Adina Maria Ciocoiu

International Collaboration in Digital Libraries – An analysis of the Manuscriptorium Digital Library case study

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Abstract

International collaboration in digital libraries represents a challenging subject for the cultural institutions, as everyone brings its own perspective and approach to the collaborative endeavour. When joining such initiatives, organizations subscribe to a set of technical and financial requirements to which local participants needs to agree. These aspects concern the participants as well as funding institutions or stakeholders. They all contribute to creating a sustainable collaborative initiative that can be easily accessed on the long-term.

For this research, the lack of assessment concerning the local participant's contribution in international collaborative initiatives was identified as a major problem and that framed the current research questions. Therefore this study aims at analyzing the challenges faced by the local institutions when joining international collaborative initiatives and at revealing the benefits of making widely available locally hosted content, i.e. special collections, in a specific research environment. The case of *Manuscriptorium* Digital Library was then chosen for answering the research questions, as it gathers valuable content - manuscripts, rare books, maps, charts, letters, and so on - from various European institutions - national, university libraries and research institutes - and it makes it available as digital representations through a virtual research environment. Also Manuscriptorium is considered to be one of the most structured, stable and experienced initiative that was undertaken in the field of digital library of special collections in Europe.

The main conclusion of this study, as revealed in the findings, consider the act of international collaboration as beneficial to the local institutions, as it involves the whole organization – staff, technical resources and financial **–** into a common environment. Still, important drawbacks were identified mostly when stakeholders – national and international - do not see the importance of collaboration and therefore do not ensure the existence of their institution in a competitive arena. All these aspects need to be considered in further studies, as the current one only gave an overview situation of digital library collaboration in an international environment. In a world that calls for sharing resources in the name of progress and innovation, collaboration brings new and broad perspectives for the local organizations.

Keywords: international collaboration, digital libraries, virtual research environments, Manuscriptorium Digital Library

Declaration

The opinions expressed in this dissertation are solely those of the student and the acceptance of the dissertation as a contribution to the award of a degree cannot be regarded as constituting approval of all of its contents by the Division of Information & Communication Studies".

I certify that all material in this dissertation which is not my own work has been identified and properly attributed.

Signed:

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List of Abbreviations

ACM – Association for Computing Machinery
CD-ROM – Compact Disk – Read Only Memory
DPLA - Digital Public Library of America
EBSCO or EBSCO Publishing – aggregator of full-text content to libraries, schools, academic institutions and corporations
EMBARK – is a European project that aims at binding and combining important works of Balkan – Slavic written cultural heritage, facilitating cross-cultural dialogue of cultural experts and exchanging and involvement of cultural and young professionals in the field of manuscript studies, different methodologies and best practices
ENRICH - European Networking Resources and Information concerning Cultural Heritage
IFLA - International Federation of Library Associations and Institutions
JSTOR – Journal Storage online system for archiving academic journals
NDLTD - Networked Digital Library of Theses and Dissertations
NISO - National Information Standards Organization
OAI-PMH - Open Archives Initiative – Protocol for Metadata Harvesting
OCLC - Online Computer Library Center
OPAC - Online Public Access Catalogue
PALMM - Publication of Archival Library & Museum Materials
SAGE – independent academic and professional publisher known as SAGE Journals and SAGE Publications
SALSAH - System for Annotation and Linkage of Sources in Arts and Humanities
VRE - Virtual Research Environment
UK – United Kingdom
UNESCO -United Nations Educational, Scientific and Cultural Organization
UTF-8 – Unicode Transformation Format 8 bit
USA/US – United States of America/United States

Chapter 1 Introduction

"If everything needed for research is free on the web, why would we need libraries?" illustrates the overall perception of students no matter what age they are or what discipline they study. This is how most users will respond to library professionals that will try to argue for their purpose without bringing solid evidence or relevant arguments. Cochrane (2007) used that phrase when she was arguing the role of the library in a society that relies completely on its Internet connection (2007, p. 6).

The Internet connection, along with various tools that were developed during recent years challenged and opened new opportunities for libraries, publishers, vendors and most of all for the general public, be they students, researchers or just someone who wants to learn and expand his knowledge.

The Internet has also created new ways of interacting with the world, with the information and with each other. It played a role in unifying diversity and to displaying it in one single frame. It developed the new humanism mentioned by Irina Bokova (2010), Director General of UNESCO, which underlines the effects of globalization and technology on individuals and cultures. She notes that this "mingling of peoples and cultures [...] demands that the conditions necessary for mutual understanding [...] be re-thought" and she refers here to the incredible power of people working together, acknowledging and accepting their differences, while acting as single human civilization (2010, p. 2).

Her speech touches aspects of general interest for the modern world and libraries can hardly ignore her assertion, moreover now that "digital" libraries have changed to some extent their initial scope. Libraries have become active players in the societal game and they realized that one of the keys to remain so is to share their expertise and resources. This is why international collaboration in digital libraries has became a popular topic among libraries, as collaboration can work for the best of all partners in terms of achieving funding, acquiring expertise and exchanging knowledge. Still, the act of collaboration implies bringing together different institutions, with different background

and experience that share at least one common goal, namely to make their valuable collections widely available and to increase their use. Not disregarding the power of the unified approaches and the efficiency of having dispersed collections accessible from one single place, this research will focus on identifying the challenges for the individual participant and how everyone can cooperate in opening up and making relevant their valuable resources to be used and relevant for use by the wider public.

After so many years of talks and debates about the creation of digital repositories institutions have now found it appropriate to interact with similar organization to share tools and resources and to assess the possibilities they have for creating a valuable space for their local and widely-spread interested communities of interest. This research examines to what extent they succeed, and it identifies the challenges they face and the benefits of this collaborative approach.

The main argument behind this study emerged during the researcher's practical work at the National Library of Romania (Digital Library Department) where the need for collaboration and cooperation was imperative in order to demonstrate the value that lies within the library's collections. Even though the library had been involved in some international initiatives, the researcher noticed that it required more than theoretical or practical knowledge of the field to really make it a successful endeavour. The size of the study, the limited time and unpredictable events are constraints known and accepted by the current researcher, therefore this study aims at giving an overview of the aspects mentioned above in the context of a case study, Manuscriptorium – European Digital Library of Manuscripts.

1.1 Context

The context of this research was drawn by a recent statement made by Ingeborg Verheul at the IFLA meeting in 2011. Here she defined Europe's libraries to be "the driving force behind the knowledge society" having as main responsibility the role to "provide access to the information that underpins the continent's creativity and economic growth". She also underlined the uniqueness of such institutions in defining themselves as "spaces for sharing, learning and research for all members of society, regardless of their knowledge needs" (2011, p. 153). Moreover, Neelie Kroes, Digital Agenda Commissioner in her speech at the same reunion referred to European Commission's support to encourage cultural institutions to come together and develop a single access point to Europe's cultural heritage (2011, p. 162). This is what libraries need in order to motivate and

sustain their future and furthermore to inspire their goals for international collaboration.

Starting from their first embodiment of physical spaces that were built to store the knowledge created by people, libraries have now come to a point where making that content available for everyone in every corner of the world using a virtual environment is just not enough. If in the past libraries targeted in their mission and goals the people that visited the library and the community around that library, nowadays with the continuous growth of technological applications libraries need to find ways of engaging their audience, of sustaining their activities and adapting their purpose to the current and future developments. Most of these institutions have already become aware that working individually might not be the best way of doing all that and they opened their minds to collaboration and cooperation.

Collaboration by definition implies that individual participants are entrusted with quite similar tasks for the purpose of doing the same activities. It means coming together and acting on common goals, complying with common standards and submitting to the same responsibilities. But practice always brings slight interferences in the whole process and that is because of each member's local history and culture that had defined their workflows and position, the technology they used or which they lack. This is not to ignore what Hedgren (2007) points out, that the success of international collaboration depends mostly on human interactions, sharing power and displaying trust among participants.
This is to say, that behind the institutional aspect of libraries one of the most important part is played by the humans that work there and their efforts and aspirations for the public to have unlimited access to the human knowledge.

1.2 Statement of problem

Within the current times, in this ever-changing technological environment that actively creates a mixture of everything to be served to everyone at a global rate the researcher finds it reasonable to ask questions about the roles and responsibilities of the local participants and the local and global benefits of such venture.

The researcher found it difficult to identify particular studies related to the perception of the staff involved in collaborative digital libraries. Still, Pinto et al. (1993) is worth mentioning as a research investigating the effects of collaboration on the internal organizational structure. They analyzed the cross-functional cooperation and interaction

within locally hosted projects and they focused on the team goals, proximity between members and leadership coordination. Even though their approach was on projects handled by particular organizations and their respective teams, the methodology they used would be easily adaptable for a dispersed community of participants in collaborative initiatives. They concluded that the dynamics of projects is strongly influenced by the roles drawn by the project leaders for the team members and by the distribution of tasks among participants (1993, p. 1283). Even though the current research refers to randomly located participants, the international collaborative initiative still needs to be coordinated and structured; the participants need to have their roles and responsibilities. Thus, the advantages and disadvantage of such approach will be investigated in the current research, as well as the impact on the internal organizational structure.

In addition, the literature reviewed by the current researcher who previously examined this problem, referred mostly to the whole endeavour of the collaborative digital library, to its success and fame but dealt rather less with the role of individual participants, their experience, how collaboration shaped their organizational structure or how it helped the library interact with its local community of users. There is the case of a collaborative project that aims not only to store documents in one single place but to make them widely and readily available to everyone.

At institutional level, being part of a collaborative project implies putting together diverse factors, ranging from individual working practices, level of development, economic situation, and human capital to their own historical and cultural understanding of the field of practice. And yet, the need to consider the particular, heterogeneous aspect is required as part of the digital library architecture (Pradt Lougee & Prince-Wilkin, 1999, p. 18).

Therefore, the researcher believes that there is a need or tendency to preserve individual identity and by extension, the institutional identity, starting from the various languages and cultures and including the particular approaches to technology and the capacity to understand it and develop it for a particular case. Traditionally, the nature of a library aims to be exhaustive – successfully or not – and therefore among its collections are documents that illustrate the history of a nation, a period of time or just a field of study. These are considered special collections, by their nature and value and so the public consulting them tends to be limited to an interested segment of the user population. Therefore, this research will look at the special collections hosted in the library and will

analyze the collaborative initiatives that grew around them. The researcher considers here the aspect of creating a future for the past as the challenge of the millennium, knowing and accepting everyone's uniqueness and value, putting all our difference together to create, innovate, develop and progress. In so doing, this research will bring together special collections and the international collaboration between institutions that hold these treasures, and the role of digital libraries in the venture as a mean of preserving them and making them available locally and globally.

1.3 Research aims

The aim of this research is to analyze the challenges that institutions face when deciding to make their locally hosted content, i.e. special collections, widely available. It will investigate how local institutions work when creating a usable research environment and how their local communities of users understand and benefit from this common space. It will try to identify new models of access to the digital documents and new potential users of such service.

1.4 Research objectives

Overall, the research will have the following objectives:

- To identify the advantages and disadvantages of international cooperation for the participant library (that is reflected in their local digital library experience, local organizational structure, financial and human resources)
- To determine the level of understanding of the local community of researchers regarding the involvement of their institution in collaborative digital libraries and the potential benefits that this initiative may bring for their profession.
- To examine the impact of participation in collaborative digital libraries of manuscripts for the research community – within local and global environment.

1.5 Research questions

The questions concerning the research are:

1. What are the challenges and benefits (advantages and disadvantages) for local institutions when participating in international collaborative digital library initiatives?

2. To what extent does the participation in international collaborative digital libraries improve the value of the locally stored digital collections?

Consequently, the research method applied here will be investigating the case of *Manuscriptorium Digital Library – European Digital Library of Manuscripts* - that is one of the most comprehensive digital library projects undertaken in the area of special collections. *Manuscriptorium Digital Library* is provided by the National Library of the Czech Republic, a institution with long history of practice in technical aspects of the library field. *Manuscriptorium*, as presented by Uhlíř, was introduced in 2004, as a result of the library's goal to integrate historical resources and to open them to the research community. The focus was on manuscripts and the idea was put into practice by many other institutions that eventually became part of the project (Uhlíř, 2008, p. 154).

1.6 Conceptual framework

Describing the importance of a conceptual framework, Maxwell (2004) remarks that it is very crucial to present a model of what is to be analyzed in the study, the actions that it triggers and the reasons for what happens. He stresses that defining this conceptual framework helps refining the goals of the study, choosing the suitable methods and techniques to be further employed (Maxwell, 2004, p. 33).

