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A DIGITAL LIBRARY INITIATIVE FOR SCHOLARLY MONOGRAPHS:
AN ACTIVITY THEORY ANALYSIS

A Thesis in
Information Sciences and Technology

by

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ABSTRACT

Scholarly communications are changing with the application of technology. Historically academic scholars established their reputations through publications in monographs and journals. Scholarly presses often acted as an outlet for such publications. Research library budgets funded the process through journal subscriptions and monograph purchases. However, as science, math and engineering journal subscriptions increased, the funding for monographs decreased in parallel, creating a need for new publication processes and funding models. An attractive candidate for many university libraries has been digital publication opportunities, which seem likely to decrease costs while maintaining the goals of faculty publication and dissemination.

This project followed a university research library and university press as they partnered in a digital initiative to create an economically viable monograph series, using a dual-delivery method of electronic and print publishing. Using an interpretivist epistemology, the researcher employed observation, artifact analysis and qualitative interviews to examine the activities surrounding the project. The research focused on the context of the digital library initiative and the influence of that context on the choice and implementation of technology. Implications of this research include insight into the social and organizational interactions surrounding a complex technology project, pointing to the challenges of integrating people, information, technology and foundational work in the realm of digital library initiatives.
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Chapter 1

Introduction

1.1 Problem Space

Society has changed since people began using the internet in their daily lives. Information is no longer at the hands of the specialized craftsman but at the fingertips of those who seek it. With the increased access to information, libraries are no longer the gateway to information but another source in a long list of resources. Libraries in general have experienced pressure from the information age with the rising demands of patrons for more in-depth data and better design/presentation of information. With this change came the need for libraries to digitize assets, subscribe to other digital initiatives and allow patrons access to the best sources of information possible. Digitization at first was expensive, therefore decisions needed to be made on what to digitize and when. Libraries worked independently, without general guidelines, for some time, focusing on what they deemed important. This created duplication of collections across various libraries.

As time passed, Google emerged seeking to “organize the world’s information and make it universally accessible and useful” (Google Inc., 2007). One of Google’s many initiatives involved the mass digitization of library collections. This initiative left libraries wondering, if an ever growing company was digitizing their collections, who was picking up the stewardship of such collections? The initial reaction was to bar Google from accessing distinct collections, but with time, more libraries found their way to allowing the digitization. They saw it as their duty to increase accessibility and work to ensure that the information surrounding the collections remained intact and complete. Google swept through the acclaimed research oriented libraries,
gobbling up unique collections and leaving the duplicate reserves behind. Their promise to the libraries, in return, included access to the universal library, copies of the digitization for archival and access at their own institution.

With the common collections being “googlized”, virtually anyone with internet access would soon be able to locate information on the internet without utilizing the libraries resources. The libraries were now required to re-evaluate their position in information accession. Information stewardship, through support of scholarly communication and representation of specialized collections, emerged as an opportunity to add value to the information society.

Scholarly communication was an area of growing interest within the library community. Increased costs of science and technology journals have resulted in decreased financial means allocated to the purchase of monographs. Library sales of monographs have dropped, on average, from 750 to 200 copies (Association of Research Libraries, 1997). Without the profits from larger publications, publishers could no longer afford to publish in specialized subject areas that were not lucrative or financially sustainable. (Association of Research Libraries, 1997) The lack of opportunities to publish specialized research has made tenure difficult for academics since a major factor in tenure decisions involves quality and quantity of publications.

At the Mid State University\(^1\) Library, a timely decision was made to formalize a partnership with the Mid State University Press and create a Scholarly Publishing Office (SPO)\(^2\). The SPO’s primary mission is to utilize media technologies to advance scholarly communication (SPO, 2006). Past ventures of the Library/Press partnership, prior to the SPO, had proven lucrative through complimentary websites that expanded on the information provided in the monographs. The Library possessed the content expertise to add value to the printed volumes.

\(^{1}\) Mid State University represents a large public university in the Northeast.

\(^{2}\) Scholarly Publishing Office represents a specific unit formalized within Mid State University
Through formalization, more projects could be taken on and the Libraries could guide scholarly communications merger with technology.

The Mid State Studies in Romance Literatures became one of the initial focus projects for the SPO. This monograph series had been pulled from printed publication when it could no longer be financially sustained. Although the books in the series were well reviewed and had been contributing to positive tenure reviews, the publishing costs made it economically unfavorable. Re-examination of the series’ publication and sales history led to a pilot project shared by the Library and Press, aimed at delivering content electronically while offering the option of print on demand. This pilot project was an attempt to allow Romance Studies, along with similar monograph series in the future, an opportunity to be both actively published and economically viable. The initiation of the project also provides the starting point for the research study reported in this thesis.

1.2 Research Objectives

The research carried out in this thesis is aimed at clarifying the interactions of individuals working collaboratively to implement a digital library initiative. The research activities were motivated and framed by two high-level research questions:

R1: What are key elements within the social and organizational context surrounding digital library initiatives?

R2: How does social and organizational context influence the choice and implementation of technology within digital library initiatives?

Implications of this research include foundational work in the realm of research library and press partnering, insight into interaction surrounding a complex technology project, and the challenges of integrating people, information and technology.
1.3 Structure of this Document

Chapter Two provides a review of current literature in the area of research libraries, university presses, and scholarly communications. Chapter Three describes the research questions, introduces and discusses Activity Theory (AT) as a framework for addressing the research questions, draws a comparison of AT and other theories, and describes the methodological approach taken. Chapter Four offers an overview of the digital library initiative, reasoning behind the methods employed, issues that arose during the research process and data synthesis. Chapter Five describes the data gathered and establishes the context surrounding the digital library initiative. Chapter Six analyzed the activities that comprised the initiative, utilizing Activity Theory to examine the relationship between context variables and technology within these activities. Chapter Seven summarizes the implications of the research for scholarly communications and collaborative working groups, as well as discussing limitations and future work.

1.4 Researcher Perspective

The author’s perspectives on this research are affected by her professional and academic experiences. In terms of academic experience, the author has a Management Information Systems background with an educational pursuit in the Information Sciences and Technology. During the research process, the author was an employee of the Library within the Information Technology unit. Thus the author has experience with both technology implementation and its use within academia as a scholar. This experience guided the research approach with respect to defining the project chosen, research questions, interviews conducted, focus of observations and analysis of the data. Based on that experience, the research was approached with the assumption that
activities within the project would include complex interactions that required internal processing for analysis. This research was highly dependent on the experience and relationships established by the researcher during the immersion into the project.

1.5 Contributions

The research offers several categories of contributions including literature review, qualitative methodology, and analysis efforts to address R1 and R2. The literature review offers a foundation of libraries, publishers and the intersection propagated by changes in society and an increase in applications of technology.

The qualitative methodology offers insight into R1 and R2 through the application of Activity Theory (AT). Other predominant theories in the areas of social and technology interactions are also summarized and compared to AT. The methodology calls for the use of an interpretive lens. The research methods are identified as observation, semi-structured interviews, and artifact analysis of emails, project documentation, etc. as outlined in Table 1.

Table 1: Research Methods Employed

<table>
<thead>
<tr>
<th>Data Collection Method</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation of meetings</td>
<td>38</td>
</tr>
<tr>
<td>Qualitative Interviewing</td>
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</tr>
<tr>
<td>Artifact Analysis</td>
<td>307</td>
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An interview guideline (See Appendix B) offered structure for the qualitative interviews. The overall approach required the researcher to be immersed in the project, devoting large quantities of time to observation. The data collection employing these methods took place over an eight
month period, May to December 2007, initiating at the project’s inception thru the initial deployment.

R1 is addressed through an in-depth analysis of the people and organizations and acts as the foundation for R2. AT frames the initiative’s activities for analysis and reveals implications of context within the digital library initiative. The implications discussed include insights into interaction surrounding a complex technology project and challenges of integrating people, information and technology.
Chapter 2

The Evolution of Digital Libraries

This chapter presents a review of research libraries, university presses, and scholarly communications, with the aim of establishing a base of knowledge for the research conducted. The history of libraries and presses offer background information on the benefits and challenges of the individual entities. Scholarly communications and the binding of the two entities are then discussed to frame the research into digital initiatives.

2.1 Research Libraries

Libraries are long standing entities; a historical view dates libraries back to the days of Mesopotamia with papyrus scrolls as the first books (Krasner-Khait, 2001). Over five thousand years, collections have changed hands, been destroyed by fires, wars and other events, and moved throughout the world. At some points threatened, the library has never been forgotten. Great leaders saw the value of maintaining the history and lessons of the past. In the late 1800s, free public education and philanthropy drove the first public libraries to spread across the U.S. (Krasner-Khait, 2001). Today, libraries come in various shapes and sizes from the small local public library to the Library of Congress. The Library of Congress defines its mission as serving the American public “to sustain and preserve a universal collection of knowledge and creativity for future generations” (Billington, 2007). Libraries are seen as a repository of knowledge being held and organized for the people.
Librarians and other staff who support library activities play various roles within the library. These roles all support the same general goals: acquiring, maintaining, and providing access to collections within the library. Activities supporting collections are divided into four roles; preservation, dispensing, bibliographic and symbolic. A collection’s future importance is difficult to predict and therefore preservation of all documents protects against the loss of information. This is not always feasible even with the best possible effort being made. The dispensing role is the familiar function that libraries provide to the general public. Library “users” identify libraries as a location to procure documents and books at the time of need. The bibliographic role offers structure enabling the searching and retrieval of information. As collections grow, the bibliography keeps the information manageable and retrievable. Finally the symbolic role of collections encompasses all other roles. Without symbolism or importance, the collection lacks value. Large collections of rare materials bring status and funding for future endeavors (Buckland, 1992).

Libraries are traditionally divided by the profession they support: academic, scholastic, specialty, public and research (American Library Association, 2008). Academic libraries support the institution and the research/curriculum taught there. Scholastic libraries reside within the primary and secondary schools and support the students’ learning. Specialty libraries are typically private collections supporting the entity that houses them, such as corporations. Public libraries house readings sought after for pleasure reading and lightweight research. Public libraries are not typically focused on research-oriented publications. Research libraries focus efforts on supporting scholarly efforts. National and academic libraries usually reside in this category (American Library Association, 2008).

The Mid State University Library lands squarely into the research library category as a member of the nonprofit Association of Research Libraries (ARL). ARL offers governance over
123 research libraries. These libraries, all residing in North America, must adhere to the membership obligations by displaying the following characteristics in Table 2.

Table 2: Principles of Membership of the Association of Research Libraries (Association of Research Libraries, 2001)

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
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<tr>
<td>Institutional Commitment</td>
<td>Significant resource allocation to promote diverse collections and dissemination methods for scholarly pursuits</td>
</tr>
<tr>
<td>National Contributions</td>
<td>Contributing and partnering with other national or international libraries</td>
</tr>
<tr>
<td>Bibliographic Contributions</td>
<td>Contributing to a major bibliographic network through record creation</td>
</tr>
<tr>
<td>Circulation</td>
<td>Usage of collections by researchers at all levels of education both internal and external to the organization</td>
</tr>
<tr>
<td>Preservation</td>
<td>Proactive preservation of scholarly materials</td>
</tr>
<tr>
<td>Professional Contributions</td>
<td>Development of the library profession</td>
</tr>
<tr>
<td>Technological Growth</td>
<td>Increased utilization of technology opportunities</td>
</tr>
<tr>
<td>Academic Excellence</td>
<td>Support and growth of the academic community through programs, service and participation</td>
</tr>
</tbody>
</table>

These characteristics work to preserve the quality and access of collections for future researchers. Membership within ARL acts as a network to support the efforts of libraries to sustain scholarly pursuits through the stewardship of public and information policy (Association of Research Libraries, 2001). ARL acts both as a governance and a voice for research libraries across North America.

The voice of the ARL guards the interests of the member libraries and gives weight to their concerns within the government and litigation arenas. This voice has been growing in importance as the role of the research library has begun to change. Some say that libraries are a thing of the past, others argue that those people would not understand why libraries will continue on (Keller, Reich, & Herkovic, 2003). The libraries steward the process of research and the rationale behind it. It is not the information that the library provides but the “intellectual
guidance” to not only believe but to question and find contradictions for a clearer contribution to humanity (Casper, 1999). This position speaks to the importance of information stewardship even while the role of the library evolves.

Information Technology acts as a change agent in the changing roles and trends in the library. As technology matures and gains acceptance, libraries must adapt to offer services that meet the constantly evolving customer demands. For example, the internet and search engines have replaced the task of searching a card catalog. In the late 1990s, the internet moved from a librarian’s tool for information searching to the world’s playground for information dissemination (Buckland, 1992; Casper, 1999; Keller et al., 2003; Krasner-Khait, 2001). Patrons moved from starting their search at the library to conducting their explorations on their own workstations through search engines. Information discovered on the internet provided quick answers to questions, but left the integrity of the information to question at times. Thus patrons who were concerned about information credibility would often continue and refine their searches at the library. As a result, the reference questions brought to librarians have gained complexity as the simple searches are conducted without library intervention, and only the more detailed follow-on questions are reserved for the library experts (Marino & Nazarov, 2004). The Smithsonian Institute’s Office for Policy and Analysis has identified seven themes to aid in coping with the change in searching (Marino & Nazarov, 2004).

1. Become content providers to specific search engines (Yahoo!, Google, etc.)
2. Increase data aggregation (federated searching) and search with greater precision
3. Learn from business, adopt XML as the standard storage language
4. Manage Information Storage proactively (scalability)
5. Handle different data formats (expand into image and video indexing)
6. Create portals for patrons
7. Support the wireless patrons and utilize wireless devices within the library
These themes highlight the various methods to aid in the libraries transformation from a library to library 2.0. The community is listening and shifting towards a more patron focused effort. Within the Mid State University Library, initiatives include unconventional interaction with students, increased visibility of faculty and staff and new strategies for collection digitization and delivery.

2.2 University Presses

University Presses offer academics the opportunity to publish within specialty fields. Presses function similarly to commercial publishers in acquiring, editing, producing, designing, and marketing publications. But where the commercial publishers focus on popular content and on profit-making publications, university press focus on specialize scholarly content contributing to the larger society (Association of American University Presses, 2007b). The Association of American University Presses (AAUP) unites the presses and offers professional development as well as advocacy for the practice. Membership includes 125 presses within Belgium, Canada, China, Egypt, Ireland, Italy, Jamaica, Japan, The Netherlands, and the United States (Association of American University Presses, 2007a).

In most cases, the Press is a distinct entity separate from the University that houses it. In contrast to other academic units, Presses traditionally function as non-profit yet fiscally responsible units. Because Presses are fiscally responsible, they must create an attractive market to sell their publications. A common approach to this is for individual Presses to focus on specific subject areas, striving to become a revered source of publications for the subject.

Although Presses are housed within university settings, author favoritism is not encouraged nor taken lightly. Faculty members pursue publishers with a reputation in their field and often prefer outside institutions to avoid issues of prejudice (Brown, Griffiths, & Rascoff,
The University receives the benefits of the reputation of the press but the academics within the University are not guaranteed the rewards of a publication with their local University Press. Presses are not known for their profits; 72% of universities surveyed in the Ithaka Report operate the University Press at a deficit for the greater good of scholarly communications (Brown et al., 2007).

As information technology evolves, presses are not immune to the pressure of the internet and electronic resources. Technology has redefined the publishing process and affected the practice in ways that will continue to reveal themselves for many years. The “Long Tail” phenomena (Anderson, 2004) and the rise of online purchasing channels like Amazon have enabled specialization and profit in unexpected ways. The Long Tail phenomenon recognizes that profit is made from the niche markets for specific material. Anderson illustrates this with the Touching the Void mountain climbing book. Although the book was critically acclaimed, sales were small and the book was quickly forgotten. A decade later, the mountain-climbing tragedy, Into Thin Air by Jon Krakauer, became a publishing sensation. Touching the Void sales rocketed overnight as Amazon.com recommendations directed readers to similar titles (Anderson, 2004). Presses gain sales and profits from partnering with sites like Amazon.com and offering links to the print on demand version of past publications. In turn, sites like Amazon.com offer used books at discount prices and cut into presses potential sales.

The changing marketing of publications has occurred simultaneously with the lowering profits from monograph sales. Based on ARL statistics, since 1986 there has been a 25% decline in monograph purchases (Thatcher, 1997). The future of the monograph vexes University Presses and calls attention to the future of the press itself. Without the monograph sales and the complications of the market delivery, Presses are fiscally stressed and must rely even more on the parent institution for funding.
2.3 The Publishing Problem

Information technology and its adoption into everyday life have created a conundrum for scholarly communication within research libraries and university presses. Research libraries’ ambitions of collection and dissemination of scholarly content are challenged by the costs of sustaining access. Simultaneously, university presses struggle to sustain publications in specialized subject areas with diminishing returns.

