

This final section of *Digital Humanities* reflects on the preceding chapters, but can also stand alone as a concise overview of the field. As digital methodologies, tools, and skills become increasingly central to work in the humanities, questions regarding fundamentals, project outcomes, assessment, and design have become urgent. The specifications provide a set of checklists to guide those who do work in the Digital Humanities, as well as those who are asked to assess and fund Digital Humanities scholars, projects, and initiatives.

# A SHORT GUIDE TO THE DIGITAL\_HUMANITIES

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### What is the Digital Humanities?

Digital Humanities refers to new modes of scholarship and institutional units for collaborative, trans-disciplinary, and computationally engaged research, teaching, and publication.

Digital Humanities is less a unified field than an array of convergent practices that explore a universe in which print is no longer the primary medium in which knowledge is produced and disseminated.

Digital tools, techniques, and media have expanded traditional concepts of knowledge in the arts, humanities and social sciences, but Digital Humanities is not solely “about” the digital (in the sense of limiting its scope to the study of digital culture). Nor is Digital Humanities only “about” the humanities as traditionally understood since it argues for a remapping of traditional practices. Rather, Digital Humanities is defined by the opportunities and challenges that arise from the conjunction of the term *digital* with the term *humanities* to form a new collective singular.

The opportunities include redrawing the boundary lines among the humanities, the social sciences, the arts, and the natural sciences; expanding the audience and social impact of scholarship in the humanities; developing new forms of inquiry and knowledge production and reinvigorating ones that have fallen by the wayside; training future generations of humanists through hands-on, project-based learning as a complement to classroom-based learning; and developing practices that expand the scope, enhance the quality, and increase the visibility of humanistic research.

The challenges include addressing fundamental questions such as: How can skills traditionally used in the humanities be reshaped in multimedia terms? How and by whom will the contours of cultural and historical memory be defined in the digital era? How might practices such as digital storytelling coincide with or diverge from oral or print-based storytelling? What is the place of *humanitas* in a networked world?

### What defines the Digital Humanities now?

The computational era has been underway since World War II, but after the advent of personal computing, the World Wide Web, mobile communication, and social media, the digital revolution entered a new phase, giving rise to a vastly expanded, globalized public sphere and to transformed possibilities for knowledge creation and dissemination.

Building on the first generation of computational humanities work, more recent Digital Humanities activity seeks to revitalize liberal arts traditions in the electronically inflected language of the 21st century: a language in which, uprooted from its long-standing paper support, text is increasingly wedded to still and moving images as well as to sound, and supports have become increasingly mobile, open, and extensible.

And the notion of the primacy of text itself is being challenged. Whereas the initial waves of computational humanities concentrated on everything from word frequency studies and textual analysis (classification systems, mark-up, encoding) to hypertext editing and textual database construction, contemporary Digital Humanities marks a move beyond a privileging of the textual, emphasizing graphical methods of knowledge production and organization, design as an integral component of research, transmedia crisscrossings, and an expanded concept of the sensorium of humanistic knowledge. It is also characterized by an intensified focus on the building of transferrable tools, environments, and platforms for collaborative scholarly work and by an emphasis upon curation as a defining feature of scholarly practice.

### What isn't the Digital Humanities?

The mere use of digital tools for the purpose of humanistic research and communication does not qualify as Digital Humanities. Nor, as already noted, is Digital Humanities to be understood as the study of digital artifacts, new media, or contemporary culture in place of physical artifacts, old media, or historical culture.

On the contrary, Digital Humanities understands its object of study as the entire human record, from prehistory to the present. This is why fields such as classics and archaeology have played just as important a role in the development of Digital Humanities as has, for example, media studies. This is also why some of the major sectors of Digital Humanities research extend outside the traditional core of the humanities to embrace quantitative methods from the social and natural sciences as well as techniques and modes of thinking from the arts.

## Where does the Digital Humanities come from?

The roots of computational work in the humanities stretch back to 1949 when the Jesuit scholar Roberto Busa, working in collaboration with IBM, undertook the creation of an automated approach to his vast *Index Thomisticus*, a computer-generated concordance to the writings of Thomas Aquinas. By means of such early uses of mainframe computers to automate tasks such as word-searching, sorting, counting, and listing, scholars could process textual corpora on a scale unthinkable with prior methods that relied on handwritten or typed index cards. Other early projects included the debut, in 1966, of *Computers and the Humanities*, the first specialized journal in the field. Seven years later, the Association for Literary and Linguistic Computing (ALLC) was founded, with the Association for Computers and the Humanities (ACH) following in 1978.

By the mid-1980s computational methods for linguistic analysis had become widespread enough that protocols for tagging digital texts were needed. This spurred the development of the Text Encoding Initiative (TEI). This important undertaking reshaped the field of electronic textual scholarship and led subsequent digital editing to be carried out in Extensible Markup Language (XML), the tag scheme of which TEI is a specialized subset. The first humanities-based experiments with database structures and hypertextual editing structured around links and nodes (rather than the linear conventions of print) date from this period, as do the many pilot projects in computational humanities in the United States sponsored by the National Endowment for the Humanities and other agencies, organizations, and foundations.

## How do the Web and other networks affect the Digital Humanities?

As this revolution in protocols was taking place, the explosion of personal computing in the mid-1980s combined with the advent of the World Wide Web a decade later gave rise to a new generation of Digital Humanities work that was less text-centered and more design-driven. The desktop environment—with its graphical user interface, real-time WYSIWYG toolkit, and evolution from command lines to icons and window-based frames—not only vastly expanded the corpus of born-digital documents but also ushered in the gradual integration of audio, video, and graphics.

This integration has matured over the past decades and given Web culture its profoundly multi-medial character. It also favored the enhancement of models of sharing, co-creation, publication, and community-building that have situated the Web at the center of contemporary social debates and

socio-economic processes. The concept of the Web as a public sphere that extends the physical public spaces of contemporary life has, of course, been intensified thanks to smartphones, tablets, and other ubiquitous and pervasive computing and media devices.

