A tale of two cities: implications of the similarities and differences in collaborative approaches within the digital libraries and digital humanities communities

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Abstract

In addition to drawing upon content experts, librarians, archivists, developers, programmers, managers, and others, many emerging digital projects also pull in disciplinary expertise from areas that do not typically work in team environments. To be effective, these teams must find processes—some of which are counter to natural individually oriented work habits—which support the larger goals and group-oriented work of these digital projects. This article will explore the similarities and differences in approaches within and between members of the Digital Libraries (DL) and Digital Humanities (DH) communities by formally documenting the nature of collaboration in these teams. While there are many similarities in approaches between DL and DH project teams, some interesting differences exist and may influence the effectiveness of a digital project team with membership that draws from these two communities. Conclusions are focused on supporting strong team processes with recommendations for documentation, communication, training, and the development of team skills and perspectives.

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1 Introduction

In addition to drawing upon content experts, librarians, archivists, developers, programmers, managers, and others, many emerging digital projects[1] pull in disciplinary expertise from areas that do not typically work in team environments. To be effective, these teams must find balance between different discipline-specific approaches and modes of interaction to negotiate processes—some of which may

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be counter to 'natural' individually oriented work habits—which support the larger goals and group-oriented work of these digital projects. However, to accomplish this, team members must understand the similarities and differences between their own and their discipline's work habits and those of their team members.

This article will contribute to the development of these necessary discussions and expanded understandings by exploring the similarities and differences in approaches between members of the Digital Libraries (DL) and Digital Humanities (DH) communities, two groups that often collaborate on digital projects. This knowledge will enable those who work in such teams to recognise factors that tend to predispose them to success, and perhaps more importantly, to avoid those that may lead to problematic interactions, and thus make a project less successful than it might otherwise have been.

This article is structured as follows: (1) the context will be outlined for collaboration in the DH and DL communities along with the benefits and challenges of team-oriented research; (2) the results from surveys and interviews with community members will be explored with the objective of outlining the similarities and differences in collaborative approaches; (3) the article will conclude with implications for practice.

2 Context

Traditionally, research contributions in humanities broadly defined have been felt to be and documented to be predominantly solo efforts by academics involving little direct collaboration with others, a model reinforced through doctoral studies and beyond (Newell *et al.*, 2000; Cuneo, 2003). However, this trend has been changing with a growing realization that the research questions addressed by academics are becoming more complex and technologically sophisticated, often beyond the capacity of any one individual, thus requiring a team approach (Newell *et al.*, 2000; Hara *et al.*, 2003). The DL and DH communities are at the forefront of this shift. Given that the nature of digital projects involves computers and a variety of skills and expertise, collaborations in these fields involve individuals within their institutions and with others nationally and internationally. Such collaboration typically must coordinate efforts between academics, undergraduate and graduate students, research assistants, computer programmers and developers, librarians, and other individuals as well as financial and other resources. In addition, as potentially natural partners, collaborations between academics and librarians are likely to become common as issues of long term digital project sustainability are explored, issues that librarians and other information specialists are best able to address (Unsworth, 2007; Kretzschmar Jr. *et al.*, 2009; Cunningham, 2010). As further examples of the importance of the collaboration between the humanities and libraries, the Institute of Museum and Library Services contributed grant funding to the Digital Humanities Start-Up Grant, sponsored by the National Endowment for the Humanities (National Endowment for the Humanities Office of Digital Humanities, 2010).

Especially when involving a variety of disciplines, collaboration can enhance research by increasing its quality, depth, and scope and often can achieve what a single individual could not. However, these gains require additional work on the part of the team members and new skills such as conflict resolution, negotiation, and communication (Kraut *et al.*, 1987–1988; Northcraft *et al.*, 1993; Newell *et al.*, 2000). Further, several challenges exist within these research teams. Difficulties and conflicts between various professional subcultures due to their differing academic languages and research methodology may exist (Epton *et al.*, 1983; Pearson, 1983; Northcraft *et al.*, 1993). These tensions can be exacerbated when team members also have different approaches to collaboration (Birnbaum, 1979; Fennel *et al.*, 1983; Hara *et al.*, 2003; Cunningham, 2010). Without clear communication, coordination, and integration, problems due to differing expectations of roles, contributions, power, personalities, and status can occur (Cheng, 1979; Northcraft *et al.*, 1993; Martin, 1997). Contextual factors, such as institutional reward and recognition policies, and relative levels of prestige of the different academic institutions involved, can also minimize the

effectiveness of the research team (Nason *et al.*, 1998; Amabile *et al.*, 2001; Cech *et al.*, 2004). Ultimately, when teams are not successful, the result can be uncompleted research, disrupted personal relationships, and loss of reputation and research money (Newell *et al.*, 2000).