As the field of this study is digital librarianship, or digital libraries, Rowlands and Bawden (1999) tried to define a conceptual framework in order to develop understanding of the concepts that surround this subject. They analyzed several approaches and they concluded that digital libraries are a cluster of interdisciplinary activities that also trigger an interdisciplinary approach (Rowlands & Bawden, 1999, p. 193). They mention Christine Borgman (1999), one of the several authors who have written about the emergence of digital libraries. Her vision on a conceptual framework of digital libraries follows a three-way perspective, namely

- digital libraries as content, collections and communities as a set of electronic resources gathered in collections to serve certain communities of users;
- digital libraries as services or institutions as dedicated bodies to serve the needs of the public, responsible for creating a space where all the above could easily interact;
- digital libraries as databases or the systems and technologies needed in order to ensure a smooth access (Borgman, 1999, pp. 232 – 238).

Acknowledging all the above, the current research aims at understanding how international collaboration is applied to digital libraries from a practical point of view.

Therefore, the researcher decided to analyze the case of *Manuscriptorium* digital library, which is a platform created to display digital representations of certain material belonging to the special collections held in libraries. From a technical point of view, Manuscriptorium had created tools and services for providers to use when describing their data, and also for users to offer easy, unlimited access to the material presented there. It was from this perspective, a single point where specialized communities could turn to in order to perform their research in a friendly manner. By analyzing the interaction between local and global participants, this study aims at offering the motivation for development, for continuation and for sustainability, as well as a good example for future similar initiatives.

Manuscriptorium is therefore described as a digital library and moreover as a virtual research environment for revaluation of special collections. To provide an answer to the specific research questions in this study, the researcher subscribed to the Gonçalves et al. (2004) description of digital library architecture, as to contain five main variables. These were noted in "Streams, Structures, Spaces, Scenarios, Societies (5S): A Formal Model for Digital Libraries" and represent *content (**streams**), management (**structures**), locations (**spaces**), activities (**scenarios**) and communities (**societies**)* within the actual digital library.

Even though this model uses a fairly technical approach for analyzing the data, the researcher chose to look at adapting it for the current research on the basis of the replies for the questionnaire. The questionnaire was designed in such a manner that technical aspects of the digital library would not be tackled but rather that the local understanding of digital libraries and the relevance of international collaboration from the humanistic perspective would be approached.

The choice for pursuing these five variables is also connected to the aims and objective of the study, namely to describe and understand the libraries' experience in international collaboration from the management and functionalities point of view and to assess the benefits on the content and of the communities involved in the process considering the location of each participant. Manuscriptorium will be analyzed here as very well structured and organized digital library, and that is the result of a good international collaboration between its participants.

1.7 Expected outcomes

The expected outcomes of this research were associated with identifying different levels of involvement – for various reasons - social, financial, technical or even cultural inheritance - specific to the geographically location and to detect the particular approach within their local setting. The prospect of revealing how each community understood the initiative and how they are using it to promote themselves was anticipated. As possible barriers the researcher expected to encounter lack of interest from the respondents' side which eventually could lead to lack of replies, as this survey won't offer any incentive for its participants and just calls on their willingness to help a student/colleague complete the study. The added constraint of a brief timeframe, preventing other methods of investigation can also be considered a barrier hindering this research.

1.8 Outline of the paper

This dissertation consists of five chapters.

Chapter 1 provides an introductory section for the research explaining the context and the statement of problem that is to be further investigated , and for which research aims, objectives and questions were stated. This is followed by a brief description of the methodology used to reach the objectives and to achieve the aims of the study.

Chapter 2 tracks the topics of collaboration, libraries, digital libraries, digital library collaboration in Europe and the USA a well as special collections in the collaborative environment as reported in the existing body of literature.

Chapter 3 frames the methodology that was selected and applied to this research from the philosophical paradigm that guided the methodology, to the research methods used and the data collection techniques employed (from design, distribution, ethical considerations and limitations).

Chapter 4 describes the research findings and their analysis by the categories that emerged under the model proposed for this section.

Chapter 5 concludes the research from the perspective of the research topic, research methodology and research technique applied in this paper and suggests steps for further research.

In the last section of the thesis the researcher provides the references that supported the study along with the appendices – the "evolution" of the participants' list (the researcher' selection, and the data provided by the key informant), the questionnaire sent to the final sample which includes the protocol designed for giving the respondents an overview of the study. The model used for analyzing the data with the respective categories is also included as an appendix.

Chapter 2 Literature review

This chapter is dedicated to defining the concept of collaboration in libraries and digital libraries, and to introducing the means of scholarly collaboration using virtual environment facilities, with a focus on the systems designed for research communities with an interest in special collections. The literature reviewed to support the researcher's arguments in relation to the study was drawn from consulting specialized materials and databases, namely SAGE Publications, ACM Digital Library, EBSCOhost, Emerald, JSTOR, ScienceDirect, SpringerLink, Taylor and Francis Online, Google Books & Google Scholar, dictionaries and other paperback books and journals. All the sources consulted are detailed in the References and Bibliography chapter at the end of this paper.

2.1 Collaboration – some definitions

To introduce the term of collaboration, the researcher of this study looked up primary resources for some definition and found that *collaboration* is described in the Collins English Dictionary as "the act of working together to produce a piece of work, especially a book or some research"(*Collins English Dictionary*, 2001) while Oxford Advanced Learner's Dictionary refers to it as "the act of working with another person or group of people to create or produce something (*Oxford Advanced Learners' Dictionary*, 2011). Wikipedia on the other hand expands the explanation and details the concept of collaboration by giving classical and contemporary examples of the topic. This definitions starts with trade in prehistoric times when people used to exchange goods for survival and it ends in modern times when massively distributed collaboration facilitates the communication between peers or ordinary individuals to fulfil a modern need, namely to be informed (Wikipedia, 2012).

Collaboration has been the focus of many professions as it provides excellent possibilities to exchange and share knowledge, to minimize the costs of resources for the specific activities of the collaborative act. In social sciences, collaboration has helped organizations achieve a deeper understanding of the current issues, to practice with experienced peers and therefore to stimulate innovation. In addition, the technology has

developed to such extent that there are now many tools and methods available for researchers to use and to support inter-organizational collaboration. Nevertheless, these initiatives create constraints that need to be noted regarding funding, location of the participants and their interest and willingness to commit to the mission that drives the process. Yet, the most valuable characteristic of collaboration is illustrated by the different perspectives of the participants in what concerns the object of their collaboration (Cornish, Zittoun, & Gillespie, 2007). Creating consensus on the act of collaboration is one of the most challenging aspects of this activity, as participants might be located in their own environment or organization, viewing the initiative from their point of view and making communication and coordination hard to follow and to interpret (Steinheider & Legrady, 2004).

2.2 Libraries and Digital Libraries

Libraries are institutions that work with people and for people, and are thus no strangers to the act of collaboration. This can be noticed in their initiatives and efforts of collecting, cataloguing and representing information available in card catalogues, OPACs and eventually on the web. Moreover, history has showed that libraries need to grow, to adapt and to change and collaboration has been one of the methods that helped library professionals evolve. Just to underline the collaborative spirit of libraries, few good examples can be noted, the Union Catalogues which were created by each country in order to organize their materials into one single point of access to library 2.0 or the virtual reference desks and international professional associations (Coffman, 2012).

To start reflecting on the importance of both libraries and digital libraries and on their provided intentions for collaboration, relevant definitions of both libraries and digital libraries will be introduced next to sustain the case that this study will build upon. The Online Dictionary of Library and Information Science defines “the library” as:

> *A collection or group of collections of books and/or other print or nonprint materials organized and maintained for use (reading, consultation, study, research, etc.). Institutional libraries, organized to facilitate access by a specific clientele, are staffed by librarians and other personnel trained to provide services to meet user needs. By extension, the room, building, or facility that houses such a collection, usually but not necessarily built for that purpose (Reitz, 2004).*

As the definition states, libraries with their experienced staff, manage different collections of various materials and developed services that are appropriate to allow the community of users to retrieve and use the collections with ease. For example, a particular physical location with proper facilities will fulfil a set of conditions for its patrons. On the other hand, "digital libraries" are mainly characterized by combining the theory and the practice that grew around the idea of transforming the content from one physical form into a digitized virtual manifestation. An illustrative definition of digital libraries is given by the Digital Library Federation, an organization that brought together libraries to work for the creation and the development of a specialized community of practice:

> *Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities (Waters, 1998).*

These definitions stress that there are common goals, both for libraries and digital libraries, as in serving communities by allowing access to an organized and structured collection of resources, even though there might be more profound differences regarding the type of materials, the environment where they can be accessed and in particular the ways in which those can be used. When libraries were defined by the physical location of their collection, the collaboration was perhaps not that obvious nor was its impact; now, when collections are spread over many institutions or new collections are being created around a theme or subject, institutional cooperation gains new dimensions. Ram et al., also underlines the advantage that digital libraries have, from being able to represent their materials in a more appealing manner to proving rich and contextualized information irrespective of the physical location of the user. They are – or at least are supposed to be – dynamic entities, compared to their brick and mortar counterparts (Ram, Park, & Lee, 1999).

Gonçalves et al**.** (2004) describes a model of institutional cooperation highlighting the case of NDLTD, the Networked Digital Library of Theses and Dissertations. NDLTD reflects the international effort of libraries, universities and similar institutions to bring specific content, i.e. electronic theses and dissertations in one single point of access. They work together to identify, and target specific audience but also to promote worldwide the electronic theses and dissertations. The success of this international

collaboration was highlighted by describing the digital library architecture according to the 5s model – a digital library architecture model comprising every aspect from content, location, management, communities and activities**.** These are reflected in the 5s model, as being “streams”, “spaces”, “ structures”, “societies” and “scenarios”.

For the NDLTD **societies** were defined by the primary **community** of users, i.e. graduate students and the impact that the digital library have on their research, and on secondary or tertiary targets as in the teachers and the library staff. Moreover the faculty as an institution was seen as an additional target as well as publishers who might encourage the primary community to use the digital library. To access the NDLTD system each of the communities mentioned above need different services, defined by the study **scenarios**, where each can perform their specific activities, i.e. simple or advanced search in a user-friendly interface, federated search across multiple platforms, annotation capabilities and compatibility with other similar systems. For **spaces** they referred firstly to the physical **location** of the ones that created the digital library and secondly to the conceptual space where the material is stored, namely the virtual space offered by Internet, servers, and the system that allows materials to be indexed and displayed. For **streams**, they considered the set of characters that combine the material (for text and for images) respectively the **format** and the protocols that allow the transfer of such materials and for **structures** they pointed to the workflow **management** (Gonçalves et al., 2004, pp. 280 – 282).

Besides theses and dissertations, another type of content suitable for creating sustainable digital library collaboration initiatives are special collections or the historical valuable materials that libraries have gathered for centuries and that were somehow hidden from the public eye. As they are free from any restrictions, these are currently the best material to work on, to develop tools and systems that would allow every researcher independently of his/her physical location to consult, annotate, share and fulfil a research task. In addition, collaboration brings a new perspective into how these documents are handled, stored and preserved, as pointed out by Dahlström et al (2012). They redefine the individuality of the library and changes that follow concerning its role and purpose in society. Digitizing special collections originated from the need to develop tools and methods for locally stored collections and this later expanded to include shared experiences, lessons learnt and best practices. By choosing this path of sharing their resources - collections, knowledge and technology – libraries have ventured to become part of a globalized world where standards and practices are unified and common to all (Dahlström, Hansson, & Kjellman, 2012).

2.3 Digital library collaboration

Traditionally, libraries have not shown much experience or motivation in proving their value; however they do not store documents for without a purpose and they need to evidence this. Libraries are often taken for granted by their customers and even by their employees. They have a tacit understanding with the society they serve and sometimes they fail to enunciate their value to the general public. On the whole, libraries are quiet and keep a low profile, being generally less engaged in public debates that would allow them to demonstrate their existence.

Bishoff (2004) claims that collaboration is an imperative and that libraries, museums and archives need to consider it when approaching the acquisition of a sustainable and cost-effective model. These institutions hold different types of materials, but all of them want to contribute to the development of spaces where cultural heritage can be accessed. Therefore, he argues, they have to overcome their differences and find consensus (2004).