## What is ahead for the Digital Humanities?

Contemporary Digital Humanities stands not in opposition to the past, but on its shoulders. It honors the pioneering labors carried out over the past seven decades in the form of statistical processing (computational linguistics), linking (hypertext), modeling (architectural and visual displays), the creation of structured data (XML), and iterative editing and version control (for critical editions as well as analysis and creative practices), even as it seeks to move beyond repository building and editing to new synthetic practices. It is inspired by the same core conviction that animated computational humanities and early Digital Humanities pioneers: the conviction that computational tools have the potential to transform the content, scope, methodologies, and audience of humanistic inquiry.

### Why projects?

Projects are both nouns and verbs: A project is a kind of scholarship that requires design, management, negotiation, and collaboration. It is also scholarship that projects, in the sense of futurity, as something which is not yet. Projects are often pursued in teams, with collaborators bringing complementary skill-sets and interests to conceptualize the research questions being investigated and design possible trajectories for them to be answered. Hence, projects are projective, involving iterative processes and many dimensions of coordination, experimentation, and production.

### Who is involved in Digital Humanities projects?

Digital Humanities projects typically involve multiple circles of researchers, from faculty and staff to students and community partners. A project's complexity and scale generally implies the involvement of multiple strata of personnel from within and across institutions of learning.

Projects can involve partner institutions such as museums, libraries, and archives as well as members of the community, alumni, and members of interested virtual networks such as collectors, amateur historians, and the like.

Partnerships with corporations, in particular media and technology companies, are also possible, with a caveat that corporate and academic cultures may be different in their goals and values.

### How are Digital Humanities projects organized?

Projects are usually faculty-, staff-, or student-initiated. They are often built around a research question and/or a university collection or archival repository. Many take place outside the classroom; others involve a research project that is anchored in a recurring course.

A Principal Investigator (or, PI), co-PIs, project advisors, staff, interns, and students are all part of the project team. It is the responsibility of the PI to organize the project team, establish timelines for deliverables, and assess the project at each stage of development.

### What is the difference between Digital Humanities projects and Big Humanities projects?

Digital Humanities projects come in all sizes: big, medium, and small. Some of the defining early Digital Humanities projects, however, as well as prominent contemporary work have assumed the form of Big Humanities projects, which are realized over many years, with many contributors, developers, and funders involved at various stages of development. Big Humanities projects are built along the lines of Big Science. They involve large-scale, long-term, team-based initiatives that build big pictures out of the tesserae of expert knowledge. The researchers and team members, from historians to technologists to designers, may number in the hundreds.

Little or "lowercase" Digital Humanities projects are typically carried out by individuals or small teams in consultation with experienced staff. As standard platforms and protocols have emerged, editing, exhibit-building, network analysis, and repository development require less one-off investment.

The bulk of Digital Humanities projects fall in between the two ends of the spectrum.

### How is the Digital Humanities continuous with traditional forms of research and teaching in the humanities?

Like traditional humanities-based research and teaching, Digital Humanities work involves practices of analysis, critique, and interpretation; editing and annotation; historical research and contextualization. It examines the formal and historical properties of works of the imagination, the interplay of self and society, the history of ideas and of material culture. It attends to qualitative and non-quantifiable features of the human experience: complexity, ambiguity, medium specificity, and subjectivity. It builds on traditional approaches to the study, preservation, and classification of cultural corpora.

Though the range of media with which Digital Humanities works extends beyond the textual, its core commitments harmonize with the long-standing values of the humanistic tradition: the pursuit of analytical acuity and clarity, the making of effective arguments, the rigorous use of evidence, and communicative expressivity and efficacy. Digital Humanities then melds hands-on work with vastly expanded data sets, across media and through new couplings of the digital and the physical, resulting in definitions of and engagements with knowledge that encompass the entire human sensorium.

Both the traditional classroom and solitary study remain key features in the landscape of Digital

Humanities learning. At the same time, many precedents for collaborative work in communities of letters and knowledge networks are enhanced by digital platforms in a fabric animated by opportunities for hands-on, project-based learning. Since antiquity, the dominant models of humanistic inquiry have favored an understanding of intellectual labor as solitary and contemplative, cut off from—and even superior to—manual labor and the realm of making or doing. Digital Humanities re-embeds these models in an augmented model of pedagogy that emphasizes learning through making and doing, whether on the level of the individual or the group.

### **How is the Digital Humanities discontinuous with traditional forms of research and teaching in the humanities?**

For nearly six centuries, humanistic models of knowledge have been shaped by the power of print as the primary medium of knowledge production and dissemination. Rather than rejecting print culture or embracing the simple pouring of print models into digital molds, Digital Humanities is engaged in developing print-plus and post-print models of knowledge. Both involve more than an updating of the knowledge delivery system. They entail the cognitive and epistemological reshaping of humanistic fields as a function of the affordances provided by the digital with respect to print. They also respect the increasing role teamwork and collaboration play in humanities research and training.

### **How does the Digital Humanities function in the print-plus era?**

Print typically offers a single viewing angle, linear organization, a research output characterized by finitude and stability, and a scale of documentation and argumentation that has to respect the physical proportions of the book. The digital print-plus era, in contrast, allows for toggling back and forth between multiple views of the same materials. It allows for fluid scale shifts, for “zooming” from the macro- to the micro-level, and for the interweaving of data sets (such as source materials, notes, and correspondence) into research outputs. The screens and augmented spaces of the print-plus era allow for the faceting, filtering, and versioning of corpora; for the coexistence of multiple pathways within a single repository; for multilineal forms of argument. It is extensible in the double sense of allowing for seemingly unlimited scale and of being process- rather than product-based. When a book goes to print, it stabilizes in an edition that has to be reissued in order to be revised; a digital artifact can be altered

or revised on a rewritable substrate that supports rapid refresh rates. The same digital artifact can lead multiple lives on multiple platforms, with multiple authors. It can undergo remixing by others before, during, and after its “completion.”