Given this context, some research has been done on DL and DH project teams as separate entities (For example, see Johnson, 2009; Liu *et al.*, 2005; Liu *et al.*, 2007; Ruecker *et al.*, 2007; Siemens, 2009). However, little has been done on the nature of the interaction between these two communities when in collaboration. On top of disciplinary differences, these work relationships can be further complicated when some team members, such as librarians, have more experience and training in collaboration than others. These can also be made more difficult when faculty do not have a good understanding or appreciate for the librarian's role in supporting research and scholarship (Christiansen *et al.*, 2004; Cummings *et al.*, 2005). Ultimately, too little is known about how teams involving DL and DH members collaborate, and the types of support needed to ensure project success. This article is a start to that discussion.

3 Methods

This research project used a two-pronged inductive approach with a combination of data collection methods in order to explore the nature of collaboration between these communities (Bickel *et al.*, 1995; Jassawalla *et al.*, 1998; Easterby-Smith *et al.*, 1999; Amabile *et al.*, 2001). First, members of various DH and DL research teams located in Canada, the USA, and the UK were interviewed in 2008 and 2009. Lasting about an hour, these in-depth interviews explored the individual's research team context with a focus on their definition of teams, their experiences working in them, and the types of supports and research preparation required to ensure effective research results. Purposeful sampling was used to select those individuals with specific experiences and knowledge related to the research question. Participants were identified through personal contacts and recommendations from others (Rubin *et al.*, 1995; Marshall *et al.*, 1999). Interview questions can be found in the Supplementary Data.

Second, drawing upon themes from these interviews, a survey was administered twice—first to members of the DH community and second to the DL one, with slight revisions to the survey to reflect the specific DL context. This allowed for the comparison of the results between the two communities to determine if there were any similarities and/or differences in methods of collaboration. These surveys were sent to the members of these communities through listserves and association membership lists in North America and Europe. In particular, the survey for the DH community was distributed to members of the Society for Digital Humanities/ Société pour l'étude des médias interactifs, Association for Literary and Linguistic Computing, Association for Computing and the Humanities, and the Centrenet, HUMANIST listserves and others. The DL community survey was distributed to members of the Canadian Library Association, Canadian Archival listserve, HUMANIST (with a specific call for librarians and archivists), and other similar outlets. The survey produced descriptive statistics on the number of teams, their composition, and perceived effectiveness; it also established a baseline against which further research in this field and others can be compared. It should be noted that the resulting sample is small and self-selected and there are limitations to generalizability across both communities. The surveys can be found in the supplementary data, available in LLC online.

The results from both the surveys and interviews provided a description of these communities' work patterns and relationships, and the identification of supports and research preparation required to sustain these teams (McCracken, 1988; Marshall *et al.*, 1999).

4 Findings

The following section will present the findings from both surveys and interviews by exploring similarities and differences in collaborative approaches. The two

communities show many common patterns of interaction, but the results also suggest the presence of several key differences which may have an impact on a digital project team's efforts. Survey and interview respondent demographics will be outlined.

4.1 Survey respondent demographics

In total, seventy-one individual respondents who had experience with at least one digital project completed the survey with the number of respondents split almost evenly between the two communities. These individuals have been involved in a variety of digital projects, including digitized manuscripts, electronic editions, databases, software creation, institutional repositories, portals, and others. The project teams in which these survey respondents have participated are often inter-departmental and often span institutions, but less often crossed national borders. The teams also tend to be either fairly small in the number of members with three to five members or relatively larger with more than ten individuals involved. The project budgets were varied in size with some having budgets of less than $50,000 (CDN) and others having significantly larger budgets totalling more than $250,000 (CDN); these larger budget projects tended to be within the DH rather than the DL community. Respondents played various roles in these teams, ranging from project lead to team members, technical support providers, librarians, or project managers. In some cases, individuals held more than one position or used titles that captured the more subtle roles that they played. Table 1 summarizes survey respondent demographics.[2]

4.2 Interview respondent demographics

The twelve interviewed individuals (seven from the DH community and five from the DL community[3]) have participated in a range of digital projects, in terms of project objectives, team membership, budget, and geographical dispersion, within their own institution as well as nationally and internationally. The roles they have played vary and include research assistant, researcher, computer programmer and developer, project manager, and lead investigator.

