Digital humanities and visual project management: Use of tools in libraries

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ABSTRACT
This paper stemmed from the understanding that technological tools for Visual Project Management have been configured as a part to be investigated within the scope of Digital Humanities .Therefore ,it proposed identifying in the scientific literature whether these tools are used in libraries and what they are from a bibliographic survey carried out in the Web of Science database .This research is characterized as qualitative, exploratory ,descriptive ,and bibliographic .As for the results obtained, only one paper was identified that described the adaptation panels of the Notion tool for project management.

Keywords: digital humanities; visual project management; tools; library

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1. INTRODUCTION

The advancement of information and communication technologies has changed the behavior, use, treatment, and processing of data and information. New forms of communication and decision-making have been provided with the advances of the digital world, generating a new form of interaction between people and technologies. In this scenario of challenges and possibilities, with the introduction of these technologies in research in Human and Social Sciences, as well as social-cultural changes caused by the protagonism of the digital in today's society (Kirschenbaum, 2012). This developing phenomenon is called Digital Humanities, and, according to Kirschenbaum (2012), it assembles various discussions related to the digital environment and humans.

The working groups of the *Network for Digital Methods in the Arts and Humanities* (NeDiMAH) delimited typologies of research in Digital Humanities (Guerreiro, 2017), one of them being that of *Information Visualization*, which integrates different types of interaction, technologies, and tools for visualizing information, whether for descriptive or analytical purposes. Visual Project Management refers to a set of actions, tools, and models that aim to promote greater visualization of the project development process (Teixeira, 2015). In the study by Viola (2019), which depicted the librarian performance regarding their maturity in project management, the author identified that most of the librarians in the studied sample used agile methodologies configured within visual project management: Kanban and Canvas.

Therefore ,given the above ,by understanding that technological tools for Visual Project Management have been configured as a part to be investigated within the scope of

Digital Humanities ,the present paper proposed to identify in the scientific literature if these tools are used in libraries and what they are. A bibliographic survey was carried out in the Web of Science database.

2. SIGITAL HUMANITIES AND INFORMATION AND VISUALIZATION

Digital Humanities may be considered "a new way of approaching research in humanities and science, particularly, crossed by the technological imperative" (Moura, 2019, p. 60). According to Moura (2019), this field of research has become possible due to the expressive digitization of data masses, adding to the need to compress the nature of the data obtained, expand collaborative research, and change the scientific production chain. Andrade (2020) stated that Digital Humanities might be defined as the use of digital technologies for humanistic doing; however, it goes far beyond "understanding the impact of technological innovations on academic research, as well as seeking to determine which methodologies, theories, and practical procedures need to be reviewed for their development" (Santos & Venâncio, 2017, p. 06).

According to Kirschenbaum (2010, p. 56):

> Digital Humanities, also known as humanities computing, is a field of study, research, teaching, and invention related to the intersection between computing and the disciplines of the human sciences. It is methodological by nature and interdisciplinary in its scope. It involves investigation, analysis, synthesis, and presentation of information in electronic format. It studies how these media affect the disciplines in which they are used.

To Pimenta (2019), the significant thematic variety around Digital Humanities configures as a fact. The author highlighted that its richness in Brazil is still unknown to many because the academic production in Digital Humanities still does not dialogue much with other works of digital humanists to discuss productions, ideas, questionings, and concepts. In Library Science and Information Science, as products and services derived from information retrieval systems converged into the digital environment, Digital Humanities also began to integrate them (Andrade, 2020).

According to Paletta (2018), this integrative movement was due to the creation of digital sources being an irreversible trend in our increasingly connected society, leading to discussions about the challenge of introducing new methods, models, and approaches for conducting research mediated by these technologies. The working groups of the *Network for Digital Methods in the Arts and Humanities* (NeDiMAH) delimited typologies of research in Digital Humanities (Guerreiro, 2017), namely:

- Space and time: studies addressing the visual representation of complex data, network analysis, mobile computing, and the semantic annotation of places, times, and events.
- Information and visualization: integrates different types of interaction, technologies, and materials for visualizing information with descriptive or analytical purposes.
- Linked data and ontological methods: includes studies dedicated to the development of tools that favor the publication of structured data in an open, collaborative, and accessible environment, with the application of ontologies to projects for semantic definitions and the indication of other actions to be implemented to aggregate a large number of diverse and dispersed sources into a coherent data set.