### **How are Digital Humanities projects funded and sustained?**

Because they cross over boundaries between disciplines; between theoretical and applied knowledge; and among the humanities, library science, information technology, and design, Digital Humanities projects typically require support structures that cut across conventional department and school organizational lines. Private foundations, public granting agencies, and industry partners have all provided monies for projects at every scale.

Funding for research in the humanities is far more limited than in the science and engineering fields, but the scope and innovative character of the Digital Humanities have led many projects to successfully garner external funding. In order to attract and sustain such funding, it has proven essential for projects to receive internal support during a period of incubation so that they may prove their worth by successfully reaching an initial set of benchmarks.

Sustaining such projects requires that faculty and students who assume leadership positions need the support and recognition that this work is a combination of research, teaching, and service.

### **What are the prevailing crediting and attribution conventions and authorship models for Digital Humanities projects?**

Traditional authorship and crediting practices in the humanities are based on single authorship. Although practices of attribution are still fluid in the Digital Humanities community, the emerging model recognizes that many, if not most, Digital Humanities projects are analogous either to natural science laboratory projects or to the collaborative attribution system used in the performing arts.

No standardized crediting system for Digital Humanities projects has been embraced universally. But the dominant trend is toward the differentiation of roles such as principal investigator, researcher, designer, programmer, modeler, editor, and the like.

**How do Digital Humanities projects interconnect the classroom with libraries, museums, and archives?**

Most colleges and universities have extensive resources for research and study that are underutilized after fulfilling their core research, teaching, and training missions. Contemporary Digital Humanities taps these riches by expanding the concept of the classroom to encompass library, museum, and archival collections, positioning them as central training places via hands-on research in the company of peers.

Much as in a natural science laboratory, students involved in Digital Humanities projects learn by making and doing, working within this extended classroom under the guidance of expert curators, archivists, and researchers, and in the company of peers. Whereas traditional models of humanistic training view the acquisition of skill-sets and disciplinary training as preconditions for the transition to becoming engaged in the creation of original scholarship, Digital Humanities work accelerates this apprenticeship, inserting students into research communities from the start.

**How can Digital Humanities projects involve inter-university collaboration?**

The scale and scope of many Digital Humanities projects, as well as their ties to physical collections and IT infrastructure needs, make them ideally suited to inter-university collaboration. Projects can be developed and divided up strategically among multiple partner institutions leveraging specific strengths, distributing workloads, sharing the benefits of research outcomes, and building cross-institutional bridges.

Benefits include cost-sharing and enhanced prospects for external funding. But they also transcend the practical sphere: They enable Big Humanities models of research whose outcomes are of potential interest to broad cross-disciplinary and nonspecialist audiences. By involving multiple institutions, such projects contribute to a sense of shared identity and of belonging to a broader research community. They also help to answer endemic student anxieties regarding the practical value of humanities knowledge and research.

**How can Digital Humanities projects involve expertise outside the academy?**

Many Digital Humanities projects develop entirely within a single college or university. But others require domains of knowledge and forms of expertise that are under- or unrepresented in or lie outside the confines of academic fields. Combining intra- and extramural expertise within well-designed Digital Humanities projects often proves essential to their success. Such approaches include work with communities of collectors and historical associations and the use of crowd-sourcing for the processing, transcription, and annotation of archival documents. Not only can the scope and quality of humanities research benefit from such partnerships, but they also contribute to the creation of a new class of citizen scholars who otherwise would be mere citizen consumers.

**How can extramural partnerships play a role in developing, supporting, and sustaining Digital Humanities projects?**

The promotion of public knowledge is a core value of the Digital Humanities. Extramural partnerships—whether with professional societies, historical associations, institutions of informal learning (libraries, museums, archives), corporations, or public entities—can extend the reach and impact of humanities research in contemporary society. The most successful partnerships address questions of shared critical interest with research results that rise to the highest standards of scholarly rigor while being conjugated across multiple media platforms in the “language” of the partner institutions through exhibitions, performances, books, Web publications, or other means.

Partnerships can expand the depth and diversity of the talent pool of available participants in a project, broaden a project’s potential audience and impact, and, as with inter-university collaborations, help to solidify short- and long-term financial sustainability.

**How can educational institutions support Digital Humanities research?**

Digital Humanities research projects require fluid boundary lines among academic departments and institutional units. Because the projects are often team-based and imply merged models of theoretical and applied knowledge across the traditionally separated domains of “research,” “teaching,” and “service,” elements such as design facilities, information systems, multimedia production, IT work, and collections-based research are not mere “supports,”

but rather integral features of project design and execution.

In addition to promoting a culture where such boundary lines do not stand in the way of innovation, institutions must embrace co-teaching as a standard feature of the new landscape of the humanities, rather than penalizing it as a form of work reduction. Co-creation must be seen as a legitimate form of scholarly and student intellectual labor, complementary to traditional forms of output. The easing of access and use-restrictions on museum, archive, and library special collections represents a key precondition to the creation of an expanded, hands-on classroom, and serves open-access models equating preservation with proliferation, rather than restricted control.

College and university legal offices must be careful not to interpret copyright restrictions narrowly out of an unwillingness to broker hypothetical risks. Fair use needs to be understood in the broadest possible sense in order not to shackle Digital Humanities research. College- and university-based collections need to be shared with the research community as freely as possible.

Last but not least, institutions of higher learning must promote and foster a less risk-averse culture in the humanities disciplines: a culture where, as in the sciences, “failure” would be accepted as a productive outcome when undertaking innovative, speculative work. Differentiating between productive forms of failure and poor research is essential to promoting research communities where innovation is a core value.

