement of colleges of Arts & Humanities/Arts & Sciences in all of these initiatives
 - Role of the campus interdisciplinary humanities center
 - Engaging graduate students as well as faculty
 - Campus advisory and interest groups
- Dedicated staffing for continuity and stability
 - This often included a library-based director and strategic hires
- Training and workshops for skills building in the library as well as to support scholars
- Integration into the campus curriculum
- Flexibility to respond to changing campus needs and support
- Branding and outreach

IVBi. External Experts on Established Initiatives

During the dh+CU symposium and especially the workshop, Task Force members had the opportunity to learn from the external experts how their centers developed, the challenges they faced, and the successes they enjoyed, which are summarized below. Both Nebraska and Virginia are considered peer institutions to CU.

Trevor Muñoz, [Maryland Institute for Technology in the Humanities](#) (MITH)

Support from upper administration at Maryland has been a crucial factor throughout MITH's existence. It started with an NEH challenge grant, which required a commitment from upper administration to raise the remaining funding. Collaboration was also key. A campus coalition including the Vice Provost for Research, College of Arts & Humanities, Libraries and campus IT was necessary to support the creation of a physical place on campus for DH-interested people to come together. MITH was originally geared as a DH center in the Libraries and has had a Libraries-based director for most of its existence, which has provided needed stability as campus partnerships fluctuated. Campus IT was an original partner but dropped out; now MITH is supported by a larger team of humanities technologists. It was initially identified with the English Department. English is still involved, but MITH now enjoys interdisciplinary support. It has also garnered more Libraries support in terms of staffing and funding. Its mission has changed significantly since it was established in 1999. Institutional structures were refreshed twice. As MITH has

grown and diversified, a challenge has been matching its activity to available resources. Continually shifting centers of support create uncertainty and constant adjustment of its role on campus - diversification of staff, alliances, etc. - to remain relevant. MITH started by funding researchers but now funds staff, including a project development team with humanities technologists that sustains the center. Grant monies are vital source of funding for MITH. Arts & Humanities and English have provided formal support for the center throughout. MITH has created an award-winning "DH Incubator" to grow the necessary skills among library staff to take on the role of furthering DH work on campus. It is also developing the HILT Training Institute, an intensive course based on the University of Victoria's well-known DH Summer Institute that is also intended as a means for local capacity building. MITH's future plans involve creating a DH curriculum at Maryland.

John Unsworth, [Institute for Advanced Technology in the Humanities \(IATH\)](#)

Unsworth was director of IATH at the University of Virginia for ten years before moving on to Illinois and then Brandeis. The "stone soup recipe" was successful at Virginia, that is, everyone throws something into the pot and can take credit for the result if the initiative is a success, but no one is left holding the bag if it fails. Several units, including Computer Science and central IT, were willing to support a center under these circumstances. Release time was the greatest benefit for involved faculty. Modest internal funding was necessary to get the initiative started. Only after this commitment was made was external funding sought. At first faculty took on paid projects to support the center (e.g., creating websites), but ultimately the dean provided funding so faculty could focus on research. IATH pioneered the practice of having technical staff based permanently in the center with academic staff "visiting" from departments.

Katherine Walter, [Center for Digital Research in the Humanities \(CDRH\)](#)

CDRH originally sprang from discussions between the University of Nebraska-Lincoln Libraries and the College of Arts & Sciences about the future of scholarship in the digital age. Initially, recommendations to the deans led to the formation of an electronic text center in the Libraries in 1998, a centrally-located and neutral area on campus. The College provided a staff line and librarians worked part-time on projects. In the long term it was not sustainable for these librarians to solely support the DH initiative, thus Walter, a professor and department chair in the Libraries, began directing it half-time with a couple of support staff and another faculty line from the Libraries. English and the Press, particularly four core faculty, showed great academic interest in the initiative and collaborated with the Libraries, raising funds to support a TEI specialist. By 2004, significant grant funding for interdisciplinary research in Digital Humanities drew the attention of senior administrators and resulted in Programs of Excellence funding for technical staff and operations in the Libraries and faculty hires in Arts & Sciences. In 2005, CDRH was officially named a University center by the Board of Regents of the University of Nebraska. Walter and Kenneth M. Price, a named professor in English, are currently co-directors of CDRH and the center has now worked with over sixty faculty in thirteen departments. Thus, collaboration with many partners on campus over time was required to ultimately transform the initiative into a center. In 2013, UNL is in the third year of a multi-year DH cluster search. Tenure homes of faculty are in academic departments and memos of understanding between the departments and the Center are required. UNL offers a DH minor and certificate at the graduate level and is the process of raising an endowment to support students in these programs.

IVBii. Initiatives Starting at Peer Institutions

In two cases where initiatives are just getting off the ground, interviews with both initiatives' organizers were conducted to take a more focused look at how it started and was developing on their campuses. Both Indiana and Penn State are considered peers.

Indiana University, [Scholars Commons](#)

Indiana is developing a dedicated space in its main library, the Scholars Commons, which is "envisioned as a vibrant, attractive central-campus space dedicated to technologies and services that support in-depth scholarship and

scholarly community.” The space encompasses ca. 15,000 square feet at the entrance to the its research collections. Within the Libraries, the Scholars’ Commons is a partnership between Public Services (Reference Department + expanded desk group) and Digital Library Services. Members of these departments are being cross-trained with one another to staff it. Involvement in the Scholars Commons has broad appeal in the Libraries. Staff from more departments than originally envisioned wish to participate, and cross-training has been well-received by staff in units across the Libraries. The Scholars Commons represents a broad partnership in the Libraries; the space not under the purview of any one department. It includes the reference desk and two computer labs, one self-serve and one staffed. This initiative has strong administrative support within the Libraries. Campus partnerships are also critical to a successful initiative. A campus advisory group represents its broad appeal outside the Libraries as well; it includes faculty members, graduate students and administrators. The initiative enjoys a close relationship with the graduate and professional student association. The interdisciplinary humanities center on campus held meetings to discuss digital initiatives on campus, and campus computing is also supportive. The advisory group suggested creating a branded series of workshops. A recurring semester-long workshop series will be advertised and marketed effectively and held in the Scholars’ Commons. Outreach and publicity is a hugely important factor to the success of the initiative.

Pennsylvania State University, [Humanities in a Digital Age](#) (HDA)

The HDA initiative at Penn State is built upon a strong partnership between the Libraries and the College of Liberal Arts. This partnership has been exceedingly important to getting the initiative off the ground. It received funding to hire someone and raise awareness about DH on campus. Humanities librarians have organized a monthly interest group at which participants present on projects or problems they have encountered in DH research. The response has been enthusiastic - the first meeting drew 40 people. A DH research designer will be hired into a three-year position partially funded by the College. Initially they will focus on pilot projects as demonstrators to build interest and explore through active doing and also plan to bring in one or two high-profile speakers. These steps make the initiative easier to fund. The organizers would like to avoid reliance on gift funds or grants longer-term, as they do not consider this an effective way to develop a program. Staff throughout the Libraries have expressed interest in the initiative. Interest has also been expressed by pockets of faculty but is not necessarily evident at the department-head level. Graduate student involvement is important to bring attention to and learn more about the faculty’s thoughts on the initiative. Further affirming this is that a new graduate-level course on Digital Humanities will be taught in the Department of English in Spring 2014.

V. Topical Presentation/Campus Issues

VA. Current Resources, Services, and Demographics

By combining information from the internal environmental scan, interviews, and survey data, we can present a broad snapshot of campus DH activities. We aimed to identify associated people, projects, and resources that are currently available for or involved in DH work on campus. This information would serve as a baseline for adding new and non-duplicative services to fill gaps in resources.

Centers, Groups, and Service Providers

Our research yielded dispersed resources and services that might be of use to DH scholars. A summary of the centers, groups and other initiatives that offered potentially relevant services and resources are enumerated below.

[ALTEC](#)

This unit’s mission includes "developing, curating, and promoting access to a state-of-the-art, multilingual resource collection;" and "preparing current and future educators to incorporate educational technologies into their pedagogy."

ATLAS

The Alliance for Technology, Learning and Society (ATLAS) Institute is an innovative campus-wide initiative in education, research, creative work and outreach in which information and communication technology is the enabling force. Its goal is to “help prepare...students for lives and leadership careers in the networked information age.” Technology, Arts and Media (TAM) is an existing program within ATLAS that offers certificates and a minor. ATLAS offers interdisciplinary master’s and PHD programs, as well as housing the Center for Media, Arts and Performance.

ASSETT

Arts & Sciences Support of Education Through Technology (ASSETT) offers pedagogy-centered IT resources (technology tools, assessment, advising, etc.) and consulting services for incorporating technology into teaching within the College of Arts & Sciences.

Brakhage Center

This center “encourages experimentation and critical inquiry in the media arts” and is centered on experimental film (hence the namesake).

Certificate in Music Technology Program

“Featuring four state of the art student computing labs, access to the brand new multimedia facilities in ATLAS including the Black Box Theater, a full time staff of recording engineers and technology coordinators, and a higher density of MAX5 licensees than anywhere else in the world, the College of Music is able to offer students unprecedented access to the best technical resources and collaborative opportunities.”

Digital News Test Kitchen

“A cross-disciplinary research initiative aimed at testing, expanding, and developing new technologies, techniques, and business models to benefit news and journalism during the digital transition.” Pairs CU students and faculty with high-tech media companies.

The scan also identified several sources of hardware, software and services available to DH scholars. Many of these exist within academic departments, colleges or units, and their use was restricted accordingly. They are summarized below.

Broadcast Television Production Studio

Provides production equipment and studio space for students in relevant courses.

CINC Facility and Design Fabrication Lab

Center for Innovation and Creativity (CINC) facilities include a Wood Lab and Metal Lab, laser-cutting machines, a 3-D printer, two digitizers and two 3-axis CNC routers for Environmental Design students and faculty.

KESDA Lab

The Ken Erickson Spatial Data Analysis (KESDA) Lab is an “Instructional computer lab with advanced software and hardware used to teach technique (skills) courses in Geography.” Domain-equipped workstations are available for use by specific courses.

Media Archaeology Lab (MAL)

Lori Emerson of the English Department created and directs the the MAL as “A place for cross-disciplinary

experimental research and teaching using the tools, the software and platforms, from the past.” Collection of older technologies, including computers, printers, typewriters, software, e-literature and analog machines.

OIT

OIT provides access to and support for a variety of software tools. [Research Data Services](#), a partnership between Research Computing and the University Libraries, provides consultation and services to enable management, storing and sharing of research data.

Art and Art History VRC

The Visual Resources Center maintains a multimedia digital library, which as part of the CU Digital Library is available to all faculty, staff, and students across the CU system. It offers space, hardware and software, and assistance to Art and Art History faculty and students. It lends digital equipment such as digital SLR and video cameras for the creation and documentation of creative work and scholarship; provides photography space for art; maintains several digital imaging stations; and offers training and support in all of these areas.

Environmental Design VRC

The Visual Resource Center is a student and faculty academic support center that provides access to a variety of photographic and audiovisual equipment, a portfolio photography studio room, computer scanning stations, and digital image collections that are part of the CU Digital Library.

Experimental Digital Arts Studio (EDAS)

Computer lab with specialized software housed in the Art and Art History program, available to students and faculty in the major. The facility features new media technologies and functions as a creative work space where students are encouraged to develop critical and collaborative research projects that are relevant to their own evolving arts practice. Production, presentation and performance ideas can be investigated in the EDAS lab, the Critical Chill Room, and the TECHNE post-production editing suites. The facility also includes an area seminar room and various image and sound capturing devices.