- Building and developing collections of digital data for research: contemplates making digital or digitized collections available in the Web environment and using digital technologies in all phases of digital editing.
- Using large-scale text collections for research: studies addressing the use of tools and methods for analyzing and mining large and complex data sets, allowing the extraction of patterns and hidden data.
- Scholarly Digital Editions: investigates digital editing arising from large-scale digitization programs and editorial initiatives" (Andrade, 2020, p. 445-446).

This article addresses the bias related to information and visualization. According to Gonzalez Aguilar and Paletta (2020), visualization is defined as the communication of information through graphic representations. Images have been used as a communication mechanism long before spoken or written language. A single image may contain a large amount of information and may be processed faster than a page of text.

3. VISUAL MANAGEMENT OF PROJECTS AND LIBRARIES

Project management is an increasingly growing field deployed in public and private institutions. According to Silva Júnior, Ferreira, and Salcedo (2019, p. 443), "the growing number of studies on project management, understood as a tool in organizations, points to the need to specify how it takes place in the various organizational environments, given that the instruments and techniques must be adapted to the different realities encountered".

However, as Massis (2010) stated, distinguishing projects from routine activities is necessary when identifying

library work that should use projects. According to the author, much of the work carried out in libraries is framed as an operation; however, when there is work that involves the building and implementation of new technologies, the reorganization of strategic goals, or any other work to expand the boundaries of the library beyond its daily operational flow, the project approach should be adopted.

Cobo-Serrano (2016) understood that project management is one of the necessary demands for librarians since it allows strategic alignment with operational planning and, thus, promotes the achievement of the expected result according to the strategies and plans were drawn up. Valauskas (1988, p. 1) realized that project management is directly related to the mission of libraries by its definition of "planning, organization, monitoring, and control of resources to meet a single goal". Spudeit and Fenherof (2017) stated that good practices in project management allow reducing costs, improving quality controls, and optimizing resources and efforts. With an emphasis on information units, which "are increasingly viewed as service-providing organizations, the main input of which is information that adds value to institutions and intellectual capital formation" (Silva Junior, Ferreira & Salcedo, 2019, p. 429).

Thus, it is possible to realize the relationship and importance that project management makes possible for the management of information units to improve the provision of their services and the offer of their products. However, several factors influence the achievement of success in project management, some of them being organizational culture, communication, methodologies, techniques, tools, documentation, training, and professional qualification (Pmi, 2017; Viola, 2019; Kerzner, 2016; Silva Junior,

Ferreira, & Salcedo, 2019). Massis (2010) understood that adopting methodologies for project management might contribute to solving planning problems and monitoring goals, which would lead to project failure.

Some studies highlighted and reported how the use of project management methodologies contributes to achieving the goals set in the projects. Dulock and Long (2015) and Stanley, Norton, and Dickson (2003) described different methods; the first addressed how using the Scrum methodology contributed to the digital collections development project at the Library of the University of Colorado. The latter reported on using the PRINCE 2 methodology at the Library of the University of Leeds, just as Carpenter (2011) addressed the PRINCE methodology for libraries, archives, and museums.

Stanley, Norton, and Dickson (2003) reported that one benefit of using methodologies is reducing the administrative burden for the project manager. According to the authors, it may even be that in the first project, the time required for management to apply the methodology is longer; however, as one gains experience, one will obtain time optimization. The non-use of a method will inevitably lead to a more significant overload in project management time.

Kachoka and Hoskins (2017) described the use of PMBOK in the renovation project of the physical space of the *Chancellor College Library of the University of Malawi*. The project was considered successful, although it faced financial, human resources, and time constraints. They were guided in part by the PMBOK recommendations; however, they did not follow a standardized approach as was the initial goal, nor did they use an adequate methodology since the PMBOK is not a methodology but a body of knowledge as a guide. Therefore, they emphasized the importance of

adopting methods and techniques to guarantee the success of a project throughout all its stages and recommended using simple and flexible approaches according to the reality and size of the libraries.

Faced with this perspective is a landmark in project management: the Agile Manifesto[1]. In 2001, 17 renowned software development professionals met in Snowbird, Utah, USA, and discussed problems faced in software projects that lead to failures and delays. As a result of this meeting, the Agile Manifesto emerged, containing four priority values relative to others: 1 – Individuals and interactions over processes and tools; 2 – Working software over comprehensive documentation; 3 – Customer collaboration over contract negotiation; 4 – Responding to change over following a plan.