Moreover Allard (2002) found two approaches that encourage people to work together and further noted that they are often interchangeable. From her perspective, these can be defined as the "collaborative project" or the "cooperative venture". While the former joins individuals who need to contribute to a one single purpose and which is based on more than two institutions being funded by limited resources depending on the duration of the project, the later gathers individuals or institutions working towards developing policies or coordinating research efforts, with uncertain funding but these are more inclined to evolve into a consortium as their interest grows.

2.3.1 US and European international approaches

World Encyclopedia of Library and Information Services dedicated an entry to the concept of library cooperation, describing its long history of sharing resources for mutual benefit at regional, national and international level. No matter in which region of the world they are located, libraries have found a way to come together and tackle subjects of interest. In the USA for example, all types of libraries have joined collaborative ventures since the 1970's making the financial and technical support much more flexible and affordable. Among the advantages listed are sharing resources, using standardized procedures (to save staff' and user's time) and applying centralized technical processes. The disadvantages relate to various tensions that may arise between the local library's autonomy and the network or the ruling consortium (Wedgeworth, 1993, p. 23).

Bradley (2008) pointing at the US experience, insists that libraries do not work well with each other, as they could not overcome their institutional pride. In the digital environment, libraries would need to adjust to new requirements and abandon previous definitions especially when new technologies have brought ample possibilities for the public to become contributors and institutions would need to allow the public to participate in the development of digital collections (Bradley, 2008).

An example for good collaboration is provided by NISO (National Information Standards Organization) as an organization that relies greatly on the participation of publishers, libraries and software developers promoting honest communication in an environment where expectations are clearly stated. This allows the working process to be performed in a unified space, by sharing and agreeing on the project goals and making the result of the collaboration and long-term success. But they also face challenges, as Todd Carpenter (2012), director of NISO mentions, and one of the main ones is related to the shortage of resources that highly contributes to the development and sustainability of collaborative projects (Carpenter, 2012).

From these perspectives, both the USA and Europe have undertaken several initiatives. They are both organized groups of many individual states, with advantages and disadvantages. While the US has the advantage of using common language for all of its regions, Europe is more diverse combining quite distinctive regions. Creating digital libraries within these spaces can be very challenging but also rewarding. This is particularly noteworthy in the differences between Europeana and the Digital Public Library of America (DPLA), two international collaborative initiatives that are currently shaping the picture of digital library collaboration.

On the one hand Europeana which was launched as a prototype in November 2008, aims to bring content together from 1500 providers from countries belonging to the European Union and to integrate content from libraries, museums and archives. The French president at that time, Jacques Chirac, proposed to the European Commission to create a virtual environment that would provide access to European cultural heritage. Similar to the US, the case for Europeana was supported by a large digitization project undertaken locally, in the many European countries that helped create a framework for the prototype. Europeana has developed into a more complex entity, not only as an aggregator and distributor of digital content, but also as a professional network for sharing expertise. It has encouraged user generated content by curating online

exhibitions, semantic tagging or crowd-sourced translations, to mention just a few (Purday, 2009).

On the other hand, DPLA is considered a huge effort in terms of funding, governance, legal issues, audience and participation, technical infrastructure, and the fact that most of the states have their own local digital library project will ease the way for many of these issues. Nevertheless, DPLA is a very young project which was first proposed in 201o with the hope that by 2013 it will be up and running. As mentioned by Robert Darnton cited by Schwartz (2012), DPLA needs to find the balance between library holdings commercialization and the public mission of libraries.

These two initiatives have common goals of openness, interoperability, access and they can collaborate towards developing an adequate space for combining digital resources from both continents and to create a global network, as mentioned by Robert Darnton in the collaboration agreement. Price (2011) noted that the first collaborative proposal will concern the migration between the two worlds, and will consist of combining digital content into a virtual exhibition (Price, 2011).

2.3.2 US and European local collaborative initiatives

As far as local initiatives are concerned, Andrew Adaryukov (2004) describes an example of successful cooperation between libraries and particularly between digital libraries in the case of Florida Atlantic University. This institutions was involved in digitizing the library's collections and the collaboration behind this action was regarded as "one of the important driving forces behind development of the physical collection" and moreover it provided the perfect opportunity for "cooperation on practically every-level from intra-departmental to international" (Adaryukov, 2004, p. 4).

The project, Publication of Archival, Library and Museums Materials (PALMM http://palmm.fcla.edu/) was initially known as Florida Heritage. It was later expanded to a larger and more cooperative undertaking being shared between libraries, museums and archives. The choice of gathering all these diverse institutions in a joint effort reflected in the collaboration between internal staff and stakeholders, who had a unique goal of creating a single place for Florida's culture, arts, history, sciences. The internal structure was modified by the new activities that came up in the daily workflow, and the new types of equipment brought in to serve the project (database, hardware and software to needed for digitization, such as equipment for digitizing vinyl discs and old

audio tapes). In addition to the collaboration between library staff, new opportunities for digitization projects arose from the collaboration with other university departments and with the community of users (digitizing Jewish historical material that was part of the university's curricula as well as local cartoons and maps). The success of PALMM was a result of the work of different people, each having different skills and expertise, who invested their knowledge and activities into preserving the cultural treasures that they managed using the digital technologies and the Internet (Fesenko, 2007). Years later, Parandjuk (2010) was interested in evaluating this project using an information architecture model. This model was chosen to describe the act of organizing the content in a user-friendly manner that helped the library customer discover the materials needed more quickly. She emphasizes the role of libraries in teaching online navigation and digital collection discoverability to library patrons and the role of the information architect behind that collection in designing a user friendly interface for the collection. This particular project was observed as a best practice case and the manner in which the higher education institutions approached their role of content providers could be used as an example for future similar approaches. She supports this conclusion by analyzing the project against the information architecture requirements articulated by Morville and Rosenfeld and she notes the collection uniformity, using the same standards, interactive approach, consistent use of features, and simple search facilities to build up the brand of the project, which consequently lead to developing trust between users of the digital library and the digital library itself. By offering taxonomies and by supporting user-generated metadata it built up a community feeling that has improved the search experience (Parandjuk, 2010).

Furthermore, the case of digital libraries in Europe is strikingly defined by the various levels of development. While in more developed countries one can find advanced and well organized digital libraries, in some parts, unfortunately simple points of access to the digital representation of the library's holdings are made available. Liu (2005) compared a number of cases and had observed that European countries tend to easily cooperate among each other in different areas; the case of creating collaborative digital libraries was no exception at all. European countries tend to be small and closely located to one another which makes it easier to transfer goods and products, but when talking about digital libraries she noticed that most action goes on locally, where digital libraries are typically run by the national or local institutions focusing on the documents related to their national language, history and culture. She had also observed how the financial support of the European Commission helped libraries to come together and

work for development and implementation of a sustainable framework for digital library initiatives (Liu, 2005).

One interesting case to mention here regards Poland, where many libraries decided to start digitizing their collections and in 2002 the first Polish Digital Library was launched on the web. This initial venture was then used as an example for many libraries in Poland and currently they are developing a model for sharing expertise and cooperating at national and international level, called PIONER. It is a system that integrates a variety of digital libraries in Poland and has existed since June 2007. The objective of this endeavour is to provide a technical and organizational infrastructure to sustain digitization related activities and their representation on the web. Mazurek and Werla (2011) presented this model in detail and stressed the expertise of the scientific libraries in creating the architecture, and so the Polish Libraries Federation came into existence. It gathered together libraries interested in publishing their collection in digital form by collaborating to build a single access point that would therefore make their collections easier to retrieve than accessing different sources. It was based on the individual institutions' will to act cooperatively in sharing expertise, managing responsibilities and locating funding for long-term sustainability (Mazurek & Werla, 2011).

2.4 Special collections in collaborative environment

Over time libraries have gathered historical materials that have shaped the culture and national identity. In the past, these special collections had to be transported for various reasons – political, economical and so on – away from their original environment. Libraries have and now come to host not only nation-specific material, but also documents coming from other different cultures. With the help of technology, these institutions are trying to reunite them and to share them using digitization and collaborative projects. As Paul Ayris puts it, collaboration for bringing online this type of material will help develop innovative partnerships and services for the benefit of all. He further emphasizes the European situation where collections of historical documents are rich and precious and where the ongoing financial crisis has pushed libraries to collaborate via shared services and partnerships (Ayris, 2012).

From the US perspective, OCLC has undertaken a number of studies on what concerns special collections and these have revealed that the initial goal of digitizing special collections was to have them preserved without having a special community in mind. Ignoring this important aspect, it allowed other bodies to create models to be put on the

market and to make some sort of profit out of it. As Ricky Erway (2008) mentions Google, perhaps the main competitor of libraries, that has seen a window of opportunity and decided to step in and make a business case out of library's collections. Google has relied on the local lack of funding for digitization, on the limited usage of those collections and has the advantage to make the digitized material widely available on the web, particularly those historical materials which no longer have copyright restrictions (Erway, 2008).

Taking the pulse of special collection use was the focus of another OCLC survey (2010) that aimed at identifying how these hidden collections are exposed. They focus their the survey on the importance of special collections for academic and research libraries and how a significant proportion of such materials remains unidentified and overlooked by scholars due to lack of funding and lack of specialized staff to curate and contextualize them. Among many other aspects, their key findings demonstrates that shared actions and responsibilities can overcome these barriers (Dooley & Luce, 2010)

Practice showed that the most common method for consulting digital documents in a digital library is by accessing the digital repository or database where these are stored, similar to the way one would go to the library in order to consult printed materials (books, journals and so on). There are various names used by the practitioners to describe this digital environment - platform, portal, database or even more specifically, virtual research environment. The link between the traditional library and the digital library is very important for the documents these offer, but there are cases where they are interrelated and dependant on each other or more in the case of the digital library, an independent entity (digital born repositories, academic databases with no print equivalent).

In the humanistic understanding, bringing technical tools and systems online, means creating a platform for human interactions. Combining materials found in traditional libraries with the capabilities offered by the technology leads towards complex spaces where institutions can showcase their collections, encouraging the audience to learn and discover them and present themselves as valuable actors on the national and international scene (Frumkin, 2006).

From a business perspective, the appropriate term to use is "digital collaboration", expressed by Kumar as the way of using technologies in order to help create efficient and valuable connections between people, to improve current processes and to develop

innovative spaces. On a global scale, collaboration improves the circulation of ideas by developing new markets and establishing new opportunities for development; when it occurs at a local level the need to prove efficiency and survival defines the ways in which particular cases are approached. Factors that can contribute substantially to achieving high quality collaboration is, from Kumar's perspective, related to the internal collaboration between employees, the relations that are built with the customers through the services provided, the interactions with investors, the rate of executing specific operations and the capacity to reach and motivate skilled employees and to provide them the appropriate working environment. Virtual collaborative workspaces are mentioned here from a technical perspective, where local or external infrastructure is needed to support the communication and to help exchange documents and ideas (Kumar, 2007).

For librarians, VREs translate into an opportunity to create and maintain new spaces for their communities and also relate to changing perspectives regarding their activities. Voss and Procter (2009) also note that VREs are here to help researchers interact in a collaborative manner in order to improve scholarly communication. This implies designing a proper infrastructure that allows transfer of information, data use and re-use, discoverability, publishing and monitoring while engaging in talks with peers. Even though the positive aspects dominate, VREs have their limitations, namely the amount of information exchanged and shared, the best way to process and store it so the communities can benefit from it, as well as the level of awareness among stakeholders, developers and participants that can play a crucial role in the sustainability of the VREs. All that was mentioned above are issues of great concern for the profession and they need to be overcome in the future for these spaces to be fully effective (Voss & Procter, 2009).

2.4.1 Virtual research environments

Virtual research environments (VREs) as envisaged by Fraser (2005) stand for the digital infrastructure and services needed to support particular research. It comprises a number of services and systems to aid teaching and learning. Collaboration is one of the most used concepts of virtual research environment as it allows multiple disciplines to work together and develop a suitable space for research (Fraser, 2005).