University Libraries

The Libraries offer space for scholarly collaboration as well as access to digital content and staff familiar with digital research. The Libraries' Media Lab also offers audio and video production and digitization services to the campus. Further the Libraries partners with OIT to offer Research Data Services (see above, under OIT).

Finally, a number of past and current DH projects were identified, including some that have utilized campus resources. Please see the [Methodologies section](#) for examples.

Use of Resources and Services

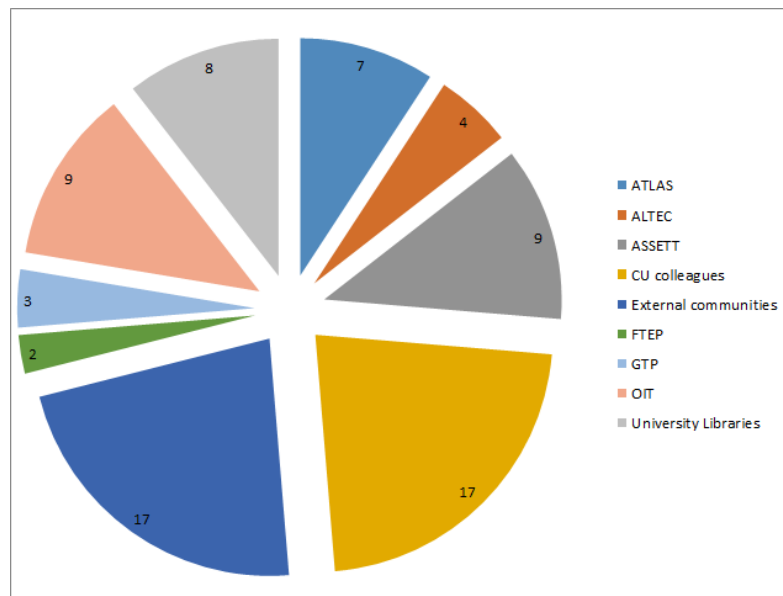
Our interview and survey participants gave a remarkable variety of answers about how they use current resources and services that are available on campus. Questions were asked about campus resources that were utilized in teaching on the one hand, and research on the other. Satisfaction with available resources varied widely from not applicable to complete satisfaction, which often had to do with the disparate nature of the projects in which participants engage as well as the respondents' level of localized support and technical knowledge, and reflects the siloed nature of current services.

Many digital humanists have been “going it alone,” or seeking support outside of CU. Several interviewees reported either a high level of self-dependence, or reliance on support from outside colleagues and institutions. Tied for the most common response, 20% of survey respondents mentioned external community such as a DH community,

open-source community or professional societies, as a main point of support. However, an equal 20% cited CU colleagues, suggesting a budding Digital Humanities community on campus.

The interviews and survey found use of university technology support at a low rate, reflective of a lack of DH-specific support. The coded interview data found that respondents largely received help from ASSETT (9), OIT (9), University Libraries (8) and ATLAS (7), followed by the Anderson Language Technology Center (ALTEC) (4), Graduate Teacher Program (GTP) (3), Other (3), and Faculty Teaching Excellence Program (FTEP) (2). Survey respondents involved in DH also mentioned a number of different sources of support for this work. OIT, ASSETT and the Libraries were also mentioned by about 16% of respondents as sources of support. A similar number of respondents said that they did not receive any support for their DH work. Other sources of support, mentioned by less than 10% of respondents were: ALTEC, GTP, FTEP. Those who selected “Other” also mentioned internal contacts and colleagues, Research Computing, CU/CSU Digital Initiatives Working Group; and CU/CSU Archives Working Group.

The following chart shows Support Resources and Networks for CU digital humanists from the survey:



During the interview process, several common types of educational support were frequently referenced. Numerous interviewees mentioned course management software, particularly the Desire2Learn course management system, and the Kaltura streaming audio and video service.

Several interview participants mentioned they had utilized either workshops or lab environments at the university, sometimes cross-departmentally. This ranged from accessing media labs for undergraduate work to collaborations with researching computing to utilize the JANUS supercomputer. Some interviewees also reported useful workshops offered by various campus entities, such as OIT, ASSETT, and Research Computing.

The survey data allowed us to break down the types of support that respondents received from these resource providers, and thus understand where digital humanists currently are going for what kinds of support.

Survey respondents were asked about the following types of services:

- Community support (email lists, discussion events, online environments)

- Availability of (digital) content (data, texts, images)
- Consultation services (on best practices, use of tools, new forms of digital publishing, project planning/management, copyright, metadata, digital asset preservation and access, grant development, website development)
- Referral services (to support services on campus, potential collaborators, potential funding opportunities)
- Training and workshops (online tutorials, in-person workshops, e.g., on technology tools, metadata, copyright, digital asset management)
- Institutional support (promotion/tenure criteria for DH research, acknowledgement of the value of DH scholarship)
- Physical space (scholars' commons, makerspaces)
- Campus technology infrastructure (purchase and support of hardware, software licenses, web hosting services, institutional repository)

Overall, external communities provided the largest amount and most varied types of support. These were followed by CU colleagues, OIT, the respondent's school/department, and the Libraries. Interestingly, ATLAS and the GTP provided the same variety of support as offered by external communities but to fewer respondents, perhaps suggesting the smaller communities these two programs serve. ALTEC provided all types of support except for physical space to a small amount of respondents seeking language-learning support, and ASSETT provided all but institutional support. The FTEP provided referral services, community support, consultation services, and training and workshops, but to the fewest amount of respondents.

The survey results for entities that provided services to the greatest number of respondents are summarized in the following table:

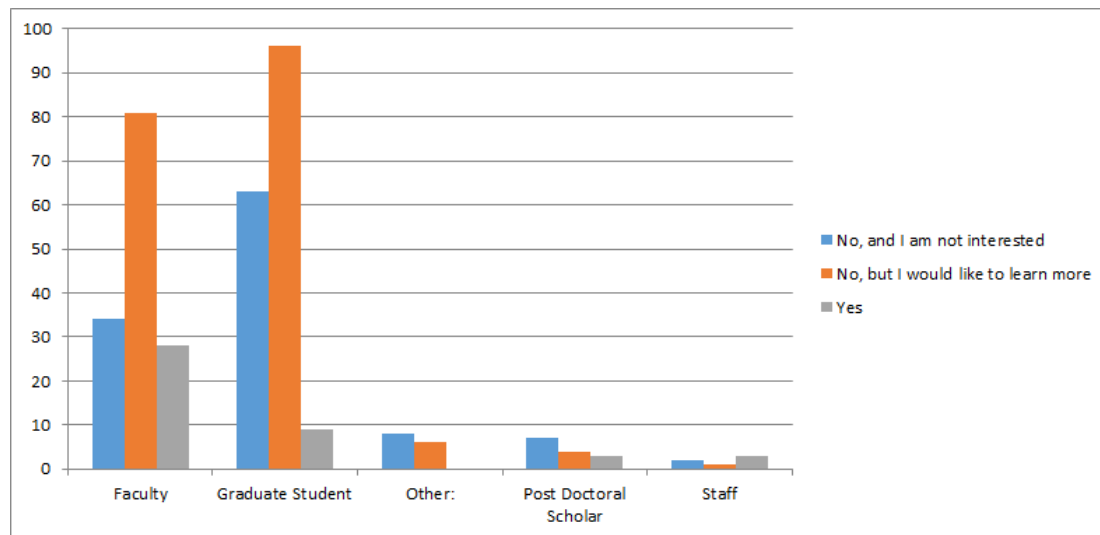
Types of services and number of respondents	External communities	CU Colleagues	OIT	School/ department	Libraries
Referral services	7	7	5	2	4
Community support	14	9	4	3	1
Campus technology infrastructure	1	4	6	4	3
Institutional support	3	3	0	3	1
Availability of (digital) content	14	4	1	3	8
Consultation services	8	6	5	2	2
Physical space	1	1	3	4	4
Training and workshops	7	5	7	4	2

Overall, we see that digital humanists at CU are reliant on external communities for support that could be more effective if offered locally. Additionally the importance of CU colleagues and informal networks suggests the ad-hoc nature and lack of centralized organization for DH on campus. The Libraries is a natural fit for many of the services that are currently lacking on campus, such as referrals, consultations, physical space, and trainings.

Demographics

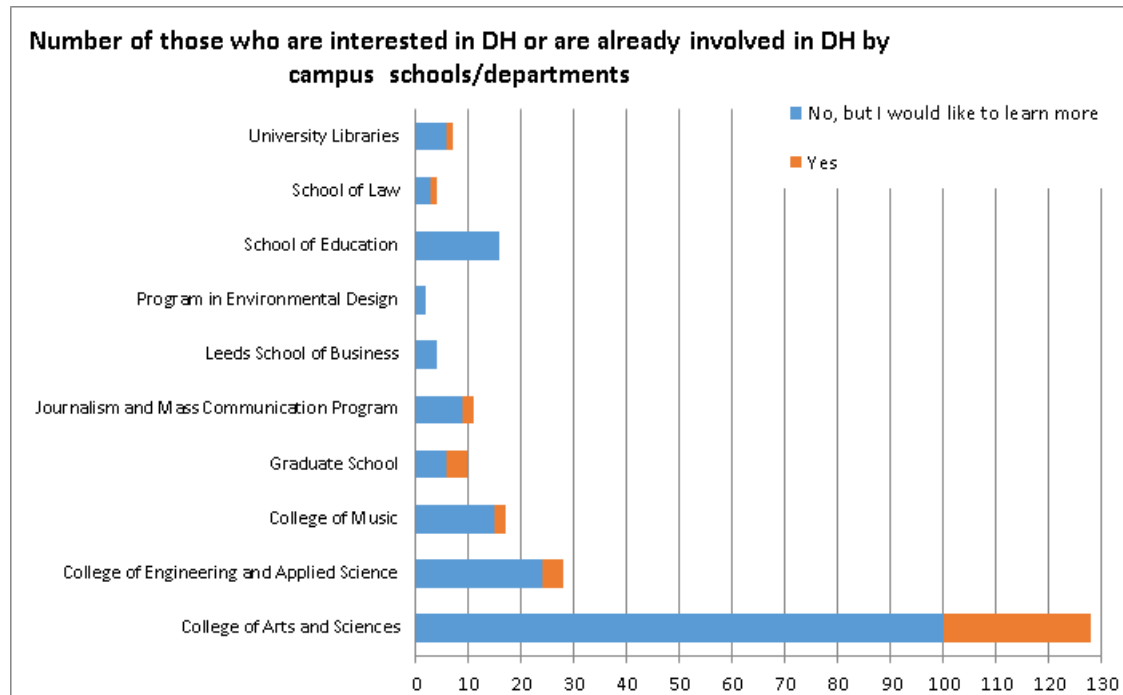
Our research suggested that there was extensive interest in DH, but only a small portion of those with interest actually considered themselves involved with DH. The survey indicated that a small but significant amount of respondents are active in the Digital Humanities, most of whom were faculty. There were 43 survey respondents (18.6%) who say they are currently involved in DH teaching and/or research (28 faculty, 9 graduate students, 3 post-doctoral students, and 3 staff). However, there were a much larger number of respondents who were not yet involved in Digital Humanities but were interested in learning more, suggesting that barriers and a lack of opportunities are keeping many campus community members from taking the plunge into the Digital Humanities. Graduate students were much more likely to be interested rather than currently involved, suggesting a need for support and encouragement of graduate student involvement in digital studies, as well as a potential for courses, fellowships, and other opportunities for graduate students to become involved in the Digital Humanities.