Research libraries are adapting to the new demands of patrons, changing their approach to information dissemination and delivery medium. It is important to realize that the costs of such changes must be covered by existing budgets. For research libraries, subscriptions to journals in the science, technology and medical fields (STM) provide fundamental resources for research in those fields. Over time, the rising costs of the STM publications have cannibalized the budgets for other endeavors such as monograph collections. The increasing availability of resources online has also lowered the circulation of such materials. This decrease in demand has justified the lower levels of supplies as illustrated in Figure 1.

Figure 1: Factors Influencing Increases in Budget Allocations for Journals
The Press relies on monograph sales to recover the costs publication. Unfortunately, average library sales of monographs have dropped from 750 to 200 copies per monograph in the last decade (Association of Research Libraries, 1997). As library sales have declined, the capacity of the Press to publish materials has also diminished. The first subject areas to feel this diminished capacity are those that are least likely to produce a significant return on investments for the press, for example specialized titles in the humanities.

Academic scholars within these relatively low-selling subjects experience considerable disparity relative to their counterparts in STM disciplines. In most scholarly disciplines, tenure decisions are traditionally based on the faculty member’s capacity to publish and grow the reputation of the institution in the subject area. Thus a decrease in monograph publication opportunities adds challenges to the tenure process for scholars in under published fields like the Humanities. Within STM subject areas, new forms of publication like online peer-reviewed journals and articles have become the standard and accepted practice. Reform is called for within the humanities for the acceptance and movement to online materials (Harley, Earl-Novell, Arter, Lawrence, & King, 2007; Stanton et al., 2006). Whether or not reform occurs, the future of the monograph remains dim unless innovative approaches change its path.

The monograph crisis has not occurred overnight nor have the signs gone unnoticed. Within the library, press and academic associations and publications, one will discover numerous reports, articles, and blog entries that discuss the scholarly communication crisis (ACRL Scholarly Communications Committee, 2003; Association of Research Libraries, 1997; Brown et al., 2007; Esposito, 2007; Ryan et al., 2002; Schneider, 2007; Stanton et al., 2006; Thatcher, 1997; Wasserman, 1997). The common theme is the lack of publishing opportunities for underprivileged subject areas. Technology and the changing demands of consumers are at the root of a cycle of diminishing returns for publishing institutions leading to the demise of the publication channels needed by those subject areas.
2.4 The Digital Library Initiative

With the changing environment of both research libraries and presses, these two entities began to explore opportunities for mutual support and synergy. Scholarly communication was a growing area of interest within the library community, as libraries began to investigate ways to innovate their services and aid the troubled subject areas. Presses were failing with the financial burdens associated with specialized publications and seeking new ways to reach the market. The entities offered complementary perspectives and it seemed that by united they might create a better future for the troubled subject areas.

The Mid State University proposed a digital library initiative to explore a partnership of the Library and Press. Initially the project focused on making monograph series available electronically through a library driven web site with the backing of the Mid State Academic community for editorial reviews and refereeing. This allowed academics opportunity to voice their research and gather information. Unfortunately the cost saving of electronic publishing only represents roughly 25% of the print publishing costs. A majority of the costs of print (overhead, editing, marketing and refereeing) are also experienced by electronic publishing (Wasserman, 1997). The University re-evaluated the initiative and reformulated the partnership: The Press was absorbed into the Library and the Romance series was reconceptualized as an initiative in dual delivery methods. The research reported in this document studied this partnership and its Romance series initiative, seeking to characterize the essential elements of the context surrounding the digital library initiative and the influence of this context on technology decisions and implementation.
Chapter 3

Technology and Human Activity

Technology decisions impact many facets of the implementing organization and the information society including the users, administrators, organization, etc. This research examines the impact of context on technology decisions specifically within a digital library initiative. The following chapter outlines the research questions pursued, theoretical and methodological approach, data collection and synthesis.

3.1 Research Questions

The initiation of the Romance Studies monograph project at Mid State University created a unique opportunity to observe and understand the dynamics of the personal, social, and organizational factors that influence a technology selection and implementation project. The project was a partnership between various units within the University, with different units playing different roles and bringing different skill sets to technology discussions. Because the project was taking place at the time that the research was conducted, it was possible for the researcher to conduct an ethnographic style of data collection. This type of immersion into the project offered an excellent source of rich interactions and observations. As outlined in the introductory chapter, the research focused on two distinct yet complimentary questions.

R1: What are the key elements of the social and organizational context surrounding digital library initiatives?
R2: How does social and organizational context influence the selection and implementation of technology within digital library initiatives?

R1 investigated the various units’ roles and governance in the Romance Studies digital initiative. All of the units were internal to Mid State University, with most housed within the Library. Other units were part of the College of Liberal Arts and the University’s IT organization, Information Technology Services (ITS). The context analysis included the relationship and governance between the Library and ITS, internal Library units and Library and College of Liberal Arts. The partnership between the Library and ITS was key to the success of the initiative, specifically technology and its implementation. In addition, the relationship between the Libraries and the Press was new and fairly undefined. Internal struggles for position and recognition between University Libraries units were also visible.

R2 built upon R1’s findings and analyzed the activities surrounding the project. The analysis offered insight into the choice of technology and the key activities / interactions that affected that choice. Activity Theory was utilized to frame the project process and illustrate the interdependencies and crossover of actions. This framing offered valuable lessons and a significant overview of the digital library initiative. AT, the framing it offers, as well as comparable theories are explored in the following sections.

3.2 Activity Theory

Activity Theory is not a theory in the general terms but a “set of basic principles which constitute a general conceptual system which can be used as a foundation for more specific theories” (Kaptelinin, Kuutti, & Bannon, 1995, p. 190). These principles create a focus for research revealing the activities and sub activities and the complexity of the systems through
multiple values, historicity and contradictions that evolve over time. The general principles of AT are highlighted in Table 3.

Table 3: Principles of Activity Theory (Engeström, 2001, pp. 136-137)

<table>
<thead>
<tr>
<th><strong>Principle</strong></th>
<th><strong>Explanation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities are the prime unit of analysis</td>
<td>Action and operational motivations mediated by tools are parts of the larger activity. The analysis is held at the collective level of the activity system and its network connections to other activities.</td>
</tr>
<tr>
<td>Multi-voiced</td>
<td>Activity systems hold individuals with various backgrounds and interests. The Division of labor determines the role within a specific activity but the multiplicity of the network of activities an individual is involved in complicates the activity and its voice.</td>
</tr>
<tr>
<td>Historicity</td>
<td>Activity systems transform over time and their history must be understood to understand the complexity and challenges.</td>
</tr>
<tr>
<td>Contradictions</td>
<td>Tensions within and between activities foster change and innovation in the object of the activity. These tensions are structural in nature (technology, div. of labor &amp; roles) and build over time.</td>
</tr>
<tr>
<td>Expansive Transformation</td>
<td>Over time, the aggregation of contradictions causes the activity system to evolve and widen the possibilities of the activity.</td>
</tr>
</tbody>
</table>

Activity Theory does not focus on the technology as a separable factor but rather on the ways in which technology is used to mediate efforts to achieve the “object” or goal of the activity. For example, in a librarian reference activity, the object is relatively straightforward, to retrieve information relevant to his/her query. The analysis or retrieval tools that she uses are not analyzed on their own, but instead with respect to whether and how they support achievement of this object, and ultimately the outcome of informing the patron. In Figure 2, Yrjö Engeström’s (1987) conceptualization of an activity illustrates a number of entities that comprise an activity (the entire diagram represents the activity).
Activities are the actions surrounding a subject and object in the pursuit of an outcome. The outcome motivates the activities and it is possible for the object and outcome to change overtime within the activity. The introduction of community requires the rules of the community to mediate the subject and the division of labor to mediate the outcome. The tool mediates the subject and object structures by aiding and inhibiting roles. Multiple activities can merge for a common goal. For example, in information system design (ISD) there are multiple components (objects) that entail various activities but the different components are all contributing to the same higher level goal (outcome). It is the integration of related activities that makes the community structure in Figure 2 so important (Kuutti, 1995).

There are three main benefits to the application of AT in organizational research. First, AT offers a framework to step away from the activities observed and identify relationships that are under stress and need reworking. Second, focusing on the intentions of the subjects and the mediation of technology, AT highlights areas of continued frustrations for subjects within the activity or network of activities. Finally, application of the theory offers an opportunity to affect the long term success in achieving an outcome. By analyzing the activity, opportunities for influence may be identified early in the lifecycle (Kaptelinin & Nardi, 2006).
AT has roots in the Soviet psychology. In the 1920s, Lev Vygotsky deemed the field of psychology to be in “crisis”. His works focused on the relationship between the mind and culture. Contemporary psychology held that culture and society were external factors to the mind. Whereas, Vygotsky viewed culture and society as “generative forces directly involved in the very production of the mind” (Kaptelinin & Nardi, 2006). The impacts of those forces are revealed over time and therefore a cultural-historical perspective is critical. The cultural-historical psychology takes a radical departure from contemporary psychology. The beliefs and values of humans are constantly being evaluated as interactions occur within daily life; “the person needs to relate to meanings that are already there” (Kaptelinin & Nardi, 2006, p. 50). Aleksey Leontiev, a student of Vygotsky, continued to evolve Vygotsky’s ideas about cultural-historical psychology. His work elaborated on the perspective laying the foundation of today’s Activity theory. The famous ‘primeval hunt’ example (Leontiev, 1981, pp. 210-213) illustrates the need to consider collective activity rather than the individual. If a group of hunters break into groups, half hunting and half bush beating the prey, the group bush beating looks insane to an outsider without the collective activity of the larger group.

Activity Theory has frequently been applied to the analysis of technology use, particularly within the field of computer supported collaborative work (CSCW). In one of the earlier adoptions of AT, under the study of Human Computer Interaction (HCI), Bødker used AT to highlight the human use of technology within the larger context. Traditionally, HCI focused more on the information process and less on the context and how the technology mediated the interaction (Bødker, 1989; Kaptelinin & Nardi, 2006). AT was instrumental in bringing HCI out of the laboratory and into the real world contexts in which technology is used.

In the early 1990s, Activity Theory strengthened its contributions to the CSCW field. Kuutti (1991) proposed activity as the basic unit of analysis for CSCW research and (Kuutti & Arvonen, 1992) offered one of the first analytical tools based on the theory. CSCW traditionally
used ethnomethodology in research. Ethnomethodology attempts to gather all available details and avoid theorizing prior to data collection. Both AT and ethno-methodology gather details to understand the actions but AT brings theory to the observations. Both practices value the observation of actual work rather than reliance on descriptions. The observations often reveal the tacit complexities of the task at hand. The proximity in approach and values allow the CSCW field to embrace AT as an theoretical framework to inform design (Kaptelinin & Nardi, 2006).

The framework, illustrated in Figure 2, offers researchers a broad framework to understand “complex mediated social practices” (Kaptelinin & Nardi, 2006, p. 100). By dividing the data collected into the structures and mediatory roles, interactions and contexts emerge. This gives the data clarity and framing for analysis. The practice of setting the data into the framework also illuminates areas of contradiction and the connections between activities.

Various areas have embraced AT as a framing tool for analysis. Designers for information systems find AT useful for understanding the context in which the system will be used. In this research, the theory was applied in a more traditional sense following the practice of developmental work research. Developmental work research investigates the transformation of an organization’s work activities with the introduction of technology. An example of this is Engeström’s study of the implementation of technology at a Finnish hospital; the technology did not just impact work and the time it took but redefined the roles of the employees and their understanding of the hospital (Engeström, 1990). Engeström revisited this study and examined the progress of the hospital in several other publications (Engeström, 2001). Utilizing AT, Engeström framed the breakdowns in the learning process not just of the technology but the very practices in place at the hospital. The research reported here followed a path similar to that described by Engeström, analyzing the processes surrounding the investigation as well as the change in activities as the project progresses.
3.3 Activity Theory and Other Approaches

As an aid to formulating the rationale for adopting an Activity Theory framing, other theories that consider the role of technology in human activity were explored; these included Actor Network Theory, Boundary Objects, Situated Action and Distributed Cognition. All of the theories had similarities and merits for use. The theories also had various differences and limitations. The following subsections explore each theory and draw comparisons to Activity Theory.

3.3.1 Actor Network

Actor Network Theory was created as an answer to both Technological Determinism and Social Construction of Technology (Latour, 1993). Both theories are extreme in their positions stating that technology or social constructs, respectively, determine the outcome of innovations. Actor Network Theory levels the playing field by recognizing every entity that plays a role in an activity as an actor with agency. Agency represents the ability to influence actions by internal decisions. Actors can be “black-boxed” to represent a summation of other embedded actor networks. The theory views actors as interconnected with other actors on various levels through networks (Tatnall & Gilding, 1999).

Actor Network Theory and Activity Theory both encourage a nested analysis approach, acknowledging that actor networks (or activities) are embedded within other actor networks (or activities). They also both rely on network structures to document the inter-connections between the entities engaged in the activities. However, unlike Activity Theory, Actor Network Theory assumes agency by all actors within the network; both artifacts and humans or human
organizations are seen to have context and agency that affect the outcomes. Human elements are given no special attention as thoughtful deliberate beings with experiences and intentions.

### 3.3.2 Boundary Objects

Knowledge and the complexities that surround sharing, building and communicating it have always offered interesting areas of research. Boundary Objects (Carlile, 2002) works to further explore improved knowledge transfer or communication methods. Boundaries are identified by the various groups that work on a specific artifact or process. There are several styles of framing: syntactical, semantic, and pragmatic.

Syntactical framing (Shannon & Weaver, 1949) holds that an established syntax, both controlled and adopted, will provide the common ground needed to transfer of information across a given boundary. For example, if a sales division and engineering team tried to communicate product deadlines, their various terms could confuse the communication of key milestones. Setting syntax allows the two groups to communicate information freely without using keywords that confuse the groups.

Semantic framing builds on syntactical framing by recognizing that different individuals may have different interpretations of the same message (Carlile, 2002). Even if the syntax is stable across the groups, the conveyed message may not be understood in the same fashion. Tacit knowledge and the individual’s orientation within the organization determine the interpretation (Nonaka & Takeuchi, 1995).

Pragmatic framing (Carlile, 2002) considers knowledge as it exists within a specific practice. Knowledge within a practice has specific attributes. Knowledge is:

- Localized or positioned around specific issues within a process
- Embedded in the practice (rules of thumb, experiences, methods, etc.)
Invested through experiences, the more successes experienced with knowledge, the more likely it will be applied in the future (Carlile, 2002, pp. 445-446). This framing does an excellent job of establishing the value of knowledge within a practice. Artifacts and tools used to create the practice are considered objects and the individual’s actions and interactions with such objects are evaluated for knowledge creation. This framing helps to further identify the knowledge within a specific practice but does not bridge the communication between separate practices looking to transfer knowledge.

Boundary Objects succeeds in identifying the diversity of knowledge and complexity of information transfer across various groups. Activity Theory recognizes that the activity has the potential to have multiple activities within an activity and therefore multiple individuals and groups with mixed voices. However, the concept of boundary objects and the theory’s identification of different types of breakdowns are relevant to the application of Activity Theory and should be recognized within the process of framing with Activity Theory.

3.3.3 Situated Action

Situated Action (Suchman, 1987) focuses on the actor and situation surrounding the actor at the moment of activity enactment. The research investigates the rationale for actions taken by the actor. The approach analyzes at a moment in time and draws inferences about the actor’s context based on the environment in play at that moment. The research into the rationale of the actor helps to inform the design of object or task at hand.

This approach is useful for usability and HCI studies. It experiences limitations when practiced in uncontrolled settings. Because the research seeks information about a specific moment in time, it does little to capture the larger process that may span over time. Activity
Theory specializes in larger, multi-leveled processes and recognizes that human behavior at any specific moment is contributing to actions that are part of a larger activity (Nardi, 1996).

### 3.3.4 Distributed Cognition

Distributed Cognition (Hollan, Hutchins, & Kirsh, 2000) groups the individuals and the artifacts they use into a cognitive system. This approach closely mirrors that of the activity within Activity Theory. However the focus of distributed cognition lies with the interaction between the artifacts and individuals accomplishing a specific goal. This goal is not evolving but a stable objective. The individuals are part of the system and functioning within the specific system, therefore they are held at the same level as the artifacts (Nardi, 1996).

Although both Distributed Cognition and Activity Theory look at the event as a whole, they differ in their level of analysis and treatment of the individuals within the event. The absorption of individuals into the system is the leading difference between Distributed Cognition and Activity Theory. Within Activity Theory, the individual has a mediating relationship with the artifacts. Like Actor Network Theory, Distributed Cognition considers agency to be present for both the human actors and the artifacts.

### 3.4 Rationale and Epistemology

Qualitative and quantitative research approaches were analyzed to decide which methods were better suited to answer the research questions and the overall nature of the phenomenon. Using quantitative research methods would require the phenomenon to be represented numerically through theoretical constructs and concepts (Straub, 2004). Qualitative research methods, on the other hand examines the phenomenon by understanding people and the social
and cultural contexts within which they exist though interviews, participant observation and/or
document analysis.