In March 2004, JISC started a programme under the coordination of Maia Dimitrova (2007) on creating VRE in the UK, based on the tools of the time. They assessed the research environment, its needs and limitations, at the same time elaborating and

integrating new tools within and across disciplines (Maia Dimitrova, 2007). Later on, the same organization released a report on the collaborative nature of VREs that details some key recommendations. Carusi and Reimer (2010), the authors of this report refer here to the interest of the community rather than the technology and the importance of having an established research group with well defined interest and purpose. They also mention that VREs need to ensure sustainability and long-term commitment and this requires international co-operation. VREs on the other hand aim to integrate different documents from different countries as well as the legal and ethical aspects that will need to be further clarified (Carusi & Reimer, 2010)

Marcum and George (2010) looked at how special collections can be integrated with these platforms and offered as an example the experience of the University of Southampton where VREs were seen as supporting collaboration in large and small scale projects as well as opening up possibilities to encourage multidisciplinary research. In the future, VREs will change their focus from a technological and infrastructure perspective to being focused on the actual research process and the contribution made by its users (Marcum & George, 2010).

As mentioned earlier, the case of developing VREs for special collections mainly concerns a very small group of researchers, historians or linguists, and therefore only institutions that are truly aware of these communities would invest in developing such spaces. A relevant example of scholarly cooperation can be discussed as a best practice case, namely the project developed at the University of Basel, System for Annotation and Linkage in Arts and Humanities (SALSAH). Rosenthaler, one of its creators drew attention to the huge number of digitized collections stored in static repositories which are of no value to the humanistic communities as they are not used. He also stressed the opportunities brought by VREs that could help bridge the current gap between texts and their usage. For that matter, SALSAH was designed as a browser based application to help researchers work on the same documents at the same time. This system has been used thoroughly mostly for a particular project at the University of Basel, namely "*Incunabula Basiliensia*", "*The complete edition of the Works of Anton Webern*" and "*Critical Edition of Robert Walser*" and even the "*Virtual Manuscript Library of Switzerland*"(e-codices). (Rosenthaler, 2011)

2.4.2 Manuscriptorium as VRE

Manuscriptorium known as the European Digital Library of Manuscripts, includes digital representations of historical books, manuscripts, incunabula, early printed books, maps, charters and other types of documents. The digital library is provided by the National Library of the Czech Republic which has a coordinating role and by AiP Beroun Ltd. as a technical and system administrator. It focuses on digitization and promotion of historical documents within the library and other European libraries that host such collections. For the institutions that don't yet have a digital representation for their manuscripts, Manuscriptorium is used as a shared catalogue for historical resources ("Manuscriptorium," n.d.).

Knoll (2002) describing the involvement of the National Library of the Czech Republic in processing special collections notes the UNESCO initiative "Memory of the world", started in 1992, when the Czech Republic was invited to produce digital copies of the most valuable documents held at the National Library. The result was a CD-ROM database with manuscripts and old printed books, which would preserve them by making them available in a format that would prevent direct use and therefore deterioration. It was a big success and motivated the National Library staff to continue on the same track and to engage in the following years in various digitization initiatives (Knoll, 2002, p. 3). Later on, Uhlíř & Knoll (2009) highlighted the development of *Manuscriptorium*, that was launched in 2003 as a platform for representing "compound digital documents" that were initially described using an XML based standard, MASTER+, and later by the schema, TEI P5, created under the ENRICH project (2009, p. 6).

The European Networking Resources and Information concerning Cultural Heritage ("ENRICH," n.d.) – in short ENRICH - project scheme was built on top of the already existing *Manuscriptorium* platform and focused on creating interoperability tools to later provide seamless access to the content hosted in the *Manuscriptorium* digital library. As Uhlíř and Knoll describe, the ENRICH project allowed them to join together resources from several providers to further facilitate the access to the digital representations of old documentary heritage. The action of integration referred not only to the descriptive metadata and its physical representation but also to the data represented by the digital images and full text and to combine them all to offer good quality collections, which were both interoperable and persistent (Uhlíř & Knoll, 2009).

In addition Uhlíř (2008) underlined the main goal of *Manuscriptorium* - to create a VRE for the communities interested in working with historical collections. It was designed as an open space for both specialized researchers as well as for the general public interested in cultural heritage. In so doing, *Manuscriptorium* provides possibilities for organizing personalized areas where selected collections of material can be saved, followed by editing and sharing them with others in a very user-friendly manner (Uhlíř, 2008). Moreover, for library staff and technicians who work with digital collections *Manuscriptorium* provides a range of tools that will ease their work and ensures that their contribution to the digital library encompasses their aim of providing harmonized metadata formats. A brief description of these tools is to be provided, as follows:

- M-Tool works as a stand-alone, online and offline application that was developed to help create structural and descriptive metadata for individual and compound documents in cases where there is an existing digital representation (Uhlíř & Knoll, 2009, p. 72);
- M-Can is an online tool that helps the uploading workflow and management of the records (Jindřich, 2009, p. 13);
- Gaiji Bank of non-standard characters and glyphs created for normalizing manuscript characters not standardized under Unicode/UTF-8 (http://www.manuscriptorium.com/index.php?q=gaijibank);
- TEI P5 ENRICH (http://projects.oucs.ox.ac.uk/ENRICH/) is an XML format used by ENRICH to contribute to *Manuscriptorium* digital library, either directly or indirectly by means of a harvester or transformation process. TEI P5 distinguishes three levels for describing a digitized manuscript, namely the metadata describing the original source manuscript, the metadata describing digitized images of the original source manuscript and a transcription of the text contained by the original source manuscript. This can be applied by all partners who have an interest in providing a complete and rich digital representation of their holdings (Burnard, 2008).

All the services described above are easily accessible from the main page http://www.manuscriptorium.com/ that also links to the digital library catalogue interface which allows users to search the available collections maintained by Manuscriptorium. The work done so far serves as proof of reliability and credibility and it is recommended as a good practice example for similar institutions. It builds up the

trustworthiness needed when candidate institutions decide to join in the collaboration initiative (Marek, 2009).

Uhlíř (2012) underlines that the digital library is continually being improved, and therefore activities to enrich the functionalities of the digital library are on their way, namely creating tools for full-text and image comparison, developing a processor for music notation and the intention to participate in the Handwritten Text Recognition (Uhlíř, 2012).

At the time of the writing (2012), Manuscriptorium has accumulated 9 years of practical experience and t presents itself as having more than 100 partners – all technical partners and content providers combined - from over 20 countries (Turkey , Serbia, Hungary , Romania, Poland, Italy , Germany , Spain, Sweden, Iceland, Latvia, Lithuania, Korea, and others) from library institutions , museums, archives, private collections and other different cultural organizations. It contains 217,638 catalogue records of manuscripts, early printed books, old prints, and so on, 21,628 digitized books and 2242 full text documents that makes it according to Uhlíř the largest digital library of manuscripts world-wide. As expected, the user is located worldwide and 2,418 individual online accounts are registered (Uhlíř, 2012) .

This stresses the fact that international collaboration can really be a success in terms of creating a research environment where the specialized communities can access, share and store for future use. Although the act of collaboration can be perceived as natural there are cases where the institutions involved lack interaction with each other in terms of exchanging knowledge and participation or in terms of communicating with an audience whose interests or needs they don't know.

As Coffman (2012) concludes libraries have accomplished a lot over time, from public access computing, virtual references, e-books or the electronic library. Still each of these is being replaced by private competitors. How libraries will make use of their holdings, of their facilities and of their resources will define their path and their future. The act of bringing collections into the day of light and creating tools that facilitate easy discovery will permit them to create value and this needs to be part of every library's vision (Coffman, 2012).

2.5 Conclusion

This chapter provided an overview of the literature consulted by the researcher regarding the characteristics of collaboration, both from European and US perspectives. The common ground on which libraries and digital libraries act was stressed and how these two provide the best choice for bringing institutions with common interests together. A particular type of collection was then noted, special collections, as the current research aims to analyze the act of international collaboration concerning particular collections, its hosting institutions and users. The importance of the Virtual Research Environment was then stressed as being good evidence of institutions able to align with standards and requirements in order to make their collections usable and easy to reach.

Chapter 3 Methodology

The research aims, objectives and questions of this paper, as mentioned in the first chapter will be supported by a chosen methodology and an appropriate theoretical framework. This, along with the methods and techniques will be further detailed and sustained. Overall, this study aims at identifying perceptions and experiences of individuals therefore the methodological approach will be qualitative. As it will focus on presenting and understanding a particular set of circumstances or problem for both the local and global perspectives, the paradigm suitable for the current research follows the interpretivist approach. The process of identifying the population, sampling and the research technique with more thorough discussion of the methodology is expanded in the following sections.

3.1 Research paradigm

Pickard (2007) emphasizing the importance of a paradigm to support the research process quotes Guba and Lincoln's statement about the relevance of the inquiry as follows "paradigm issues are crucial; no inquirer ought to go about the business of inquiry without being clear about just what paradigm informs and guides his or her approach". To clarify the approach, they have identified questions to help frame the research, namely the ontological question (regarding the nature of the reality), the epistemological question (the relationship between the knower and the known) and the methodological question (how do we come to know it?). As the investigator interacts with the object of the investigation each construction of reality is investigated in it own right and it is interpreted by the investigator (Pickard, 2007, p. 5).

When these questions are applied to the current study, the ontological question points at the field of study, i.e. digital librarianship, and how this is defined in the context of international collaboration where institutions and individuals with a different culture and history understand and act on the same practice, this reality is context and time bound and cannot exist outside their locally constructed environment.

The epistemological question defines the relationship between actors and shapes a subjective experience, i.e. the researcher and the subject are to be influenced by the

interaction they are subjected to during the study, where certain aspects might be identified that were not considered by the researcher or by the subject of the research prior to applying the study .

Lastly, the methodological question points to the interaction between investigator and the subject of the investigation, in this particular case by interacting with the respondents individually and analyzing the case of international collaboration in digital libraries from their perspective, interpreting the meaning of their opinions (Pickard, 2007, p. 10).

Consequently, the research paradigm under which this research will be carried out is the interpretivist approach where the understanding of the researcher for the current situations will shape the research process. As Pickard (2007) mentions, the interpretivist approach is the newest paradigm in the field of social research and it can be divided into two approaches, the empirical interpretation, where the phenomenon is analyzed in its natural setting, and critical theory, where the focus is on examining current social structures. For this study the empirical interpretation will be followed, as it aims at revealing particular experiences in their own individual context (Pickard, 2007, p. 12).

3.2 Theoretical framework

The theoretical framework is then defined by the research paradigm showing its importance for the current study. This shapes a particular research methodology using certain techniques that are to be described in the following sections and will outline the responses for the research questions.

The interpretivist paradigm aims to recognize the actions, entities or phenomena which are located in a particular context in its integrity; the qualitative methodology is the most suitable approach in identifying the results. As Pickard notes “it is impossible to examine multiple, individual realities in any depth using quantitative methodology, just as it is impossible to identify a single reality, measure or quantify it in any other way than via a quantitative methodology” (2007, p. 13).

3.2.1 Interpretivism – empirical interpretivism approach

As the interpretivist research is based on the observer’s perspective, which is in most cases constrained by the social, economic and political factor, the definition given by

Orlikowski and Baroudi (1991) fully supports the choice for the current study. From their perspective "*... [it] assumes that people create and associate their own subjective and intersubjective meanings as they interact with the world around them. Interpretive researchers thus attempt to understand phenomena through accessing the meanings participants assign to them*" (Orlikowski & Baroudi, 1991).
To further stress the relevance of interpretivism, Livesey (2006) adds that this relies on three principles:

1. consciousness, where actors are aware of each other's presence and characteristics;
2. action, where each participant behaves according to the circumstances;
3. unpredictability, where the context allows for unexpected issues to occur (Livesey, 2006, p. 4).

As far as this particular research is concerned, the aim is to understand the phenomena of joining and participating in international collaboration with regard to particular types of collections (i.e. special collections of manuscripts) that will be presented in a particular way (i.e. digitally, in a virtual environment). In this context, these principles apply to the current research as the institutions involved in the project were aware of the difference between them – different location, different language, and different history – and the action each may take is closely tied to their local context defining the quality and ability of involvement.

Pickard (2007) mentions that the interpretivist study offers the possibility of analyzing a case study transferring its results and reconstructing the entity or phenomenon under investigation. She further refers to the methodology used for such cases, that located within the qualitative approach and that can guide the research according to the researcher's desired path. This usually focuses on identifying people's perceptions, understandings and actions (attitudes, experiences and behaviours) (Pickard, 2007, p. 12).

3.3 Research method

As the main goals of the study are human experiences in a particular case of action, the qualitative methodology is found appropriate to be applied for the current study. Therefore, this research will follow the case study approach which will allow the researcher, as the human research instrument, to complement the findings with the existing tacit knowledge and experience. As Pickard (2007) states, qualitative

methodology does not require extensive planning, but it must be "played by ear" to reveal and emerge (Pickard, 2007, p. 15).