These values unfold into twelve principles: 1 – Our highest priority is to satisfy the customer through the early and continuous delivery of software of value; 2 – Accept changes in requirements, even at the end of development. Agile processes adapt to changes so the customer obtains competitive advantages; 3 – Deliver working software frequently, on the scale of weeks to months, preferably shorter periods; 4 – Business-related people and developers must work together daily throughout the project; 5 – Build projects around motivated individuals. Giving them the necessary environment and support and trusting that they will do their job; 6 – The most efficient and effective method of transmitting information to and within a development team is through a face-to-face conversation; 7 – Functional software is the primary measure of progress; 8 – Agile processes promote a sustainable environment. Sponsors, developers, and users must be able to maintain

1 Available at http://agilemanifesto.org/

constant steps indefinitely; 9 – Continuous attention to technical excellence and good design increases agility; 10 – Simplicity: the art of maximizing the amount of work that did not need to be done; 11 – The best architecture, requirements, and designs emerge from self-organizing teams; 12 – At regular intervals, the team reflects how to become more effective, then adjust and optimize their behavior accordingly.

From these values and principles, project management methodologies and techniques were developed using visual, interactive, and simplified tools (Highsmith, 2004), and they were assigned the nomenclature of Agile Project Management. This approach was included in the sixth and most recent editions of PMBOK. The primary motivator of the expansion and consolidation of Agile Project Management was the fact that traditional practices began to present limitations when used in dynamic environments with high levels of uncertainty and constant changes, in which a project is hardly executed according to the initial planning (Dawson & Dawson, 1998; Williams, 1999; Perminova; Gustafsson; Wikstrom, 2008; Steffens; Mastinuso; Artto, 2007).

Albino, Souza, and Prado (2014) reported differences between agile and traditional approaches based on their quantitative and qualitative focuses. Quantitatively, agile methods utilize only the necessary processes, plans, and control to realize a project, moving on to project execution and value delivery to the customer. In other words, their planning is the minimum necessary for an execution more aligned with the interest of those involved in the project. Qualitatively, these approaches are based on adaptive systems that view the project as a non-linear delivery and changes as something natural, unlike traditional methods, which understand projects as linear and mechanical works.

Teixeira (2018) explained how information visualization impacts the planning, execution, and monitoring of projects, highlighting Visual Management as a project guide, as it allows those involved in projects "to visualize and understand the project, rendering the situation more transparent and helping to prioritize and improve what is necessary" (Teixeira, 2019, p. 33). "The need for qualified, standardized, and easy-to-use information makes the user interface a fundamental part of project management models" (Teixeira, 2018). With this focus, Teixeira (2018) proposed a new model for project management, aiming at the understanding and clear monitoring of project development processes concerning the visualization of the stages, activities, and tasks to be carried out through information visualization.

In projects, it is common for some weaknesses to appear, such as a lack of clarity in the functions and responsibilities, lack of initiative, lack of creativity, lack of innovation, poor communication, excessive bureaucracy, and difficulty coordinating between departments, allowing conflicts arising from misunderstandings, communication failures, interpretation errors, frustration, and disputes, which consequently hinder the evolution and productivity of the team at different levels: organizational, procedural, departmental, sectoral, and individual (Teixeira, 2018).

It is in this sense that Sibbet (2013) defended the advantage of making syntheses visually so that global thinking is facilitated through mapping ideas, locating patterns, and making comparisons so that designers, data analysts, decision-makers, and other interested parties may focus their cognitive and perceptual attention from the visualization of information. Visual management is creating a well-organized workspace that eliminates information deficits (Galswortg, 2005, p. 10), and visual project management

is a set of actions, tools, and models that aim to promote greater visualization in the project development process. Viola (2019) identified that most librarians in their studied sample used agile methodologies configured within visual project management: Kanban and Canvas.

Kanban is a term of Japanese origin that may be translated as "signboard" or "billboard". It emerged from the card systems used in manufacturing industries, the purpose of which was managing the workflow through development organization. With its signaling mechanism, it aims to present a work-in-process activity. It has been applied more to software development projects and has gained space in other project areas with the expansion of the agile methodology. It considers three phases: to-do, doing, and done. By separating these phases on a board, activities are circulated according to these divisions. Its benefits are directly related to the agile approach: planning flexibility, agile development cycles, continuous and incremental deliveries, development efficiency, favored communication, priority setting, simplified use, and cost reduction.