### **What are the institutional niches that best support Digital Humanities projects?**

Digital Humanities projects have generally flourished less within single departments, schools or institutional units, than across such structures. Even humanities research centers, built to house and support the research of individual scholars, have not always proven to be the ideal home—although some have successfully reshaped their policies, funding models, and physical infrastructure to support collaborative Digital Humanities work.

More typically, Digital Humanities has thrived in independent, free-standing laboratories or centers where there exists a community of scholars (humanists and non-humanists alike), staff members, curators, and students interested in the shared exploration of innovative models of scholarship. Such environments are best envisaged as a hybrid of making, thinking, and play spaces, combining computational facilities; digital imaging, sound, and video production facilities; and meeting and exhibition spaces.

### **How can institutions assess the scale of investment and expectation for Digital Humanities projects appropriate to them?**

Projects come in all sizes. There is no inherent reason why a large project cannot be undertaken by a small institution or a small project by a large institution. Nor is there any inherent reason why individual scholars cannot undertake large-scale collaborations among multiple colleges or universities.

So there is no single formula for success. The scale and form that Digital Humanities projects take must be dictated by thoughtful project design—combining research questions, ambitions, and anticipated outputs—as well as the available logistical, personnel, and financial resources. Much as in the laboratory sciences, this implies a balance between pragmatic vision and entrepreneurial initiative.

### **How can peers and academic leaders assess Digital Humanities projects?**

Metrics for evaluating the quality and impact of Digital Humanities projects combine traditional assessment methods in the humanities with new factors. Peer review remains fundamental to processes of assessment, but now draws as much from the community of leading Digital Humanities practitioners as from field-based peers. A less risk-averse culture is the prerequisite for a more innovation- and experimentation-driven model of the Digital Humanities to take hold.

In addition to traditional peer-based criteria, some assessment tools that have a long history in the natural and social sciences may become relevant to humanities fields: citations, grant-writing success, public impact, and the like. It should be noted that variations in the sizes of fields make caution essential in the use of quantitative tools; otherwise they will provide very crude, and possibly misleading, measures of importance or impact. Original scholarship and intellectual rigor remain the essence of Digital Humanities work.

Traditional print-based metrics of productivity are already being eclipsed by the realities of print-plus and digital publishing, so expectations of productivity must encompass multiple media, different formats, and variable scales of contributions to knowledge. In other words, the media and technologies in which intellectual work is realized matter as much as its “content.” This means that the “work” is not just the content but, rather, *everything*: the environment that has been designed for the work’s performance and publication; the interface and data structures, the back-end database, and the code that enables multiple forms of audience engagement. All of these matter in assessments of quality and rigor.



## SPECIFICATION I HOW TO EVALUATE DIGITAL SCHOLARSHIP

This text provides a set of guidelines for the evaluation of digital scholarship in the humanities, social sciences, arts, and related disciplines. The guidelines are aimed, foremost, at academic review committees, chairs, deans, and provosts who want to know how to assess and evaluate digital scholarship in the hiring, tenure, and promotion process. The list is also intended to inform the development of institution-wide policies for supporting and evaluating scholarship and creative work that reflects traditional values while incorporating specific understandings of new platforms and formats.

### Fundamentals for initial review

The work must be evaluated in the medium in which it was produced and published. If it is a website, that means viewing it in a browser with the appropriate plug-ins necessary for the site to work. If it is a virtual simulation model, that may mean going to a laboratory outfitted with the necessary software and projection systems to view the model. Work that is time-based—such as videos—will often be represented by stills, but reviewers also need to devote attention to clips in order to fully evaluate the work. The same can be said for interface development, since still images cannot fully demonstrate the interactive nature of interface research. Authors of digital works should provide a list of system requirements (both hardware and software, including compatible browsers, versions, and plug-ins) for viewing the work. It is incumbent upon academic personnel offices to verify that the appropriate technologies are available and installed on the systems that will be used by the reviewers before they evaluate the digital work.

### Crediting

Digital projects are often collaborative in nature, involving teams of scholars who work together in different venues over various periods of time. Authors of digital works should provide a clear articulation of the role or roles that they have played in the genesis, development, and execution of the digital project. It is impractical—if not impossible—to separate out every micro-contribution made by team members since digital projects are often synergistic, iterative, experimental, and even dynamically generated through ongoing collaborations. Nevertheless, authors should indicate the roles that they played (and time commitments) at each phase of the project development.

Who conceptualized the project and designed the initial specifications (functional and technical)? Who created the mock-ups? Who wrote the grant proposals or secured the funding that supported the project? What role did each contributor play in the development and execution of the project? Who authored the content? Who decided how that content would be accessed, displayed, and stored? What is the “public face” of the project and who represents it and how?

### Intellectual rigor

Digital projects vary tremendously and may not “look” like traditional academic scholarship; at the same time, scholarly rigor must be assessed by examining how the work contributes to and advances the state of knowledge in a given field or fields. What is the nature of the new knowledge created? What is the methodology used to create this knowledge? It is important for review committees to recognize that new knowledge is not just new content but also new ways of organizing, classifying, and interacting with content. This means that part of the intellectual contribution of a digital project is the design of the interface, the database, and the code, all of which govern the form of the content. Digital scholars are not only in the position of doing original research but also of inventing new scholarly platforms. Five hundred years of print have so fully naturalized the “look” of knowledge that it may be difficult for reviewers to fully understand these new forms of documentation and the intellectual effort that goes into developing them. This is the dual burden—and the dual opportunity—for creativity in the digital domain.