Involvement in the Digital Humanities broken down by role:

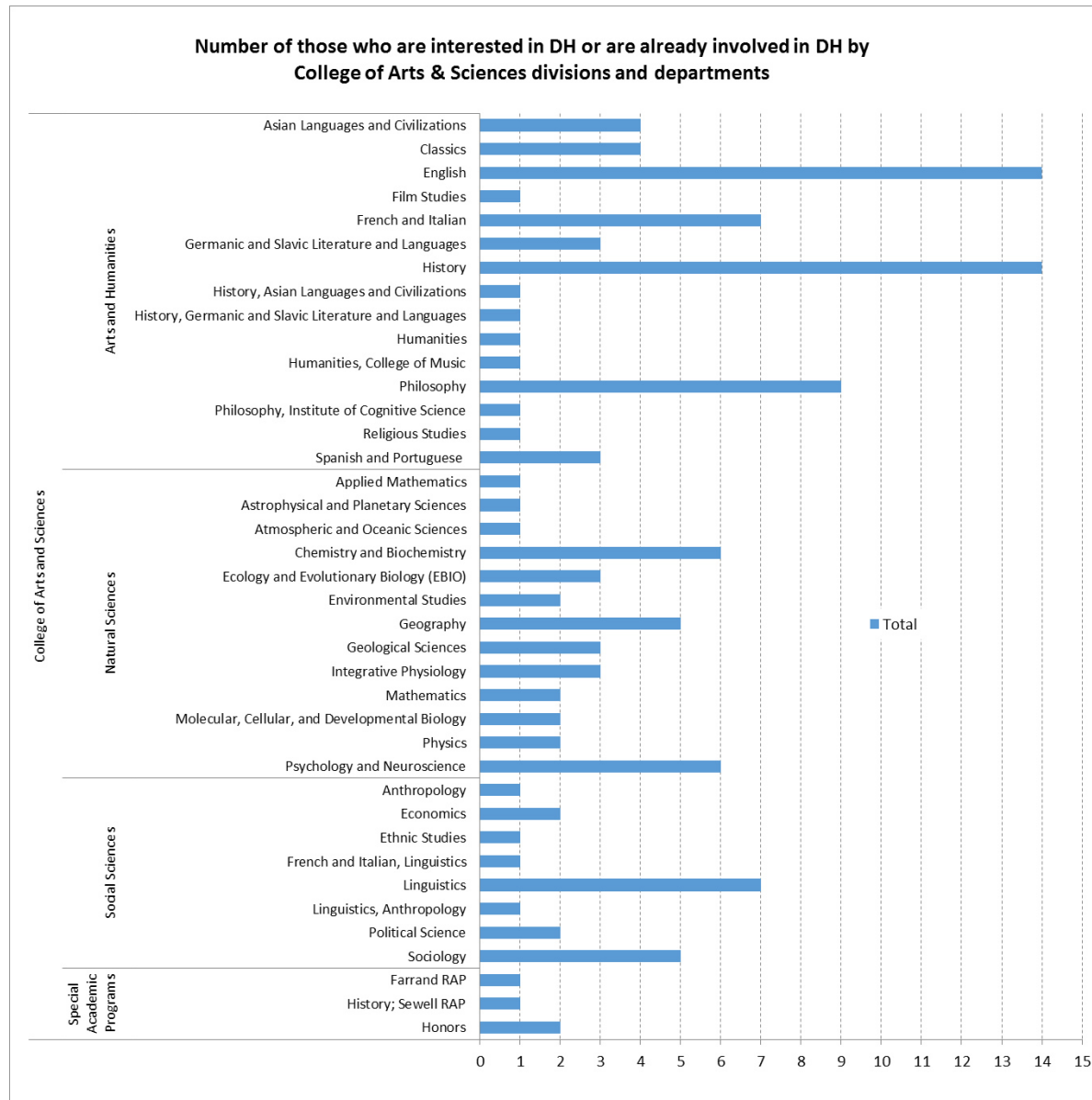


The survey results indicated strong interdisciplinary interest in DH and interviews uncovered existing interdisciplinary partnerships among researchers on campus, and between researchers at other institutions. This is hardly surprising given the collaborative nature of the field and the involvement of librarians, technologists/computer scientists and researchers in various disciplinary fields on the teams undertaking these projects, all of whom bring necessary skills and experience to the table. Further, as research becomes increasingly interdisciplinary, many researchers outside of traditional humanities fields are applying research methods from their own fields to the investigation of humanistic questions, and vice-versa. The application of quantitative approaches in history and literature is but one example of the latter. The following chart shows the broad involvement in the Digital Humanities across campus, for the interdisciplinary collaborations taking place between campus groups see section [VD. Collaborations](#).

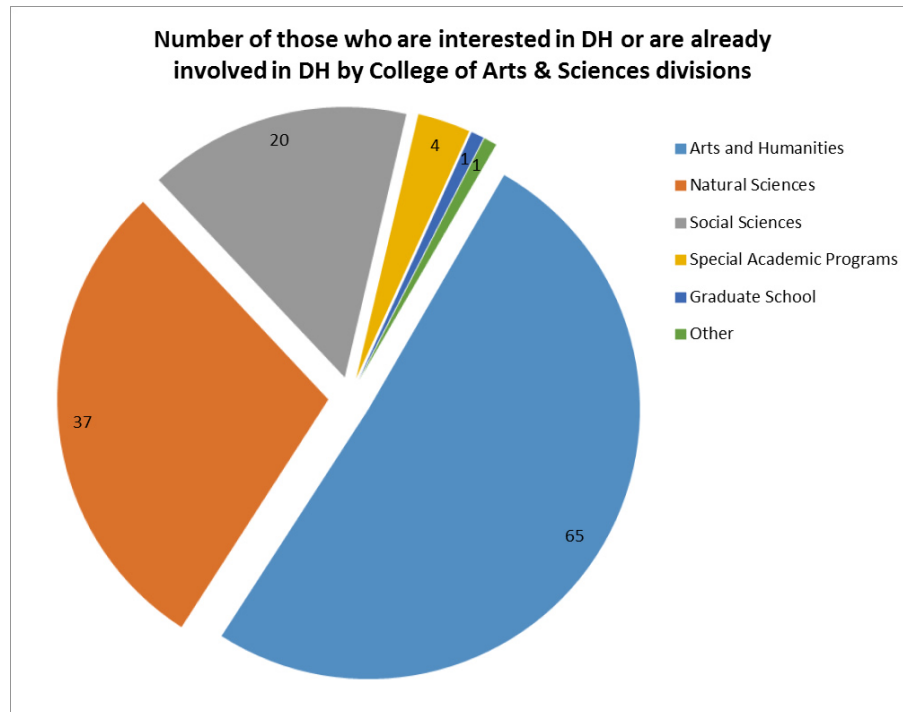
Interdisciplinary interest in DH came across strongly in the survey results. While there was interest across schools and colleges, the College of Arts & Sciences is currently the most involved in Digital Humanities.



A departmental breakdown in the College of Arts & Sciences, shows interest is strongest in History (14), English (14), Philosophy (9) and French & Italian (7), but it is clear that many departments across the humanities, social sciences, and natural sciences are investigating modes of digital scholarship. In the natural sciences, for instance, significant interest was shown by survey respondents in Chemistry & Biochemistry (6), Psychology & Neurosciences (6) and Geography (5), and in the social sciences by those in Linguistics (7) and Sociology (5).



As compared to 65 respondents (50.8%) who were interested or involved in DH in the arts and humanities, there were 37 (28.9%) in the natural sciences and 20 (15.6%) in the social sciences.



During the interviews, the Task Force spoke to 14 faculty, 3 grad students, 2 researchers, and 1 administrator. Participants were rostered in the following departments: English (5), Art and Art History (3), Journalism (2), Asian Languages and Civilizations, Behavioral Science Institute, Classics, Cognitive Science Institute, CU Administration, Geography, History, CU Museum of Natural History, Religious Studies, Technology, Arts, and Media Program.

The demographics of the survey and interview data suggest that Digital Humanities support is needed across campus departments, and that siloing support networks could inhibit interdisciplinary collaboration. Community is especially vital to connect Digital Humanists who are rostered in disparate departments and colleges. Additionally, interest in Digital Humanities is high, there needs to be more support to convert this group into active Digital Humanities practitioners. The need is especially great among graduate students, who may need these skills as they enter challenging job markets.

VB. Teaching and Student Interest

Though questions specific to using DH in teaching were not included in the survey, there was a contingent who reported being involved in both DH teaching and DH research. 37 of these 43 respondents identified as faculty and graduate students, and thus may have teaching responsibilities on campus. 16 of these 37 respondents indicated that they used campus services that primarily provide support for using technology in teaching: ALTEC (4), ASSETT (9), and GTP (3), allowing us to assume that at least 16 survey respondents use DH methods in the classroom.

Several survey respondents also mentioned teaching in the additional comments field. One respondent each reported the following:

- CU Boulder is far behind its national peers in infrastructure and training for teaching technologies, conceptualizing and supporting alternative forms of scholarship
- Concern that involvement in DH would be evaluated as part of their teaching and research activities in annual

FRPA reporting and departmental merit review

- Their courses in the humanities often include digital components
- They are interested in using digital media in teaching and also in student submissions (submitting video and other media products instead of just papers)

While the survey provided limited data about DH in teaching, the Task Force gathered substantial information about this area via interviews. Sixteen of 20 interview participants (17 faculty and 3 graduate students) indicated that they used DH in teaching, and they shared many examples of how they applied it. Many discussed teaching with technology generally and described their use of common teaching technologies, like Google apps, wikis and blogs. Some interviewees described specific course assignments they give that are relevant to DH. And some talked about DH-specific tools that they use in teaching, such as the Voyant text-analysis tool. Overall, instructor-interviewees see technology as a way to create interactivity inside and outside the classroom, and to engage students in the subject matter being taught.

Several interviewees use social technology tools such as Google Docs, Twitter, wikis and blogs for writing assignments, and especially for teaching students how to write collaboratively. A few instructors also used digital project assignments. Some asked students to use specific technologies, such as PowerPoint, iMovie or a website, and some left it to students to decide what technology they would like to use for their projects. A few interviewees also use open online digital collections, such as museum websites and Google Art Project, in teaching.

DH teaching tools interviewees specifically discussed included, in addition to Twitter, wikis, iMovie and Voyant, Skype, Wordpress, Blogger, Google Apps, Prezi, Sketchup, Adobe products, Camtasia, Prezi, and Zotero.

Some notable examples of teaching activities mentioned during the interview process include:

- Encouraging students to use text-analysis tools such as [Voyant](#) in literature classes
- Developing a virtual archaeological dig video game called *Expedition Osiris* in which students play the role of the dig director for a site in Amarna, Egypt
- Assigning students to create sophisticated multi-media digital projects
- Creating a Webspinna project, in which students are asked to find sounds online and then mix them up for inclusion in a live performance in class. Students then articulate the performance process in a blog.

Interviewees were also asked about their perceptions of students' interest level in DH. The responses were pretty uniformly distributed across 'very interested' (5), 'interested' (4), and 'not interested' (5). Interviewees who teach pointed out that students require some introduction and scaffolding in order to work with DH in the classroom. A common theme across several responses was that students do not perceive a real divide between the Digital Humanities and "regular" Humanities. Several interviewees also noted that students initially often would rather avoid the burden of learning a new technology, but once they do learn it, enjoy using it and recognize that the technology helps them learn.