4.3 Similarities

The results from Question 2 in the survey begin to establish the foundation for the examination of the similarities and differences between these two communities, from which the survey and interview results will be explored to provide a fuller picture of these collaborative approaches.

As can be seen in Table 2 which focuses on the results to survey Question 2, teams are used for digital projects because the scale and scope of these projects demand this approach. Respondents ranked the fact that they worked in teams because team members have different skill sets highest (DL: 93%, DH: 90%). Further, 72% of the DL respondents and 51% of the DH respondents said that they work in teams because the project schedule requires multiple staff to complete tasks on time. Interestingly, both sets of respondents ranked very low (9%) the need for a team due to the fact that the data is in different languages.

Respondents further elaborated on the reasons for team work through the open-ended questions on the benefits and necessity of project teams. These reasons focused on both the requirements of the work and on the resulting inter-personal team relationships. Respondents in both communities focused on the ability of a team to leverage expertise and complementary skills, especially within multi-disciplinary teams. As one respondent remarked, 'some work can ONLY be done collaboratively' (DHR34;[4] emphasis in the original). Further, another commented that one can learn 'a lot from others with different skill sets and experiences' and that these teams can also provide 'support, particularly through the setbacks' (DLR16).

Analysis of the full survey results provide further insight into the methods of interaction and collaboration within these digital project teams. Both communities indicated that they relied on email and face-to-face meetings for most of their communication with relatively little use of online communication tools. The DL respondents seem to suggest a greater reliance on email as opposed to face-to-face communications and tended to rate the relative effectiveness of email higher than DH respondents. Potential reasons for this difference will be discussed below.

Table 1 Survey respondent demographics

Demographic (number)	Digital humanities (36)	Digital libraries (35)
Affiliation	University (32)	University (23)
	Research centre (1)	Research centre (3)
	Other (3)	Public library (2)
		Archive (1)
		Other (6)
Language	English (28)	English (31)
	French (4)	Other (2)
	Spanish (1)	
	Other (1)	
Role within the team	Leader (22)	Leader (15)
	Team member (6)	Team member (4)
	Technical support (1)	Technical support (1)
	Other (4)	Librarian (6)
		Other (7)
Team's membership size	Two individuals (1)	Two individuals (1)
	Three to five individuals (15)	Three to five individuals (19)
	Six to ten individuals (6)	Six to ten individuals (6)
	More than ten individuals (11)	More than ten individuals (7)
Budget	$0–9,999 CDN (6)	$0–9,999 CDN (11)
	$10,000–49,999 CDN (5)	$10,000–49,999 CDN (7)
	$50,000–249,999 CDN (9)	$50,000–249,999 CDN (9)
	$250,000 CDN and more (12)	$250,000 CDN and more (4)
Position	Academic (10)	Academic (8)
	Post Doctoral Fellow (2)	Librarian/Archivist (23)
	Programmer/Developer (4)	Programmer/Developer (1)
	Researcher (2)	Project Manager (2)
	Student (4)	Other (3)
Academic discipline	Humanities (19)	Library and Information Sciences (9)
	Social Sciences (5)	Archival Studies (22)
	Library and Information Sciences (4)	Humanities (24)
	Computer Science (6)	Social Sciences (2)
		Other (1)

Respondents indicated more than one academic discipline.

The respondents also indicated that their digital project teams tended to operate without formal documentation that outlined organizational structure, roles, responsibilities, decision making methods, and conflict resolution mechanisms. Only approximately one-third of digital project teams within either community had such documents. Further, survey respondents were asked to evaluate the importance of various decision-making mechanisms to their particular research team. For both communities, over three-quarters ranked decision-making by the project leader as important or very important to the team as compared to consensus or decision-making by a few select individuals. These results might reflect the large number of self-identified team leaders in the survey samples. At the same time, groups may be using different kinds of decision-making processes depending on the type of decision, as one respondent elaborated:

> The group tends to function using a number of methods from consensus to individual decision making. This is made possible by (1) agreed upon goals and objectives, (2) a recognition that each of us has strengths and weaknesses, and (3) a division of responsibilities wherein those carrying out duties are given latitude to perform them. The respect we