### Crossing research, teaching, and service

Digital projects almost always have multiple applications and uses that enhance research, teaching, and service. Digital research projects can make transformative contributions in the classroom and sometimes even have an impact on the public-at-large. This ripple effect should not be diminished. Review committees need to be attentive to colleagues who dismiss the research contributions of digital work by cavalierly characterizing it as a mere “tool” for teaching or service. Tools shape knowledge, and knowledge shapes tools. But it is also important that review committees focus on the research contributions of the digital work by asking questions such as the following: How is the work engaged with a problem specific to a scholarly discipline or group of disciplines? How does the work reframe that problem or contribute to a new way of understanding the problem? How does the work advance an argument through both the content and the way the content is presented? How is the design of the platform an argument? To answer this last question, review committees might ask for documentation describing the development process and design of the platform or software, such as database schemata, interface designs, modules of code (and explanations of what they do), as well as sample data types. If the project is, in fact, primarily for teaching, how has it transformed the learning environment? What contributions has it made to learning and how have these contributions been assessed?



## Peer review

Digital projects should be peer-reviewed by scholars in fields who are able to assess the project's contribution to knowledge and situate it within the relevant intellectual landscape. Peer review can happen formally through letters of solicitation but can also be assessed through online forums, citations, and discussions in scholarly venues, by grants received from foundations and other sources of funding, and through public presentations of the project at conferences and symposia. Has the project given rise to publications in peer-reviewed journals or won prizes by professional associations? How does it measure up to comparable projects in the field that use or develop similar technologies or similar kinds of data? Finally, grants received are often significant indicators of peer review. It is important that reviewers familiarize themselves with grant organizations across schools and disciplines, including the humanities, the social sciences, the arts, information studies and library sciences, and the natural sciences, since these are indicators of prestige and impact.

## Impact

Digital projects can have an impact on numerous fields in the academy as well as across institutions and even the general public. They often cross the divide that arises among research, teaching, and service in innovative ways. Impact can be measured in many ways, including the following: support by granting agencies or foundations, number of viewers or contributors to a site and what they contribute, citations in both traditional literature and online (blogs, social media, links, and trackbacks), use or adoption of the project by other scholars and institutions, conferences and symposia featuring the project, and resonance in public and community outreach (such as museum exhibitions, public policy impact, adoption in curricula, and so forth).

## Approximating equivalencies

Is a digital research project "equivalent" to a book published by a university press, an edited volume or a research article? These sorts of questions are often misguided since they are predicated on comparing fundamentally different knowledge artifacts and, perhaps more problematically, consider print publications as the norm and benchmark from which to measure all other work. Reviewers should be able to assess the significance of the digital work based on a number of factors: the quality and quantity of the research that contributed to the project; the length of time spent and the kind of intellectual investment of the creators and contributors; the range, depth, and forms of the content types and the ways in which this content is presented; and the nature of the authorship and publication process. Large-scale projects with major funding, multiple collaborators, and a wide-range of scholarly outputs may justifiably be given more weight in the review and promotion process than smaller-scale or short-term projects.

## Development cycles, sustainability, and ethics

It is important that review committees recognize the iterative nature of digital projects, which may entail multiple reviews over several review cycles, as projects grow, change, and mature. Given that academic review cycles are generally several years apart (while digital advances occur more rapidly), reviewers should consider individual projects in their specific contexts. At what "stage" is the project in its current form? Is it considered "complete" by the creators, or will it continue in new iterations, perhaps through spin-off projects and further development? Has the project followed the best practices, as they have been established in the field, in terms of data collection and content production, the use of standards, and appropriate documentation? How will the project "live" and be accessible in the future, and what sort of infrastructure will be necessary to support it? Here, project specific needs and institutional obligations come together at the highest levels and should be discussed openly with deans and provosts, library and IT staff, and project leaders. Finally, digital projects may raise critical ethical issues about the nature and value of cultural preservation, public history, participatory culture and accessibility, digital diversity, and collection curation which should be thoughtfully considered by project leaders and review committees.

## Experimentation and risk-taking

Digital projects in the humanities, social sciences, and arts share with experimental practices in the sciences a willingness to be open about iteration and negative results. As such, experimentation and trial-and-error are inherent parts of digital research and must be recognized. The processes of experimentation can be documented and can prove to be essential in the long-term development process of an idea or project. White papers, sets of best practices, new design environments, and publications can result from such projects, and these should be considered in the review process. Experimentation and risk-taking in scholarship represent the best of what the university, in all its many disciplines, has to offer society. To treat scholarship that takes on risk and the challenge of experimentation as an activity of secondary (or no) value for promotion and advancement can only serve to reduce innovation, reward mediocrity, and retard the development of research.

Project-based scholarship exemplifies contemporary Digital Humanities principles. It differs from traditional scholarly publication in being team-based, distributed in its production and outcome, dependent on networked resources (technical and/or administrative), and in being iterative and ongoing, rather than fixed or final, in its outcome. It necessarily involves many dimensions of conception, design, coordination, and resource use that build extra layers of complexity onto the traditional approach to humanities research. The following list is useful to the creation of a grant proposal or research plan for project-based work and reflects best-practices standards (with the caveat that debate persists).

### **Contribution to knowledge**

The project should meet the criteria of any scholarly work through its contribution to knowledge in a discipline or field. How is the project in dialogue with an issue or topic in a given disciplinary field and how does it move the discourse forward in an innovative way? Does the project contribute to and advance the state of knowledge of a given field or fields?

### **The model of knowledge**

How is the knowledge shaped and modeled: as an argument, a presentation, a display? What can be taken from the project as a theoretical principle, method, or information that is useful for other scholars, including those who are not engaged with Digital Humanities research? How does the project model and embody new knowledge?

### **Research questions and digital media**

Digital environments allow for different approaches for relating and processing materials and this should be demonstrated in the research plan. Simply putting something online is not digital research. The litmus test is to ask what is being done that could not be done in print-based or traditional scholarship. How has the research project been formulated from within the affordances of digital methods?

### **Tools and content**

Many digital projects involve innovative recombining and reconfiguring of existing tools toward the formulation of new knowledge. Is this a tools-based project or

a content-driven project and how do these intersect? How can the intellectual labor of the design and development of the “tool” be assessed in tandem with the “content”? To what extent are they inextricable and why?