Finally, attendees and presenters at the symposium also discussed a few DH-specific teaching tools, notably:

- Omeka - software for creating online exhibits that showcase collections of digital images, text, and other media
- Neatline - a plugin for Omeka for creating interactive maps, timelines, and other visual materials
- Oxygen - an XML editory tool for creating TEI documents

The symposium not only served as a educational and networking event for campus constituents, but also raised the

profile of the Libraries as a potential nexus of campus DH activities. Afterwards, the department of History expressed interest in incorporating digital history methods into the graduate curriculum. The subject specialist in this area is currently in the process of developing and co-teaching a DH component for an American history graduate course in spring 2014. This will be used as a test case to decide if and how such a component should be more formally infused into the history graduate curriculum. Incorporating DH into the graduate curriculum has been an important component for other centers and programs as well, e.g. for Penn State's growing initiative (a graduate course in DH is being taught in English in spring 2014). Also a large number of English faculty and graduate students participated in the event. Several of the latter volunteered to participate in a TEI encoding and transcription project as a result of English graduate student Kirstyn Leuner's presentation on the Stainforth project.

Taken as a whole, faculty and graduate student instructors are implementing a wide variety of DH tools and methods into their classroom teaching, and some are likely using resources such as ALTEC, ASSETT and OIT's Academic Technology Consulting Services to support their work. Some are general, for instance social applications like Twitter and Google Apps, and others tend to be more discipline or task-specific like Voyant or Oxygen for text analysis and markup. Given that the use of technology is growing and many tools are becoming more user friendly, and students hardly distinguish between "regular" assignments and assignments utilizing digital tools, the Task Force believes that incorporating digital methods in the classroom is here to stay and is indicative of the overall direction teaching and research is moving in higher education. Despite these trends, it must be noted that using these tools requires an investment of time on the part of both students and instructors in learning to use them, and, for instructors, providing the necessary scaffolding to encourage students in this process to get to the point that they report enjoying it and feeling it helps them learn.

VC. Methodologies

The Task Force also investigated the methodologies CU DH scholars are interested in employing in their teaching, research and scholarship. Below we elaborate upon those that the majority of CU affiliates surveyed or interviewed were either a) already employing; or b) interested in learning more about, thus indicating possible areas of concentration for support in our context. Definitions of the first three of these methodologies are drawn from arts-humanities.net.

(1) Multimedia and digital publication

Digital publication methodologies involve more than simply uploading a digital version of a resource onto an Internet-accessible portal. Below are some examples of approaches that might be employed that fall under this rubric.

Collaborative publishing involves "the collaborative creation of content (graphical, textual, audio, video, etc.) which evolves over time in a publicly-accessible workspace." Examples include wikis and collaborative blogs such as [fembot](http://fembot.org), "a scholarly collaboration promoting research on gender, media, and technology." The website functions as a collaborative blog, a launch page for an open access journal, "unconference," zine, and clearinghouse for topics relevant to feminist media scholars such as job ads, interviews with authors, and related projects and links.

General website development "can incorporate interface and application design and coding and programming for the Web. It can also include the maintenance of websites, and adapting them where necessary, as technology evolves."

Interface design: "A user interface is the part of a computer program that the user is able to interact with to perform various tasks and conduct activities. In particular, the term 'interface design' refers to the design of websites and software applications."

Streaming media are “multimedia that are constantly received by, and normally presented to, an end-user while being delivered by a streaming provider. The name refers to the delivery method of the medium rather than to the medium itself.”

(2) Image, video and audio editing and manipulation

Image enhancement or editing refers to “techniques used to improve the appearance of digital and well as analog images.” Image manipulation refers to “modifying an image in a manner that affects its original visual form and differs from image enhancement or restoration in that the subject matter and meaning of the original image are often changed, sometimes quite dramatically, although some manipulations are more subtle, blurring the boundaries between truth and fiction.” Video editing refers to “techniques used to manipulate moving image data into a defined structure.” And audio editing refers to “techniques used to mix, adjust, optimize and fix sound signals, either for audio or video files”, and can include “speeding up or slowing down the sound, cutting portions, fading between clips, combining multiple audio files, applying effects such as reverberation and removing unwanted background noise.”

(3) Text mining and analysis

Text mining seeks to extract information from texts and focuses on tasks such as text categorization and clustering to discover trends. Text mining in literary texts is one of the most popular applications of humanities research and is often paired with visualization techniques. “The overarching goal of [text analysis] is, essentially, to turn text into data for analysis, via application of natural language processing (NLP) and analytical methods.” (Wikipedia, Nov. 13, 2013)

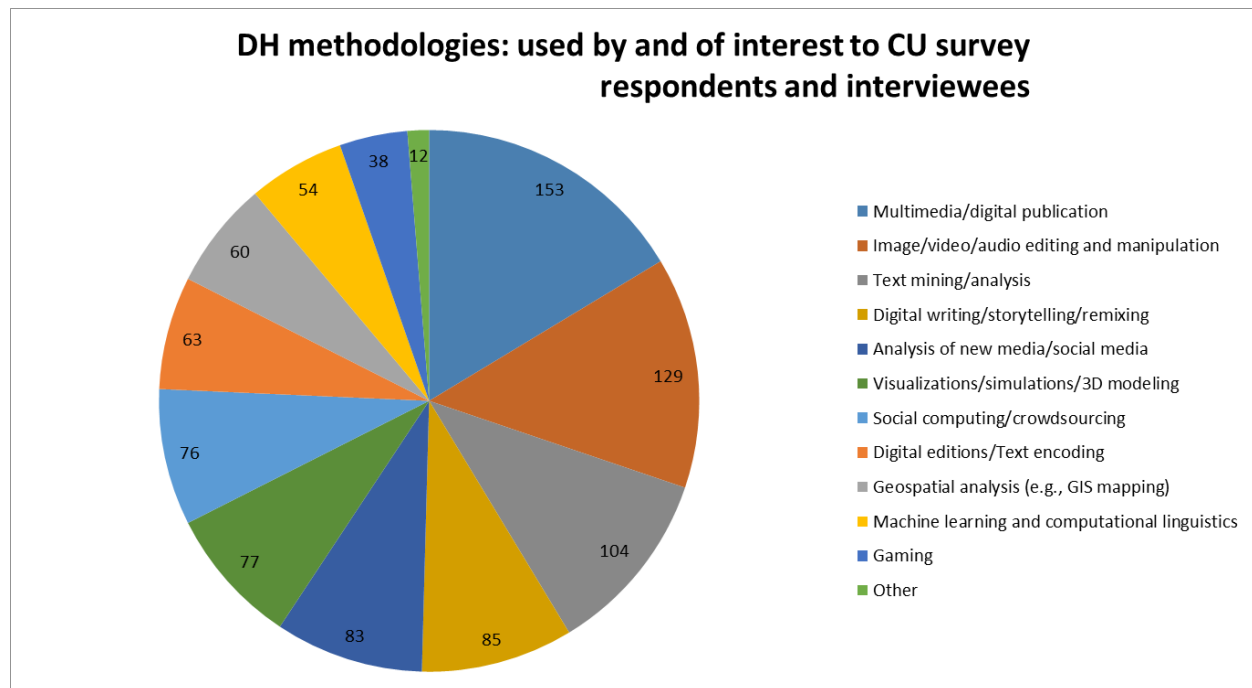
Text analysis techniques can be employed in “distant reading” of a large corpus across time to identify themes, word frequencies and patterns that would otherwise be difficult to discern. Distant reading is juxtaposed to “close reading” of a single text. A well-known, free and easy-to-use tool for text analysis is [Voyant](#), part of the [Voyeur](#) suite of easy-to-use text analysis and visualization tools that Unsworth, for instance, uses with students in the classroom. Using Voyant, they can upload text into the software, which will automatically determine word frequencies and display them visually. One of the graduate student instructors we interviewed encourages students to use text analysis tools such as this one in the literature classes she teaches. Text mining and analysis techniques are also used in the [VerbNet](#) project in which the Martha Palmer lab (CINC/CLEAR) is closely involved with partners from Berkeley and Princeton. VerbNet is a hierarchical domain-independent, broad-coverage verb lexicon with mappings to several widely-used verb resources, including WordNet, Xtag, and FrameNet. [SEASR](#), a Mellen-funded project, is another well-known text analysis tool. [TAPoR](#) is a useful gateway to finding text-mining and analysis tools.

Two examples of projects that leverage text mining and analysis are Dan Cohen’s [Victorian Texts project](#), which seeks to show whether the themes Walter E. Houghton identified in his 1957 classic *The Victorian Frame of Mind*, which was based on close reading of some of the most famous works of literature and thought, are substantiated by Google’s nearly comprehensive collection of over a million Victorian books; and Matt Jockers’s [project to compare 18th and 19th-century authors’ works](#) with one another based on stylistic and thematic connections.

(4) Digital writing, storytelling and remixing

Digital writing as a type of composition is a practice centered on the impact of technology on the writing environment. It enables writers to explore ways in which technology and different writing spaces affect the reading and understanding of a text. Networked computers have had a significant impact on the process, context and product of writing. Hypertext in particular changes how readers interact with text, allowing a less linear narrative and the opportunity to explore concepts and entities while reading. An example of digital writing and remixing that was initiated by a CU Boulder faculty member is Mark Amerika’s [Remix the Book](#) project, which is explained in more detail below. Digital storytelling involves the creation of stories using computer and web-based tools and methods. It can be highly interactive, and allows authors to introduce other forms of digital media (audio, video, images, games) into a narrative.

These approaches are just a few of the broad range employed by digital humanists and indeed that are of interest to those on our campus who responded to the survey and participated in interviews, as can be seen in the charts below. (See the [methods section](#) of arts-humanities.net for more information on the full range of available methods.)



All survey respondents and interviewees together (241), either involved or interested in DH, indicated use of or interest in the following methodologies:

- Multimedia and digital publication (153) - 66.2%
- Image, video and audio editing and manipulation (129) - 53.5%
- Text mining and analysis (104) - 43.2%
- Digital writing, storytelling and remixing (85) - 35.3%
- Analysis of new and social media (83) - 34.4%
- Visualizations, simulations and 3D modeling (77) - 32.0%
- Social computing and crowdsourcing (76) - 31.5%
- Digital editions and text encoding (63) - 27.3%
- Geospatial analysis (60) - 24.9%
- Machine learning and computational linguistics (54) - 23.4%
- Gaming (38) - 15.8%
- Other (12) - 5.0%

CU Boulder faculty are already using DH methods for teaching and research. The following are three endeavors highlighting the breadth of their work in this area:

The Media Archaeology Lab (MAL)

Started in 2009 by English professor Lori Emerson, the MAL is “a place for cross-disciplinary experimental research and teaching using the tools, the software and platforms, from the past.” The lab is a collection of old technologies such as computers, printers, typewriters, software, e-literature, and analog machines. The lab serves to preserve a

collection of obsolete machinery, as well as creative products produced using that older technology.

Project Osiris

A virtual archaeological dig video game created through collaboration between Classics professor/archaeologist Elspeth Dusinger and students in Computer Science. In the game, students play the role of a dig director for an archaeological site such as Amarna, Egypt. Students put together a team to dig at the site and oversee the operation. Architecture is dispersed throughout zones randomly each time the game is played so groups get different zones each time. Trenches are laid out by supervisors; teams discover artifacts, have a specialist mend broken pieces, and so on. Students interpret their finds to discover the function of each room. In-game grant funds for the next digging season are dependent on student interpretations. Desert hazards such as thieves, giant scorpions, cursed artifacts, and a genie who backfills trenches are also included to make the game more fun.

Remix the Book

Art & Art History professor Mark Amerika created Remix the Book as an “online hub for the digital remixes of many of the theories generated in the print book and features the work of artists, creative writers and scholars for whom the practice and theory of remix art is central to their research interests.” The site includes multimedia art forms in the forum of scholarly writing, and aims “to create a collaborative and cross-disciplinary approach to the way contemporary theory is performed, and to anticipate future forms of art and writing that challenge traditional modes of scholarly production while still taking on the philosophical issues of our time.”