Table 2 Reasons for collaboration

IN2: Why do you work in a project team?	DL	DH
Different methodological approaches	24%	54%
Team members have different skill sets	93	90
The volume of data to be studied	15	42
The project schedule requires multiple staff to complete it on time	72	51
The data is in a range of different languages	9	9
Data is collected from geographically distributed areas or participants	63	21
Collaboration is more productive than individual work	40	63
I enjoy collaboration	18	42

> have for one another's talents means that is generally easy to advance broad agendas for the project by consensus and make decisions about more specific issues based upon discussion and listening to those who know most about an issue and communicate to the group as a whole... (DLR44).

The opposite situation is true for formal project plan and project management documents that outlined project goals, outcomes, and timelines. In this case, over 60% of respondents in both communities indicated that their team had such a document. Of this subset, the majority agreed or strongly agreed that processes and steps required to meet the project goals were well understood. In addition, over 80% agreed or strongly agreed that the project goals themselves were well understood. Finally, over 60% agreed or strongly agreed that the mechanism for setting and sharing the project goals were effective.

DL and DH survey respondents reported similar challenges within their collaborations, many of which are similar to those encountered by many teams, regardless of project focus. These included difficulties associated with scheduling and coordinating tasks, people, and other resources, facilitating communication with geographically dispersed team members, even those within the same organization, and interpersonal issues, such as conflict resolution and different work rhythms. For many, group dynamics and expectation management were factors. As one respondent stated, 'every now and then one person just doesn't work well with others and one ineffective and unproductive or stubborn person can drag the team down' (DLR17). Several also highlighted the importance of 'making clear what the expectations are for each member' (DHR9) as well as 'finding common goals' (DHR22). Key activities for many teams included 'reaching agreement, building on project outcomes, taking ownership of aspects of the project' (DLR36). One respondent perhaps addressed this issue most succinctly with a comment regarding the necessity of 'getting everyone on the same page and having a vision for the end result' (DLR33).

For some digital project teams, language differences presented barriers on several levels. First, given the geographical spread of some teams 'language barriers—many team members had English as a second language—made communication somewhat challenging' (DLR9). The geographical spread often slowed group progress. This particular challenge was highlighted by one DL respondent with regard to their particular project. They stated there were 'unique challenges for a long-distance collaboration on digitization. Pre-digitization and digital imaging are carried out in one country with all the physical materials located there; while post-digitization and quality control are performed in another country'[5] (DLR15).

However, other challenges were more directly related to the same diversity that creates the benefits in these types of teams where a variety of skills and perspectives are required. As highlighted, these teams must find methods to allow them to harness these different skill sets and academic perspectives to ensure that the team can effectively reach their research objectives. As acknowledged by one survey respondent, this type of team work 'challenges members to think of their work through another

kind of specialist's eyes' (DHR6). Other associated challenges include the variety of vocabularies used by members from different disciplinary backgrounds and the necessity to train 'people in disciplines and methods that aren't theirs' (DHR12). As one respondent indicated, it was challenging 'getting all the team members to use the same language: one person's ''book'' is someone else's ''volume'' (DLR13). Finally, tensions may be created when there may also be a 'general lack of appreciation of the value of different contributions' (DHR8).

By way of summary and conclusion to the survey, respondents were asked to provide advice to teams undertaking their first digital project. As several respondents suggested, one should 'plan as much as you can before you begin' (DHR11) and 'set up a structure and deadlines with milestones' (DHR19). Further, 'formal documents sound cheesy, but in a multi-ethnic, multi-lingual, multi-generational, multi-talented work group (as every work group is) they are essential for setting a baseline of understanding of what the project is and who is supposed to do what' (DLR11). Finally, respondents reinforced the necessity for follow up and project control. As one respondent stated, a team must outline work clearly and 'have one member of the team whose responsibility it is to keep an eye on whether this is being met or not' (DLR33).