Approaching the project with the intention to observe and understand the interactions
surrounding the implementation of a new process helped the researcher to remain open-minded.
This also meant that the research did not start with a priori hypothesis about what the
observations and outcome would be. The data was collected at both the individual and group
levels and therefore bound by social rules and norms. Motivations and individual goals play a
key role. As the individuals converge in collaboration, the data can be aggregated based on its
ontological perspective. The data concerned with social relations, processes and practices is well
matched to a qualitative research methodology (Mason, 2002).

The three lenses of qualitative research are positivist, interpretivist or a critical
theoretical. Positivist studies to test theory, hypothesis, and formal propositions in order to draw
inferences about phenomenon from the sample to the stated population (Orlikowski, 1991).
Interpretivism is based on the ontological assumption that reality and our knowledge of it are
socially constructed. Interpretive studies assume that “people create and associate their own
subjective and inter-subjective meanings as they interact with the world around them”. In IS
research, interpretive methods are aimed at understanding the context within which an
information system exists and how it influences and is influenced by this content (Walsham,
1993). Critical studies in IS consider information systems in their wider social context, focusing
on issues such as power, domination, conflict and contradiction (Howcroft, 2004).

Activity Theory works to understand the actions and context that surround the outcome
of an activity. Because of the fluidity of activities, moving up and down the scale of importance
and perspective, the context surrounding the activity is very important. This context is highly
interpretive and therefore requires an interpretivist lens.
Chapter 4

Understanding the Digital Library Initiative

The digital initiative studied in this research was a monograph delivery project that was used to explore whether a mixed delivery method could be an economically feasible approach to low volume sale monographs. The traditional delivery method included an initial print publication of monographs via the Press, followed by offering of the backlist, or out of print series titles, via website orders and print on demand. The mixed delivery method was designed to offer the monograph both in print form and online in its full form at the initial release of the publication. Project Directors hypothesized that implementing the mixed delivery method would increase the public awareness of and access to the monograph content, leading to increased print on demand sales (A5-7, A9). In proposals for funding, the Directors argued that “attempts to control [electronic] access are not cost-effective and have the potential to generate negative publicity around the project” (A9).

The entire project consisted of three phases: technology investigation, implementation, and deployment. Initially, the Directors communicated the goals of the project to the project manager stressing the short term technology investigation. Notes from director/project manager meeting introducing the project focused solely on the testing of technology in phase one (A2). Whether an oversight of the director or an over-interpretation by project manager, the project manager led the team with a narrowed perspective. The project manager focused on technology testing rather than implementation and release. This contradiction is further explored in Section 6.1.3.
The technology investigation (phase one) tasked the team with developing and demonstrating an example monograph in two separate but comparable technologies: Corporate Software System (CSS)\(^3\) and Open Source Software (OSS)\(^4\). The implementation phase (phase two) included implementing the upcoming publications in the chosen technology and preparing the publications for public release in line with the print publication dates. The research reported here was conducted throughout the technology investigation and implementation phases over an eight month period from May 2007 to December 2007, as outlined in the following sections. The third phase of the project was outside the scope of this research.

### 4.1 Research Design

In a research context, the methodological strategy is the logic by which one goes about answering research questions (Mason, 2002). To organize the research questions and associated methodological considerations, a chart was created, following Mason’s suggestions for how to link research questions to the methods, justification, and practicalities of data collection and analysis. This methodological analysis is summarized in Table 4.

---

\(^3\) Corporate Software System (CSS) represents a software system developed by a large research library oriented corporation.

\(^4\) Open Source Software (OSS) represents a software system developed by a large university in partnership with Mid State University and released to the open source community.
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Sources and Methods</th>
<th>Justification</th>
<th>Practicalities</th>
</tr>
</thead>
</table>
| *R1*: What are the key elements of social and organizational contexts surrounding digital library initiatives? | - Interviews of project members, Directors and management  
- Observation of interactions in group events (e.g. meetings, planning sessions, vendor demos)  
- Artifact Analysis of project emails, documentation, etc. | By approaching the research through multiple paths, a more holistic understanding is likely to occur | Need access to key people, meetings, artifacts, and communications. |
| *R2*: How does social and organizational context influence technology within digital library initiatives? | Same as above | Understand the motivations and goals of invested parties (team members, departments, management) and how they influence the outcome of the project | Same as above. |

### 4.2 Data Collection

Triangulation of methods, qualitative interviewing, observation, and artifact analysis, was a critical aspect of the data collection and synthesis. The data gathering process was first approved by the Office of Research Protections specifications for the use of Human Participants, such that all direct participants of this study, participating in interviews or observed meetings, received and signed an informed consent (See Appendix A). Data collection occurred over an eight month period. This period included the formulation and charging of the project and extended to implementation of the system and release to the public. The quantity and type of data collected through each method is summarized in Table 5.
Table 5: Data Collection Summary Statistics

<table>
<thead>
<tr>
<th>Data Collection Method</th>
<th>Quantity</th>
<th>Length</th>
<th>Record Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation of meetings</td>
<td>38</td>
<td>1-3 hr/meeting</td>
<td>Notes/audio</td>
</tr>
<tr>
<td>Qualitative Interviewing</td>
<td>18</td>
<td>1 hour</td>
<td>Notes/audio</td>
</tr>
<tr>
<td>Artifact Analysis</td>
<td>307</td>
<td>N/A</td>
<td>Email, Notes, Agendas, &amp; Reports</td>
</tr>
</tbody>
</table>

The observational approach is often used in qualitative research as a means to gather data with an insider perspective. This approach, with an interpretivist lens, sees the people, their interactions, and perspectives as the primary data source (Mason, 2002, p. 56). Throughout the project, the researcher was located in close proximity to the project manager and other members of the project team. As an employee of the library, the researcher was tasked with unassociated projects that allowed for continuous observation of the project manager’s work area. The researcher also had pre-existing work relationships with all project members, with the exception of the University Press. The proximity and work relationships aided in data collection as the members felt comfortable with the researcher. Access to work behavior and non-meeting communications were continuous throughout the project. Members of the team would often make a note of emails and meetings that the researcher was not aware of and forwarded the information. The motivation behind the unscheduled interactions was often spontaneity of communication in which the researcher was not included.

In addition to daily observations within the workplace, full access to all project-related meetings was granted. The researcher had no project role and therefore did not contribute to the process; the only role of the researcher was observing the meeting discussions and other behaviors. The meetings observed had a variety of participants as shown in Table 6. For purposes
of data analysis, each type of meeting was given its own analysis code; direct quotes or specific observations reported in the results sections are annotated with these codes. As the table conveys, most of the meetings observed were with either the project team or the publication team. On a few occasions, the researcher was notified about a meeting too late or had a conflict and was unable to attend.

Table 6: Observed Meetings by Type

<table>
<thead>
<tr>
<th>Meeting Type</th>
<th>Participating Units</th>
<th>Number</th>
<th>ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Team</td>
<td>L-IT, ITS, Press, Preservation, Cataloging</td>
<td>12*</td>
<td>M1</td>
</tr>
<tr>
<td>Publication Team</td>
<td>L-IT, ITS, Press, Preservation</td>
<td>10</td>
<td>M2</td>
</tr>
<tr>
<td>Directors</td>
<td>Asst Dean (Library) &amp; Assoc Director (Press)</td>
<td>2*</td>
<td>M3</td>
</tr>
<tr>
<td>Unit Managers</td>
<td>Directors, L-IT, Press, Preservation</td>
<td>4*</td>
<td>M4</td>
</tr>
<tr>
<td>Vendor</td>
<td>Directors, Press, Preservation</td>
<td>1*</td>
<td>M5</td>
</tr>
<tr>
<td>Technology Demos</td>
<td>Directors, L-IT, Press, Preservation, Cataloging, ITS</td>
<td>3</td>
<td>M6</td>
</tr>
<tr>
<td>Forums/Presentations</td>
<td>General Library Audience</td>
<td>4</td>
<td>M7</td>
</tr>
<tr>
<td>Editorial Board</td>
<td>Directors, Faculty, University Press</td>
<td>2</td>
<td>M8</td>
</tr>
<tr>
<td><strong>Total Meetings</strong></td>
<td></td>
<td>38</td>
<td></td>
</tr>
</tbody>
</table>

* Additional meetings occurred without observation due to scheduling conflict or lack of notification.

During meeting observations, the researcher took notes of who was present, participating, and the various perspectives/concerns expressed by the participants. It is important to note that although participating units were represented, the individual attendees varied, primarily as a function of the level of management required at the meeting. For example, a typical unit manager meeting would include the Press and Scholarly Communication Services members of the project team. Additionally the Press included all other middle management. Project team representation in unit managers meetings was limited to only those members who had a management role and did not include the project manager. Libraries’ Information Technology, Preservation and Cataloging members were represented by their respective managers and ITS had no representation.

Meeting observations were limited by the invitations received. As summarized in Table 6, some types of meetings occurred with regularity but the researcher’s invitation to attend was
sporadic. In addition, the researcher relied heavily on the project manager to note when invitations were not extended and facilitate an invitation.

This research followed Mason’s suggestions for planning and conducting qualitative interviewing (Mason, 2002). She suggests qualitative interviewing “to give maximum opportunity for the construction of contextual knowledge” (Mason, 2002, p. 64). An example of “constructing contextual knowledge” is asking project members to explain project initiatives or interactions from their own perspectives. Initially, general and meeting observations were used to identify key players in the project. Because of the researcher’s pre-established relationships with project members, interviews were granted with ease. A total of eighteen interviews were conducted with varying individuals both inside and outside Mid State University (See Table 7). Thus the data ID in this case refers to a particular individual who was interviewed, in most cases just once.

Table 7: Interviews Conducted by Unit

<table>
<thead>
<tr>
<th>Unit</th>
<th>Position/Role</th>
<th>Number of Interviews</th>
<th>ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scholarly Communications</td>
<td>Asst Dean/ Director</td>
<td>5</td>
<td>P1</td>
</tr>
<tr>
<td>Scholarly Communication Services</td>
<td>Head/Project member</td>
<td>1</td>
<td>P2</td>
</tr>
<tr>
<td>Preservation</td>
<td>Chair/Manager of project member</td>
<td>1</td>
<td>P3</td>
</tr>
<tr>
<td>Press</td>
<td>Staff/Project Member</td>
<td>1</td>
<td>P4</td>
</tr>
<tr>
<td></td>
<td>Assoc Director/ Director,</td>
<td>1</td>
<td>P5</td>
</tr>
<tr>
<td></td>
<td>Production Manager/Project Member</td>
<td>2</td>
<td>P6</td>
</tr>
<tr>
<td></td>
<td>Marketing Manager</td>
<td>1</td>
<td>P7</td>
</tr>
<tr>
<td>Cataloging</td>
<td>Faculty/Project Member</td>
<td>1</td>
<td>P8</td>
</tr>
<tr>
<td>Library Information Technology (L-IT)</td>
<td>Staff/Project Manager</td>
<td>1</td>
<td>P9</td>
</tr>
<tr>
<td>Information Technology Services (ITS)</td>
<td>Staff/Project Member</td>
<td>1</td>
<td>P10</td>
</tr>
<tr>
<td>Big University, University Library, Scholarly Publishing Office</td>
<td>Director/ N/A</td>
<td>1</td>
<td>P12</td>
</tr>
<tr>
<td>Center for Innovative Publishing</td>
<td>Executive Director / N/A</td>
<td>1</td>
<td>P13</td>
</tr>
<tr>
<td><strong>Total Interviews</strong></td>
<td></td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>
The interviews of Mid State staff and faculty focused on background experiences, knowledge of Scholarly Communications and project roles and perspectives. An interview guideline was developed to aid the interview (See Appendix B). Participants were typically interviewed once during the project with follow-up questions addressed in face-to-face or email communications. Monthly interviews were conducted with the primary director of the project. These regular interviews were initiated once the project moved from the discovery stage to implementation. These multiple opportunities to interview the director provided an evolutionary perspective on the project’s perceived success and future plans.

The interviews of Scholarly Publishing Directors outside Mid State University were used to establish perspective on scholarly communication outside of Mid State. These interviews were focused on the initiatives at the institution, views of scholarly communication, technology initiatives and forecasting of the next five years in scholarly publishing. Because these individuals held mirror positions to the project director, they offered perspective to scholarly communications and publication innovations without the inscription, or allegiance to the project.

The final approach, artifact analysis, required the collection of all known documents and emails in reference to the project (See Table 8). The project manager granted access to the project team’s process documentation. The researcher was also added to the project team email list and project members were asked to include the researcher in any emails referring to the project topic. Other documents such as presentations, project charters, and meeting agendas were gathered based on availability and awareness.
Table 8: Artifact Breakdown

<table>
<thead>
<tr>
<th>Artifact Role</th>
<th>Number</th>
<th>ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emails within Project Team</td>
<td>126</td>
<td>A1</td>
</tr>
<tr>
<td>Emails between Directors, Managers, and Project Team</td>
<td>138</td>
<td>A2</td>
</tr>
<tr>
<td>Emails to General Library</td>
<td>9</td>
<td>A3</td>
</tr>
<tr>
<td>Meeting Agendas</td>
<td>3</td>
<td>A4</td>
</tr>
<tr>
<td>Project Directors  Reports</td>
<td>2</td>
<td>A5</td>
</tr>
<tr>
<td>Project Documentation (Requirements)</td>
<td>7</td>
<td>A6</td>
</tr>
<tr>
<td>Project Planning (Charter, Plan, Timeline, etc)</td>
<td>3</td>
<td>A7</td>
</tr>
<tr>
<td>Project Content</td>
<td>4</td>
<td>A8</td>
</tr>
<tr>
<td>Proposals and Internal Reports</td>
<td>9</td>
<td>A9</td>
</tr>
<tr>
<td>Affiliated Websites</td>
<td>6</td>
<td>A10</td>
</tr>
<tr>
<td><strong>Total Artifacts</strong></td>
<td>307</td>
<td></td>
</tr>
</tbody>
</table>

The artifacts collected were categorized by type, with each type assigned a data ID for reference during data analysis. As Table 8 conveys, by far the greatest number of artifacts were email communications; these documents also presented the most challenge in classification. For example, project team emails were those that did not include any outside managers, but could include outside faculty or staff who were involved in the project subtasks. An email was classified as email between Directors, managers, and project members if its distribution list included at least one project member. Emails from project members that named project directors or managers in the “to” or “cc” fields were also included in this category.

4.3 Data Synthesis

The research questions required a phased approach to first understand the context and the individuals contributing to that context (R1) and then to understand how that context influenced the initiative (R2). Figure 3 depicts this evolutionary analysis of project context and activities.
Activity Theory focuses on understanding the activity through the context provided by the activity’s subject and object (Kuutti, 1995). Because qualitative methods were employed, much of the analysis included an iterative process of synthesizing information gathered into themes and translating these themes into descriptive text and figures. The analysis process began with the physical processing and organizing of the extensive data set, organizing the data within the framework of Activity Theory, and the resulting interpretation.

In Chapter Five, the context, both social and organizational, surrounding the digital library initiative is discussed, offering an answer to the first research question (R1). The digital library initiative, the monograph project, is outlined. The participants and their respective units within the University are examined through triangulation of observation, interviews and artifact analysis. The unit contributions and pre-existing relationships are examined to establish organizational governance. The technologies employed within the initiative are outlined with a brief history of their application in similar projects. The chapter concludes with an examination of the interplay between the people, organization, and technological goals. The goal of this context analysis is to ground the reader for a more detailed investigation of the specific activities comprising the digital monograph initiative.

In Chapter Six, the general digital library initiative, and the monograph delivery project within that, is framed using Activity Theory. As a starting point, the traditional activity systems...
for monograph production and digital library initiatives are outlined. As part of presenting these activity systems, the systems’ contradictions are highlighted to show motivation for the monograph delivery project. The new monograph delivery project activity system is then outlined, along with its sub-activity systems; each system is again discussed with respect to the contradictions that were observed to influence the activity. The chapter concludes with the technology activity systems that occurred during the digital initiative. Activity Theory is used to aid the researcher in framing the efforts made during the digital initiative. This framing will prepare the discussion in Chapter Seven of the context, outlined in Chapter Five, and its influence (R2) on the digital library initiative.
Chapter 5

Monograph Delivery Project Context

The social and organizational context surrounding the digital library initiative builds a foundation for understanding the activities comprising the initiative. In this chapter, the context surrounding the digital library initiative is outlined including the participants, their respective units, as well as the organizational governance and information technologies that played a role within the initiative. The chapter concludes with an examination of the interplay between the people, organization, and technological goals. All data discussed was gathered through triangulation of observation, interviews and artifact analysis outlined in Chapter 4.