Additional examples are Matthias Richter’s [Database of Chinese Characters](#) and the [Beza Mahafaley Lemur Biology Project](#).

VD. Collaborations

Interviews with DH practitioners on campus revealed collaborative partnerships of varying types. Thirteen of twenty interviewees reported collaborating on DH projects. Interviewees worked with faculty, staff and students from other CU departments and colleges, colleagues from other CU institutes, and peers at other institutions. Modern communications technologies have enabled collaborations across oceans and continents. Collaborative projects included cooperative courses taught online, shared collections and exhibits, co-creative analysis and writing projects, and mapping of geospatial data. These partnerships are very often interdisciplinary endeavors, and it is thus in these projects that the interdisciplinary nature of DH is often most apparent.

The majority of collaborations took place across departments at CU Boulder. About a third of partnerships were between colleagues at different institutions. Faculty and staff in the Libraries and CINC/Computer Science, for instance, have partnered with researchers at Princeton and Berkeley on an NEH Digital Humanities Start-Up Grant to refine tools to automatically recognize entities in historical texts. A few arrangements paired academic researchers with other campus institutes, and one was a widespread collaboration with a large community of practitioners.

Notable collaborations include partnerships such as English faculty working with Libraries faculty on a digital poetry collection and exhibit, University Museum faculty partnering with OIT’s media division on digital collections, and Classics and Geological Sciences faculty joining forces to produce 3D maps of ancient Persia. Oftentimes these collaborations are informal rather than true team-based projects, suggesting a need for more organization and support. Besides colleagues at other institutions, Engineering, technology departments, earth sciences-related departments, and Computer Science were the most common partners of humanities scholars.

Collaborations were born out of common research or teaching interests, available campus support (OIT), familiarity from professional activities (associations, etc.), and work on campus committees and other bodies. From the breadth of collaborative relationships revealed through interviews, finding partners who could accomplish or assist in

accomplishing research or teaching goals was the most significant factor, regardless of the nature of the partner(s)' position.

At the symposium, attendees, many of whom were involved in past or current DH projects, expressed a desire for collaboration and community development. One English graduate student, who had partnered with the Libraries on a digital project, summed up this need in the post-symposium feedback survey:

Until I began working with CU Libraries on the Stainforth project, I considered DH work as something that I do with colleagues that are external to my institution. That is one of the perks of DH work, actually: that it broadens your scholarly community and requires learning how to collaborate mostly over electronic media with a rare face-to-face meeting. However, it would be wonderful and energizing to have a regularly meeting community workshop and DH workshop space on CU's campus. It would help connect the various Digital Humanists who are working on different projects in different departments (I know they're there, I just don't know who they are). It would also help energize our work and provide opportunities for collaboration.

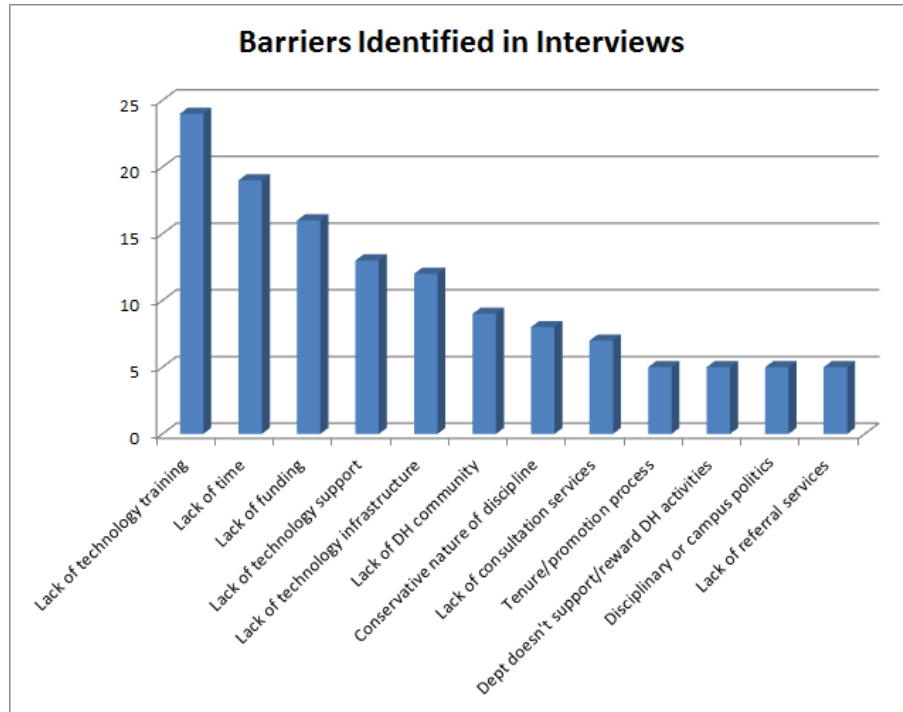
Another post-symposium feedback survey respondent, a faculty member in Journalism and Mass Communication, expressed the desire for a more inclusive DH community environment:

"[...] there seem to be real barriers if you're not a part of the "club." It's very frustrating as a relatively new faculty member to have the lack of support and collaboration."

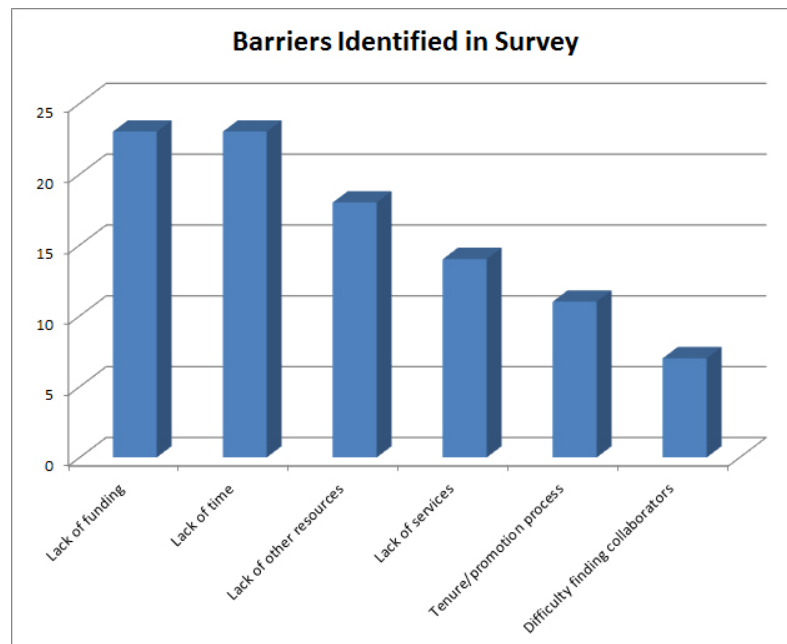
Particularly after hosting the symposium, the Libraries is well-poised to help meet this community-building need on campus. Its role is further enhanced by its interdisciplinary status and that of its potential partners in such an endeavor. Ad hoc collaborations have already been taking place, but the possibilities of such partnerships can be enhanced through a centralized "hub", such as the Libraries, that can facilitate interaction between units and departments.

VE. Barriers

One of the main goals of the Task Force's investigation was to better understand the barriers that faculty and graduate students encounter in their DH work in order to determine what is required to mitigate or eliminate these obstacles. Thus both the interviews and survey asked respondents to describe the barriers that they face. After coding, we found that the interviews contained 224 different instances of "gaps and barriers"-related comments. The most frequently cited barriers or service gaps were:



The survey asked Digital Humanities-involved respondents to select from a predefined list of barriers with a “lack of other resources” write-in option. The results were:



While 18 people answered “lack of other resources,” only one elaborated in the textbox: lack of knowledge.

Technology Training

Technology training was the most frequently discussed obstacle in the interviews. Interviewees requested training for specific tools such as Zotero and Adobe AfterEffects and skill sets like programming and principles of archival organization. Several mentioned that ASSETT teaching with technology workshops had been very useful as a forum to exchange ideas with other faculty. Interviewees also praised the OIT Academic Technology Consultants' (ATCs') brown bag sessions; one noted that she wished ATCs had more leeway to offer training on tools outside of OIT's supported suite of software. A high percentage of survey respondents, 72.9% (137), also expressed a desire for trainings and workshops.

Time and Funding

Lack of time and funding were the primary barriers identified by the survey and the second and third-most frequently cited barriers in the interviews. Respondents pointed out that DH requires a significant investment in time to become competent in the methodologies, to do the research, and to integrate into the classroom. Competing demands such as traditional modes of scholarship do not leave much time to explore DH, and narrow expectations about what types of research merit tenure keep it on the back burner for many of the faculty interviewed.

Comments about funding can be categorized into three predictable themes. The most frequently mentioned theme was that respondents had many interesting ideas for DH research projects without the funds to initiate them. Many requested a local source of seed grants to start up projects. Secondly, for those DH initiatives fortunate enough to be grant-funded, respondents lamented that this funding model is not sustainable. Finally, many faculty expressed a desire for funding to secure more student assistants and staff support. Many initiatives, such as the Media Archaeology Lab, are run entirely by volunteers - a model that is not particularly sustainable or equitable for students.

Technology Support and Infrastructure

Inadequate technology support and infrastructure were also highly ranked issues. 64.9% (122) of survey respondents who were interested in the Digital Humanities expressed a desire for improved campus technology infrastructure. Most interview comments on this subject related to database design, as well as web hosting and design. Three respondents related accounts of websites developed by students or consultants that were lost or taken down once the developers were no longer available to support and maintain the sites. Better software and hardware were also mentioned by a handful of interviewees, but the nature of the comments varied. Some respondents requested more infrastructure in the form of laptop carts and smart classrooms for DH-related pedagogy, while others found reliance on the "OIT-approved" suite of tools to be limiting and would prefer to have the latitude to use more open-source and third party cloud-based applications.

Community (Finding Collaborators)

One of the barriers to a full-fledged DH ecosystem is the lack of a coherent community of practitioners on campus. In the survey, difficulty finding collaborators was cited by 16% of the DH-involved respondents and 38.8% of DH-interested respondents. Lack of collaborators was mentioned nine times in the interviews. Although these numbers are lower than some of the other barriers, it seems likely that this is because many scholars are utilizing networks and collaborators outside of CU found through conferences, previous institutions or social media. It was obvious that collaboration is key to all of their projects, as there were 22 mentions of collaboration in the interviews, and community is a crucial means of bringing potential partners together. At the dh+CU symposium, it became clear that the chance for scholars to share their DH work and have informal conversations was invaluable. When interviewees were asked to describe their ideal DH support network, community and a center were common themes. Most DH practitioners are involved in some kind of collaboration, and our interviews showed a need for a local community to link those with subject knowledge to those with technological expertise.

Disciplinary/Departmental Culture and Tenure and Promotion

In the faculty interviews, many voiced the concern that the culture of tenure and promotion in their discipline was a significant barrier to doing DH work. The coding process revealed multiple mentions of departmental culture and tenure requirements as barriers to DH. There were eight mentions of the conservative nature of the interviewee's discipline, five mentions of the evaluation of DH in the tenure or promotions process, as well as five mentions of the fact that their department does not support or reward DH activities. In the survey, of the 43 respondents involved in DH, 11 (26%) cited the tenure and promotion process as a barrier to their work. 37.8% (71) of survey respondents who were interested in the Digital Humanities expressed a desire for institutional support. Seven users who are not interested in becoming involved in DH cited their uncertainty about how this work will be evaluated as a reason for not pursuing projects. Given the pervasiveness of this concern, any significant effort to provide DH services should to address DH's role in tenure and promotion.