The respondents also provided advice on appropriate communication patterns, including the importance of face-to-face interactions. One individual recommended that 'it helps especially in the early stages to have some formalised communication opportunities—team meetings or whatever' (DLR16). Further, respondents advocated 'enough F2F (face-to-face) time and opportunities to build trust and working relationships before relying heavily on electronic methods of interaction and communication' (DHR34). The survey participants also suggested that a good attitude was necessary with comments such as 'Stay in a good mood. Have fun. Keep your eye on the prize' (DLR13) and 'Start slowly and build up. Expect snags. Expect some resistance. Get buy-in from the top. Have patience. Take the time to recognize the successes' (DLR46). Finally, respondents also stressed the importance of good team members, particularly those with patience and who are 'open-minded' (DLR50). Another survey respondent echoed this by suggesting that one should 'make sure you've got good people; good people make a good team make good projects. Everything else is secondary' (DHR12). Ultimately, one needs to ensure that they are interested in the project and are 'engaged intellectually in order to get the job done' (DLR48).

4.4 Differences

While there are many similarities in approaches between DL and DH project teams, some interesting differences exist and may influence the effectiveness of a digital project team with membership that draws from these two communities.

First, as seen in Table 2, the starting assumptions for these projects may be fundamentally different. In contrast to the DH respondents, DL project teams are not being formed due to the necessity for team members with different methodological approaches and the volume of data within the project. Only 24 and 15% of DL respondents indicated that teams were needed due to these factors, respectively. This is in comparison to the 54 and 42% of the DH respondents on the same factors. This difference may be attributed to the nature of librarians and archivists' functions which has them interacting with relatively more volumes of data and undertaking different tasks with the data, as compared to academics. DL projects also appear relatively more deadline driven. That is to say, a greater percentage of DL respondents indicated that a team was needed in order to meet deadlines. Further, the data in DL digital projects tends to be more geographically dispersed as compared to DH projects.

Perhaps, the most striking difference can be seen in the relative weightings of the productivity of collaboration versus individual work and enjoyment levels. In both cases, DL survey respondents indicated that they enjoyed collaboration less and view it as relatively less productive than individual work as compared to the DH respondents. Comprising of relatively more academics, the DH respondents may undertake more solitary work, and therefore collaboration may be seen as a welcomed change and may be a deliberate choice activity. In contrast, team work is more the norm for librarians and

archivists, and thus they may feel it is an expected part of their jobs and/or assigned tasks, rather than a welcomed choice. This view was echoed by several of the DL survey respondents who said that there may be a 'corporate requirement' (DLR 55) for teams or a recognition that collections and data have 'cross-departmental custodianship' (DLR14); thus necessitating a team approach. However, in the open-ended questions, both groups highlighted the enjoyable aspects of collaboration. As one DL respondent stated, 'with the right people, it really is fun' (DLR13). Further, 'delivery of the project is more rewarding because of the team spirit that develops' (DHR6).

The differences between these two communities were clearly articulated in the interviews, with a focus on academic culture, disciplinary perspectives, rewards and recognition, and opportunities for training in team processes. First, the tensions between disciplines and between research and service functions that exist in academic culture can lead to differences in status, whether perceived or actual (Hagstrom, 1964; Ramsay, 2008; Newell *et al.*, 2000). For example, librarians are often seen to be a support and as such may not be perceived as valued members of a team in the same way academics are. The DL interviewees were most vocal about these tensions. DLI1 described academics as 'prima donnas', but recognized that this might be because it is their individual contributions, accomplishments, and achievements that are ultimately evaluated. Further, academics may be more focused on 'quality control' since it is their name that is attached to the publication (DLI3). Finally, one of the DL interviewees also stressed that 'we're very service oriented, but we don't want that to be confused with servitude' (DLI5). One of the DH interviewees (DHI6) provided further perspective on this by discussing these tensions within the context of age differences, suggesting that younger members of the academy may be more accepting of the various roles that team members play and ways that collaborative technologies can facilitate this interaction. As they stated:

> . . .because it's a Humanities-based project, the idea of working collaboratively isn't something, that especially older researchers, are used to at all. The idea of working in a collaborative relationship with your graduate student is for a senior scholar, that's crazy, what are you talking about? That's just not a model. Some people say, 'what you're developing is a Sciences-based model' and no, actually we're doing is this experiential based model that is very much geared toward working in the Humanities. It's just different kind of pedagogy, a different kind of learning, a different kind of research that we're engaged in (DHI8).

They suggested that younger colleagues may have different comfort and control levels that can allow for deeper collaboration. All interviewees, regardless of community, commented on the scholar's role as being solitary. Echoing the survey results, the implication of this is that academics may not be as accustomed to working within a team with deliverables on timelines, when compared to the often production-oriented work of many librarians.