3.3.1 Qualitative methodology

Byrne (2001) emphasizes the terms and strategies used in evaluating qualitative research as credibility of findings, their transferability and confirmability. This terminology differs according to the context of the researcher, but in order to identify evidence for the current study, the ones mentioned above will be further described.

Credibility is the most prevalent term when doing qualitative research and as for quantitative research it relates to reliability and validity of findings. It concerns the trust that develops when analyzing the opinions and feelings of participants as well as the credibility of the research hypothesis. On the one hand the credibility of the research question is suggested by the researcher's initial suppositions, that institutions lack the motivation or experience to join international collaborative initiatives. On the other hand, there is the credibility of the responses coming from senior professionals with a well defined role in the collaborative process and practical experience in the field of digital libraries. In this particular case the credibility is provided by the key persons involved in *Manuscriptorium*, namely heads of departments in their own local institutions. Their experience both in digital libraries and international collaboration allowed them to provide most knowledgeable responses, and so this approach is used to confirm or refute the researcher's hypothesis.

Transferability relates to the idea of applying the findings to other similar contexts. Form the researcher's perspective, this is unlikely to happen as the results tend to be context bound, and based on the individual experiences. Nevertheless, the analysis will reveal concepts and variables that can highlight the applicability of findings, and that can allow judgments of value. This is to be reflected in the received replies, as a difference was observed between countries from different geographical areas, i.e. institutions belonging to developed or developing countries that carry significant differences in resources (human, technical, financial).

Confirmability accounts for the method by which the researcher tracks the decisions taken during the research process that can be consulted to enrich the quality of the results. It involves documents, notes and reports kept during the research and it indicates here the early interpretation and communications with peers and research

participants (2001, pp. 704–705). For this study, the articles read concerning the *Manuscriptorium* case were very relevant to the study and that was later confirmed by the discussion the researcher had with the key informant and later with the person responsible for the technical side (aggregation). Pickard (2007) recommends that the responses should later be validated by the participants, but in this case replies were sent in written form and after a period of time which mostly allowed the respondents to provide comprehensive answers, so this may also count as a confirmation of their acts (Pickard, 2007, p. 21).

Purposive sampling as recommended by Patton, cited by Pickard (2007) is the selected number of participants that will ensure the variation of replies by bringing in new characteristics of the topic. It concerns identifying multiple perspectives that will provide a solid basis for presenting the results. After analyzing the initial sample of 41 institutions with the key informant, a selection of 28 participants representing 11 national libraries, 9 university libraries, 2 public libraries, 6 academic libraries or research institutes was chosen as valid for providing the required information. Pickard also mentions that individual data collections – as the one employed by this study – should suggest concepts and ideas that would attract the interest of the researcher for further and deeper investigation. All these aspects will be elaborated in the following chapter (Pickard, 2007, p. 16).

3.3.2 Case study

Case studies are one of several methodologies used in qualitative research. In defining case studies, Tight (2009) reviews some of the social sciences literature and tries to identify an accurate definition and understanding in the field of qualitative social research. He found that case studies can be understood as a context bound strategy to create a framework around a particular problem, as cross-sectional, experimental and comparative research design or as a combination of "styles" for educational research involving ethnographic, historical and experimental or survey related approaches (Tight, 2009, p. 4).

As noted in the literature, case studies have pros and cons regarding their relevance as a research method. Darke et al. (2002) refer to the rigor, relevance and pragmatism of case study research method under the qualitative methodology, and noted some difficulties in establishing the validity of findings. They explained the general purpose of the case studies as offering a description of a phenomenon, to develop or test a theory.

(Darke, Shanks, & Broadbent, 2002, p. 3) In addition, Eisenhardt (1989), confirmed that usually case studies aim to provide a description for a particular organization, test a theory or even generate one about an identified problem, but emphasized that the research focus should be very concise (Eisenhardt, 1989, p. 553).

3.4 Data collection techniques

A number of data collection techniques are associated with qualitative research as in participant observation, surveys and ethnography. Regarding this particular study, the research technique developed consisted of a semi-structured questionnaire which comprised 14 questions. The questionnaire was especially created for the participant institutions of the problem and was sent out after consulting and agreeing with one of the main person responsible for the *Manuscriptorium* digital library.

3.4.1 Questionnaire design

Questionnaires were seen as the most appropriate technique to use in this study, considering the student's lack of research experience and lack of time for the study to be conducted on a large scale. Questionnaires, as defined by Burns (2000) have an implicit assumption of the willingness and truthfulness of the respondents regarding the topic (Burns, 2000, p. 571). Therefore, the appropriate manner in which significant data could be collected for this research problem was thought to be the questionnaire. Therefore the design and distribution was made using this approach. To substantiate the choice and to further sustain the discussion, three points of view will be presented next.

First Pickard (2007), talking about different forms of questionnaires notes that there are different types of electronic questionnaires for example those that use specific software for sending them to the sample population for completion, or others which are sent using a word processing tool and as attachment to an email message (Pickard, 2007, p. 198) .

The case of the embedded structured questionnaire is mentioned by Bryman (2008) as being one of the easiest ways of collecting data in an online environment though it might have its limitations and this was the preferred technique for this study (Bryman, 2008, p. 543). In addition, email interviews could be considered a proper research technique where as Meho (2006) explains the desirability of the ongoing exchange of email between the researcher and the participant where the availability for interviewing is a

problem. A response written by the interviewee at his or her own pace and not under the pressure of the physical presence and time constraints has much to recommend it (Meho, 2006, p. 5). Initially, the design of the questionnaire contain a request for additional follow-up questions to clarify the case and the specific situation, but unfortunately due to time limitations this action was never materialized. Only a follow-up communication was sent with a message of appreciation for the time and willingness of all the participants who replied and some preliminary conversation informing them about the status of the inquiry, i.e. when the respondents needed more time, or informing them about the level of their involvement and their current availability. Along the same line further communication was established with the aggregator contact of Manuscriptorium, to offer details about specific inquiries after the data gathering.

The questionnaire was then piloted to another colleague and a participant in Manuscriptorium digital library and they both confirmed that the questions could be easily understood, were unambiguous and relevant to the research topic, and so its structure was considered adequate.

During the questionnaire design process, ways in which the data could be analyzed were considered and this assisted in clarification of which question to ask. The model for analyzing the data is detailed in Chapter 4 and the questions followed a particular structure to match those criteria. A table explaining the model is provided in Appendix 3.

3.4.2 Questionnaire distribution

The preferred way of applying this technique makes use of the online environment as the possibility of collecting data in the natural setting is unlikely to happen. Therefore the questionnaire was to be embedded in a message addressed to each respondent individually so the respondents were able to share their thoughts and opinions without too much effort. The embedded questionnaire has the advantage of simply replying to the questions which makes it the best choice for this study. Even though the online environment in which the data gathering takes place can be considered artificial as the response cannot be given instantly, the main argument for this choice considers the lack of time of the respondents and gives them enough time to ponder the questions and then provide comprehensive answers (Bryman, 2008, p. 642).

The data was collected using email, regarded as being one of the most suitable ways to reach the geographically dispersed sample of participants. Another advantage is that the

data is already stored in electronic form; therefore there is no need for additional processing or transcribing. For communicating the questionnaire the researcher decided to use an official email (in this case the work email) as it offered the possibility of verifying the delivery status and message read status. In doing so the researcher aimed to create a professional environment (by presenting as a professional that does the research) and therefore more and elaborated answers, where a student would've been disregarded. The language used for the questionnaire was predominantly English but there were several where the communication was carried in Romanian.

Moreover, the synchronous questionnaire allowed transmitting the questions to many participants at the same time and by having time considerations, it allowed them to respond in a flexible manner (i.e. within the time limit proposed by the researcher, earlier or later as the participant desired). The title of the email reflected the purpose and the intention of the study, "Manuscriptorium case study" and together with the questionnaire protocol it offered information about the research aims and objectives and it provided a note on confidentiality. There were some explanations provided for the questions may have seemed unclear, in order to emphasize their central focus. It also had a limited time for answering, two working weeks respectively, and there were 5 institutions that, due to stated reasons, needed more time to reply. They kindly informed the inquirer about it and the deadline was therefore extended to accommodate them.

There was no reminder for the questionnaire, as observed by the researcher most of the emails were read instantly or with a 1 or 2 days delay (automatic read reply from the email client used), which meant that the address is valid and used. The ones that actually provided an answer, even if it wasn't an immediate reply they sent a dedicated confirmation of reading underlining that they needed more time to reply, to gather some of the data they lacked, or even they said that they had no time to individually replying to such inquiries. The questionnaire protocol considered all these aspects and insisted in sending a response no matter the case. Moreover, the protocol informed about the purpose of the study, its aim and goal. It considered the privacy of respondents as well as allowing them time to answer (initially the response time was limited to only 2 weeks, with the flexibility of extending the period if required).

Overall, the questionnaire concerned the experience of the institutions in digital libraries, in collaborative projects, the resources involved, the support and the

promotion of this research environment; the complete questionnaire and protocol can be found in Appendix 2.

3.4.3 Sample

The sample for this study was selected according to the simple random sample criteria, namely from the defined population a selection of random participants was chosen. For this work, a sample of national, university, public libraries and other research institutions was selected out if 41 participant organizations. The selection process consisted of two steps:

1. Identifying the institutions that might be able to provide answers. This was done in collaboration with a key informant from the Manuscriptorium side and he provided details about the participants. For this step a number of 28 institutions were selected and approved by the main contact person.
2. Selecting the sample according to the institutional typology, namely 9 national libraries, 9 university libraries, 4 public libraries and 3 research institutes

The representative sample consisted of library institutions belonging to all regions of Europe, where a contact person was identified as being the most involved in this initiative. They were chosen based on their level of participation and involvement and most of them were expected to provide some information. Nevertheless, there were some limitations in defining the sample of the study, as most of the contacts have been lost, or email addresses changed, or they canceled their participation for various reasons, or they just agreed to only allow to include certain collection via OAI - PMH into the digital library. Despite all this, a total of 13 contacts have sent comprehensive responses and some of them showed interest in the topic of this research. A complete list of contributors is provided in Appendix 1.

3.4.4 Ethical considerations

To develop a professional approach that is supported by trust and reciprocity, a questionnaire protocol was drawn up considering the time, position of the participant, explaining the reasons of the research and the researcher's interest, as well as the privacy of their reply. At the same time, it aimed at starting a conversation about the topic at hand, and therefore continuing the communication if needed. It provided the chance for the researcher to allow the individual respondent to receive a notification when the research was complete and published online, that added a sort of professional "incentive" to the study. The questionnaire was time boxed for a period of two working

weeks, allowing the possibility of expanding this time, if for unpredictable reasons the participant so required.

3.5 Limitations

The limitations of the study concern, amongst others, lack on incentives to reply to the questionnaire, lack of time from the interpreter's perspective to handle each case individually (because each participant has its own history and experience related to this case), lack of financial resources to actually apply this questionnaire in a natural setting as it was logistically impossible for the researcher the travel to all the countries listed in the participant list. Considering all the arguments stated above, the researcher decided to pursue the research as presented above compelled by the current context and limitations.

When designing the questionnaire the researcher didn't consider in-depth questions, as it will make the inquiry too long for this particular study and most probably it wouldn't have yielded any replies. Moreover sending out long questionnaires to active professionals and thus increasing their workload entails the major risk of the questionnaire remaining unanswered. This was another limitation of the current study that it failed to have in-depth questions or longer inquiries.

The design of the questionnaire was quite flexible, so the respondents could provide their answers according to their experience; a neutral approach, not encouraging to give a positive answer or to complain about the negative aspects. Nevertheless, there were cases when the positive aspects were described in detail (even digressing from the focus of the question) and some respondents mentioned the negative details or eventual lacks. Due to above mention constraints, it was not possible to have these verified by the aggregator.

By using a professional email address, even though at the time of writing the researcher was a student, it created a professional atmosphere was created - trustworthy and responsible - therefore the answers and the communication had a different value.