The evaluation of DH work in promotion and tenure was mentioned much less frequently than technological problems or lack of time and money. However, lack of time, the second most common barrier (coded 19 times in the interviews and selected 23 times (53%) by the DH-involved respondents in the survey), could be exacerbated by a lack of recognition for DH work, as faculty feel the need to do traditional work on top of their DH projects. This was a theme that was voiced during the Digital Humanities Symposium, as faculty and graduate presenters said they felt as if they had to do twice as much work as others if they wanted to pursue their DH interests.

Given the collaborative nature of the digital scholarship process, the Task Force firmly believes that the Libraries should seriously consider not only supporting scholars in their digital endeavors, but also encouraging its staff to participate as true partners in the collaborative digital scholarship process. This is particularly appropriate in a system like ours in which librarians hold faculty positions. Miriam Posner, the Coordinator of the Digital Humanities Program at UCLA, is but one of several voices that have recently urged libraries to avoid adopting only a "service-and-support" model and instead seek equal partnerships with scholars as collaborators in DH work. In this context, it is also important to consider how alternative forms of scholarship such as those generated from this work are assessed and valued in the tenure and promotion process within the Libraries.

Connecting People to Resources / Referral services

The current support that is available for Digital Humanists is not at all apparent. Many people at the symposium expressed a desire for some way to find out where help is available. Data collected during the interviews (coded 9 times as a barrier) and survey (selected as a desired service by 52.1% of DH-interested respondents) further supports this claim. Beyond explicit mentions, referral services also touch on all the other barriers from technology to funding, because in many cases support already exists but potential users are not aware of these resources.

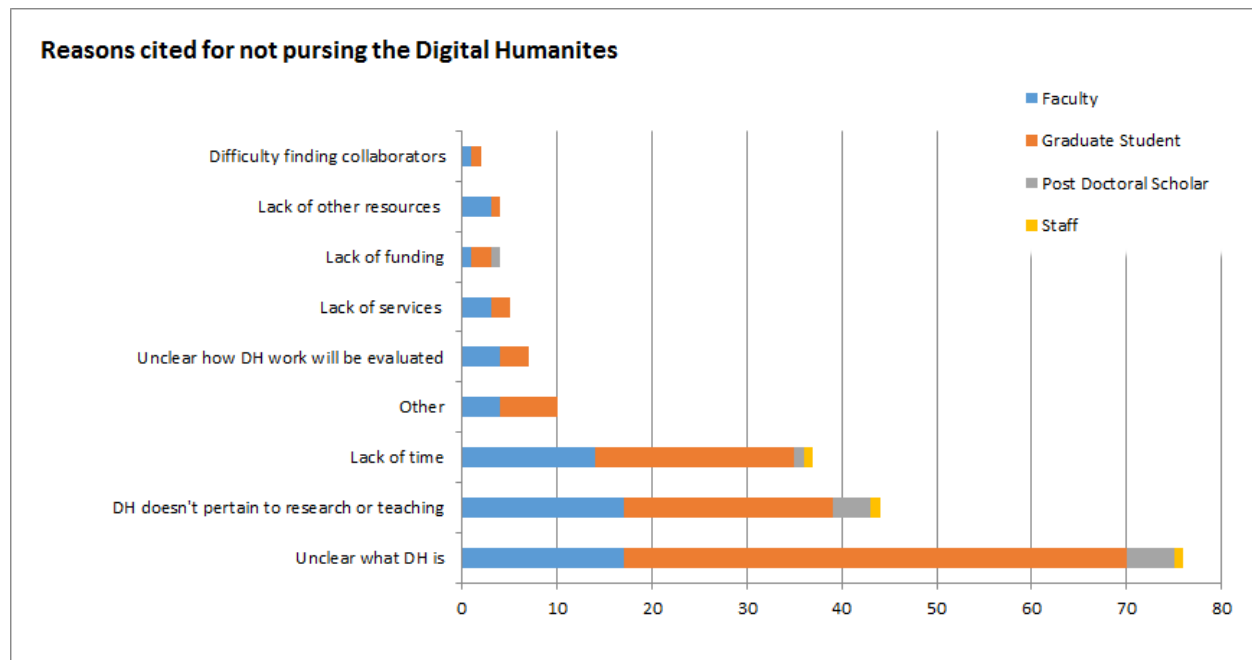
Barriers to initial DH participation

The previously mentioned themes reflect the barriers that faculty and graduate students who are already involved in DH have encountered. However, the Task Force also gathered feedback from survey respondents who indicated that they are interested but not involved as well as those who are not interested, since this information may bring to light barriers that inhibit initial involvement. For those respondents who are interested but not involved, the survey asked what services they would like to see offered at CU. It may be inferred that the lack (or insufficiency) of these services represents a barrier to initial participation.

Interestingly, many of the barriers identified by existing DH practitioners were also highly ranked as desired services by this group: training and workshops (59.3%), campus technical infrastructure (52.8%), consultation services (48.1%), referral services (42.4%), and community support (31.6%). Furthermore, the 'interested but not involved'

contingent also expressed a desire for digital content (55%), institutional support (30.7%), and physical space (20.8%).

The respondents who indicated that they are not interested in DH were asked why that is so. While the response that DH does not pertain to their research or teaching was expected since the survey went out across campus, it was actually eclipsed by confusion about what DH is. This misunderstanding and lack of knowledge could be improved through educational initiatives. Many of the reasons for lack of interest, however, were the same as some barriers faced by current practitioners, most notably time and uncertainty about evaluation.



VF. Potential Support Networks

The ultimate goal of this investigation is to gather ideas for potential DH support models and determine which would be best suited to the CU environment. Throughout the discussions and surveys with faculty, graduate students and the external experts, we asked about ideal networks of support. A DH center was often held up as the gold standard, but there were a wide range of support mechanisms that could support Digital Humanities at CU.

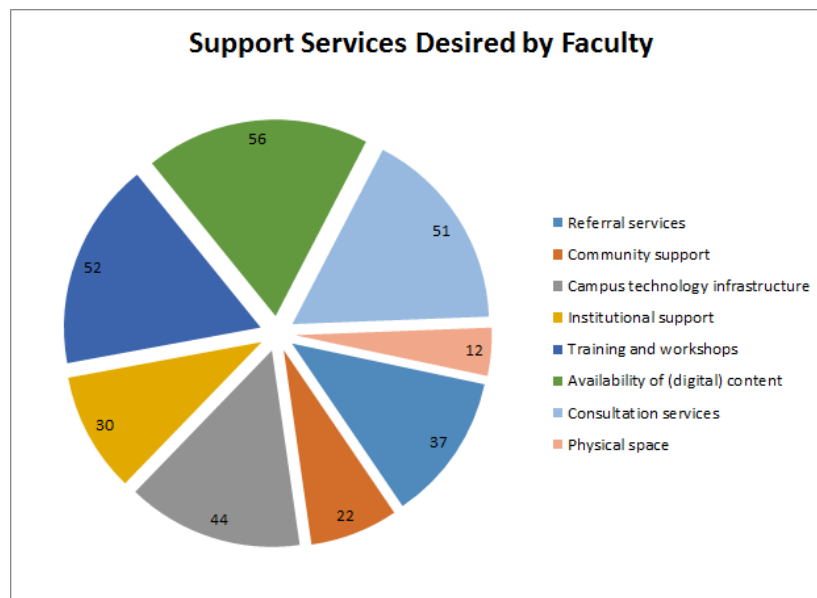
VFi. User-Desired Support Services

Interview data indicates more and greater variety of technology instruction is a central and immediate need. Interviewees were specifically asked to describe their ideal DH support network and the top three themes involved training (4), community (4), and a DH center (3). The outside experts and several interviewees suggested engaging local faculty members who already have some DH expertise to lead workshops, by establishing reciprocal training and skill-sharing. During the interviews, respondents mentioned several training topics of interest including specific programming languages, social media and media production tools, as well as training in metadata and archival theory. Other responses focused on services: IT support, library support and content, instructional design, programmers, grant writing support and/or grants. Several interviewees framed their answers in terms of cultural shifts, such as developing an environment that encourages sharing resources and services between departments, recruiting more

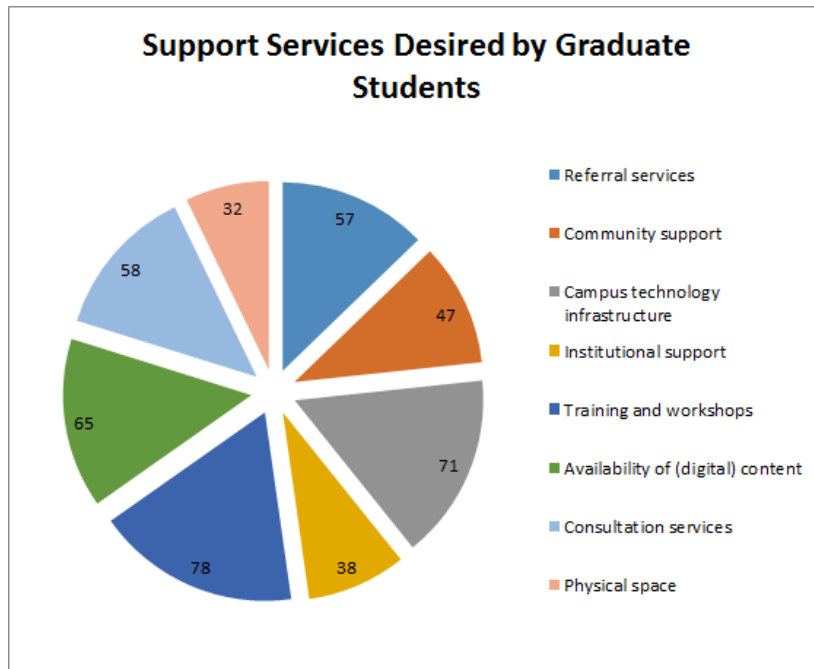
faculty and grad students with DH skills, and encouraging faculty with DH interests/skills to mentor students.

The desire for a local DH community was a common theme running throughout the committee's investigation. For example, analysis of the interview data showed that "lack of DH community" was one of the top ten barriers preventing our faculty and grad students from engaging in DH activities (9 coded instances). Yet, cultivating this type of network is one way to develop a strong grassroots base that can serve as a peer-to-peer support model. Outside experts recommended several ways to accomplish this, including establishing an interest group, involving graduate students, and planning regular events similar to the dh+CU symposium.

In the survey, both those interested and those involved in Digital Humanities were asked about the types of support for DH that they would like to see. The most common response given by faculty was more digital content, followed closely by training and workshops, consultation services and technology infrastructure.



Graduate students favored many of the same objectives but found training and workshops along with technology infrastructure to be the most important services. While relatively few faculty selected physical space, it was much more desired by graduate students. This outcome is hardly surprising given that graduate students, unlike faculty, often do not have access to a personal workspace on campus. Additionally, the ambiguity of what constitutes physical space may have caused many faculty not to select it since they do have personal workspaces. It was unfortunately not made clear in the survey that a DH space might be used as collaboration space, or as a place for workshops and other trainings, which were highly desired.



A common thread is that almost all the services were selected by a large number of respondents. From the data gathered both in the interviews and survey, there is broad demand for a range of support services for Digital Humanities work. In retrospect, we realize this interest may be even broader than the survey was able to identify given that a good number of respondents in the “not interested” group said they do not understand what DH is. Once they do, some of them might also find some of these services helpful.

VFii. Expert-Recommended Support Models

Based on a summary of the survey and interview data and their observations and conversations during the interview day, the external experts discussed possible models for centers, staffing considerations and methods for incentivizing participation that might be employed in the CU context.