Another aspect of these differences focused on the different cultures due to varieties of disciplinary backgrounds represented in these teams. As noted above, digital project teams may need to create a common vocabulary at the start of the project. One DH interview respondent provided further elaboration on the translation challenge that can exist. They said that 'Humanities scholars do not know a lot about computer science or technology. Computer science individuals do not know about humanities. Information scientists know about data, but not programming' (DHI4). The interview and survey respondents commented on the amount of time needed to overcome this challenge. As one of the DL interview respondents said, 'the reviewer did an MCRI project based out of University of X,[6] one comment that they made to us is that it took them a year of talking before they got on the same page' (DLI1).

Different rewards and recognition policies for collaborative work exist between these two communities. As echoed by the survey and interview respondents, collaboration and team work appear to be key components in librarians' roles in a way that is still generally not the case for academics. For librarians and other information experts,

'active participation and leadership in teams whether they are local, national, or international is definitely prized' (DLI4). However, within Humanities disciplines in particular, the single author publication is generally valued higher than multi-author one (National Endowment for the Humanities Office of Digital Humanities, 2010).

Training is the last area of difference between the two communities. The DH interview respondents indicated that they generally had received very little formal training in team skills, such as communication, negotiation, conflict resolution, and others. Instead, these individuals had learned to work in teams directly from projects completed as students or while working in other settings. In comparison, the DL interviewees had been more exposed to training within the context of the diverse roles that they play within the university and beyond. As they commented, the Library and Information Studies curriculum appears to be more team-oriented and collaborative than traditional humanities programs, a trend that seems to continue after convocation. In response to this, one DL interviewee suggested that, regardless of discipline, PhD students should be taught about the context of academic life, which includes working together in teams for both research and teaching and 'how to be successful in academic life' (DLI3).

As can be seen in this research, digital projects are being undertaken by teams of individuals with a variety of skills, academic disciplines, and perspectives, partly by choice and partly by necessity given the type of project demands and organizational setting. Team members from the DH and DL communities are finding similar benefits and advantages to this collaborative approach to digital work, despite challenges. However, it is clear that these two communities approach collaboration from different perspectives, which must be understood from the outset of the digital project in order to reduce associated challenges.

5 Discussion

This research contributes to a larger discussion regarding the nature of project teams within an academic setting generally, and within the Digital Humanities and Digital Libraries communities more specifically, and supports other studies on academic project teams, including an earlier study within the DH community (Siemens, 2009). As confirmed within this sample, collaboration enhances the project work by increasing the quality, depth, and scope of the scholarly work (Kraut *et al.*, 1987–1988; Northcraft *et al.*, 1993; Newell *et al.*, 2000). At the same time, as show above, academic teams struggle with difficulties and challenges associated with the various professional subcultures (Northcraft *et al.*, 1993; Newell *et al.*, 2000). With this knowledge, teams can understand those factors which contribute to success while minimizing and mitigating the potential difficulties (Amabile *et al.*, 2001).

Given the survey and interview results, several conclusions regarding work patterns of these teams are worth highlighting. Regardless of the community, these teams appear to be operating with relatively little formal documentation of roles, responsibilities, structure, and decision-making process. The exception is with documents that outline project goals, outcomes, and timelines, a difference which may be explained in two ways. First, many granting programs require a project plan as part of the application; thus, teams often start their work with this in place. Second, this situation may not be surprising given that the majority of the teams in which the respondents are involved are relatively small in terms of membership size, budget, and scale, with relatively little geographical spread. It may be easier to function with little formal documentation when a team is small. However, challenges that may flow from little formal documentation may become more apparent when project scope, membership, and budget increase in size and complexity, or when a project encounters difficulties. For example, several very large digital projects are underway at present and are engaged in efforts to be more formal in their documentation (For example, see Siemens *et al.*, 2009b). Also, as highlighted above, as projects become more geographically dispersed, the need for planning and documentation increases in importance. The open-ended responses in the context

of challenges and advice reinforce this need as survey respondents recommended planning, scheduling, and organization as keys to success. Finally, these respondents reinforced the importance of identifying the right people with whom to collaborate on these digital projects. This suggests that while the technical components and content are important to a digital project, the project's ultimate success (or not) may rest on interpersonal factors. This finding was reinforced in a recent report on the review of the Start-Up Grant program with the National Endowment for the Humanities where project directors indicated that one of their biggest challenges related to personnel issues with collaborators (National Endowment for the Humanities Office of Digital Humanities, 2010).