### **Methods**

Does the project have a thesis or guiding methodological principle? How did the digital platform allow it to be explored, tested, argued, demonstrated, or even refuted?

### **Born digital and/or digitized artifact**

Digital projects often combine analog materials that have been scanned or digitized and elements that are born digital—analysis, research, processing, or newly authored files. Elements of information structure are also born digital. How are each of these elements understood and what role do they play in the overall project?

### **Collections-sharing and licensing**

The future of humanistic learning and the level of societal impact that humanities scholarship can achieve depend upon unrestricted access to cultural and historical repositories; accordingly, the least restrictive licenses should be the norm. What kinds of licensing and intellectual property issues will the project encounter? How can the work be accessed and used by the scholarly community and public-at-large?

### **Interface as knowledge representation and content-modeling**

The interface of a project expresses an argument in its design. Does it offer a snapshot of the contents of the project, or a set of entry points for activities that can be performed? Understanding the ways the interface is structured, how it embodies the ideas of the project, and how it supports the engagement with the project is essential.

### **Team, collaborative, and project management**

Knowing who will take responsibility for each part of a digital project is crucial for development and design. Each participant's role should be spelled out in documentation: project conception, research plan, technical analysis, Web development (infrastructure), Web design (interface), content development, database design, and so on. Some account of the percentage of effort in the project as a whole should be indicated.

### **Credit for intellectual contributions/authorship**

Project teams have to work collaboratively, and the research activity unfolds within the implementation; it is not separate from it. But the responsibility for the research question and the intellectual contribution of each participant should be made clear in documentation. This should include a description of how the project was shaped by design decisions, discipline-specific knowledge, and technical expertise.

## Info architecture/institutional cyber-infrastructure/systems administration

Decisions about information architecture and design are crucial parts of the project. Knowing where the work will sit institutionally, how it will be supported and in what server environments, and how the software and/or platforms for content development will be chosen is at the foundation of the project. It is also necessary to know who will configure the server infrastructure, administer the systems, install the software (and keep it up to date), and back up the content.

## Open-source software and technology transfer

Development of tools and platforms is one of the foundation stones of Digital Humanities projects. It is in the interest of the common enterprise of teaching and learning for software to be understood as a community resource with source code shared so as to enable support and development by the user community as a whole. In general, projects should be built with an eye toward fostering common solutions and shared platforms, though there may be times when one-offs serve a specific purpose. How does the project allow for the documentation and transfer of code, tools, platforms, and applications?

## Documentation

Documentation of the structure and design of a project is an essential piece of the work. Too often this is ignored. Documentation is essential for continuity of the project after its initial start-up, and it is an important contribution to the field, as well as a way for others to repurpose the design. Development processes should be documented; functional and technical specifications should be documented; system requirements for the project should be documented (for example, which browsers and versions are supported; what plug-ins are required); database entities and relational schemata should be documented; and, finally, code should be documented, including the publicly available code libraries used in the project, licensing agreements or user agreements (especially for APIs), and the intended operations of individual modules, with author attributions.

## Audience, user considerations

Making clear who the audience for the project is and how its members are engaged in its development is important, even if the research is driven by an individual scholar's curiosity or agenda. Projects without audiences or users are silos into which work and resources disappear. User-testing is often a critically necessary part of the refinement of the project's interface and navigational features.

## Compliance with all legal regulations

Digital Humanities projects must follow Americans with Disabilities Act (ADA) standards in their design and must be compliant with intellectual property and copyright restrictions. The latter are, however, to be applied with a clear understanding of the right to fair use, the not-for-profit character of nearly all humanities

research, and the contribution that such research makes to the knowledge and recognition of cultural objects and heritage.

## Publishing/dissemination models

Getting attention for a digital project requires putting it into view in an online venue, getting it reviewed, and creating visibility within a scholarly community and among potential users and future contributors. Projects should have a plan for dissemination and publication. Projects built with and from communities have more buy-in than projects built by single scholars. Digital projects should not "rebuild the wheel" but instead strategically assess and, where possible, take advantage of existing software solutions, platforms, or tools. Both the future of humanistic learning and the ability of humanities scholarship to matter in society at large depend upon the unrestricted circulation of scholarly knowledge; accordingly, the least restrictive licenses should be the norm.

## Assessment criteria

A project should have its metrics of success and failure stated explicitly. These might range from creating a project that proves a concept or demonstrates a design principle to a project that sets a goal of digitizing and marking up a particular amount of material or engaging a specific community in online discussion and discourse. Having clear goals and milestones is useful as a way to assess the relation between resources and results.

## Conversation with multiple fields

Is the project in dialogue with other works in its field, both those traditionally conceived as well as those realized in digital media? Do the authors understand and reference other research and digital projects as models? How does the project situate itself within the intellectual development of a given field or fields?

## Sustainability

However experimental its technology base, preservation strategies are a defining feature of good project design. Digital assets are fragile by nature, and this fragility needs to be addressed from the outset by means of a mid- to long-term preservation strategy. What is the plan for sustaining the digital project? Where will it be housed and maintained institutionally? How will those resources be sustained? What will it cost to continue the project, if it is open-ended, and what possible sources of revenue are there for this support? The labor of staff, students, and consultants as well as the costs of hardware, software, and other materials need to be taken into account, not to mention the intellectual commitments of the primary researcher and community of advisors and contributors.

## Transparency

All funding sources, whether monetary or in-kind donations, should be disclosed in the various outputs to which a Digital Humanities project gives rise.

## SPECIFICATION 3 CORE COMPETENCIES IN PROCESSES AND METHODS

What are the basic skills essential for being able to do Digital Humanities work? How can such projects be supported within an academic or institutional environment? This advisory lists the fundamental elements necessary for the creation of digital research projects. The specific competencies will vary by field and discipline and not all projects require all of these competencies.