5.1 The Digital Library Initiative Stakeholders

The digital library initiative included participation by a diverse set of stakeholders; their individual and organizational goals and values create a unique social and organizational context. In Table 9 and 10, the stakeholders and their interests (or ‘stakes’), at the individual and organizational level respectively, are summarized through stakeholder analysis (Smith, 2000). Both tables offer the primary interests of each stakeholder at an individual and organizational level detailed further in the sections below.
Table 9: Stakeholder Analysis on Individual Level (Smith, 2000)

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Level</th>
<th>Stake in the Initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directors</td>
<td>Individual</td>
<td>-Open access to monograph publication (Library)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Return on investment (Press)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Reputation within scholarly publishing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Reputation within research libraries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Stewardship of scholarly communications</td>
</tr>
<tr>
<td>Editorial Board</td>
<td>Individual</td>
<td>-Reputation within subject area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Publication opportunities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Board position</td>
</tr>
<tr>
<td>University Press</td>
<td>Individual</td>
<td>-Definition of Library/Press partnering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Distinguished publications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Reputation amongst academic press</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Experience with application of technology for print</td>
</tr>
<tr>
<td>Cataloging and Metadata</td>
<td>Individual</td>
<td>-Experience within a research library</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Collection enhancement through metadata</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Experience with various aspects of digital library initiatives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Metadata creation for CSS and OSS</td>
</tr>
<tr>
<td>Library Information Technology (L-IT)</td>
<td>Individual</td>
<td>-Stewardship of technology within the Library</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Accessibility of content to users</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Reputation as technology experts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Experience with emerging technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Role within technology projects at the Library</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Liaison with DiMeMa for CSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Innovation of CSS platform</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-End User Interface design of OSS</td>
</tr>
<tr>
<td>Scholarly Communication Services</td>
<td>Individual</td>
<td>-Coordinate scholarly communication efforts within Mid State University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Experiment with OSS Editorial Services</td>
</tr>
<tr>
<td>Digitization and Preservation</td>
<td>Individual</td>
<td>-Stewardship of Mid State University’s digitization and preservation efforts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Experience with library and publication technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Digitization and preservation of library collections</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Content loader of CSS and OSS</td>
</tr>
<tr>
<td>Information Technology Services (ITS unit members)</td>
<td>Individual</td>
<td>-Support and development of digital library technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Hardware and infrastructure of Library</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Technical experience with technology (server administration, coding, maintenance)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Installation of CSS and OSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Administrative Interface design and coding of OSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Administrative load support of OSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Stewardship, adoption and promotion of OSS into open source community</td>
</tr>
</tbody>
</table>
The stakeholders, individuals and organizations with the ability to influence the outcome of the project through action or interest, were identified through the initial analysis of the project (Smith, 2000). The interests that each stakeholder brought to the project (detailed in the following subsections) were surmised from observation and interviews before and during the phases of the project.

### 5.1.1 Directors

The Assistant Dean for Scholarly Communications at the Library (Dir-L) and the Associate Director and Editor in Chief at the Press (Dir-P) make up the digital library initiative directors. They co-chaired the Scholarly Publishing Office (SPO) and sponsored the monograph project. Both individuals were relatively new to the University, with less than a year experience in either position.
The Assist Dean was unusual in the library organization, as he did not possess a formal degree in library science. Within research libraries it is rare to find a non-librarian in a high-level administrative position. Proper library “pedigree” usually includes graduate studies of Library Sciences at the Masters level as a minimum. In contrast, Dir-L rose through the ranks at another respected research library after coming close to completion of a Doctorate in English at that institution. Mid State University Libraries conducted a national search for the challenging position that he filled, because it entailed steering the entire division of Scholarly Communications.

It is important to recognize that the Scholarly Communications position was emergent in nature; formed to fill a role of both stewardship and publishing and new to the Library (M7). Stewardship is a traditional role for libraries, serving to oversee collection preservation and digitizing. However the publishing role is novel for research libraries in general and only became relevant to Mid State University Libraries when the University Press was added as a subunit of the Libraries. Because the role was a departure from the classic library structure, the expectation of a conventional library pedigree was downgraded relative to the importance of real world experience in making things happen at another prominent research library.

The Dir-P also brought a unique perspective to the Press. His background in humanities publishing was in the private sector. This private sector experience set him apart from the default University library value of “for the greater good”. Recall that the Press, until merged with the Libraries, functioned predominantly as a non-profit organization, and acted as such in their attempts to set reasonable prices for monographs and to ensure access. In contrast, Dir-P’s experience in the publishing industry was predominantly profit-driven even when serving non-profit presses. His experience was built on the belief that profit for a non-profit creates a healthy business model, as long as the profits are returned and cycled into furthering the press’ initiatives.
(P5). The orientation to profit as a value was new to the Mid State University Press and infused change in perspective throughout the project.

As co-chairs of the SPO, the Directors created a specialized team – henceforth referred to as the Innovation team – that was made up of key staff drawn from the Press, the Libraries, and Mid State University’s Information Technology Services (ITS). This team was originally tasked with investigating functionality in OSS, an emerging approach to digital publishing software, and asked to make recommendations for best practices and processes that should be implemented in future digital library projects. The team’s role was an extension to an existing partnership and agreement between the Ivy League University (ILU) and Mid State that was aimed at further development and pilot testing of this digital publishing software.

The monograph project was added to the directors’ charge for the Innovation Team after the initial team charge was formed and underway. The project was originally added as a task list item and not a project in itself. The monograph project was not promoted nor treated as a project until Phase Two when the official charter was charged. As directors of the monograph project, the investigation of both CSS and OSS technology platforms provided rudimentary evidence of monograph functionality within an online environment.

5.1.2 The Editorial Board

The editorial board represents humanities faculty at Mid State University who specialize in Romance Studies, including French, Portuguese, Italian, and Spanish. When the traditional publication process for the Romance Studies series was shelved, this board had been dissolved. Thus a reconstructed board was formed for the Romance Studies digital monograph initiative, with no particular ties or even resemblance to the previous editorial board. In fact, materials from the earlier series were distanced from the new project activities because of inconsistency of
presentation and concern for diluting the new series’ content (M3, M4, P5, A2, A9). The board met quarterly and discussed potential contributors and their manuscripts. Interestingly, technology and the use of it to promote or provide access to the series was not a topic of interest to the board. At one of the board’s meeting close to the release of the new monographs, the Directors distributed a website mockup with monograph cover images. The discussion that ensued focused solely on the appearance and content of book cover. The website and its content were not mentioned nor was the planned release of electronic format (M8).

5.1.3 The University Press

The original Romance Studies series and the publication of the series backlist had been a successful partnership between the University Libraries and the University Press. The successful partnering prefaced its current union as an internal unit to the Library. In 2006, with the Press facing the financial burdens of decreasing revenue, the University Libraries absorbed the University Press as a unit. However it is important to note that the University Libraries culture varied from the press as a centrally-funded entity whereas the Press had operated for many years as a predominantly non-profit organization. The Press focused on publishing scholarly communications and used the sales returns to balance its publishing costs. The cost recovery model continued to conflict with the University Libraries’ desire to maintain status as a Research Library and further scholarly communication. The Dir-L governed the relationship of the Press in effort to help the Press become more service oriented (M7).

The University Press, in the past, typically included the Assistant Director of Marketing on University Libraries partnering project efforts. However in this case the Directors appointed the Assistant Director of Production to the Innovation Team (and therefore the monograph project). The Assistant Director of Production was surprised to be asked but embraced this new
assignment as an opportunity to learn more about the Library and its culture (P6). The inclusion may also be due to the production role of the project, delivering in dual formats (electronic and print). Nonetheless, the Assistant Director of Marketing maintained an active role and voice through participation in the Unit Manager’s meetings.

5.1.4 Technical and Collection Services

Cataloging and Metadata Services (Cataloging) and Information Technology (L-IT) within Technical and Collection Services also provided representatives to the Innovation Team and monograph project. The metadata specialist/faculty member represented the Cataloging and Metadata Services. This librarian was a newly “minted” Master of Library Sciences with great initiative and excitement towards his career. The metadata aspect of the project held importance to ensure flexibility and usability in future applications of the information. The role also enabled the librarian’s access to the “whole picture of digital preservation” (P8). This access fed the librarian’s excitement about his field and potential career.

Information Technology representatives included a database specialist and the project manager for both the Innovation Team and the Monograph Project. The key difference between the individuals was the scope of focus; the specialist had a narrow scope of look and feel of the information displayed. The project manager typically worked to maintain the entire groups’ focus on point. This displayed an interesting position of understanding all aspects of the project and not just technology. The unit had traditionally taken the roles of managing digital initiatives and web design implementation in University Libraries.

The project manager had a long history of leadership within the unit. With over two decades experience within the University Libraries, the depth of knowledge regarding processes and political caveats offered a definite edge to guiding and managing projects.
management of the monograph project became de facto through the excellent performance in the Innovation Project Manager role. The researcher’s past roles working directly with and being situated near the project manager made observation of this individual keener than other project members. Projects that land in the office have a history of completion and success unparalleled to the other units. Because the project manager had such a history of success, time became a major source of tension. Several major initiatives commanded attention and yet a person could only expect to manage so much and do it well. This project manager was over utilized and often required to work long hours in the office and at home to make the projects work. This was done without complaint and may not have been known to the Directors requesting the project manager’s time.

The database specialist had a decade of web design and implementation experience with seven years within the University Libraries. The Pilot Team relied on the specialist to implement the design for their projects. The specialist, in turn, evolved through the membership within the Innovation Team. Since OSS (outlined in section 5.4) was reliant on XML for data ingestion; it required the specialist to become proficient in XSLT, Extensible Stylesheet Language Transformation.

5.1.5 Scholarly Communications

Scholarly Communication maintained two distinct roles within the project; Digitization and Preservation and Scholarly Communication Services. The Digitization and Preservation unit played an important role in sustaining and building the University Libraries’ collections. The unit gained attention and became a prominent resource when the University Libraries’ collections were damaged by a water main break and subsequent flooding. Digitization became a major focus after the task of cataloging serials highlighted the need for digital preservation of the
materials and enhancing the search-ability of said materials. Within a year of the flooding, a full time preservation library was established (P3). Partnering with library units like L-IT helped to establish CSS as the choice digital technology.

The Digital Preservation Coordinator, as a member of the Innovation Team and monograph project, offered a decade of experience with a focus on preservation. Both teams required that this individual spend a majority of their time on the input of data into XML and creation of proper metadata in partnership with the metadata librarian.

The Scholarly Communication Services office was a newly formed unit of one. The Head of Scholarly Communication Services took on the mediation role between content and implementation. They interfaced between content experts like the faculty of the Romance Studies and the Pilot team and aided in communication of needs and content. This relationship worked well as the Head was both a MLS librarian and faculty member. The Head also offered over two decades of experience within the University Libraries and previously held the head position within L-IT.

5.1.6 Information Technology Services

The Information Technology Services (ITS) was the main technology organization with the Mid State University, supporting the core technology initiatives. ITS devoted an entire unit to the support and development of digital library technology within the Library. This unit was separate and distinct from the Library’s Information technology unit, although the two units worked closely on technology initiatives. The ITS unit worked to provide the hardware and infrastructure, such as servers, networks, and security as well as continuing research and development of technology for the library and the university as a whole. OSS and the partnership with Ivy League University (ILU), outlined in Section 5.4, were managed through this unit.
Until the Innovation team was created and its projects were initiated, ITS maintained the sole knowledge and experience with OSS at the University. The Innovation Team member was a systems coordinator with a role in the development and adoption of OSS at Mid State University. The systems coordinator joined the University in 2005 after a career within the corporate realm. Until joining ITS, the coordinator had only technical experience and no library experience. They served predominately as the interface between the OSS Development team and the Libraries.

The monograph project brought on an additional team member, more experienced with OSS development. The research programmer analyst became more heavily involved than the system coordinator on the monograph team in Phase Two. The analyst worked solely on the OSS project and offered over two decades of experience within the ITS unit serving the libraries. The analyst offered a unique in-depth perspective to the system and its growing pains as ILU and Mid State continued to actively develop the user interface and editorial services.

5.2 Organizational Governance

The governance of organizations is often hierarchical in manner and Mid State University is no exception. The hierarchy illustrated in Figure 4 played a key role in projects within the University Libraries as a service organization. For the monograph project, three main organizations contributed to the process; The College of Liberal Arts, Library and Information Technology Services. Within those organizations, various units focused on differing aspects of the project. Their focus is illustrated in Figure 4 through the use of distinct colors and mapping within the legend. Units with more than one focus received a blending of the colors on the image with no unit exceeding two focuses. The SPO unit remained white as no individuals are members of that unit. It is entirely supported by individuals within other units outlined in the sections below.
Figure 4: Organizational Governance within the Monograph Project

The College of Liberal Arts adopted the most passive role in the project. This unit required an outlet to promote its scholarly efforts and maintain its reputation as an academic unit (Check where it ranks, reputation, etc.) Romance Studies, encompassed several specialties housed within the College, and was the chosen topic for the monograph pilot. The College offered guidance for the scholarly content in the form of the Romance Studies Editorial Board.

The Library, having recently acquired the Press, maintained a dual focus for the monograph project. Its predominant and more recent goal was focused on enhancing scholarly communications by opening avenues of communication to the larger academic community through information accessibility. A secondary goal, mainly within the University Press, focused on sustaining scholarly communication while maintaining cost-effectiveness. Most of the departments within Library shared the “greater good” value system aimed at supporting academic faculty and their publishing and dissemination goals. Projects were typically conducted with a
committee-based approach on a pilot basis with most pilots eventually converted into permanent additions to the Library portfolio.

Within the Library, units worked collaboratively and individually with conflicting goals at times. As technology began to play a larger role in library activities, the various units worked to define their roles. The roles sometimes conflicted or overlapped with other units such as L-IT and led to tensions. Staff members caught in the process of defining roles, often felt the frustration as upper management worked to define their position, as illustrated in Figure 5 and in detail in Appendix C.

Figure 5: Staff Member Rendering of Management Positioning within Digital Initiatives
(Anonymous 2007)

Further examples of this can be found in Section 6.3. This led to a weakened voice for L-IT and may contribute to a lack of recognition for efforts across the units.

The Information Technology Services organization had acquired a subset of the L-IT mission many years prior to the monograph project’s inception. This acquisition had engendered an interesting and awkward relationship between L-IT and ITS: The ITS unit supplied support of infrastructure, research and development of library technologies but without any governance by the Library. Therefore it often held considerable power and influence in negotiations and decisions about which technology to use and how to implement it.
The lack of Library governance created a unique relationship between the ITS and L-IT units. The ITS unit supplied the Library with a majority of their network, hardware and software needs. The L-IT supplied the majority of the web presence and technology guidance. An advisory group, IT Strategies, governed the projects that both departments worked toward. Both organizations held positions within the group with the majority retained by the Library. The ITS unit, however, did not answer to the IT Strategies group and had a higher authority to override decisions made by that group.

The Office of Digital Scholarly Publishing tied all of the organizations together through specialized groups like the Innovation Team and exploratory efforts like the Romance Studies monograph project. This office was unique because although it had no representation from library staff or faculty members, it commanded great attention and had significant leadership devoted to it. The SPO was tasked with innovating and growing scholarly communication throughout academia. The SPO relied on the partnership and collaboration of all the organizations outlined above for the success of its initiatives.

5.3 The Technologies

The technology investigation phase of the monograph project tasked the Innovation team with testing both Corporate Software System (CSS) and Open Source Software (OSS) for a proof of concept. These technologies were included in the investigation because the Library had implemented projects in the past utilizing both of the technology approaches. CSS experiences included the digitization of image collections while OSS experiences included journal publications and conference proceedings. Neither technology had implemented monograph publications. The experience of the past and the opportunity to extend the software to other projects made both technologies desirable. Alternative technologies were not explored due to
resource limitations in both L-IT and ITS units. New technologies would have added additional strain to the workload of either or both units.

5.3.1 Corporate Software System (CSS)

CSS is a digital collection management package provided by a large research library oriented corporation. It is designed to support any library’s goals of organizing, publishing and managing its digital collections. One way of viewing CSS (see Figure 6) is as a piece of software that imports and presents for display a wide range of document filetypes, including images, pdfs, audio and video(CSS, 2007).

![CSS software](image)

Figure 6: Example of Digital Collection Display in CSS (University of South Carolina, 2007)

CSS software required a central server installation with Acquisition Station (Figure 7), a proprietary client application, for object and data upload.
The Acquisition Station offered a consistent user interface with functionality to support various levels of users and styles. In Figure 8, the library staff and faculty interacted with CSS to upload documents, images and data through Acquisition Station.

The collection settings were also managed from the software. The display of the collection (see Figure 6) was controlled through CSS’s general display. This display often
required modification to customize the look and feel of the specific collection. Such modifications are conducted by L-IT staff using javascript and PHP. Upon ingestion, metadata (see Figure 9) was created and if applicable OCR text loaded to support full-text searching.

Figure 9: Example of Metadata Display in CSS (University of South Carolina, 2007)

The availability of this industry-created and maintained software support had helped to establish a long history of innovative partnership between the Library and the CSS Corporation. For example, the Library already utilized the software package for page-based display of digital collections with full-text searching. Example collections included back-listed monographs from the press, rare and fragile documents and image collections.