As indicated by the survey results and reinforced in the interviews, these two communities may start collaborations with different assumptions which will impact how they approach the collaboration. For example, DH survey respondents appear to undertake collaboration more often because they view it as more productive and a source of enjoyment as compared to the DL respondents. Further, their roles within the teams are very different, perhaps even a case for envy from the other community. As the DL survey and interview respondents stated, academics are perceived to have a relative luxury in relation to externally imposed deadlines, unlike aspects of library production-oriented work. Further, academics often look to other parts of the university as support for, rather than as collaborators in, the process of scholarship, a situation highlighted in other settings (Christiansen *et al.*, 2004). Finally, collaboration may be a choice activity and a welcomed change to the typically solitary research world of an academic. Team work is more the norm for librarians and archivists, and thus they may feel it is an expected part of their jobs, rather than a choice. These different assumptions are further complicated by the different vocabularies and areas of expertise, differences that can take time to negotiate.

The two communities appear to have different communication patterns due to the nature of their work. As indicated above, the DL survey respondents seem to have a greater reliance on email as opposed to face-to-face communications and tend to rate the relative effectiveness of email higher than the DH respondents. There may be two reasons for these differences that relate to the potential different compositions of DL digital project teams as compared to the DH teams. First, according to the respondents, DL teams appear more likely to be located within the same institution. As a result, casual interpersonal interaction, when many crucial conversations about a project may occur, may happen more frequently among these teams. This is in comparison to DH teams which appear to be more geographically dispersed. These teams must more deliberately plan meetings and interactions. As a result, DH team members may have a higher level of consciousness about the importance of this kind of interaction and the necessity to build this into project plans. Second, given that many of the DL teams are within the same organization, team members may be more familiar with each other in advance of a project start, meaning that more communication can be done by email. Less time may need to be spent in formal meetings developing work processes and trust among team members than is the case with those teams whose members may not have this history or personal knowledge of colleagues. This situation was also found by Lawrence (2006) in her review of a large e-research science project.

6 Implications for Practice

From this comparison of the similarities and differences in collaborative approaches between DL and DH communities, several implications for practice can be outlined.

First, the use of teams is likely to increase, both because of the nature of digital projects, but also because funding agencies are encouraging this trend by funding more team-oriented projects (Office of Digital Humanities, 2010; SSHRC, 2004). As one DL interview respondent stated, '...in order to be competitive you could not submit an application as an individual. You have got to submit an application as a team. You have to in order to be successful. You have no choice in

the matter' (DLI1). As a result, DL and DH communities must determine appropriate team processes to ensure that research can be funded and ultimately completed.

Second, within those projects where individuals from the DH and DL communities collaborate, the team can build on the liaison librarian function as a start of the partnership. In this regard, teams can deliberately harness the strengths that Library and Information Studies (LIS) professionals bring to the digital project. In particular, librarians can assist faculty in 'broadening some communication or getting stuff out there using open access' (DLI5). In other cases, the librarian may be the holder of the items under study. Further, all team members need to value the different intellectual contribution each member can make and see the information expert as being 'useful in projects' (DLI5), rather than there in a service/support role. Ultimately, as highlighted in the survey and interview results, this diversity of skills and perspectives is required to achieve project objectives.

In order to harness this diversity, teams must begin collaboration by assuming and discussing differences, rather than similarities. While everyone may be a contributing force in the project, they may not be approaching it with the same perspective or enthusiasm as others. As one of the DL survey respondents stated, it is important that team members 'don't make assumptions about team members' attitudes and knowledge. Respect the curators' deep knowledge of their subjects and respect that their experiences with researchers are as important to designing the end product as the information technology staff's knowledge of the techy bits' (DLR57). This idea has been echoed in other forums (Nowviskie, 2010).