3.6 Research timetable and conclusion

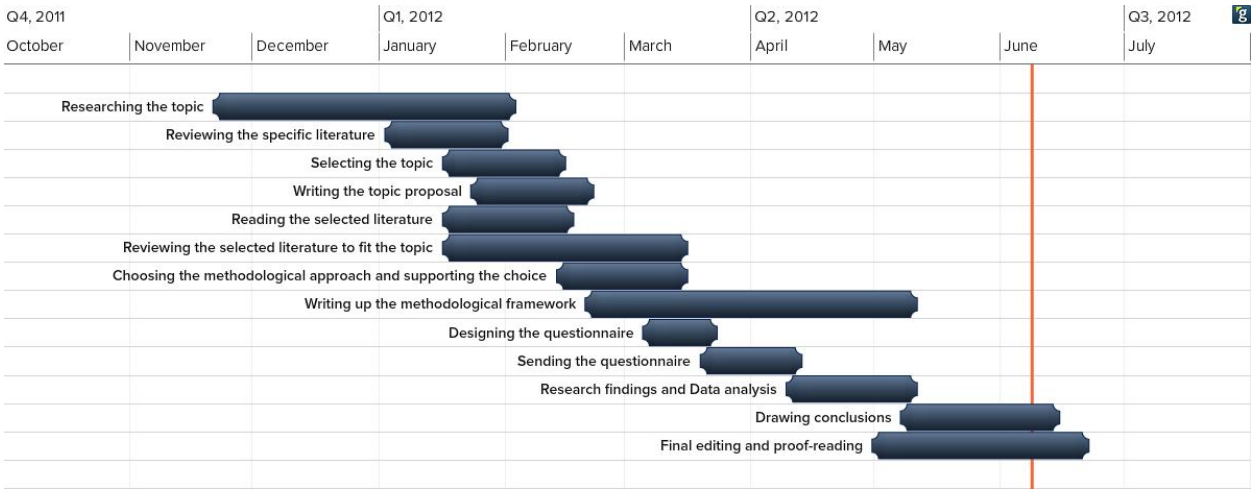

Table 1 Gantt chart representing the evolution of the research

At the time of writing this section, the Gantt chart above represents the estimated timeline for the whole research process. The timetable illustrated above reflects the period of time spent by the researcher on actually identifying the appropriate methodology and intellectual effort needed to read the literature that supported this choice. Without any doubt, the choices presented here represent the option of the researcher as they were regarded at the time of writing. An embedded questionnaire was selected to compensate the time the researcher would have liked to spend on actually talking with the selected sample of participants, but it was also considered as the best approach to interact with high level professionals involved in the actual practice of digital library.

Chapter 4 Research findings and data analysis

To set the stage for presenting the findings of this research, the research methodology, method and technique will be placed in the context of the cross-national approach, as a range of countries sent their input. Generally speaking, the aim of this research is to provide an overview of the collaboration, i.e. cross-border interaction between similar institutions, or international collaboration, which were focused on creating a digital library of manuscripts. The researcher finds it appropriate to consider the methodology of this study from this perspective, noting the points made by Mangen (1999), namely:

- The qualitative approach is most relevant as it offers semi-structured, flexible and exploratory actions; underlines the explanatory interpretation in cross-national environments (from the historical, cultural and political perspectives); it focuses on social processes and on the individual experience in the matter covering complexity, detail and context (1999, p. 111)
- A case study is an illustrative method as it combines different techniques (interviews/questionnaires and documentary research) (1999, p. 115)
- Semi-structured questionnaires (interview) implies knowing the appropriate polite rule for the participants, mastering the language of communication (in this case English) to avoid frustration caused by misinterpretations while the online environment allows for flexibility, which in this case was considered a valuable asset (Mangen, 1999, p. 117).

The findings were processed using the narrative analysis and were used to illustrate the five directions of the study. They were identified in the data and were "translated" as follows**:**

- **Streams** refer to the various types of **content** (text, image, audio, video, etc.) that can be found in a digital library; in this case particularly special collections comprising manuscripts, rare books, maps and charts, letters and so on
- **Structures** refer to the **management** of the database, standards and interoperability used to easily represent and explore the content; in this case the resources, human and technical, involved in creating the content represented in the Manuscriptorium database, corresponding to standards and interoperability requirements

- **Spaces** were identified as physical and virtual **locations** where the action of accessing the content takes place; in this case the holding institution that allows access to physically located special collections and the virtual space that allows various communities to come together over the internet and work in the same document at the same time
- **Scenarios** – implies the **activities** that were taken by the staff and by the user regarding this particular digital library, more specifically the experience gained by working with digital libraries and by being involved in other similar initiatives**;**
- **Societies** to represent the **communities** that were identified as being directly or indirectly involved.

These five tracks were adapted from Gonçalves et al. (2004) to illustrate the main aspects that need to be considered in digital libraries. Because digital library creation is a collaborative activity between many disciplines, the researcher deemed it reasonable to attempt apply it to an international collaboration case.

Therefore, in this study the analysis of the data will be categorized as follows: content, management, locations, activities and communities and they will be presented in the next section.

4.1 Research findings

The data collected are based on the final responses, namely 14 replies. Their quality and relevance is underlined by the experience and professionalism of the respondents. The small size of the respondents sample allowed the transcriptions to actually improve the data processing and analysis, and the hardcopy version permitted fast cases comparison and detail retrieval. There was a variation in the reply form, 7 participants followed the researcher's first suggestion, namely to complete the questionnaire within the text body of the message (those were later saved as .pdf files by the researcher and printed out as a hardcopy for storage and analysis) while 6 participants found it easy to copy the questionnaire in a word processor file, complete it there and subsequently attach it as reply to the researcher's initial message. The evidence of replies was kept in an Excel file where the table with the names of the institutions, their response, their confirmation answers and various notes were traced back and collected. It allowed also for tag sheets to be created (for example, to indicate different types of institutions – national libraries, university libraries, public libraries and so on)

4.2 Data analysis – narrative analysis approach

To properly investigate the current case, narrative data analysis was chosen as the most suitable method because it explains how individuals view their experience; the meaning of their participation in the venture both for users and staff, and how they believe this helped the overall institutional organization. By definition, narrative analysis stresses the action of storytelling (narrative) to detail the data collected. Franzosi (1998) defines narrative analysis, as being a method in which the researcher presents the relationships between respondents and texts and sometimes between text and social reality (Franzosi, 1998). Even though this seems to be the correct way of interpreting narrative data analysis, the current research is only limited to create a story around the categories emerged during the research process, and not so much on placing them in the context of the social reality of the respondents.

4.2.1 Data analysis overview

To explain the data analysis process some key points will be described, as noted by Taylor-Powell and Renner (2003), namely the data quantity and quality, the explanation of the cover letter and description of the questionnaire, the existing categories and emergent patterns, along with the methods used for interpretation (Taylor-Powell & Renner, 2003, p. 4).

The interpretation of raw data was done through transcriptions of the responses on the specific categories (identified prior to the data collection and confirmed during the data analysis). The activity of transcribing the data in a notebook offered a new perspective on the replies and aided in processing the replies. There were several cases where a single response required a summary, i.e. the respondent offered long response and the researcher found it easy to extract the information that was needed); as mentioned before the questionnaire was sent out electronically (using electronic mail, email) therefore the replies were received in electronic form. Nevertheless, the lack of interaction between the questionnaire administrator and the respondent created some confusion with some of the questions concerning the big picture, and the reply received did not reflect topic or offered details of other aspects.

The first questions aimed at creating a familiar ground and therefore regarded specific details about the participant's local collection. The content stored in the library by the participant institutions was estimated to define a percentage of collections from 0.02 to

15% respectively an approximate total number of 15% coming form all 4 national libraries, 17.5% coming from all 6 university libraries, 11% coming from 2 public libraries and 20% from one academic libraries and one research institute. There were cases when respondents provided extra details about this (i.e. several cases where they related the special collections within the entire collection) or one respondent could not estimate the size of their special collection. The researcher did not asked the individual participant about their actual contribution to *Manuscriptorium* digital library rather preferred to ask the aggregator side (the National Library of the Czech Republic) about each particular contribution of digital representations. The answer received, in order of institutional typology, comprises a total percentage of:

- national libraries: 15% compound digital documents
- university libraries: 12 % compound digital documents
- public libraries: 0.022% compound digital documents
- academic and other research institutes: 0.007 catalogue records and 0,124% compound digital documents

Regarding the level of awareness of *Manuscriptorium* digital library, 11 out of 14 respondents confirmed that they promoted through specific channels (media and professional channels) the service and their involvement at local, national and international level. This action was targeted to different groups (librarians, students, general public) or was done through different media (scholarly articles published, presentations at different conferences or workshops).

4.2.1 Content

The content aspect was then recognized to fit the “stream” category where questions 1 and 4 were included. Regarding this category Gonçalves et al. (2004) file all type textual material as static content and audiovisual as dynamic content. For the current case, the content represented here is only static as it comprises digital representation of manuscripts and old, historical material. The information on their local percentage of manuscripts was given, and the reason for creating its digital representation. This underlines the willingness of exposing their collection on the web as a very important aspect of their strategy regardless the size of the collection. Moreover, they are interested in providing digital representations for the users that are only interested in parts of manuscripts and so avoiding the physical handling of the original manuscript (“care for books”). The researcher therefore draws the conclusion that the institutions

are aware of the great values that lies *locally* within their material, the need of preserving this heritage and its relevance to the *global* users.

An interest in scientific research was identified as another purpose of digitizing special collections, "to give a service to the *local* communities of researchers" as one respondent puts it. Not surprisingly, from their perspective digitization will bring new ways of representing special collections and it is regarded as an advantage to historical documents. Another relevant aspect relates to the previous experience with the initiators of the digital library and the credibility of their institution, the National Library of the Czech Republic. Four respondents pointed this out as the major reason for contribution.

By locally digitizing their collections and by exposing them to a wider audience, collaboration has the added advantage of using the same space, contextualizing materials together with similar documents and building up a real service for the users. Among the replies received digitization was underlined by the need of "making available …documents which have been until then locked away in storage…of popularizing local and regional historical documents" as well as "….conservation…[and] to offer unlimited access to readers and researchers from all over the world". Collaboration was found to be relevant when the purpose of the service was to offer content to an international audience, as "…it is international material, not local." What was surprising to identify was the concern institutions have for their readers and on how do their libraries are perceived nationally and internationally, and therefore collaboration contributed to its reputations, "it answers the expectations of the readers, it provides materials that can be used at a higher level of education, and it is also part of the self-representation of the library".

All this underlines important aspects for the local contributors. They are motivated by the value of their collections, entrusted with joining a venture with experienced partners, and are aware of the capacity of the new technologies that can help build complex work spaces for researchers and individuals sharing similar interests. They learned what the power of common spaces is and they agreed to contribute to this digital library for the benefit of the local and global community of researchers.

4.2.2 Communities

The category of participants and actors defines the "societies", namely the communities that were identified for both physical and virtual space. Gonçalves et al. (2004) see the relation between these spaces as important for digital libraries, knowing that the goals of a digital library are to collect, preserve and share the information on a platform, i.e. a digital library or virtual research environment. It describes the data collected under questions 2, 12 and 13**.**

For the existing research communities the respondents enumerated graduate and PhD students, researchers in the humanities (historians, philologists, and library and information specialists), local professors, scholars or researchers locally based at the university. Three respondents claimed that there was no local research community and there was one answer suggesting that "local scholars still need to consult the original manuscript while others prefer to sit at home and access it online". It should be noted that some of these answers were not substantiated. In both cases, there is a general understanding that the content hosted locally is of global interest and that contributes to the reasons for participating in this initiative.

Apart from the specific research community mentioned before, no other communities were identified as a possible target which stresses the limitations of special collections research community. From the researcher's perspective, this can be interpreted as a very important characteristic of Manuscriptorium, namely benefiting from having a small and dedicated community rather than the general public. Having such a public, it makes it easy for the developers and the creators of the research environment to predict, test and evaluate the expectations of the community.

When it comes to assessing the advantages provided by the Manuscriptorium digital library six respondents underlined the importance of a single access point – on the Internet, available 24/7 - to the digitized copy accompanied by the descriptive information of manuscripts that are physically located in different countries. They acknowledged the value of the manuscript database for the researchers but could not actually assess how they benefited from it. They considered Manuscriptorium digital library as a "stimulation for other countries" or similar institutions to come and allow their special collections to be retrieved online, and that the research community will benefit greatly if the current space is maintained and developed. Two respondents mentioned a local initiative containing materials in a specific language and pertaining to

a specific region that allowed the researcher to interpret the relevance of local research communities, for specific regions i.e. countries belonging to the Nordic region that share to some extent history and culture even though each of them developed independently.