The collection of back-listed monographs was particularly important in the context of the Romance Studies monograph project, because it represented the first successful collaboration of the Press and the Library (recall that this project occurred prior to the Press becoming a subunit of the Library). During that partnership, the Press’ Director, the head of the Press and manager of Dir-P, had laid out the requirements for the digitization of back-listed content. For example, those requirements demanded that individual page images should be degraded and watermarked. One result was that the online pages of the monographs were difficult to read — printed versions of the images were illegible as the image degradation and the watermark left the user with a
printed page of poor/useless print quality. These requirements were designed to drive the user to purchase a print copy of the monograph and increase back listed sales (P4, P6, P7, P9).

Unbeknownst to the monograph project manager, the Directors based their eventual evaluation and consideration of CSS on their experience with this back-listed monograph collection (M3, M4, M6, P1, P5, P9, A7, A9). This phenomenon is discussed in depth in Section 6.3.1.

5.3.2 Open Source Software (OSS)

OSS was a Digital Publishing System that offered a front end user interface for “organization, presentation and delivery of scholarly journals, monographs, conference proceedings, and other common and evolving means of academic discourse” (OSS, 2007). The system displayed pdfs, word, PowerPoint and html files with the promise of simple extensibility to other formats (See Figure 10).

Figure 10: OSS Customized XSLT Display (Mid State University, 2007)
Loading material into OSS consisted of the several steps outlined in Figure 11. Contrary to the process laid out by CSS, the publication space and handle are created by OSS system administrators, not by the users who are inputting the documents or metadata. One important implication is that almost every interaction with documents or metadata in OSS was dependent on assistance from ITS due to the undependable user interface.

![OSS Content Load Process](image_url)

**Figure 11: OSS Content Load Process**

The content providers prepared the XML and logged into the user interface to load documents and corresponding XML metadata. The interface (see Figure 12) between OSS and the content providers continued to be developed and tested during the monograph project. It was often referred to as the “screen of uncertainty” because users would submit information and received a blank page or cryptic error message. This required ITS intervention to verify the data load status of success or failure (M1, M2, M6, P4, P10, A1, A2).

> “After getting the thumbs up from [the Directors], I went ahead and started setting up the [OSS] publication XML for Romance Studies.

*Step #1: Assign the name and authority.*

*Okay, got this: "Mid State Romance Studies" and "msu.rs".*

*Step two: "please restart apache server"*

*Oh. Well, I guess that's as far as it gets” – (A1)*
After the data load, an OSS system administrator must update the index on OSS to activate the collection. The publication is active at this point but a developer is required to customize the XSLT display. As shown in Figure 13, the display will render the XML metadata and offer the search interface.

Figure 13: OSS Customized Search Results (Mid State University, 2007)
Once a specific publication is chosen, the document is displayed using its native program. For example, a document uploaded in pdf format will open outside the browser in Adobe Reader or Adobe Acrobat.

OSS was an open source software package that had been initially developed by Ivy League University (ILU) in the 1990s. ILU updated OSS in 2000 as part of their vision to transition library serials into cyberspace. In 2004, ILU, in partnership with Mid State University, received a grant from The Andrew W. Mellon Foundation. The grant money enabled ILU to enhance and generalize the OSS system. ILU was to add the capacity to handle all editorial aspects for journals and conference proceedings. Mid State’s ITS was tasked with developing the installation piece of the software. Following the two years of development, ILU and Mid State filed and received a one year extension that ended July 1, 2007. The final report to the Mellon Foundation (A9) suggests several other institutions are implementing OSS in differing capacities; journal publishing, conference proceedings and an intermediate to the Fedora repository system. An interview with ILU (P13) suggests that adoption was occurring less frequently and with much hesitation. ILU plans to pursue other options in future scholarly publishing initiatives, such as JSTOR’s hinting at a more open and accessible connectivity amongst scholarly publications (Burns, 2007).

5.4 People, Organizations and Technology

Interplay between individuals, units and governing organizations made the digital library initiative an interesting and complex process of collaboration and compromise. The consideration of OSS as the publishing software of choice for the academic population can be seen as the future tool for distribution of scholarly communication or an attempt to offset and recover the cost of supporting an open source system without a strong community behind it. The
CSS collections can be seen as the product of properly updated and maintained or the product constrained by requirements established in pre-internet times when the Library was the keeper of information. Both systems have pros and cons of applying resources and further development.

The contexts outlined above illustrate the complexity of the digital library initiative. The individuals and their organizations all brought their own goals to the Romance Studies monograph project, including prior experience or pre-suppositions about different technology options. As a whole this discussion addresses the first research question about the social and organizational contexts surrounding digital library initiatives. By considering the range of stakeholders and corresponding ‘stakes’ in the project, a number of potential tensions within the context have been introduced, including:

- Different publishing backgrounds and experiences of the directors
- Developing role of the Press within the Library
- Tensions between organizations (Library and ITS) and units within organizations (L-IT, Preservation, Press, etc)
- Evolving projects of the Innovation Team and their governing units
- Organizational views of the technologies and its impacts on the evaluation.

To summarize, the analysis provided here documents diverse backgrounds, goals, and values that key players brought into the digital libraries initiative. The technologies and historical roles also offer insight into the actors’ positions and understandings during the technology decision process. This context is critical to understand the influence of context on the digital library initiative (R2). Chapter Six builds from this context, using Activity Theory to examine in more detail the evolving activities that comprised the monograph project.
Chapter 6

Monograph Delivery Activities

Prior to the Library’s absorption of the Press as a subunit, the Press produced monographs with a focus on humanities and social sciences. The Library, in turn, focused on opening access to collections through digitization of various materials including images and publications. After the absorption, the two worlds were integrated in through the Innovation Team and their efforts towards the digital library initiative. The analysis of digital library initiative presented in this chapter was framed using Activity Theory. Following the Principles of Activity Theory (Engeström, 2001), outlined in Table 3, the traditional activity systems to both monographs and digital collections are highlighted to establish historicity. Contradictions or strains on the relationships between different nodes in an existing activity are highlighted as part of each activity analysis. The process of merging the two traditional activities is then framed by observations, interviews and artifact analysis, again by presenting individual activity systems annotated by the stressors or contradictions that emerged. The framing of the activity systems concludes with an analysis of the interplay between activity systems and their impacts on the overall technology selection and implementation process.

6.1 Traditional Monograph Production

Celebrating over fifty years in publishing, the University Press had a detailed and well established process (See Figure 14) for creating a monograph. The process brought scholarly
content into the Press and evaluated that content through traditional author/editor relationships. Approved content then moved through the publishing process.

Figure 14: University Press Traditional Monograph Process (P 6 & 7)

Framed in AT (See Figure 15), the process illustrated a very traditional role for the University Press, the processing and promotion of scholarly content in specialized subject areas.

Figure 15: Traditional Monograph Activity System

The Press worked with the publishing and scholarly community to solicit, evaluate and promote scholarly content for the benefit of academia. The Press acted as an intermediary for the content providers and seekers. Operational rules, established rules and reputations guided the process and the individuals within the activity (P5-7). With assistance by an editorial board, the information was evaluated after passing through initial screenings at the Press.

Although the process for creating monographs worked fluidly, resource restrictions slowly impeded the process and forced certain strains on the activity system. Figure 16 shows the same activity system, but now annotated with “contradictions” (labeled as C1 and C2). C1 documents the tension in the relationship between the Press and its supporting community of AAUP and academic scholars; C2 between the object of producing scholarly content and the division of labor among the editor, writers, and advisory board.

As a non-profit unit of the University, the Press operated with a self-sustaining profit model that took profits from publications and placed them back into the production costs of new projects. Once technology forced the evolution of information dissemination, the profits from publications began to dwindle and restrict the resources to publish new scholarly content (P1, 2,
3, 4, 5, 6, 7, 9). “The internet changed everything…used books are abundant… six months after [the release] and Amazon has 32 used” (P7). This change in market created two contradictions; financial restrictions (C1) affecting the capacity to produce monographs and displacement of scholarly content in general (C2) (See Figure 16).

![Figure 16: Contradictions of the Traditional Monograph Activity System](image)

With fewer resources for print monograph and less profits, the Press began to suffer a problem that is common across the small academic press of the AAUP, namely they were running with a deficit (C1). C1 constrained the financial (and thus personnel) resources available to produce the monograph. As libraries and academics spent less of their budgets on monographs, the returns shrank and fiscally restricted the press to publishing only content that was sure to sell. At the same time, the Press was conscious of the need to balance its publication profile to avoid becoming a vanity press (P7).

One result of this tension is that “niche” scholarly content that contributed and furthered academic goals, but that was not likely to generate high-volume sales, went unpublished or was limited (C2). The lack of a venue for such publications caused tensions between publishers and academia (Association of Research Libraries, 1997). These factors were among those that led the University to merge the Press into the Library, and to offer a shelter of funding to promote scholarly communications as an academic goal rather than as tied to a unit’s profit margin.
The introduction of the Press into the Library also allowed for a partnership to mature between print and technology. Past ventures had resulted in successful but limited unions such as the former Romance Studies collection held within CSS, described earlier in Chapter 4. The instantiation of the new monograph project put more pressure on the merger of the print monograph and digitization processes to create a new activity system.

6.2 Traditional Digital Library Initiatives

During traditional library digitization, a team, mirroring the membership of the Library’s participation in the Innovation Team minus the Press, guided the process of digital library initiatives. The team utilized several platforms in the effort to increase access and usability of collections. These platforms included Greenstone, Luna, Olive; but predominantly CSS. The team solicited proposals for collections including the collection’s copyright contracts and requirements for display and distribution. Collections could be private, available to the University, or open to the public. The team reviewed proposals to determine feasibility, contribution to scholarly content and resource needs. Once reviewed and approved, each accepted proposal enters the activity system and becomes a project within the digital library activity system (See Figure 17).
Projects were guided by the team and content specialists to ensure appropriate quality in the scholarly content and its dissemination. The team coordinated the platform and resources needed to implement the desired digital display, using either a customized rendition or a template that was built into platform. Content was prepared by working with the content specialist to create metadata. If the content was not yet in digital form, preservation determined the format for digitization as guided by the requirements outlined in the proposal. Once digitized, the content was loaded and verified for proper functionality. After verification, the digital collection was released at the level outlined in the original proposal.

Within the traditional activity system, two key contradictions emerged: requirement restrictions (C3) and resource restrictions (C4) (See Figure 18).

C3 was often apparent to the team as a contradiction even prior to the onset of the project. Although the team reviewed collection proposals, they had limited power over the requirements laid out by the proposal. In addition, the apparent option that the team could veto any project with difficult or unwieldy requirements was not in practice an option. Typically projects had political support from other stakeholders prior to entering proposal evaluation, and the decision to
support the project was thus pre-determined. The team could guide the requirements and negotiate compromises but they could not force major changes.

As an example, the digitization of the Romance Studies collection, outlined in Section 4.4.1, incorporated strict image and print restrictions for the collection. These requirements were specified by the Press management. The user experience suffered greatly from these decisions; this was a direct contradiction to the traditional goals of digital collections within the Libraries, where the intention was always to promote access and usefulness of its materials. The Press viewed the requirement as acceptable by arguing that degradation of the user experience “will force the user to buy the book to read it” (M6). C3 continued to haunt the team as Library faculty, staff, and members of the public blamed the technology rather than the underlying requirements imposed by the Press (M1, M3, M4, M6, P1, P5, P8, A2, A9). In discussions of CSS vs. OSS, Dir-L pointed to the CSS display of the original Romance Studies and stated, “Holy crap, what do I do?” He argued that functionality bloat discourages the user from accessing the information (M4). CSS customization – if allowed to emerge in the face of resource restrictions (C4) – could have easily remedied the bloat concern.

Resource restrictions (C4) exacerbated the misconceptions of the digital collection display that began with C3. Digital collections continued to expand but without the addition of staff resources to aid in implementation or maintenance. The increase in collections quantity meant that the team had to spend increasing time on managing maintenance of existing collections and implementing new collections, without free time for platform considerations as technology emerged and evolved. As a result, the platforms and the overall approach to digitization of collections stagnated and became outdated as new releases were not considered or implemented. This stagnation was later a factor in the choice between the two digital publishing technologies outlined in Section 6.3.2.
6.3 The Digital Library Initiative: Monograph Electronic Delivery

The Romance Studies monograph project, outlined in Section 4.1, consisted of three phases: technology investigation, implementation, and deployment. This research focused solely on the first two phases of the project. This section outlines the three activity systems surrounding the first two phases of the project: technology investigation, choosing the technology and implementation of the monograph electronic delivery.

6.3.1 Technology Investigation

At the start of the project, the task of developing and demonstrating an example monograph in two separate but comparable technologies was assigned to the Innovation Team. The resulting expanded activity system is depicted in Figure 19. Of note is that the Romance Studies monograph task was added to the Innovation Team’s other responsibilities during a particularly stressful delivery period for the team; two visible digital conference proceedings – the Mid State History and the Engineering Conference Proceedings – were already due on the OSS platform.
Figure 19: Innovation Team Activity System and Sub Activities Featuring the Technology Investigation

The technology investigation activity system was absorbed into the larger ongoing activity system of the Innovation Team. The members worked simultaneously on multiple tasks in an effort to meet their many due dates. Both the Mid State History and Engineering Conference Proceedings activities diverted a great deal of the team’s attention as their due dates loomed. These activities required a great deal of feedback from units outside the group and collaboration across various organizations. Another activity – the German Broadsides project – was an unexpected task that emerged with the requirement to decode a German database of bibliographic content. This task required L-IT to decode the database by employing tools such as babblefish.com, a website specializing in translating basic dialect (M1). The variety of activities illustrates the interesting and diverse roles tackled by the members of this team tasked with innovative projects in the general area of digital libraries.

The group accepted phase one’s tasks as expected by the director. The division of labor, highlighted in Figure 20, was drawn from the project manager’s project plan and features a timeline for the investigation. A majority of the work fell within the Library, specifically to
Preservation. Preservation’s role was dominant because of past involvement in both technologies and the creation and loading of content. This unequal burden contributed to contradictions within the activity system discussed in Figure 20.
Figure 20: Innovation Team’s Division of Labor for the Technology Investigation
The activity system (See Figure 21) that developed within the group contained multiple contradictions that became more evident over time: lack of resources (C5), miscommunication (C6), reputations (C7), and technology investments (C8).

![Figure 21: Contradictions of the Technology Investigation Activity System](image)

The lack of resources (C5) is a common theme in project management referred to as the Project Triangle (Lock, 2007). The concept states that with an increase in scope one can expect to pick two items to hold stable; choosing among time, performance or cost. The “other duties as assigned” culture of the Library breeds the expectation that employees (faculty or staff) do more without increasing costs. Cost is typically minimized and non-negotiable; therefore time or performance must bear the burdened of increased scope.

Upon the introduction of the technology investigation, the SPO team voiced some dissent for the additional task.

“How are we going to get it all done?” asks one member

“Beer!” another offers…to which the group breaks out into laughter (M1)

The dynamics of the group and ability to lighten the burden of yet another task spoke to the group’s generally positive and “can do” nature. The contradiction impacted the activities by forcing the group to prioritize tasks based on rules laid out by organizational governance. The time resource increased since the task was given a low priority and was worked only at moments when other projects did not take precedence.
The abundance of sub-activities within the larger activity system (See Figure 19) contributed to the lack of attention the technology investigation task received. The task was introduced to the team at the end of a bi-weekly meeting that had last an hour and a half. The constraints of the other sub activities’ deadlines caused delay in the task and delivery of the demonstration by two months. The team noted the delay in biweekly meetings but did not move on the project as their workloads were already at threshold (M1).

The miscommunication (C6), led to an increase in the scope of the task and subsequent burden on the activity system. As mentioned in Section 5.1, the project manager led the team with a filtered perspective contrary to the needs of the directors.

*The Project Manager’s Introduction of Phase One:*

> “Compare OSS’s pdf against CSS’s chapter level pdfs and page level images... 3bit gif, watermark, full text...what can we do to print and make it nice like the Press [print version]?” (M1)

This introduction highlights the intention of the project manager to enable testing of both CSS and OSS. The project manager planned to test OSS’ set format with XML ingestion and XSLT display and CSS’s various deliveries and displays not currently employed within the Library’s digital collections. The project manager saw the technology investigation as an opportunity to display CSS without the past restrictions (C3).

The Directors, influenced by C4, may not have been aware of the project manager’s intentions. Notes taken by the project manager, from the initial meeting of the director and project manager, indicate the introduction of both CSS and OSS into the technology investigation. From the perspective of the project manager, the Directors clearly did not communicate that OSS was already the chosen technology. In direct contrast, in the eyes of the Directors, the technology investigation was an effort to create “evidence to support the OSS choice” (P1, A9). This miscommunication, or lack of a clearly stated shared goal, led to
numerous problems for both the team and Directors as resources were squandered and the task delayed.

Ultimately, the technology investigation consisted of the implementation of an example monograph using both CSS and OSS as outlined in Figure 20, and included a set of subsequent demonstrations. Although delayed by other activities, the investigation itself eventually proceeded without fanfare. OSS was loaded with the XML metadata and pdf content files. CSS and the various types of collections were implemented in the current production environment.