It is at this point that the face-to-face discussions become particularly important as forums to negotiate differences, new working vocabularies specific to a project, and project objectives, outcomes, and tasks in advance of the 'real' project work (Cramton, 2001). As highlighted here and other places, it takes time for trust to be built between team members, an activity that can be more effectively done when all members are physically present in one location (Siemens, 2008; Handy, 1995). To facilitate these discussions, it may be useful to have translators or 'hybrid people' who can talk across disciplinary cultures, languages, and methodologies (Liu *et al.*, 2007; Lutz *et al.*, 2008). Finally, these initial meetings can also be the opportunity to explore the various preferences for communication channels, such as email, face-to-face, voice, and shared project spaces, and to establish working norms for communication (Siemens, 2008). Ultimately, there needs to be 'enough F2F (face-to-face) time and opportunities to build trust and working relationships before relying heavily on electronic methods of interaction and communication' (DHR34).

Given the range of formal and informal training in team processes, opportunities may exist to provide further skill development in this area. This might include formal courses as well as coaching for a specific team, as suggested by one DL interview respondent. Training at the point of team establishment can ensure that all members of a team have same understanding of collaboration. Opportunities may also exist to more formally include students in these digital projects so that they can learn team skills (Siemens *et al.*, 2009a). Several examples of this type of training through coursework and internships already exist where LIS and Humanities students are placed with Digital Humanities Centres to work on digital projects (Conway *et al.*, 2010; Sternfeld, 2010). These are important skills for students, regardless of whether they remain in the academy (Pearson, 1983; Bilodeau, 2007). In addition, by placing students in contexts different from their disciplinary training, they get exposure and understanding of other disciplines, which will contribute to their development as effective collaborators. Drawing upon their experiences and training in teams, DL community members could also play a leadership role by transferring these important team skills to humanities scholars and other team members with less experience. Further, these experiences will also create more of the 'hybrid people' who can easily move between DH and DL projects, regardless of the particular position that they occupy in the organization.

More team- and self-reflection might also be incorporated to ensure active learning from these projects. This process might include a review of

project documentation, benefits, challenges, and lessons learned (For example, see Liu *et al.*, 2007; Ruecker *et al.*, 2007; Ramsay, 2008). In addition, individual team members could also reflect on their own performance and determine if they are developing the appropriate collaborative mindset or 'understanding/ appreciation of each other's disciplinary/profession perspectives' in the words of one respondent (DLR55). As highlighted in survey results, the 'right' people for collaborative digital projects are those who are able to see the value in other perspectives and able to capitalize on the many benefits associated with digital team work. To encourage this reflection, grant funders might consider requiring comment on this aspect in the final project report as part of the assessment of the team's success (National Endowment for the Humanities Office of Digital Humanities, 2010).

Finally, as these digital projects grow in scale, scope, and diversity, more documentation may be needed to ensure that these teams reach their research objectives and show funding agencies and other stakeholders that they are capable of undertaking and completing a project. As one DL interview respondent noted, their project:

> . . . had to have a significant amount of organization, otherwise we wouldn't have been granted the millions of dollars we were granted. SSHRC itself implements a small set of what they call milestones, we call them millstones, because they were millstones around our necks. But nevertheless, they were important because they were interim steps. So, good organization, allowing clarity of vision for all of the team members (DLI3).

These steps can be important even for small projects.

Given that collaboration between these two communities is likely to increase, more work should be done to understand the nature of collaboration within and between them. First, further research should be undertaken to enlarge the size and scope of the sample for both the interviews and survey. Second, these respondents were predominantly from an Anglophone context (USA, Canada, and UK) and may approach collaboration differently than those from other countries, cultures and language groups. As the number of international collaborations increase, more work should be done to understand these potential differences and their impact on DH and DL teams (Siemens, 2010).

As these results show, the DL and DH communities are successfully using teams to undertake various digital projects and collaborating with each other. These teams in which the respondents are involved have found ways to manage the various challenges associated with this type of work while also reaping the many benefits. This article's recommendations and conclusions are designed to support the already strong team work processes that are in place.

Supplementary Data

Supplementary Data are available at *LLC* online.

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Notes

1 The term 'digital projects' will refer to both DH and DL projects inclusively.
2 The survey respondents are classified as DH or DL depending on the survey that they completed.
3 The interview respondents were classified as DH or DL according to the role that they occupied within their institution, not by the particular projects upon which they had worked.
4 DLR13 indicates the comment was provided by Respondent 13 from the Digital Libraries survey. DHI1 would refer to Respondent 1 from the Digital Humanities interviews. From this point, each comment will be attributed to a respondent in a similar manner.
5 The country names are removed to protect the anonymity of the respondent.
6 The name of the university has been removed to protect the identity of the respondent.