Related to the ease of grasping the digital library functionalities, five respondents stated that there were no difficulties to understand them, still this depends on the level of literacy of each individual researcher and five of them said that they did not have any feedback from the researchers; therefore they cannot provide information on that matter. They could not even assess whether their local researchers found it simple and comfortable to access. From the interpreter's perspective, the limitation might be related to the lack of data or experience, as sometimes the question was understood in terms of personal experience rather that the experience of a community. This last aspect was noted to be hard to identify and to assess.

4.2.3 Activities

This category defines the context and the actions that can be performed, namely what people and systems can do with the digital content. In the interpreter's view this is related to prior experience of the staff and systems as they define the approach to digital library collaboration from the knowledge owned and gained and that also highlights the level of participation. It is in the "scenarios" category and the data gathered comes from questions 5 and 6.

The experience of individual partners in international collaboration contributes greatly to the success or failure of the initiative. In collaboration what matters most is for all partners to carry the same weight during the collaborative process and not to grow in one single independent approach. Three roles were identified here, namely the active and passive contributor, which are participants actively describing their content and using the tools and systems, the passive contributor where, for various reasons and under certain agreement they only allow harvesting certain collection to Manuscriptorium. The remaining role was identified as the aggregator, or the one taking the initiative and responsibility to develop technical tools and to making sure that their contribution gets through smoothly. Each of these has their own activities in line with their roles.

As far as the experience in digital libraries is concerned two participant had no experience prior to Manuscriptorium, five of them were reasonably experienced with building local digital libraries and the rest were involved in complex local digital library

initiatives had joined similar projects before this one. The existence of specialized personnel or experience in digitizing various types of material for local or requested use was underlined.

With regard to experience in international collaboration, five respondents had no experience in international collaboration, but they stressed that the lessons they learnt during this initiative helped them evolve and understand better the need of partnerships. The respondents that had long experience in international collaboration were the ones who developed their own digital repository, were involved in the creation of standards, were part of other international initiatives before contributing (in any sense) to this case and have seen this experience as most beneficial to their respective institutions.

Overall, the researcher interprets both the experience in digital libraries and in international collaboration as reflecting the capability of the contributors to adapt and to adjust to the requirements of the initiatives, and that contributes greatly to the quality of the participation.

4.2.4 Locations

From the digital library perspective, physical and virtual locations translate into "spaces", namely the spaces used for interaction with the existing content, be it physical or digital, and reflect data from questions 3 and 7. These spaces, as mentioned by Gonçalves et al. (2004) can be measured but the data received lacks this evidence as most of institutions do not have such statistics. This study did not aimed at revealing quantitative information, therefore there is no information regarding this aspect.

From the perspective of the location, the physical and virtual spaces were tackled. Firstly, 11 respondents named the "reading room" as the main setting where researchers need and require physical copies of the manuscripts. This may refer to the statement that the current researchers start their inquiry with going at the library and consulting the physical collection first. Four respondents mentioned their own digital repository as a means of requesting digital representations of manuscripts. The additional numbers provided illustrate the usage of their special collections and refers to specific cases and range from no statistics for the rate of requests (per week or per year), to institutions that provide comprehensive statistics and analytics. Even if the local request refers to local researchers, having the manuscripts online offers a good advantage for the

remotely located researchers and for this reason having digital representation adds to the benefits of having a unified specialized digital library such as Manuscriptorium.

There was a single case that mentioned that sometimes manuscripts are requested for exhibition, national or international, and that regards the intrinsic value of a manuscript book and that a digital representation can only be complementary to the original.

From the Virtual Research Environment perspective, the research interest was to identify if the respondents had already recognized a local community of researchers that use Manuscriptorium VRE space and the replies were mostly negative. Two respondents said that they identified researchers using the space (but did not provide any additional information) and one mentioned not having access to Manuscriptorium statistics for retrieving such information. It looks like institutions do not have the possibility of identifying such communities (there is no data whether an existing community uses the VRE nor in what way) or that the users they mentioned are employees of the local research institute (in case of a research institute or academic library) that is participating in the initiative.

A relevant argument for both cases is the specific language of the local community, this limiting the global accessibility to the content. In this respect, future improvements will be made to provide special dictionaries for advanced and flexible use that will permit specific content to be used and understood by a larger community.

4.2.5 Management

This category was adapted to represent “structures” namely the specific links that bind together the content, be they humans who bring their experience and knowledge to operate with systems, or standards that allow a uniform representation in the digital library. For this particular study, this category comprises the resources involved in creating and maintaining the digital representation as well as the tools developed to support their description and online presentation. It combines replies from questions 8 and 9 and focuses on the human, financial, technical implications but also on usefulness of the available tools form the provider’s perspective

Regarding the general inquiry about the resources involved in content creation and delivery, all respondents mentioned the contribution of specialized personnel

(manuscript librarians and technical staff) along with dedicated software and hardware (scanning technology, digital repository, compliant servers, etc.)

For the human resources side, the work carried out for this digital library was included in the working hours, the contribution to this digital library being part of their daily tasks. That is reflected at times in the experience they had with local digital libraries initiatives, five institutions mentioning that have dealt with a local digital library before joining *Manuscriptorium*.

As far as the technical and descriptive metadata are concerned, the tools developed by the ENRICH project were mostly found very easy to use and to grasp. Five respondents found the tools sophisticated and professionally created and one answer coming from an institution with high expertise and practice confirmed this but stressed the fact that the current tools need to be improved in order to be updated for the future use. Nevertheless, the tools MTool, Mcan and Gaiji Bank are considered crucial for making accessible distributed compound digital documents in a networked environment. Three participants stated that they benefited from the projects surrounding Manuscriptorium, i.e. ENRICH for grouping together digitized manuscripts in the national libraries of Europe and enhancing a similar content from university, public and academic libraries (http://enrich.manuscriptorium.com/-index.php?q=about) and EMBARK (http://embark.manuscriptorium.com/) that represents the research on Balkan-Slavic and Central-European cultural heritage gathers the electronic editions of original historical documents and integrates within Manuscriptorium digital library. One respondent stressed the help received from the aggregator institution, National Library of the Czech Republic, concerning some technical aspects. This stresses the importance of experienced partners in collaborative initiatives, when institutions that do not have the appropriate technology are assisted through the process.

Nevertheless, four replies were recorded from institutions that haven't used these tools and one of the main reason was related to the method in which they contributed, namely by allowing the aggregator to harvest particular collection.

To what concerns the funding side, there were different approaches, from finding the required funds under the initial project to being supported by the local government – where the importance of such an initiative was truly understood and acknowledged. To quote one of the respondents "digitization or creating digital representations of special

collections is a costly process, but it implies engaging few people" as in specialized staff, familiar with the workflow and this may help the process to be run smoothly**".**

There were two responses that haven't used any resources as the main aggregator harvested the specific collection and therefore it only needed the agreement to do that and the technical tools to smoothen the process. The researcher believes that in such cases most of the work was done by the aggregation institution, namely the Czech technical partner or the National Library of the Czech Republic but there is no written confirmation to support this statement.

The answers in this category illustrate the importance of local specialized staff to work with locally hosted materials. Most institutions are already engaged in digitizating their special collections and this can allow a simple harvest for the project. The tools developed and recommended by *Manuscriptorium* ensured that all the providers used an uniform system to describe their materials and therefore developed an interoperable infrastructure between contributor and aggregator.

In conclusion, all the respondents confirmed that they benefited from this initiative as they gained visibility in the case of small institutions that weren't involved in something similar before. Also, the very practical experience ensured that they benefited from the technical aspect as well as from the knowledge assimilated by the staff (in developing collaborative skills, such a responsibility for their work, the wish to provide quality content, to adjust the theoretical and practical experience of the staff involved to what concerns project management and administrative tasks). Working with the tools provided by Manuscriptorium was also mentioned among the benefits, how to practically include documents and to create digital editions of manuscripts. Now the manuscripts are visible in a collaborative workspace that will encourage historical research to flourish. Still there is room for improvement as far as the tools and the collaborative endeavour are concerned. The only respondent stating that there was no benefit was an institution that had agreed to only allow harvesting form an already established system.

Zdeněk (2012) following up on an inquiry of the researcher regarding the future plans for developing Manuscriptorium digital library mentioned that there are many aspects to be elaborated on enriching the content and creating external tools for end users to improving the personal space on the virtual research environment. All this depends on

the financial resources Manuscriptorium can obtain at national and international level or from participating in European projects for development of the current infrastructure.

4.3 Conclusion

This chapter provided an extensive narrative analysis of the data collected during the research process, and this was illustrated in five different categories. The emergent categories were contextualized according to the responses and were used to illustrate the level of international collaboration in Manuscriptorium Digital Library.

Chapter 5 Discussions and implication for further research

The purpose of this research was to identify to what extent international collaboration influences the local organizations that agree to join the initiative and moreover to examine its impact on the local community of users. It started out from a pragmatical perspective, as the researcher didn't have and later on failed to find any particular example concerning this aspect. After selecting the methodology and the research method suitable for this case, the data gathered was analyzed. This allowed the researcher to answer the initial research question. Both the research problem and the research question will be discussed next.

5.1 Discussion about the Research Problem

The overall conclusion of this research is that international collaboration is a structured "organization" of institutions grouped around an idea –an idea that is supported by certain activities, tasks and level of involvement. In the researcher's view, collaboration itself can be called "an institution" and must have all the collaborative levels accurate and compliant with the others – from staff and technology to funding. In this particular case, three roles were identified; the aggregator, the active participant and the passive participant.

The aggregator, identified as the initiator of the digital library, has the know-how, the technology and the funding to support. It also has the motivation to develop international collaboration, as acknowledged in the vast experience gained from previous participations. It is an active and up-to-date institution, able to understand and to apply further developments for the digital library, and it has the knowledge on how to attract partners and sponsors. The aggregator takes care of the technical issues that are encountered during the process and tries to act as a help-desk for the other participants and to assist in solving the technical issues.

The active participant, identified here as the institution that is willing to deliver its digitized local collection to the aggregator, respectively to the main digital library platform, acknowledges the importance of good quality material (at both data and metadata level). It has also the understanding that by creating the best possible

representation it will benefit also the host institution as well as the research environment built globally trough the digital library platform. It identified a specific local community and it is aware of the fact that the material provided is of international interest.

The passive participant, identified as the participant institution that doesn't have the experience, or the knowledge but has the willingness to learn, to open and to evolve. It does want to join the venture as it is aware of the value of its collections. This is subsequently supported by using the tools provided by the aggregator and participation according to their local systems. Another side of the passive participant comes from the fact that it already has extensive experience in digital libraries, and also in international collaboration, and accepts participation by only providing a way to harvest the selected material. This institution has limited resources - financial, human – are involved, while the technical resources are already part of the local digital library.

For all of them, international collaboration means getting across borders and placing in the same space original materials written in the language of the contributor's. This helps remotely located researchers interested in that particular document but it also raises challenges and makes all of them subscribe to the future development of the digital library.

As for the funding and sustainability of the international collaboration, two aspects were identified. Firstly, funding opportunities provided by the local government work best for local initiatives while international funding opportunities, for example the ones provided by the European Commission, support best the act of international collaboration. While the latter raises serious challenges for the participant institution or for the entire project, namely to continuously find support to ensure the sustainability and long-term availability of the initially developed product; the former implies a good social and political stability that ensures the existence, maintenance and long-term sustainability of the local initiative and makes the international participation justifiable and less costly.

In the researcher's opinion this all adds up, to building a trustworthy service from scratch, the value of which can always be tested and proved.

5.2 Discussion about the Research Questions

The nature of the research question focused only on the international collaboration between institutions as far as the creation of a digital library was concerned. To reflect on the overall interpretation of the results, this can be underlined by responding to the research questions, namely identifying the challenges and benefits for local institutions when participating in international collaborative digital libraries and underlining the improvements of locally stored digitized collection resulting from the act of collaboration.

Firstly, institutions face different challenges when deciding or agreeing to contribute to the creation of an international digital library. From the content's perspective, participants need to be sure that they offer high quality digital representation, in term of image and data quality. This can only be provided by professionally trained employees, dedicated to their work, who are aware of their actions which will define the future use and re-use of those materials, i.e. used by systems to place the document in an complex environment that allows the user to re-use the digital representation for his/her research interest. This brings us to the user perspective, whose needs and expectations might not be anticipated, but for whom systems and tools can be created to ease their research activity. As for the benefits of international collaboration, the most prevalent was the one of "promoting our local history" and this can be understood as a benefit from the international collaboration perspective. It offers a space where to showcase assets, at the same time it contributes to the value of the organization. The fact that there was an aggregator that provided tools (even though already developed by a previous project) helped both experienced and not so experienced institutions.