The reputation contradiction (C7) was a subtle influence, but had an extensive history within the Innovation Team. C7 was evident in all the Pilot Team interviews as conveyed by the varying goals of the individuals and their units, discussed earlier in Chapter Five. For example, the demonstration of software illustrated the stress felt between L-IT, Preservation, and ITS. Preservation, with its dominating role in implementing monographs in both technologies, created a demonstration with no observed input from the team. The demonstration showcased both CSS and OSS monograph implementations with the pros and cons identified by Preservation (See Appendices D & E). These pros and cons were limited to the individual rather than the Innovation Team as a whole. The valiant initiative, taken by Preservation, leads the question: why was the larger group not consulted? The bulk of the effort of loading and preparing the monographs landed squarely on Preservation’s shoulders; perhaps that led to a desire for inscription on the final results.

The demonstration, as a result of the one-sided preparation, was mired with confusion and misleading statements about both technologies. Technical difficulties with the CSS server enhanced the communication challenges. L-IT later noted that they were surprised with the presentation and with the lack of preparation. The project manager, oriented towards a full display of CSS’s potential, attempted to illustrate CSS’s potential during the demonstration without preparation or visual support. “[Preservation] didn’t even know what 4.3 could do and
didn't ask.” (P9). The demonstration only displayed CSS’s current version capabilities and left the audience ignorant of the latest version and its potential.

ITS contributed to the mayhem by claiming functionalities in OSS that currently did not exist. One such claim stated that OSS could control page views to allow the reader to only peruse 20% of the monograph. This functionality was not currently available in the latest version of OSS. When pressed by the other team members, ITS retracted the claim, stating they were just trying to “get a grasp of what you are planning in the future”(M6). The positioning of all three units left the Directors with mis-shapened impressions of both CSS and OSS capacity. These impressions are explored further in Section 6.3.2.

Technology investment (C8) was the final and most complex contradiction in this activity system. The goal of the ITS and Dir-L to propel adoption of OSS conflicted with the goal of an impartial investigation of the two technologies. This intensified the tension between L-IT and ITS, reinforced by the organizational governance discussed in Section 4.3. ITS experienced a conflict of interest to promote and establish OSS and support CSS. CSS was handicapped by difficult version upgrades and competition for resources with OSS. L-IT relied on ITS to conduct server maintenance and the lack of timely support proved frustrating to the CSS environment. The ITS/L-IT tension was regarded with variety across the remaining Innovation Team members, depending on their experience working with L-IT and ITS respectively. The Press member stated “at times, I can feel the tension between [L-IT] and [ITS]”. In contrast, more experienced team members pointed to the past leadership of ITS as a cause of the tension, stating “[the past director’s] ego always blocked collaboration” (P2). With the new leadership in place, upper management was hopeful that the roles of both L-IT and ITS would be collaborative and functional (P1, P2, P3).

The technology investigation and demonstration illustrated the complex situation surrounding the project as the individual, team and organizational goals contradicted and offered
stress to the activity system. The communication to the team about the technology that would be used in the monograph project followed shortly after the demonstration.

6.3.2 Choosing the Technology

In the process of choosing between two technologies, one would normally expect the decision to be made after the technologies had been investigated and demonstrated. However in this case, the activity system corresponding to the technology decision was mediated by a heavy influence of the underlying community (C9). This influence was invisible to the project members with the exception of the Directors of the project (see Figure 22).

![Figure 22: Technology Choice and Contradictions](image)

The community mediating the technology decision activity included the upper management of the Library and of ITS, as well as their respective supporting communities; research libraries and open source communities. In particular, the pre-existing political motivations for sustaining and promoting OSS as an open source publication system was a strong influence on the decision of technology for the digital initiative. These political motivations
arose from the partnership with ILU and a formal pledge to utilize, promote and establish OSS within scholarly publications.

Consistent with the a priori preference for OSS, the researcher received a formal copy of the Mellon Grant OSS Final Report one week after the technology demonstration. Within the report, the Romance Studies monograph project was clearly identified by Mid State University as a project that would leverage the OSS environment. “OSS will serve as a key publishing platform for [SPO]...SPO will use OSS to publish open access and print on demand versions of titles in Mid State Romance Studies.” (A9) Importantly, this report was dated *one week prior to the technology demonstration*. In fact, the drafting of the report would have taken place in parallel with the Innovation Team’s efforts to investigate the two supposed candidate technologies. The report was authored primarily by individuals at ILU, with Mid State University contributions from the Directors, ITS, Preservation and the Dean of the Library. Ultimately C9 reflects a technology choice that was made long before the exploration, debate, and other investigatory activity was formally enacted. This contradiction, illustrated in Figure 23, clarifies the motivation of the project, the complexity of the Directors’ role and the severe consequences of the miscommunication identified in C6.

![Figure 23: Impact of Community on Digital Library Initiative](image)

The impact of C9 changed the researcher’s perception of the technology evaluation from one of choice to one of coercion. The tone of the corresponding unit manager’s meeting (M4), outlined below, became more understandable to the researcher after viewing the OSS Final
Report from ILU. That is, the information in the report revealed that the Directors’ choice of technology was made prior to the discussion with the unit managers.

One day after the technology demonstration, the unit managers convened to discuss the technologies. It is important to note that unit manager meetings did not include the project manager or members of the project team that did not hold management roles. Instead information about the meetings was relayed from the directors to the project team. Unit manager meetings were intended to inform the team’s managers of progress and discuss decisions and strategies for the project. This created disconnect between the project team, middle management and upper management.

The group was smaller than normal that day, with L-IT and Preservation management unable to attend only the Dir-L, Press Production Manage, Marketing Manager and Head of Scholarly Communication Services were in attendance. The group had not historically included any other project members and this day was no exception. The Dir-L initiated the meeting with the idea of exploring thoughts and reactions on the demonstration.

The group moved through a technology discussion, focusing primarily on the format of delivery (pdf vs. gif). The image degradation of gifs was unanimously agreed to be an outdated practice outdated that was unsuitable for user experience and satisfaction. The Marketing Manager argued for the use of unaltered gifs, referring to the National Academy Press model (NAP). This model proposes to use gifs of the monograph as a way to encourage purchases of the print versions. Once the market reaches saturation the material is released with full electronic access (National Academies Press, 2008). The Dir-L responded to this suggestion stating that “we used CSS because at that time that was pretty much what we had” (P1). This declaration was followed by a brief history of CSS volunteered by the Head. After the Marketing Director argued against the influence of the Press’ former requirements on the appearance of the current CSS (C3), the discussion then turned to pdf in either environment.
The discussion of pdfs and the functionalities available in either environment created a large debate over the message being sent with the presentation of material. In Table 11, the debate points of each platform are examined.

Table 11: Comparison of CSS and OSS in Unit Manager Discussion (M4)

<table>
<thead>
<tr>
<th></th>
<th>CSS</th>
<th>OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message</strong></td>
<td>“You are a library and want to make your publications accessible” (M4)</td>
<td>“You are a publisher and want to manage your journal with electronic access” (M4)</td>
</tr>
<tr>
<td><strong>Navigation</strong></td>
<td>Functionality Bloat of interface</td>
<td>Relies on pdf navigation</td>
</tr>
<tr>
<td><strong>File Type</strong></td>
<td>Works well for images, audio, and documents not meant for monographs</td>
<td>Supports pdfs and uses viewer for display</td>
</tr>
<tr>
<td><strong>Support</strong></td>
<td>Commercial License fee and support</td>
<td>Support for open source/open source community</td>
</tr>
<tr>
<td><strong>Brand</strong></td>
<td>Branded with Library CSS style</td>
<td>Branding until actual viewing of images</td>
</tr>
</tbody>
</table>

The Press representatives pushed for the styling, branding and control of the publications. CSS had been used to meet these goals in the past. The potential to remove stringent requirements of image degradation from the equation piqued the interest of the Press.

In addition to the debate about the technology, the group contested the goal and business model of the project. “Open Access vs. the business model” (M4). The Press, with cost recovery requirements, continued to press the issue of cannibalization of sales expected if the image quality presented to users is high. “The pdf makes the profit model very challenging” (M4). Dir-L acknowledged this concern yet countered with the benefits of breaking new ground and the likelihood that those in the audience who would have normally bought the material in print form would still seek it out in print even when it was available electronically. The Romance Studies series was for the greater good and a “way for Press to return to the mission of an academic press.”(M4).
The debate of how to render the monographs continued within the Press. The Directors tasked Preservation with additional tests on encrypting pdf to control print options while maintaining search-ability (A2). Two weeks after the discussion, a technology decision was finally communicated to the team via email communication (See Appendix F). “[The Directors] are leaning towards the use of OSS for the new Romance Studies titles.” (A2) This communication, not hardnosed in its wording, marked the last of the email communications comparing the two technologies. The reasoning behind the technology decision is also contained in the email, stating that working with OSS will result in an increase in experience and exposure while CSS’s latest services were not yet available as discussed in Section 6.3.1. The director drew a distinct line between the technologies; OSS for publishing and CSS for “library projects” (A2).

6.3.3 Implement Monograph Electronic Delivery

After the technology decision was made, an implementation team was formed and a formal project charter was charged. An aggressive timeline for a release on the OSS platform established a target delivery date for the digital monograph that was only three months after the initial charge; the date was chosen to be in line with the production release of the printed monographs. The resulting activity system, illustrated in Figure 24, emerged with distinct sub-activities: the monographs loaded and available on OSS, the collection indexed by Google, site redesigned to match series print design, print control of the pdfs and tracking of file accessions. The related requirements and specifications are outlined in Project Charter (See Appendix G).
The project team, after reviewing the charter, voiced concern over the demanding timeline and task list. “What is negotiable? Can we even get this done with unlimited resources? It seems like [the Directors] are mixing functionality of the demoed systems” (M2). The project tasks described in the charge essentially grouped the positives from both CSS and OSS into a single system that did not currently exist. After a review of the charter with Dir-L, the team undertook the task with assurance that they should do their best to fulfill the tasks but that none aside from the basic functionality were absolute requirements. “The most important thing is stuff is accessible and functional” – Dir-L (M2).

ITS took a leading role in providing a stable production environment for OSS. The Press redesigned the series site to match the print and include corresponding information. Preservation and the Press worked in tandem to procure valid XML metadata from outsourced vendors. Preservation worked with ITS to load the XML, institute print controls and load the pdfs. L-IT reserved the project management role and worked with the Press to implement the redesigned the website.

As the division of labor evolved, several significant contradictions emerged: OSS system stability (C10), scope creep of enhanced monograph production (C11), design limitations for the
redesigned series site (C12), and access position (C13). The activity system and its contradictions are illustrated in Figure 25.

Figure 25: Monograph Electronic Delivery Implementation Activity System

Contradictions

The contradiction of system stability (C10) was a product of OSS activity system within ITS. The OSS’s project funding from the Mellon Foundation had ceased two months prior to monograph implementation. ITS proceeded to self-fund continued development from ILU by funding its developer. One result of that continued development was the need to install an upgrade of the software during the second week of monograph implementation. The upgrade brought OSS to the most recent platform release, as well as enabling more ad hoc patches from ILU’s developer (these changes improved the backend functionality). This upgrade also caused additional efforts for L-IT including rework of the custom design pages and delayed start for the work on the series site redesign. However, even after the upgrade and additional software patches, OSS still displayed a “screen of uncertainty” for many of its administrative functions.

The scope creep of enhanced monograph production (C11) was a longer term subsystem and contradiction that did not impact the activity system until implementation. The introduction of the Monograph Project gave voice to the changing times at the University Press. Press staff paused in their traditional process to discuss positioning, technological innovations and potential approaches. Early on in the project, unit managers and press staff spoke about the potential benefits of preparing monograph manuscripts in electronic format in addition to traditional
typesetting. XML encoding and potential innovations in Adobe pdf were discussed with the large question in the air of “what electronic format will provide future flexibility while still maintaining or lowering costs to produce?” (M4, M5). The group seemed unsure about which direction to pursue; offering questions like “How is this material going to be used? What will [The Libraries] do with the XML? Will Adobe export to XML, that’s the $64 million question...” (M4). The Innovation team members influenced the direction by pushing an exploration of vendors for XML. One member and manager at the press guided the group into the exploration stating “Instead of talking about it, just do it…the schedule gives us a chance to have XML.”(M4). The discussion of metadata and its ties to OSS foreshadowed the decision of OSS as the technology of choice. On an ironic note, the meeting closed with another press member asking a simple question which received a short and abrupt answer.

Q: “What’s metadata?”

A: “It’s Robust”

Although the answer was presumably offered in jest, the researcher wondered who if anyone in the room could have provided an insightful answer? The decision to experiment with XML outsourcing was made without a clearly defined scope or analysis of impact.

The Press – partnering with Preservations – began the experiment of XML outsourcing during the production process. This created a yet another activity system (See Figure 26) of establishing outsourcing relationships and implementing XML encoding utilizing OSS metadata definitions held within an extensible schema diagram (XSD).
The decision to use the XSD, created the metadata needed to conduct the monograph investigation using OSS (Phase One). Three vendors were chosen to proceed with the experiment; each vendor received one monograph to encode with XML Metadata and was to return a properly “chunked” pdf. The chunking of the monograph caused the initial debates on how the monograph should look and feel. Early in the process, directors indicated their lack of affection for the degraded images, preferring pdfs instead (M3 & 4). This reflected some feelings of disdain for the pre-existing collections available on CSS. As outlined in Section 4.2, the collections’ images were heavily degraded to avoid “giving the milk away for free” (M4). This debate even included the XML vendors, with little connection or knowledge to the groups’ goals. During a conference call with one vendor (M5), the Directors, Press and Preservation actively discussed the chunking approach in terms of the Adobe pdf potential as an entire file or chapter level chunking. At the close of that call, the press staff again questioned Preservation staff about the XML encoding indicating that the comfort level with XML still was not high. The chunking discussion occurred throughout the process up until the decision to go to chapter level was communicated by the Directors at the close of Phase One.
The XML encoding of monographs continued throughout the monograph project. The introduction of XML into the Press’ production impacted the larger activity system and created C11 (See Figure 27).

Figure 27: Sub-activity system of XML Encoded Monograph (C11)

As a sub activity, the XML vendor experiment created the contradiction of a delayed delivery. The two of the three chosen outsourced vendors failed to deliver the product on time with valid XML format for distribution. This stalled the implementation and impacted the review time before the actual debut of the monographs by three weeks.

The Press redesigned series site suffered from design limitations (C12) which impacted the traditional division of labor of digital projects. The directors took on an active role in the design aspects of the series early on in the process. The site redesign was always discussed with the design portion assigned to the Press (M2, M4, & M8). It was not a surprise when the specifications for the site came from the Press and the production department in partnership with the directors. The specifications included a mocked-up design of the splash page, a map of the site and a detailed scripting of content (See Appendix H). The Directors were heavily involved in the site redesign offering multiple suggestions and revisions. This involvement may have been due to the impending exposure the site would have during its début at the Modern Language Association conference. However, the design did not take into consideration the web aspect of design. The initial drafts of the site were met with additional tasks, lengthy emails and rework on the part of L-IT.
At the final hour, prior to the deployment and long holiday shutdown, the directors began to point out web design concerns, for example wondering whether Mid State University’s web design guidelines needed to be considered in the site design. This level of detail and micromanagement perplexed L-IT and proved contrary to the director level of involvement throughout the rest of the process. In one interview, Dir-L alluded to the level of involvement stating “I’m not really sure what level I should be at. At times, [the team] asks questions and I wonder why they are asking me” (P1). Perhaps the director’s past experiences in the active role engrained the desire to intervene at a base level occasionally.

Finally, access through print controls (C13) caused stress in the activity system between the community and the implementation. The Directors required a balance between using pdfs within OSS and the expectation that content security would be maintained. Although pdf content can be controlled by varying levels with encryption, the average user easily bypasses the encryption by simply moving the content outside of Adobe. The Directors set the specifications for printing access to include the intro, chapter 1 and conclusion. The monograph in its entirety was not printable and any chapters outside the specified content was “locked down”, meaning no changes, copying or printing (A2). This approach, with the potential bypass of encryption by individual users, split the community according to their emphasis on open access or on printing profits. The Press Executive Editor stated “somewhere along the way you have changed this from a one-click-per-page download with print quality at 72 dpi to a full-chapter PDF download at something that looks like 300 dpi or better” (A2). The reference to degraded images reflects to the intentional use of CSS’s degraded images as a means of print control in the past. The lack of knowledge of the change in access implies that the directors had failed to communicate intentions to the Press Executive Editor.

These contradictions, an aggressive task list, and timeline pulled at the activity system simultaneously. The project initial delivery, review and release were stunted by three weeks
through delays. The final release and stop on production changes came the final working day of
the year, prior to holiday break and only five days prior to the conference presentation. Without
the University holiday shutdown, one could debate that tweaks and changes would have
continued on.