All digital projects have technical, administrative, and intellectual aspects to their production. As tools and platforms designed specifically for the Digital Humanities become increasingly available, building custom-designed projects will only be justified if a new tool or platform is part of the development or if the project has some demonstrably unique elements that require a one-off solution.

### TECHNICAL

Web development, infrastructure, server environment, interface design; choices about tools, platforms, software, and hardware.

#### Familiarity with data types and file formats

On what basis are decisions about file formats and data types made?

#### Database knowledge

If a database is part of the information architecture, what type is it? How will it work and why is it needed? What are the entities in the database, what are their attributes and relationships, and how will the objects be queried and sorted? Is the database open-source, proprietary, and/or licensed? What data sets will be used in the project and who controls them? What kind of permissions and rights will govern the data sets?

#### XML structured data

What schema or version of XML is being used and why? Is it used for mark-up or just for metadata?

### Metadata standards

What process of metadata selection was used and how does the metadata standard suit the project and its disciplinary field as well as its institutional home? Are the metadata standards compliant with existing standards in the field?

### Scripting languages

To what extent are scripting languages used in the project and how are they suited to the server and administrative environment in which they work, as well as to the tasks to which they are put?

### GIS platforms and spatial data

Tools for spatial mapping and analysis have been developed within geographical disciplines for professional use but other more popular tools for mapping (like Google Earth) have a lower threshold for use. What are the spatial (and temporal) aspects of the data and how will these data be appropriately marked up for analysis? How will they be displayed within a mapping or GIS system, and what are the research questions that can be tested with such systems? Are the data already "spatial" and, if not, is this process automated or does it involve manual geo-rectification of materials (whether maps, historical photographs, videos, or oral histories)? How will this be done, by whom, and with an eye toward what standards for visualization and sharing within and across geo-browser applications?

### Virtual simulation tools

Virtual worlds and three-dimensional modeling are tools for creating immersive environments for historical research and presentation. Again, what tools, software, and systems are being used and for what ends? What standards are being followed and how will various communities of practice engage with the models, simulations, and virtual worlds? Into which existing platforms will the models be placed and what kind of constraints do these platforms have?

### Existing and emerging platforms for content management and authoring

How will the project manage existing content and support the growth of new content? Who are the authors of this proposed content, and how will they input it? Will they need to be technically savvy or does a browser interface enable their participation? What content management systems are used in the infrastructure or repository? Do the content management systems enable data to be shared across platforms and repositories?

### Interface design as knowledge modeling

How is content displayed in the interface and how does a user navigate this content through the interface? What is the interface model and how does it express the knowledge model of the project and support its mission?

### Game engines

Game economies have a role to play in scholarly work as well as in entertainment. Understanding the way game engines might be incorporated into a project to support participation is useful in certain circumstances.

### Design for mobility and diversity

Does the project have dimensions that will make its content available on mobile applications or allow it to be repurposed for use in multiple contexts? Will the project work on different platforms? Will it work across cultural, linguistic, and social divides? Is the project ADA compliant, or does it have limitations for use by persons with disabilities?

### Custom-built vs. off-the-shelf

Is part of the project's research the designing and building of a platform or tool, and if so, can this work be repurposed or generalized from its customized use for a broader audience? If off-the-shelf solutions or standard software systems are being used, how were they chosen? Many times, Digital Humanities projects will be a combination of these two approaches, using existing APIs, standard content management systems, or blogging engines that can be variously customized and extended to address the specific needs of a project.

## INTELLECTUAL

While the most visible intellectual element is usually the content, it is important to recognize that Digital Humanities projects present arguments and knowledge experiments in many different ways, often contributing to the creation of new knowledge through complex interactions, visualizations, data and data structures, and even code. Digital Humanities projects are not just about the content (although this is often primary), but also about the design of multiple levels of knowledge and argument from the operations on the back-end database to the front-end access points of a user interface.

### Cross-cultural communication

Has consideration been given to the ways in which the design of the project will work cross-culturally? Is it meant to engage communities whose language and/or cultural orientation will be varied?

### Generative imagination

Is the project generative and will it continue to create new content, dialogue, debate, and engagement, or is it largely a packaged repository of content meant to be viewed and used but not altered through contributions or extensions? Both of these are worthwhile and serve different needs, audiences, and intellectual goals.

### Iterative and lateral thinking

How might the project change over time, and how will reflections on its limitations be used to improve each iteration? Can the project "play well" with other projects by sharing data through Web services frameworks or code modules through code-sharing repositories?

## ADMINISTRATIVE

Resource allocation, reporting lines, clear job descriptions, goals, and outlines of responsibility for all involved are crucial and should be spelled out in a memorandum of understanding, at the very least.

### Intellectual property

Have rights and copyright clearances for intellectual property been managed and documented? The terms for use of content should be posted clearly on the site and the contact information for inquiring about the use of intellectual property easy to locate.

### Institutional circumstances

What is the institutional home for this project and who will be responsible for its maintenance after the project is built? Costs and impacts on human and material resources should be assessed.

### Sustainability, funding, and preservation

Long-term plans for sustainability can include migration of the project into an institutional repository, or archiving on a server or paid service provider, or creation of a revenue stream and business model for its ongoing support and maintenance. Collaboration with institutional entities, particularly libraries and data repositories, will be necessary for preserving data created for and by a Digital Humanities project. Can the data be "outputted" easily from the project and archived in standard formats that are widely readable? What kind of data management plan has been created and how will it be implemented? Are there any privacy or security concerns that need to be addressed?