The Committee on Institutional Cooperation’s (CIC) Digital Humanities Committee performed an environmental scan of DH at its twelve member institutions and found that DH support models typically fall into one of three categories: (1) full-scale DH centers; (2) traditional humanities centers; and (3) DH labs. This framework may be useful to reference in discussions about implementing DH centers at CU, since it alludes to the amount of resources required to achieve different levels of service and sustainability.

Full-scale DH centers -- such as [MATRIX](#), [MITH](#), [ICHASS](#) (Illinois’s Institute for Computing in Humanities, Arts & Social Science) and [CDRH](#) -- rarely spring up from the soil as fully-formed robust centers, but rather tend have evolved over time from more modest beginnings. These older and firmly established centers provide the infrastructure and personnel who can offer assistance and form research teams to fully support scholars in their DH research. Many offer seed funding, other types of grants, post-doctoral fellowships and graduate internships. The most successful centers are almost always the result of cross-campus collaboration and enjoy the support of upper administration, which frequently takes the form of ongoing funding.

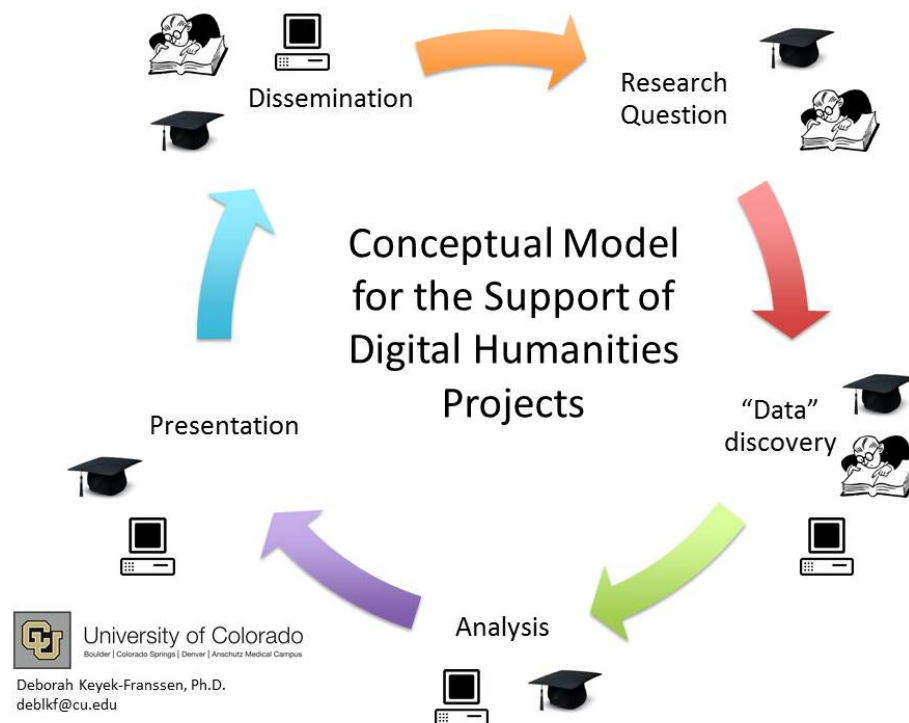
On other campuses, traditional humanities centers host institutes related to digital scholarship. These do not provide much infrastructure but do offer community, symposia and other programming, and - in some cases - seed grants for travel. One advantage of aligning DH support with an existing center is that campus constituents are frequently already aware of the humanities center’s existence and services, so they are more likely to find and utilize the associated DH support. On the other hand, some may perceive the addition of DH services as a disenfranchisement

of traditionalists' work.

Finally, some institutions develop DH labs created by a specific dean, department chair, school or college. These labs usually provide space and hardware, and sometimes have a lab manager. Some thrive and some fail, often because they are vulnerable to shifting budgetary and space priorities. The campus scan and interviews uncovered many such efforts here at CU that offer invaluable services. However, some faculty expressed concern that these department-specific labs inhibit interdisciplinary collaboration and contribute to a fiefdom culture.

The workshop in which DHTF members, CU administrators and the outside experts discussed potential models for DH support yielded several important considerations for the development of a center. The experts recommended housing a center in a central, neutral location to foster interdisciplinary collaboration. They found that co-locating DH scholars and support staff in a shared space is also very helpful for building a strong collaborative culture. This advice addresses a concern expressed in faculty interviews that the establishment of department-sponsored resources can hamper DH collaborations across units. The experts also stressed the importance of garnering broad support across campus, recommending a "stone soup" paradigm. This approach not only lessens the financial burden by spreading it across units, but it also solidifies stakeholders' investment in the initiative since the benefits and risks are also shared.

Adequate staffing levels and the right mix of skill sets are a major consideration in any support model; in fact, one expert commented that personnel are "more important than anything." Feedback gathered during the interviews suggests that CU faculty would ideally like to have the assistance of technologists, librarians, programmers, instructional designers and grant writers. Several of the experts pointed out that these staff should have a humanities background in addition to their other areas of expertise in order to understand and most effectively support DH scholarship. CDRH organizes its human resources - scholars, technologists, librarians, and students - into research teams that work together on a specific scholarly research question. This approach echoes that of Deborah Keyek-Franssen's dh+CU symposium presentation, in which she argued support models should mimic the traditional humanities research process as below:



Incentives for faculty participation are another important component of the support model. Some centers, such as CDRH, offer scholars dual appointment while others give release time or start-up packages. The external

environmental scan revealed that start-up grants are common. At Virginia, Unsworth found that funding sponsored projects for the first two years allows the research team to focus on the project rather than having to attend to grant writing immediately. As a result, the teams can produce a proof-of-concept or beta product that increases the likelihood of receiving grant funding. A similar approach is being taken at Penn State. By contrast, Muñoz reported that MITH previously offered seed grants to faculty, but now uses that money to fund the staff who execute much of the projects. Additionally, the CIC environmental scan found that seed funding for research faculty in DH is often available in the form of internal university grants.

During the workshop, the experts discussed the history of the DH centers with which they are associated, at University of Maryland, University of Virginia and University of Nebraska - Lincoln and found that they shared one thing in common: they all took years to establish and cultivate. If a DH center is in CU Boulder's future, it will not happen overnight. Data gathered during this investigation uncovered several short-term strategies to strengthen DH support which will bolster the long-term goal of establishing a center. These strategies should be taken into consideration when developing support models in the short-term.

VI. Recommendations

VIA. Introduction

Digital modes of teaching and research are steadily increasing on campus and are clearly here to stay. To thrive at CU, scholars and practitioners of DH will require increased support in a variety of relevant areas. These recommendations are aligned with meeting the goals of Flagship 2030, particularly in the areas of encouraging interdisciplinary research and increasing investment in new technologies and interdisciplinary research and educational facilities, detailed below. Although providing adequate support will require effort, resources and openness at all levels of the campus administrative structure, the Task Force believes that the Libraries is a natural entity to lead these efforts and to provide a focus for DH on campus. The Libraries' mission to remain a vital part of the research process demands that we find new resources and innovative ways to support scholars and teachers in their digital endeavors. The Libraries offer neutral space in the heart of the campus that is both welcoming and easily accessible to users in all disciplines. Our faculty and graduate student users who are involved or interested in DH expressed a need for space, services, support and collaborations. Leadership from the Libraries in these areas will help to maintain our central role in the university's scholarly endeavors in the coming decades.

These recommendations are split into two main sections. The first, Library Actions are the things the library can do to create the necessary people and resources to support Digital Humanities. The second, Goals and Outcomes focuses on general needs of the community, these are items that will be made possible by the library's actions. The recommendations set out what can be achieved over the short, medium and long-term.

Phase I: Near Term Actions

Phase I steps should be implemented as soon as possible, preferably within one calendar year. They are intended to lay groundwork for Phase II, continue to build momentum, and sustain community.

Phase II: Intermediate Actions

Phase II steps are those that the Task Force envisions as logical next steps. These will, of course, depend on how Phase I plays out, and so should be informed by its successes and failures. Phase II represents a base level of support for DH.

Phase III: Final Goals

Phase III goals represent steps which would bring CU into the forefront of DH research. While they are ambitious, we believe they are attainable and which should guide our DH efforts throughout the the previous

phases.

VIB. Recommendations for Library Action

The following recommendations form the core of our recommended actions for the Libraries. Many of our further recommendations will be accomplished by the groups and people and in the spaces recommended here. They include most importantly a DH librarian, who would dedicate their time to the work outlined below, and a technology lab, where the resources and support services we recommend would be located.

Phase I

- Create successor to the DH Task Force sponsored by the Libraries but with broader representation from other interested groups and potential partners such as College of Arts & Sciences, Center for Humanities & Arts (CHA), Graduate School, OIT, and UGGS. This group will be key to implementing Phase I goals, and will serve as a bridge to keep the initiative going until the DH Librarian could be hired. The Task Force has been successful in generating much enthusiasm around DH through the symposium and our participatory design work. This successor group could carry this momentum forward by building upon the groundwork laid by the Task Force and undertaking vital initiatives to move DH work forward on campus.
- Add a DH Librarian to the faculty recruitment plan. This position would play a key role in continuing to build partnerships and begin offering services for digital humanists. They would serve as the point person for moving forward most of the other recommendations outlined below.

Phase II

- Bring the DH Librarian on board.
- Establish an administrative unit for DH within the Libraries that reports to an Associate Dean. The external experts indicated that this level of visibility would be necessary to show institutional commitment, attract campus partnerships, and promote the Libraries as a nexus for DH on campus. The DH Librarian and the administrative unit would work closely with other libraries personnel, including the Scholarly Communications Librarian, Digital Archivist, Digital Initiatives Librarian, Metadata Librarian, and Research Data Librarian.
- Plan for a physical space for DH within the Libraries, which would include most importantly a technology lab. The space would serve as a collaboration hub for DH scholars, becoming a place for examining current and future issues associated with the Digital Humanities. Such a space would offer a natural location for technology support and workshops. The Libraries offer neutral space in the heart of the campus that is both welcoming and easily accessible to users in all disciplines. There would be potential synergies in focusing DH work in a space with proximity to archives and special collections materials.
- Consider co-locating related services in the technology lab in line with other digital efforts in the libraries, including, for example, data, assessment, usability testing, makerspaces, digitization, etc.

Phase III

- Open a DH space including the lab planned in Phase II.
- Hire support staff, most importantly programmers, but also possibly an outreach specialist and graduate assistants.

VIC. Goals and Outcomes Resulting from Library Action

VICi. Strengthen Community

One of the strongest messages that came across was that creating community to facilitate collaborations and intellectual exchange should be a high priority. Until a more formalized infrastructure can be built, developing a

community of scholars with interests in digital scholarship is crucial to improving the morale of existing practitioners and encouraging them to continue their work. Thinking further ahead, continued engagement with the DH community on campus is critical to building a base of support for a DH center as well as to the ongoing assessment of needs and priorities that will be critical to shaping the form it will take.

Phase I

- Create a campuswide interest group for scholars involved and interested in DH
- Build upon the work of the Task Force to create a clearinghouse of DH resources and services for the campus

Phase II

- Organize events similar to this year's symposium, such as workshops and lectures on DH topics

Phase III

- Organize events with nationally and internationally renowned DH scholars
- Host the annual DH conference, sponsored by the Alliance of Digital Humanities Organizations

VICii. Develop Strategic Partnerships

The importance of campus partnerships to getting a DH initiative successfully off the ground cannot be overemphasized, a message that came across loud and clear from all of the external experts and start-up interviewees. We found most library-affiliated initiatives were mainly affiliated either with the library, the college of arts and sciences/arts and humanities, or both.

Phase I

- Explore partnerships with campus units including the College of Arts & Sciences, Center for Humanities & Arts (CHA), Graduate School, OIT, UGGS and others as appropriate.