6.4 Digital Library Initiative Activities

The activities outlined above offered insight into a complex technology project that
merges individuals and organizations with unique goals and missions. The framing illustrated the
activities surrounding ground breaking efforts for digital initiatives at a large University.
Observations of those activities illustrated thirteen unique and distinct contradictions (See Table
12).

Table 12: The Digital Library Initiative Activity System Contradictions

<table>
<thead>
<tr>
<th>Activity System</th>
<th>Activity Theory Location</th>
<th>Contradiction</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMP</td>
<td>Object → Div of labor</td>
<td>C1</td>
<td>Financial Restrictions</td>
<td>Lack of Press capital affected the capacity to produce monographs</td>
</tr>
<tr>
<td>TMP</td>
<td>Subject → Community</td>
<td>C2</td>
<td>Content Displacement</td>
<td>Lack of publication opportunities for niche scholarly content that contributed and furthered academic goals</td>
</tr>
<tr>
<td>TDLI</td>
<td>Subject → Rules</td>
<td>C3</td>
<td>Requirement Restrictions</td>
<td>Disparity between accessibility and access restrictions</td>
</tr>
<tr>
<td>TDLI</td>
<td>Object → Div of labor</td>
<td>C4</td>
<td>Resource Restrictions</td>
<td>Lack of human resources to maintain and improve technology platforms</td>
</tr>
<tr>
<td>TI</td>
<td>Subject → Outcome</td>
<td>C5</td>
<td>Lack of Resources</td>
<td>Addition of the monograph technology investigation to the larger activity system increased the resource need beyond capacity</td>
</tr>
<tr>
<td>TI</td>
<td>Subject → Community</td>
<td>C6</td>
<td>Miscommunication</td>
<td>Communication breakdowns across units both within and outside of the project team</td>
</tr>
<tr>
<td>TI</td>
<td>Subject → Rules</td>
<td>C7</td>
<td>Reputation</td>
<td>Individual values and goals affected the path of the project</td>
</tr>
<tr>
<td>TI</td>
<td>Object →</td>
<td>C8</td>
<td>Technology</td>
<td>Units technology affiliation</td>
</tr>
<tr>
<td></td>
<td>Community Investments</td>
<td>conflicted with the technology investigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----------------------</td>
<td>----------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT</td>
<td>Outcome ➔ Community</td>
<td>C9 Influence of Community Management of Library and ITS pushed to sustain OSS by increasing usage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMED</td>
<td>Object ➔ Technology</td>
<td>C10 System Stability Platform and functionality issues undermined deployment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMED</td>
<td>Object ➔ Outcome</td>
<td>C11 Scope Creep The side project of outsourcing xml encoding of monographs delayed deployment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMED</td>
<td>Object ➔ Div of Labor</td>
<td>C12 Design Limitations The side project of outsourcing xml encoding of monographs delayed deployment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMED</td>
<td>Object ➔ Community</td>
<td>C13 Access Position The need to balance access and restriction for sales of monographs led a political debate for position</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- **TMP:** Traditional Monograph Production
- **TDLI:** Traditional Digital Library Initiatives
- **TI:** Technology Investigation
- **CT:** Choosing the Technology
- **IMED:** Implement Monograph Electronic Delivery

The configuration of contradictions across the activities highlight several general strains within the monograph project, and portray an interesting pattern of tensions that may be experienced in other digital library initiatives. In the pre-existing activity systems of traditional monograph production (TMP) and traditional digital library initiatives (TDLI), contradictions are balanced between the subject and objects. During the technology investigation (TI) activity however, contradictions weigh heavily on the subjects with a focus on community values and organizational governance. Later on, during the choice of technology (CT) and implementation (IMED) the locus of the contradictions shifts to the object or outcome of the activity.

This pattern of shifting stress points may reflect the flexibility and exploratory nature of the TI as it is transformed into the chosen path of the IMED. It may be that as the object of the activity gained definition, the individuals involved had less need or cause for *inscription*, a term used to refer to the act of placing one’s personal mark on an activity. The personal or organizational value-based positioning was replaced by a need for success for the project.
The activities and resulting contradictions aid in the understanding of the technology environment. With the Activity Theory framing, the reader can better understand the process of digital library initiatives. This framing also aligns the discussion of R2, the contextual influences on technology, in Chapter Seven. In Chapter Seven we will return to R2, as well as a consideration of the implications and limitations of the research.
Chapter 7

Discussion

Technology has impacted the world bringing new formats and styles of information dissemination. No stranger to that impact, the digital library initiative observed in this research project was an attempt to adapt to the changing environment. The activities analyzed in Chapter Six clearly illustrate the complementary worlds of print and collection digitization, but also their collision within the monograph dual delivery project. The project context discussed in Chapter Four impacted those activities’ outcomes on two levels; governance and functionality. The impacts and implications of this research are discussed below.

Organizational governance did not impact the outcome of the project (monographs in both online and print delivery formats). However, the initial task to investigate delivery technologies was influenced greatly by issues of governance. Directors presented this initial investigation as a comparison and analysis of technologies. In fact, the project manager’s past experience and knowledge of CSS capabilities led the team to believe that CSS was a contender in the technology decision. It is difficult to know if the Directors, influenced by organizational governance, C3 and C4, were aware of the potential of CSS. All reports and proposals drafted by the Directors, including those generated prior to the technology demonstration, indicated that OSS had long been the technology of choice. CSS was seen as the implementation for the first Romance Studies collection “because that was the only platform available at the time” (A9).

As outlined in Section 6.3.2, the choice of technology, plainly stated in the OSS Final Report and illustrated in Figure 28, was made prior to the investigation and demonstration.
Unfortunately, this decision and the method by which it was communicated made the technology investigation efforts appear extraneous to the project team that had carried them out. And this was no small task: a team of seven individuals representing five units met twice a month for four months to carry out the investigation project. There was also considerable individual time spent contributing toward the group goals. Hindsight illustrated that the OSS technology was chosen not by best fit but by political need to support a product that had been developed internally and that represented considerable investment. This is not to say that OSS is not a worthwhile application. This research does not attempt to identify the performance and validity of OSS as a whole, but rather how the technology choice and implementation was affected by the social and organizational context surrounding it.

It appears that any findings of the technology investigation could never have affected the decision of which technology to use. However, it seems clear that the exploration and demonstration of different styles of delivery via the two technologies, did contribute to the final activity in the project, the implementation. The demonstration influenced the requirements of the implementation, combining the positive characteristics from both technologies. As the deadline loomed, both directors began showing a vested interest in the details of the project. This delayed management and interest in the project complicated the delivery as areas of neglect such as printing and series site redesign became a central focus.
The second contextual impact, functionality, also contributed to the complexity of the project. The digital library initiative united the Press and the Library and impacted the respective functions. The Press adapted from print to digitization with the barrier of technical understanding of technology. The Press staff moved from a passive role of utilizing technology to understanding the inter-workings and dependencies of technical systems. Through the outsourcing of XML, in partnership with Preservation, the Press took responsibility for the generation of metadata. This responsibility was traditionally held within Preservation specifically. L-IT and Preservation, in turn, grew to better understand the print world and the requirements it held. L-IT relied on the print timeline rather than one fixed by L-IT resource constraints. This resulted in a decrease in control of delivery and increase in resource demands. With time and cost constrained, L-IT was forced to rely on resources to overcome the timeline and task requirements.

In addition to learning about each other, the Press and Library partnership necessitated a compromise in areas of open access to information. Fundamentally the Press and Library rest on opposite ends of the open access discussion. The Library focuses on providing scholarly content to the public with the least amount of cost and inconvenience. The Press positions themselves opposite of this approach traditionally, as displayed in the previous degradation of CSS images illustrated in Chapter 4. Publishers at several leading universities state they support open access and the idea of distributing content for the greater good BUT they still need to recover costs and maintain their funding (P12 & P13). The Press, positioned and funded by the Libraries, adds contradictions to the activity system as it works to define a compromise between tradition library and publication views.

In summary, the contextual impacts on technology in two areas: organizational governance in the form of technology decision making and functionality in the act of defining roles within the project. The initiative offered an opportunity for a diverse set of units to work
together and through long established boundaries. This allowed innovation and growth in all units as a better understanding of the organization was gathered. This also allowed the units to potentially collaborate more cohesively in the future with a working bond.

In the future, digital library initiatives would benefit from early evaluation of project’s context including an analysis of stakeholders, rationalization of the process/factors for success and potential activities. Establishing and analyzing stakeholders offers the project an opportunity to gather the starting position of the contributors, identify values and align the project across the organization. As illustrated in Section 6.3.1, project goals and stakeholder positions were not communicated well early in the project. This resulted in miscommunications, frustrations within the project team and late deployment. By including all the project stakeholders in the early stages of the project, the communication lines open and people increase awareness of the needs of the project.

Once the stakeholders and respective values have been identified, the rationalization and factors for success can be clearly stated and communicated. In the monograph project, the project team focused on the technology investigation and demonstration as a key factor. The project directors identified that as part of the larger implementation process. By not communicating the base rationale behind the technology investigation (i.e., gathering evidence to support their pre-determined OSS technology decision), the initiative was hampered by a misdirection of energy. Identifying clear factors for success and building rationalization from the stakeholders’ values would better position future digital initiatives.

Finally, a mapping of potential activities would offer the project stakeholders and members an opportunity to identify possible paths to success. Methods like cognitive task analysis, the process of identifying implicit and explicit knowledge, processes and goals, can be applied to illustrate the paths (Schraagen, Chipman, & Shalin, 2000). The elicitation of
stakeholder and member mental models could have aided in identification of miscommunications early in the project. This would enable a clear path for all members of the digital initiative.

The contributions of this research offered a view into the realm of digital library initiatives, the units that reside in print and libraries, and areas of potential cohesion and dissonance. These efforts also highlighted the uncertainty surrounding groups dealing with new technology, specifically digital library technologies. In this case, the uncertainties were heavily influenced by the organizational governance. This research clearly illustrates the need to provide an awareness of pre-existing and emergent social and organizational context factors when investigating and implementing novel technologies.
Appendix A

Informed Consent Form for Social Science Research

1. **Purpose of the Study:** The purpose of this study is to understand complex relationship that emerge during the implementation of technology, in this case, Romance Studies Project. This research utilizes Activity Theory to frame the human interaction and identify areas of opportunity and lessons learned from the project.

2. **Procedures to be followed:** You will be observed during meetings concerning the Romance Studies Project and/or projects that support the SPO and Scholarly Communication projects. You may also be asked to participate in a semi-structured interview lasting no more than 60 minutes. The questions in the interview will be related to the following main themes: your educational background, Scholarly Communications, and your current involvement with digital initiatives. The interview will be audio-recorded with your permission. You will also be asked to copy the principal investigator on any email that pertains to the Romance Studies Project.

3. **Discomforts and Risks:** There are no risks in participating in this research beyond those experienced in everyday life. Some of the questions are personal and might cause discomfort.

4. **Benefits:** You may gain insights into how you, as a member of the project, perceive involvement in Scholarly Communication efforts. This could lead you to a better understanding of how your interaction style contributes to the larger group effort. This study will provide insight into the interactions of individuals and their participant in the implementation of technology. This study may help to identify improvements and challenges to making academic areas like Romance Studies (which are difficult to find publishing venues in) available to the larger research community.

5. **Duration:** The study will take place over a nine month period. Interviews conducted will last no longer than 60 minutes. Observed meeting durations will be controlled by the participants, not the researcher.

6. **Statement of Confidentiality:** Your participation in this research is confidential. The recordings and data will be stored and secured at 102 Paterno Library in a locked/password protected file. Penn State’s Office for Research Protections, the Social Science Institutional Review Board and the Office for Human Research Protections in the Department of Health and Human Services may review records related to this research study. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared. Only the researchers listed on this study will have access to the recordings, which will be destroyed no later than December 2011.

7. **Right to Ask Questions:** Please contact Jennifer McCauley at (814) 863-7098 with questions, complaints or concerns about this research. You can also call this number if you feel this study has harmed you. Questions about your rights as a research participant may be directed to Penn State University’s Office for Research Protections at (814) 865-1775. You may also call this number if you cannot reach the research team or wish to talk to someone else.

8. **Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to
take part in or withdrawing from this study will involve no penalty or loss of benefits you
would receive otherwise.

You must be 18 years of age or older to take part in this research study. If you agree to
take part in this research study and the information outlined above, please sign your name and
indicate the date below.

You will be given a copy of this consent form for your records.

______________________________________________

_____________________
Participant Signature       Date

______________________________________________

_____________________
Person Obtaining Consent    Date
Appendix B

Interview Questions Guideline

The purpose of this study is to understand complex relationships that emerge during the implementation of technology, in this case, Romance Studies Project. This research utilizes Activity Theory to frame the human interaction and identify areas of opportunity and lessons learned from the project.

The following interview questions will cover three categories designed to aid in identifying trends that arise in projects with complex working environments.

Education and Skills
- What is your academic background (i.e. Computer Science, Geography, etc)?
- What is your current employment position?
- What led you to your current position?
- Do you see yourself maintaining this career path?

Scholarly Communications
- What is your impression of digital initiatives such as Google Books, Print on Demand, etc?
- What role does the University play in publishing scholarly communications?
  - What role does the Mid State Press play?
- How can subjects combat the increasing lack of publishing opportunities for their areas (ex: Romance Studies)?
- What experience do you have with digital projects?

Current Project
- What is your current role on the Romance Studies Project?
- How much of your working time is spent on this project?
- What groups do you actively participate in?
  - How do you see the groups/roles divided?
  - Is there a leadership role and who is in this role?
  - How is information passed? In what format?
- What are your goals for this project?
- What type of technology will you employ to achieve those goals?
- What is the timeline and deliverables for your portion of the project?
- What are some of the opportunities/challenges you experience while working on this project?
  - How are the opportunities communicated?
- How will this project contribute to Scholarly Communications at Mid State and the larger academic community?
Appendix C

Detail Image of Management Positioning within Digital Initiatives
(Anonymous 2008)

STAGE 1
Brainstorming a new org chart
STAGE 3
The artist goes astray...

ROAR!
I WILL CRUSH AND CONSUME ALL YOUR PROJECTS!
### Appendix D

#### Monograph Test by Platform

<table>
<thead>
<tr>
<th>Pros:</th>
<th>CSS GIFs</th>
<th>CSS PDFs</th>
<th>OSS PDFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every page is a single image</td>
<td>Ü</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image rights protected</td>
<td>Ü (low res and bit depth)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase of paper copy encouraged by file format</td>
<td>Ü</td>
<td>perhaps</td>
<td></td>
</tr>
<tr>
<td>Easy keyword searching</td>
<td>Ü</td>
<td></td>
<td>somewhat</td>
</tr>
<tr>
<td>Keyword text highlighting</td>
<td>Ü</td>
<td>Ü</td>
<td>Ü</td>
</tr>
<tr>
<td>PDF generated on the fly?</td>
<td></td>
<td>coming</td>
<td></td>
</tr>
<tr>
<td>No file conversion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Users understand interface</td>
<td>Ü</td>
<td></td>
<td>Ü</td>
</tr>
<tr>
<td>structure of the book recreated online</td>
<td>Ü</td>
<td>limited</td>
<td>Ü</td>
</tr>
<tr>
<td>Users can download sections of the book</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Users can print sections of the book</td>
<td>Ü</td>
<td></td>
<td>Ü</td>
</tr>
<tr>
<td>Illustrations rendered well online</td>
<td>variable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text easily scaled</td>
<td>Ü</td>
<td></td>
<td>Ü</td>
</tr>
<tr>
<td>Easy to read text</td>
<td>Ü</td>
<td></td>
<td>Ü</td>
</tr>
<tr>
<td>lower bandwidth due to file format</td>
<td>Ü</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cons:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image processing and conversion needed</td>
<td>Ü</td>
<td>some (PDF splitting)</td>
<td>some (PDF splitting)</td>
</tr>
<tr>
<td>Metadata preparation needed</td>
<td>Ü</td>
<td></td>
<td>Ü</td>
</tr>
<tr>
<td>Browser frames limit viewing area</td>
<td>Ü</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher bandwidth due to file format</td>
<td>Ü</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image rights harder to control</td>
<td>Ü</td>
<td></td>
<td>Ü</td>
</tr>
<tr>
<td>Ease of access to files may limit purchase of paper copy</td>
<td>Ü</td>
<td></td>
<td>Ü</td>
</tr>
<tr>
<td>Harder keyword searching</td>
<td></td>
<td>Ü</td>
<td>indexing service problematic</td>
</tr>
<tr>
<td>variable OCR reliability</td>
<td>Ü</td>
<td></td>
<td>depends on how PDF is generated</td>
</tr>
<tr>
<td>Variable page size between books due to legibility</td>
<td>Ü</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Users have to scroll side-to-side as well as up-and-down</td>
<td>Ü</td>
<td>Ü</td>
<td></td>
</tr>
</tbody>
</table>
Appendix E

Monograph Test Platform Evaluation

A. GIFS in CSS
Pros:
Every page is a single image, easy access for any bandwidth
Image rights can be protected by low resolution and bit-depth
Page-by-page flipping encourages readers to buy the dead-tree version
Keyword searching and highlighting through the entire text
Structure of the book can be recreated in CDM
Can generate PDF version on the fly in latest CDM release

Cons:
Extra preparation needed to convert from PDF to GIF and load into CDM
Low resolution may not show images inside the books at their best
Image size will vary from book to book because of smallest text and legibility
OCR not perfect unlike PDF generated from original text
Viewing area limited by CDM frames, requires users to move page around

B. PDFs in CSS
Pros:
Less preparation time = files are PDF, no conversion needed
Users understand how to use Acrobat
Keyword searching and highlighting through the entire text
Structure of the book can be recreated in CDM
Users can download each section if they want
Better graphics: illustrations in monographs look better in PDF better than gifs

Cons:
Image rights harder to control: users can download entire sections
Less revenue? Users may not buy dead-tree version if they can download each section
Keyword searching has to be done twice: once in CDM and again in Acrobat
Bandwidth: PDFs larger than GIFs
Limited viewing area: CDM frames limit viewing area, may encourage downloading and printing

C. PDFs in OSS
Pros:
Files are PDF, no conversion needed
Clean look: each title shows a full Table of Contents with links to each chapter
Users understand how to use Acrobat
Better viewing: no frames, pages are full screen or screen width
Better graphics: illustrations in monographs look better in PDF better than gifs
Users can download each section if they want

Cons:
Preparation time: XML needed for each book (hopefully vendors can create most of this)
Bandwidth: PDFs larger than GIFs, slower access
Searching: currently have to search each PDF section for words; monograph collection search engine down
Image rights harder to control: cannot secure PDFs from download
Less revenue? Users can download and print entire sections, may not purchase dead tree version.
Appendix F

Technology Decision Email From Directors to Unit Managers

Hi folks,
Just a little note on the subject of Romance Studies, OSS, and CSS to bring you up to speed on some things. Given calendars, I'm using the "long email" format that I know is less preferable. Look for the RECAP blurb at the end!