## SPECIFICATION 4 LEARNING OUTCOMES FOR THE DIGITAL HUMANITIES

While core assessment standards remain continuous with those of traditional classroom-based humanities pedagogy, the Digital Humanities recognizes the importance of additional outcomes produced by hands-on, experiential, and project-based learning through doing. Digital Humanities pedagogy emphasizes teamwork and implies an increased role for peer assessment, as well as attention to a widened set of skills beyond text-based critical thinking and communication. Outcomes emphasize the ability to think critically with digital methods to formulate projects that have humanities questions at their core. Among the learning outcomes for the Digital Humanities, we prioritize the following:

### **Ability to integrate digitally driven research goals, methods, and media with discipline-specific inquiry**

Acquire and demonstrate new fluencies from working within and navigating across various information platforms to conceptualize and carry out discipline-specific research. In practice, this means bringing together the traditional tools of humanistic thinking (interpretation and critique, historical perspective, comparative cultural and social analysis, contextualization, archival research) with the tools of computational thinking (information design, statistical analysis, geographic information systems, database creation, and computer graphics) to formulate, interpret, and analyze a humanities-based research problem.

### **Ability to understand, analyze, and use data**

Demonstrate ability to synthesize data from multiple sources and harness multi-modal and multimedia technologies to produce digital arguments. Create capacity to formulate a research problem or question that lends itself to a computational approach. Develop ability to analyze problems by applying digital methods to humanities-based data and to interpret the results of digital analysis and computationally produced outcomes in a critically significant way.

### **Develop critical savvy for assessing sources and data**

Judging the reliability of information and knowledge presented in a digital environment requires skills of discernment that examine the source, the authority, and the legitimacy of the digital material. With regard to data, this means examining how they were obtained, marked-up, stored, and variously made accessible to end-users.

### **Ability to use design critically**

Understand the importance of knowledge design in communication, project development, and long-term preservation of digital data in ways that go beyond competence to a critical understanding of tools, their uses and limitations. Develop ability to use computational design thinking to produce forms of argument and expressions of interpretation.

### **Ability to assess information and information technologies critically**

Interrogate digital, visual, and multi-modal information as evidence and critique its formation and validity. Critique the digital features of publications for a) scholarly relevance, b) best practices (e.g., online footnoting and citation, transparency of sources and data), c) attribution, d) authority and argumentative rigor. Understand and critique the epistemologies, worldviews, and structuring assumptions built into digital platforms, technologies, visualizations, and even computational languages.

### **Ability to work collaboratively**

Think across disciplines, media, and methodologies on multi-authored research projects, project proposals, reports, and presentations aimed at both academic and nonacademic communities. Work in teams and participate in peer assessment. Acquire knowledge of the development life cycle of a Digital Humanities project and the ability to understand the needs and priorities of each phase of development. Meet aggressive deadlines and produce completed, fully functional digital prototypes, products, research tools, and publications. Identify and assess specific contributions and roles in collaborative projects for the purposes of peer review and intellectual credit.

Among its other activities, digital scholarship asserts the possibility of changed relations between consumers and producers of cultural work. Listed here is a set of considerations for addressing the cultural significance of humanities work, of transforming individuals into prosumers with critical insight into the workings of digital platforms. It also contains a handful of crucial points on which to advocate for Digital Humanities as a field.

### **Value of the cultural record**

Humanistic scholarship is engaged with the production, preservation, and interpretation of the cultural record. Gauging the value of legacy materials and vetting the value of contemporary contributions is essential. In what ways does the project contribute to the cultural record (through preservation of materials, through interactions among contributors, through modes of public engagement, and so forth)?

### **Humanistic values/cultural significance and legitimacy**

Demonstrating the value of interpretive methods and fundamental humanistic values as a counter to those of managed culture is an essential part of advocacy. How are the values and perspectives of the humanities a central part of the contributions of the project? What does the project contribute to the cultural record and how is this record legitimated (and by whom)?

### **Expanded notions of community and participation**

For whom is this project of value and how are they engaged in its production, reception, or preservation? What notions of community and participation are central to the project? How is participation opened up, managed, and facilitated? How are decisions about permissions for participation, inclusion and/or exclusion, made and who makes them? And what are the limits, liabilities, and challenges that remain for participation without restriction?

### **Ability to analyze modalities of organization and presentation**

Skills for understanding the ways media organize and present arguments are the foundations of informed use of information in any environment. The specific characteristics of digital media—in all their multiple, hybrid, and overlapping forms—need their own languages of assessment.

### **Reflexive awareness of coercive regimes**

All media conceal as well as reveal the rules according to which they include certain kinds of expressions and prevent others. What is possible in any given digital space or project and what is not? We must be reflexive, dialectical thinkers aware that any “solution” always prevents certain questions and problems from arising, while privileging the very ones to which it is the answer. All technologies are coercive in some respect, and many have become so naturalized that we no longer consider them coercive but rather self-evident and necessary. It is up to digital humanists to denaturalize these technologies and create fissures for new, imaginative possibilities to come about.

### **Thinking beyond the ideologies of templates and structured discourse**

How do we read the embodiment of power dynamics and relations in the organization of structured spaces and processes? The digital environment structures its ideological expression in the graphical interfaces, the data types, the database relations, as well as in the content of each project. Epistemological defamiliarization—the “making strange”—is an important feature of modern critical thought. The force of delight, surprise, and even alienation in the face of innovative inventions are the enlightening elements of contemporary imaginative thought. What can be shown to wake us from our passive consumption? And how do new ways of knowing, engaging, and designing become the very means to provoke inquiry, generate thought, deepen values, and contribute to the cultural record of our species?

### **From passive consumer to active prosumer**

The role of reader and viewer varies from that of a consumer of material on display to that of a critically informed and discriminating prosumer of cultural materials. How does the project facilitate productive, critical engagement rather than passive consumption?

### **Creation of citizen-scholars and scholar-citizens**

Many projects support the substantive participation of amateurs, scholars without professional affiliation whose expertise in a field is highly developed, informed, and driven by intellectual passion. In what ways does the project integrate (and also evaluate) a multiplicity of perspectives and knowledge-creators? How do scholars—traditionally conceived—become engaged with a broader public citizenry, and, similarly, how are citizens engaged in the intellectual project of knowledge creation as scholars?