Secondly, the value of local collections has increased, in the sense that remote researchers could access them in one single place, even though there might be researchers who want to consult the original material. By creating a virtual space and by allowing institutions to contribute selected materials, it instantly adds to the value of the document, which is being accessible not only in the library but also on the Internet. When online, this content it has a contextualized value in its richest description that allows comparison and analysis along side with similar documents, accessible maybe in another physical location. This supports the aims of virtual research environments, where researchers could annotate, save, and share the document having no worries about destroying the original.

Overall, collaboration has a visible benefit in the creation of a virtual research environment from which existing or potential research communities can make use. This virtual research environment was made possible by the tools that served the participant, by the compliance of local systems to required standards. These tools are too the result of a collaborative act, where institutions with technical experience shared knowledge and expertise and created them for the use of this digital library.

Part of the challenges identified was the level of awareness, learning capacity, openness and communication skills, that contribute to creating a framework for development and inclusion of local collections in a global picture than the one institutions get to see daily in their local setting. By knowing the value of the collections for the international community of researchers, and by joining up forces to create an appealing space for its representation, adds to the future development of the digital library concept.

Some other challenges are included in the technical and financial aspects. Depending on the existing level of development, i.e. experience with digital libraries, both these challenges can be overcome from the collaborative perspective. In the case where institutions have extensive knowledge about systems and tools, technical skills and equipment in place, the financial aspect is not that demanding as local funding bodies support the digital library activity. But when there is no experience institutions compensate with their willingness to learn how to use the tools already developed and in this case the financial aspect could be covered by additional projects, as the ones Manuscriptorium aims for.

The lack of specialized personnel to develop compliant systems (to harvest from) or digital representations of valuable documents (to provide them to the platform or digital library) makes it difficult to provide access to material, even more to contextualize them. Also the lack of specialized personnel may reflect in the motivation to engage in collaborative ventures. But in case there is specialized staff, the funding bodies need to ensure its permanence (as noticed in the case of Manuscriptorium, where many of the contacts were lost due to the current crisis times) as they guarantee the success and the longevity of the international collaboration.

5.3 Implications for further research

As being stated before this study offers an analysis of the international collaboration within a particular digital library, Manuscriptorium. At this point, and subject to the limitations acknowledged, the researcher believes that the data gathered was enough to demonstrate the relevance of the case, but will also serve as a reference point for an extensive analysis.

One aspect that emerged during the data analysis and could be investigated further is whether special collections or any particular type of collection represent the most appropriate choice when designing a digital library? From the researcher's perspective this can give a well defined focus, and the activities could be straightforward. The fact that an institution "knows" the community that by offering continuous access the community benefits and is satisfied. For this approach, collaboration means only dealing with one or many related types of documents - that will create the experience and expertise in the field of manuscripts, for instance – as this would have to be described, displayed, and contextualized. It therefore can offer a rich resource to an important category of people, to study, understand and describe in an accurate manner particular historical events.

By approaching the problem from this perspective, the researcher believes that further studies are needed, to prove the value of the service and to promote its advantages. An extensive assessment of the international collaboration, and maybe for this particular case, as a whole and of the value gained by the participant institution will prove that libraries are able to join forces for the benefit of their research communities. To that purpose web analytics and other metrics tools could help in offering some statistical information that can aid the interpretation process.

The current study focused partly on the technical side of collaboration, identifying if the content meets the expectations of an existing community, of the tools and the virtual research environment are used and satisfactory. The researcher's intentions regarding the current research were to reveal the level of awareness for international collaboration among local institutions. To strengthen the credibility and trustworthiness of the research, further inquiries could focus more on the human relationships behind collaboration and on the local organizational structure. Decision making factors need to be investigated further, and eventual political implication of the collaborative process. As mentioned in a response "…often international collaboration is subject to

competitions" meaning that the candidate needs to subscribe to a set of requirements prior joining the collaborative venture. Is the case especially when the calls are initiated by international organizations that were recognized as being the driving force behind international collaboration in digital library initiatives.

As mentioned previously, the main limitation of this research was time, and therefore the methodology and methods were adjusted accordingly. Further and more research is needed, as in applying combined research techniques that would allow the interaction between respondent and interpreter to be narrowed down to identifying specific advantages and disadvantages of international collaboration. As noted from the data collection, each participant has its own approach even if they all have the same type of content, the same systems and the same understanding of the problem. By placing each participant in their own context (from the institutional background, the historical and political environment) and then adapting this to the context of this case , the researcher believes that it would have provided rich and contextualized information, and so it would give a better understanding of to the collaborative act. If so, the methodology needs to be expanded and possibly modified to fit the future research.

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Appendices

Appendix 1 - List of contributors to the Manuscriptorium digital library and with statistics of the respondents

The following table lists the 41 list of institutions that are active or passive contributors to Manuscriptorium digital library. The structure of the table is based on the type of the institution, namely national, university, public, academic library or research institutes.

National Libraries	University Libraries	Public Libraries	Academic Libraries and Research Institutes
National Library of Kazakhstan (Almaty)	University Library Bratislava	Public Library "Ivan Vazov" Plovdiv	Central Library of the Slovak Academy of Sciences
National Library of Turkey (Ankara)	University Library Budapest	Holy Trinity St. Sergius Lavra	University of Copenhagen - Nordisk Foskningsinstitut
National Library of Serbia	The Budapest University of Technology and Economics	St. Poelten Episcopal Archives	Poznań Supercomputing and Networking Center
National Széchényi Library (Budapest)	Computer Science for the Humanities - University of Cologne	Public Library in Cracow	The Árni Magnússon Institute for Icelandic Studies
National Library of Romania (Bucharest)	University Library Heidelberg	„George Barițiu“ Braşov County Public Library	Library of the Lithuanian Academy of Sciences
Biblioteca Nazionale Centrale di Firenze (Firenze)	University Library Lund		Institute of mathematics and informatics in Vilnius
National Library of Moldova (Chişinău)	Complutense University of Madrid		The State Scientific Library in Banská Bystrica
National Library of Spain (Madrid)	University Library Toruń		Patrimonio Nacional - Real Biblioteca Royal Library
National Library of Belarus (Minsk)	University Library Vilnius		Odessa State Research Library
Russian State Library (collection of St. Sergius Lavra)(Moscow)	University Library Wroclaw		
National and University Library of Iceland (Reykjavik)	University Library Zielona Gora		
Royal Library – National Library Stockholm (Stockholm)			

National and University Library of Croatia (Zagreb)			
National Library of Poland (Warsaw)			
Martynas Mažvydas National Library of Lithuania Vilnius)			
National Library of Czech Republic (Prague)			
Total = 16	**Total = 11**	**Total = 5**	**Total = 9**

Table 2 Total number of contributors to the Manuscriptorium digital library

The email with the questionnaire was sent to most of these institutions, of which 28 resulted to be read the message ("Read Receipt" received). The following is a list of the 14 institutions that actually responded to the questionnaire , namely:

National Libraries	**University Libraries**	**Public Libraries**	**Academic Libraries and Research Institutes**
National Library of Serbia **(**Serbia, Belgrade)	University of Bratislava **(**Slovakia)	Brasov County Public Library (Romania)	Library of Lithuanian Academy of Science **(**Lithuania)
National Library of Romania**(**Romania, Bucharest)	University Library Lund (Sweden)	Public Library "Ivan Vazov**"** (Bulgaria)	University of Copenhagen - Nordisk Foskninginstitut (Danemark)
National Library of Czech Republic **(**Czech Republic, Prague)	University Library Torun (Poland)		
National Széchényi Library (Hungary, Budapest)	University Library Zielona Gora (Poland)		
	University Library Budapest (Hungary)		
	University Library Worclaw (Poland)		
Total = 4	**Total = 6**	**Total = 2**	**Total = 2**

Table 3 List of participants that responded the questionnaire

The remaining institutions were not able to provide any responses as the contact person left the position or an error message email was returned automatically by the system.

Appendix 2 - Research techniques employed by the study

Questionnaire Protocol

Dear Name Surname,

My name is Adina Ciocoiu, student of the International Master in Digital Library Learning, dill.hioa.no. As part of my studies I started a research in the field of international collaboration for digital libraries under the supervision of Prof. Anna Maria Tammaro and I chose to work on analyzing the case of the Manuscriptorium digital library (www.manuscriptorium.com).

After consulting with Mr. Adolf Knoll, Secretary for Science, Research and International Cooperation at the National Library of the Czech Republic, and one of the main persons responsible for the Manuscriptorium digital library, your institution was selected to be part of my research. It concerns your institutional participation in Manuscriptorium digital library, tackling issues related to the content, deliverability, interoperability and digital library functionality. Moreover, it aims at understanding the challenges and opportunities brought by the act of collaboration to the local institutions and to the local community of users.

I am therefore kindly asking you to answer the questionnaire below keeping in mind that the data you provide will be used only for drawing conclusions related to the act of international collaboration, and that no names will be mentioned.

The questionnaire contains 14 questions and the time needed to complete it will be strictly related to your experience in the project. Nevertheless, for a better processing of the results, detailed and comprehensive answers (where applicable) are preferred rather than short and unclear answers, be they negative or positive.

Clarification of some of the terms used in this questionnaire:

- Manuscripts are understood to mean historical documents Manuscriptorium definition).
- Local community of researchers, the locally organized group of experts sharing a research interest.
- Digital representations are digital copies of a document, enriched with descriptive information that can be found in an online virtual environment, like a

digital repository or a digital library. The organization of such collection can vary from topic, period of time, geographical area or other categories established by the holding institution.

The answers to the questionnaire should be sent as a REPLY to this message but if you choose other ways of sending your replies, please feel free to do so. If needed and with your permission, further communication could be established.
As time is a valuable resource for everyone, you are kindly asked to return the questionnaire within 2 working weeks, namely by 7th of May. Also do please inform me if you need more time for completing it or if, for any reasons, you cannot participate in this survey.

The final research will be delivered to the University of Parma as a Master Thesis by the end of June 2012 and will be made freely available in the university's digital repository. If you are interested in consulting the final work, please let me know and I'll make sure you'll get the link once the study is made public.

Thank you very much for your collaboration.

Adina Ciocoiu

1. What percentage of your library's collections is represented by manuscripts?
2. Have you identified an existing research community interested in accessing those manuscripts?
3. What is the rate of local requests for the manuscripts held at your institutions? (reading room, at home, ILL or otherwise)
4. What were the reasons for creating digital representations of your library's manuscripts?
5. What was your experience in digital libraries when joining Manuscriptorium digital library?
6. What was your experience in international collaboration regarding digital library when joining Manuscriptorium?
7. Manuscriptorium aims at creating a virtual research environment. Were you able to identify local researchers using this space?
8. What were the resources involved in creating and delivering the content to Manuscriptorium digital library? (human, technical, financial, etc)

9. In order for the content to be unified in terms of technical and descriptive metadata, Manuscriptorium developed a set of tools that were suggested to the partners. How would you assess the technical tools provided by Manuscriptorium?

10. If a research community had already been established in your country, could you assess how they benefit from Manuscriptorium digital library?

11. Have you promoted Manuscriptorium digital library within your local establishment (regional/country level)?

12. Were the Manuscriptorium portal functionalities easy to grasp by the research community in your country?

13. Manuscriptorium has the research community as a defined target. Have you encountered other interested communities when using this digital library? (e.g. publishers, students, etc)

14. At this point, could you consider that your institution benefited or not from participating in this international collaborative project?

Appendix 3 - "5S Model" adapted and used for data analysis

Streams	Societies	Scenarios	Spaces	Structures
Content	Communities	Activities	Locations	Management
Q1+Q4	**Q2+Q12+Q13**	**Q5+Q6**	**Q3+Q7**	**Q8+Q9**

Table 4 "5S Model" adapted for the current research

There were three more additional questions that were designed to create a framework around the five above-mentioned categories and they were analyzed independently. Q10 and Q14 aimed at identifying the benefits of the collaboration for the research communities and for the local institution while Q11 concerned the support that the digital library initiative had in the media.