First, Romance Studies titles will be published in print this fall. [The Directors] would like to see the new series online, along with a revamped web presence for the series, by December to allow us to promote it to the Modern Language Association meeting that month. The next SPO managers meeting on October 3 is going to be all about Romance Studies, so that we can track progress. I need to work with the group of you to determine the best way to make this happen this fall.

Second, [The Directors] are leaning towards the use of OSS for the new Romance Studies titles. While we are not fully "operationalized" with OSS yet, we do seem to know enough about the tool to rely on it as a publishing platform. Using OSS, it seems, will give us more experience with this tool--and it should give us another chance to work through some work flow issues with a local client (SPO/Press), rather than a remote client (like WEPAN), with limited availability. While CSS has some upgrades and new functionality ahead, they aren't in place yet, and it seems likely (to me) I think we will be using OSS more for publishing activities and CDM for library projects. It will also give us a chance to cross promote the series and the tool. We need to know more about the results of [Preservation]'s test with the PDFs that I wrote about last week before we make a final call on this.

Third, over the past week, it became clearer in talking with the Press that, for them, protecting the print sales is best achieved by limiting print quality and functionality of the online content. This is the starting hypothesis, so we will need to test this theory out over the next year by gathering some data on sales and usage of RS as it rolls out. However, they would very much like to improve the quality of the on-screen experience. I explained that previously we could only get low-quality print by having low-quality on screen.

Fourth, it was this issue that led me to ask for the test of PDF encryption in the email I sent to Preservation and the rest of you last week. Over time, it would be preferable to limit print via other methods, but we have to start somewhere. If encrypting the PDF limits printing but also prevents search engines indexing, then we have to start over.

Finally, the Press are looking over the current Romance Studies site for language/navigation updates. Romance Studies now has a new design for the print series, and Press is looking to one of their designers to translate that to a web design. That would need to be translated to the real web this fall.

RECAP: December for new Romance Studies online, need a project team.
OSS likely for Romance Studies, but waiting on Preservation's test.
Preservation is testing a way to limit print functions in PDFS.
Goal: Improve screen quality, but limit print quality.
Press is reviewing design and content of existing web site.

Questions, surely you have questions: fire away. Thanks for your help with all of this.
### Appendix G

**Romance Studies Publication Team Charter**

<table>
<thead>
<tr>
<th><strong>Project Name</strong></th>
<th>Romance Studies Publication Team</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Manager</strong></td>
<td>XXXXX</td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td>L-IT</td>
</tr>
<tr>
<td><strong>Director</strong></td>
<td>Directors</td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td>OSDP</td>
</tr>
<tr>
<td><strong>Customer</strong></td>
<td>SPO, Mid State Press</td>
</tr>
<tr>
<td><strong>Document and Date</strong></td>
<td>10/--/---- 2:09 PM (3rd draft w/ input L-IT, ITS, MSUP)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Team Members</strong></th>
<th><strong>Departments</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXXX</td>
<td>L-IT</td>
</tr>
<tr>
<td>XXXXX</td>
<td>Digitization &amp; Preservation – to be confirmed</td>
</tr>
<tr>
<td>XXXXX</td>
<td>ITS</td>
</tr>
<tr>
<td>XXXXX</td>
<td>Scholarly Communications Services</td>
</tr>
<tr>
<td>XXXXX</td>
<td>ITS – to be confirmed</td>
</tr>
</tbody>
</table>

### Project Scope

**Business Need**  
The Romance Studies series is a publishing experiment to support academic monograph publishing through a mixed business model of open access and print on demand. A Romance Studies publication team will work with project Directors to review/revise an existing Romance Studies website, prepare and ingest content into an OSS collection for the series establish a workflow for adding future titles to the website and to the OSS collection.

**Project Goals**
1. Revise content and design of existing Romance Studies website
2. Online publication of first three titles in new Romance Studies series
3. Specify, explore and enable preliminary system for discovery and data gathering.
4. Final review outlining publication process and needs for future Romance Studies titles.

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Final product will be a newly designed web site that can be used to promote the series and provide a point of entry to publications of the series for both end-users and/or systems that harvest or crawl for data/metadata.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Scope/Out of Scope</td>
<td>See attached list of deliverables and assumptions.</td>
</tr>
</tbody>
</table>
| Critical Success Factors             | ▪ Romance Studies is a highly visible project for the SPO and Press/Libraries collaborative effort. What we do will be observed nationally and commented upon.  
▪ Completion in advance of the December Modern Language Association meeting.  
▪ Fully functioning search/delivery for titles.                                                                                                                                                                         |
| Project Assumptions                  | ▪ Management platform: OSS  
▪ Content format: PDF -- encrypted to limit printing to 150dpi                                                                                                                                                                                                       |
| Project Constraints                  | ▪ Timeline is a key constraint.                                                                                                                                                                                                                                       |
| Project Deliverables                 | ▪ General Website  
▪ Same URL  
▪ Edit content and revise design to conform with book design  

  E-Monographs  
    ▪ Ingest and deliver through OSS collection  

  System  
    ▪ Entire site should be crawl-able by Google and other harvesters  
    ▪ Access data should be logged by OSS (if possible) and the web server.                                                                                                                                 |

Requirements

This is in development. Consider it a starting point.

Romance Studies “collection”

Title list (links to individual titles)
  Minimal descriptive info for each
Search across all titles
Titles to be listed with links to content:

Role Stories by Juliette Dorothy
Reconstruction of Woman by Dorothy Rogers
Territories of Known History by Sarah Williams

Titles to be listed as “forthcoming:”
  Winter/Spring 2008: (need info from MSUP)
  Summer/Fall 2008: (need info from MSUP)

Individual Titles:
All top level title pages should be accessible through persistent-URL (PURL) based on ISBN
• http://publications.libraries.msu.edu/ersources/<ISBN> (to be confirmed)
Titles should be listed on the website as soon as it is scheduled for publication.

Each title should have a page that includes the following links or info:
• Table of contents linking to content
• Descriptive information (blurbs, description, etc to be provided by Press)
• Search within the book
• Browse by chapter or major section
• Additional links/info/bibliography (to be developed by author with Press)
• Include buy book link (specify where) pulling page data to automatically go to your print on demand vendor.

E-Monograph Implementation
• E-monograph format: PDF -- encrypted to limit printing to 150dpi
• OSS Implementation
• Monograph content structure
• Search inside book/collection
• PDF viewer to launch inside browser (not outside)
• Links to content: “read this section” (not “PDF”)
• Links to metadata: “about this section” or maybe remove entirely
• Design to match rest of RomStud designs

Access Tracking and Counting
Can OSS track user behavior/accesses natively? If so, how/what can be captured? Are web-logs enabled on OSS server?
• If not—can they be turned on in order to capture some data for later analysis?
Information to be logged/tracked for analysis
NOTE: preliminary list—this is to be scoped more fully during the work of the group
• Page views (for tables of contents, splash pages, etc).
• Article/chapter accesses/downloads
• Unique visitors (numbers)
• Demographics of users (eg by domains/IP addresses)
• Search behavior: what text is being searched?

Enabling Web Crawling/Harvesting
• Limit robots.txt exclusions to known abusing IPs.
• Final site and titles should be submitted to Google for crawling at
  http://www.google.com/addurl/?continue=/addurl
  • Monograph content structure
- Search inside book/collection
- PDF viewer to launch inside browser (not outside)
- Links to content: “read this section” (not “PDF”)  
- Links to metadata: “about this section” or maybe remove entirely
- Design to match rest of RomStud designs

### High-Level Milestones and Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>What</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct 29</td>
<td>1) All text revisions for website and 2) new layout/design template.</td>
<td>Mid State Press</td>
</tr>
<tr>
<td>Nov 5</td>
<td>PSUP delivers final PDF for 1st RS title (Kelly).</td>
<td>Mid State Press</td>
</tr>
<tr>
<td>Nov 12</td>
<td>Revised site available in draft for review.</td>
<td>Project team</td>
</tr>
<tr>
<td>Nov 14</td>
<td>Comment and feedback on site design and revisions due</td>
<td>Directors</td>
</tr>
<tr>
<td>Nov 19</td>
<td>2nd &amp; 3rd RS titles PDFs (Rogers and Beckjord) delivered from PSUP</td>
<td>Mid State Press</td>
</tr>
<tr>
<td>Nov 26</td>
<td>All e-monographs ingested to OSS test instance and available for review.</td>
<td>Project team</td>
</tr>
<tr>
<td>Nov 28</td>
<td>Comment and feedback on OSS behavior due</td>
<td>Directors</td>
</tr>
<tr>
<td>Dec 3</td>
<td>Final changes to site and OSS collection ready for final review. Seek clearance to go-live</td>
<td>Project team</td>
</tr>
<tr>
<td>Dec 5</td>
<td>Final decision to go live</td>
<td>Directors w/ project team</td>
</tr>
<tr>
<td>Dec 10</td>
<td>Go - live</td>
<td>Project team</td>
</tr>
</tbody>
</table>
Appendix H

Detailed Scripting of Series Site Content

**ROMANCE STUDIES WEB SITE TEXT/NAVIGATION REVISIONS**

Note: this document is meant to provide text and guidance on link/navigation placement only. Fonts, indention, etc are used for emphasis in this document only, and are not meant to be followed as design mandates. Possible links are highlighted in blue underline.

NAVIGATION/LINKS ON ALL PAGES

- TITLES
- SUBMISSIONS
- ABOUT
- SPO
- MID STATE PRESS
- UNIVERSITY LIBRARIES

SPASH PAGE

MAIN TEXT

- **NEW TITLES (NEED TO BE HIGHLIGHTED/VISIBLE IN SOME WAY)**
  - Role Stories by Juliette Dorothy
  - Reconstruction of Woman by Dorothy Rogers
  - Territories of Known History by Sarah Williams

**MID STATE ROMANCE STUDIES**, a peer-reviewed monograph series, represents a bold experiment offering simultaneously, in both print and in an Open Access, digital format, the best and latest in scholarly research in the languages, literatures, and cultures of the Romance languages. The series covers a wide range of topics across a lengthy period of time. It also spans a broad spectrum of genres, including monographs, reference resources, translations, and editions of critical works.

A cooperative effort between [Mid State University Press](http://example.com) and the [Mid State Library](http://example.com), ROMANCE STUDIES appears under the auspices of the new [Office of Digital Scholarly Publishing](http://example.com). The editorial board welcomes new proposals according to the [submission guidelines](http://example.com).

SPASH PAGE SIDEBAR

( NOTE: CAN THIS FOLLOWING INFORMATION FIT ON THE FIRST PAGE?)

**MID STATE ROMANCE STUDIES EDITORIAL BOARD**

- PersonX (French)
- PersonX (French/Comparative Literature)
- PersonX (French)
- PersonX (French)
- PersonX (Italian)
- PersonX (Spanish)
- PersonX (Spanish)
- PersonX (Comparative Literature)
**MidState Romance Studies Advisory Board**

PersonX (Notre Dame University)
PersonX (Columbia University)
PersonX (Emory University)
PersonX (Vanderbilt University)
PersonX (Cornell University)
PersonX (Georgetown University)
PersonX (Indiana University)
PersonX (University of Pennsylvania)
PersonX (Michigan State University)
PersonX (Collingwood College, University of Durham)
PersonX (University of California at Santa Barbara)
PersonX (Yale University)

**Romance Studies Titles Page**

**NOTE:** suggest keeping this page as clean as possible, without graphical buttons, etc., links for titles would go directly to a Table of Contents page that has background, chapter links, links to buy book, etc.

**Series Volumes**

Current Series
Role Stories by Juliette Dorothy
Reconstruction of Woman by Dorothy Rogers
Territories of Known History by Sarah Williams

Forthcoming:
Title 1 by author
Title 2 by author
Title 3 by author

**Original Series: Mid State Studies in Romance Literatures**
(No titles listed, just link)

**Original Series: Mid State Studies in Romance Literatures**
List of the titles now available (e.g., the same list that is at [http://romancestudies.msu.edu/titles/index.html](http://romancestudies.msu.edu/titles/index.html)) but redesign to match rest of site.

**About Romance Studies Page**

**Background**

From 1991 to 2003 the Mid State Press published a distinguished monograph series entitled **Mid State Studies in Romance Literatures**. Books published in the series were well reviewed in scholarly periodicals and often played a favorable role in tenure and promotion decisions for their authors. In 2004, series author PERSONX was awarded the MLA’s prestigious X Prize for his book, X Renaissance (2003).

Unfortunately, rising costs and declining sales forced the Press to discontinue the series in 2004, confirming what the MLA found regarding publication in the foreign language fields in its

Supporting Quality and Access

Sales alone cannot be the driver of academic scholarship. University Presses were founded to support publishing that had limited commercial value. By re-commissioning the series as Mid State Romance Studies, we have three aims:

1. Publish scholarship of the highest quality.
2. Support academic fields that have limited publication outlets.
3. Experiment with business and access models that will provide sustainable support for scholarly monograph publishing.

All books chosen for publication in Mid State Romance Studies undergo full peer review, ensuring the same commitment to quality as with any other university press series. By making publications available simultaneously in both electronic open access format and via print-on-demand, the series will be accessible to scholars and general readers throughout the world.

As a collaborative project at Mid State, the series brings together the complementary strengths of the Press, the Libraries, and the Departments of French and Italian, Spanish, and Portuguese. The Press will contribute its expertise in peer review, content development, design and production, and marketing. The Libraries bring expertise in technology, collection development, and archiving. The two academic departments provide scholarly support in the form of an editorial board that solicits and reviews potential series books.

SUBMISSIONS GUIDELINES

The Romance Studies editorial board restricts the number of proposals it accepts but welcomes new submissions.

If you are working on a book-length project dealing with the culture, language and literature of the Romance Languages appropriate for Mid State Romance Studies, please prepare the following materials for submission:

- cover letter (include all contact information, including email and personal webpage address)
- abstract (300–500 words)
- table of contents (preferably annotated)
- technical description (word count, illustrations, charts, diagrams, date manuscript will be complete)
- if this is a revised dissertation, please describe the revisions
- sample chapter
- a brief description situating your work within the scholarly conversation
- curriculum vitae or résumé
- a self-addressed stamped envelope if you would like your material returned

Direct email inquiries to info@psupress.org with the subject line “Manuscript Submission.” Send written submissions to:

Mid STATE UNIVERSITY PRESS
Preference will be given to the single-authored scholarly monograph. Every proposal will be reviewed and, if deemed appropriate for the series, forwarded to the editorial board. With the board’s approval, authors will be invited to submit full manuscripts for formal peer review. The press will solicit reviews in consultation with the board. As appropriate, reviewers will be drawn from, but not limited to, members of the advisory board.

Submissions will be evaluated on the basis of their significance for the field of Romance Studies. To be accepted for the series, each work must advance scholarship in one or more of the following ways: by presenting new scholarly information, offering original interpretations, advancing theoretical discussion, or synthesizing a body of literature. Preference will be given to works marked by clear and jargon-free writing.
Bibliography