Phase II

- Explore strategic partnerships with private entities off campus, such as Google or Bing.

Phase III

- Form a high-level advisory committee with representatives from interested units to help establish strategic directions and support activities

VICiii. Build Technical Infrastructure

Without the necessary technical infrastructure, DH cannot flourish on campus.

Phase I

- Create a web resource for the DH community, drawing upon relevant sections of the existing subject guide. This may include DH projects, clearinghouse of campus resources, and referral services.
- Begin work with OIT partners to identify and build the technical infrastructure required for effective and robust support of DH activities.
- Collaborate with OIT to improve awareness of existing infrastructure and technology services.

Phase II

- Acquire software and hardware in collaboration with OIT and/or LIT that best support DH on campus,

ideally in tandem with the creation of a lab.

- Embrace principles of the open-source software community, as critical to the future of DH on campus.

Phase III

- Adapt existing open-source software to new purposes and contribute back to the software community. Begin to develop new Digital Humanities tools.

VICiv. Develop and Provide Services

Develop and provide DH services that are based on demonstrated need and that support targeted audiences (faculty, graduate students, etc.)

Phase I

- Promote the Libraries' digital content, both created in-house and licensed, as source material for DH projects.
- Negotiate robust rights for transformative uses like DH work with vendors for licensed content.

Phase II

- Offer consultations on areas such as DH tools, project management and use and analysis of digital content.

Phase III

- Develop workshops on DH methods and concepts, grant writing, copyright issues, and technologies that both empower novices to join CU's DH community as well as broaden practicing Digital Humanists' existing skillsets.

VICv. Promote Guidelines for Evaluating Alternative Scholarly Outputs

Guidelines for evaluating DH projects for purposes of tenure and promotion were a high priority for faculty. Our research indicates that lack of recognition of alternative scholarly outputs plays a key role in inhibiting DH work, which applies to faculty within as well as outside of the Libraries.

Phase I

- Undertake further conversations with appropriate stakeholders (AVC for Faculty Affairs, Libraries Tenure Committee, BFA), in order to determine the appropriate route for drafting guidelines for DH research outputs.

Phase II

- Work to create guidelines through the appropriate channels.
- Promote the adoption of these guidelines for the purposes of promotion and tenure review.

VICvi. Create a Campus Center for Digital Humanities

A center would create campus-wide visibility, as well as provide funding support for a range of faculty and graduate student DH activity.

Phase II

- Explore partnerships and potential interest in a Center for Digital Humanities with other campus units.

Possible partners could include the College of Arts & Sciences, CHA, Graduate School, and OIT, among others.

Phase III

- Establish a Center for Digital Humanities. We suggest a collaborative leadership model for the Center similar to MITH and CDRH, co-directed by one Libraries and one non-Libraries faculty member. It should support symposia, visiting scholars, post-docs, and graduate fellows, by offering funding, grants, course releases, and other support for DH research. The Center could be physically co-located with the Libraries' existing technology lab and DH space.
- Integrate the Center into the campus teaching curriculum, through seminars, credit courses, etc.

VII. Recommendations within the context of the Flagship 2030 Strategic Plan

Fostering DH on campus would substantially further the goals of the CU's Flagship 2030 Strategic Plan and its core initiatives:

5) Transcending Traditional Academic Boundaries

We will build high-level advocacy and incentives for promoting interdisciplinary teaching, learning, research, creative work, and scholarship.

The interdisciplinary nature of DH clearly would further CU's overall teaching and research strategy in this area. (50) The demand for teaching is already demonstrated, for example, in the History Department's interest in incorporating a DH component across its graduate curriculum (to be tested in the spring in HIST 7415). A center of excellence in DH in the Libraries as a discipline-agnostic virtual and physical space would distinguish CU's research and teaching in an emerging area that cuts across disciplines.

6) Investing in the Tools for Success

We will increase investments in new technologies, campus facilities, and library collections to support outstanding education and scholarship...[and] will address the need for new interdisciplinary research and educational facilities to accommodate existing and emerging initiatives.

As the strategic Plan emphasizes, the Libraries will remain at the heart of a university's education and scholarship but will likely be very different physical and virtual space by 2030. The university's intention to invest in digital resources for "virtual information spaces" and creating "physical spaces that encourage individual and collaborative learning, research, and creative work" in the Libraries in the coming years dovetails closely with the idea of developing a physical and virtual DH center with a nexus in the Libraries. (39-40)

Such a center created in tandem with campus partners would ideally be supported at the highest administrative levels as a commitment to the following core initiatives:

1) Enhancing Education and Scholarship

The intention to create new faculty positions in emerging interdisciplinary fields and support faculty and student research and creative efforts with increased investment in start-up needs, equipment, and summer research funds as a part of the core initiative could help provide the necessary infrastructure for the initiative to succeed and contribute to graduate education. (33)

2) Fostering Research Excellence

The university's pledge to "provide targeted investments in high-performance computing facilities, facilities that promote interdisciplinary discovery across the university, and facilities for cutting-edge research enterprises" would apply clearly in the case of an interdisciplinary DH center. (35)

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[Humanities in a Digital Age](#) (Pennsylvania State University)

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IX. Appendices

IXA. Appendix A: Interview Questions

Introduction

1. Are you engaged in Digital Humanities activities in your research or teaching?
If response is "No", go to question #19. Otherwise, ask research and/or teaching questions as appropriate.

Research/Projects

2. How are you using DH in your research?
[If the respondent does not mention specific methodologies, ask him/her what methodologies they are using.]
3. Are you engaged in DH collaborations? Could you describe your role and the roles of your collaborators? In which departments or institutions are your collaborators rostered?
4. What campus resources or services (including training and support) do you use in your Digital Humanities research?
5. What resources or services do you use that are not provided by CU?
6. What resources or services do you currently not have access to, but would like to have?

Teaching (IF answered "yes" to teaching with DH in question 1, ask the following.)

7. How do you use Digital Humanities in your teaching? [Prompt for methodologies and tools, if applicable.]
8. Are there any specific DH projects that you incorporate into your teaching? [Prompt for project either from CU or from other institutions.]
9. What campus resources or services (including training and support) do you use in your Digital Humanities related teaching?
10. What resources or services do you use that are not provided by CU?
11. Are there any tools or training for those tools that you wish you or your students had access to, but don't?

General

12. Think of a specific time you work with the Digital Humanities. What were some of the barriers you find to doing to the Digital Humanities at CU *[If prompting is required: e.g. time, skills, collaborators. Let the interviewee make the distinction, if any between teaching and research.]*
 - a. Teaching
 - b. Research

13. If you could wave a magic wand and solve the largest problem you have in doing DH at CU, what would it be?
14. How do you learn about current developments in DH? How do you share information/communicate with others about DH?

Drawing Exercise for Research

15. Think about a Digital Humanities project that you are currently engaged in or have recently completed. Consider the process, the people involved, and the resources used. Please draw the steps in the process using these markers and pad. *[After the drawing is complete, ask the respondent to describe his/her drawing.]*

Now Think about any obstacles that you encountered along the way and mark where in the process you could have used additional support, tools, or resources.

Alternate: Drawing Exercise for Teaching

15. Think about a recent class in which you incorporated Digital Humanities into teaching/coursework. Consider preparing for and giving the assignment/activity. Please draw the steps in the process using these markers and pad. *[After the drawing is complete, ask the respondent to describe his/her drawing.]*
Now Think about any obstacles that you encountered along the way and mark where in the process you could have used additional support, tools, or resources.

Closing Questions

16. What would your ideal Digital Humanities support network be?
17. Is there anything we didn't ask about that you'd like to share?
18. Are you aware of others working in DH whom we should contact about interviewing?

Questions for Those Not Involved in DH

19. Please tell us more about your interests in DH?
 - a. *[If the respondent does not mention specific methodologies, prompt for that information.]*
 - b. Are you aware of any projects that you see as outstanding or inspiring models?
20. Do you have any thoughts about possibly starting DH projects, even if they are just in the idea phase?
21. What is stopping you from getting started with DH?
22. Is there anything we didn't ask about that you'd like to share?
23. Are you aware of others working in DH whom we should contact about interviewing?

IXB. Appendix B: Survey Instrument

The survey instrument is available at:

<https://drive.google.com/?tab=mo&authuser=0#folders/0BxDeCluY6d8LYzVla1dMa1pITGM>. Please note there are three different tracks for those who are involved in DH, interested in DH and not interested in DH.

IXC. Appendix C: Library-Affiliated Digital Humanities Initiatives

Of the 107 initiatives identified from the SPEC Kit, and centerNet, and the MITH/CRDH/MATRIX spreadsheet, the following showed evident library involvement:

- Boston University
- Brandeis University

- Brown University
- Cleveland State University
- Columbia University
- Emory University
- Florida State University
- Hamilton College (Canada)
- Indiana University Bloomington
- Loyola University
- McMaster University (Canada)
- National Taiwan University (Taiwan)
- Northwestern University
- Ohio State University
- Oxford University (UK)
- Penn State
- Stockton College
- University College Dublin (Ireland)
- University of Alabama
- University of California, Los Angeles
- University of Florida
- University of Göttingen (Germany)
- University of Graz (Austria)
- University of Illinois at Urbana-Champaign
- University of Iowa
- University of Kansas
- University of Kentucky
- University of Maryland
- University of Melbourne (Australia)
- University of Michigan
- University of Nebraska — Lincoln
- University of Pennsylvania
- University of Rochester River Campus
- University of South Carolina
- University of Utah
- University of Virginia
- University of Würzburg (Germany)
- Washington University in St. Louis

IXD. Appendix D: Peer Institutions

- University of California, Los Angeles
- University of Florida*
- University of Illinois at Urbana-Champaign
- University of Iowa*
- Indiana University Bloomington
- University of Kansas
- University of Maryland*
- University of Michigan*
- University of Nebraska - Lincoln
- Ohio State University*
- Pennsylvania State University
- University of Virginia*

* without medical schools, which are considered “true peers”

IXE. Appendix E: Survey Analysis

Of those who are involved in DH (43), the methodologies they use include:

- Multimedia and digital publication (27) - 63.8%
- Image, video and audio editing and manipulation (16) - 37.2%
- Text mining and analysis (15) - 34.9%
- Analysis of new and social media (11) - 25.6%
- Digital writing, storytelling and remixing (11) - 25.6%
- Digital editions and text encoding (10) - 23.3%
- Visualizations, simulations and 3D modeling (9) - 20.9%
- Social computing and crowdsourcing (7) - 16.3%
- Machine learning and computational linguistics (7) - 16.3%
- Gaming (5) - 11.6%
- Geospatial analysis (4) - 9.3%
- Other (5) - (1) collecting images and metadata in database; (2) course design; (3) using digital resources archives, especially of early modern texts; (4) logic software; digital collection projects; (5) metadata for discovery & access to digital collections

The methods of interest to those who are not yet involved but are interested in learning more about DH on campus are similar. Of those who are interested in DH (188), the methodologies they are interested in include:

- Multimedia and digital publication (126) - 67%
- Image, video and audio editing (101) - 53.7%
- Text mining and analysis (88) - 46.8%
- Digital writing and storytelling (69) - 36.7%
- Analysis of new and social media (68) - 36.2%
- Visualizations, simulations and 3D modeling (66) - 35.1%
- Social computing and crowdsourcing (64) - 34%
- Digital editions and text encoding (53) - 28.2%
- Geospatial analysis (52) - 27.7%
- Machine learning and computational linguistics (47) - 25%
- Gaming (31) - 16.5%
- Other (3) - (1) Digital learning and teaching; (2) Interactive or simply active textbooks; (3) digitized historical sources and electronic research management