Canvas: Its main characteristics are the graphic format and the use of scratch pads that serve as a tool for recording the fundamental activities of the process, promoting the reuse of information from one project to another, and having an area with specific goals to be completed by the team. The model considered pioneering that suggests using Canvas in projects is the model by Finocchio Júnior (2013), called Project Model Canvas (PMC). The author emphasized using the model in the context of building the planning for a project as an alternative to the traditional project management plan. It is organized into thirteen areas referring to basic concepts of projects, divided into five blocks containing six questions in the following sequence: Why? Refers to the project's

justifications, goals, and benefits; What? Refers to two fields: the product and its requirements; Who? Addresses the main people involved in the project, divided into *stakeholders*, external factors, and project team; How? Defines project premises, deliverables, and constraints; When and how much? Refer to the risks, timeline, and costs of the project.

According to Finocchio Júnior (2013), two premises must be met for using the PMC model. First, the project plan must be built together collaboratively with the integration of project participants. And the other premise is the need for it to be carried out by a team in which at least one member has basic knowledge about project management so that there is better dissemination, knowledge, and use of good practices. According to Morais *et al*. (2017), the specific Canvas for innovation projects is the Innovation Project Canvas (IPC) created by a Brazilian company, which has several boxes that may be filled by using post-its or writing directly in the appropriate places, namely: problem, necessary resources, financial analysis, idea, risk and uncertainties, alternative solutions, and action plan.

Currently, it is possible to find a variety of digital tools and systems for managing projects and monitoring their processes (ClimbApp, Miro App, Trello App, Nialli, Pipefy, Asana), focusing primarily on the ease of decision-making to streamline the activities to be executed and strategies to be aligned. As such, these tools use knowledge areas such as Information Design and User Experience (UX) to design the dashboards that best meet the informational needs of the teams involved. Therefore, it is necessary to identify whether libraries and librarians have used such Visual Project Management tools to better understand the visualization of information in the project approach from the perspective of Digital Humanities.

4. METHODOLOGICAL PROCEDURES

The present research has a qualitative approach, as it does not have a statistical focus for its primary analysis (Haguette, 1995). It is characterized as descriptive because it intends to describe the characteristics of the problem pointed out (Richardson, 2015), exploratory due to the intention of knowing a particular subject better (Richardson, 2015), and bibliographic, given that as its objective, it is a bibliographic survey.

To identify the digital visual project management tools used in libraries or by librarians reported in the scientific literature, a search was carried out in the Web of Science database with the following search strings: 1) "project management " AND "libraries" AND "tools"; 2) "libraries" and "visual management". Filters related to Information Science and Library Science were included in all databases. The period selected for the search was January 01, 2000, to December 31, 2021.

From the recovered data, articles that related visual management in libraries to using project management tools in libraries were selected according to the information in the titles and abstracts. After this identification, the articles were read fully to identify the tools described. The following section presents the results found and their analysis.

5. RESULTS

First, the search was conducted with the search string "project management" AND "libraries" AND "tools", selecting all fields for the search and the period from January 01, 2000, to December 31, 2021, together with the application the Information Science and Library Science filter, allowing the retrieval of 16 articles. After reading the titles and abstracts

to identify the articles that addressed, more specifically, visual management, project management, and libraries, eight articles were selected for full reading to determine what was exposed about using a visual management tool for digital projects, as shown in Box 1.

Then the search was carried out with the search string "libraries" AND "visual management", selecting all fields for the search and the period from January 01, 2000, to December 31, 2021; this, together with the application of the Information Science and Library Science filter, made it possible to retrieve only one article, which was selected for reading in full. Thus, a total of nine articles were selected for full reading so to identify visual project management tools used in libraries or by librarians. Table 1 shows the reference of each of the selected papers.

Table 1. Articles Selected from the Web of Science database (Source: Prepared by the authors).

	Articles selected for full reading – Web of Science
01	Zhang, Y., & Bishop, C. (2005). Project-Management Tools for Libraries: A Planning and Implementation Model Using Microsoft Project 2000. *Information Technology and Libraries*, 24(3), 147-152.
02	Calvert, P. (2004). Project Management: Tools and Techniques for Today's LIS Professionals, *Online Information Review*, 28(5), 381-382.
03	Erik T. Mitchell. (2018.) Lightweight Tools and Dashboards for Program Management in Libraries, *Technical Services Quarterly*, 35(1), 68-82.
04	Carranza-Diez, K. E.; Arquero-Aviles, R. & Alberdi-Zubiaurre, E. (2021) *Ibersid-Revista De Sistemas De Informacion Y Documentacion*, 15(2), 37-46.

	Articles selected for full reading – Web of Science
05	Porter, S. (2019). Project management in higher education: a grounded theory case study. *Library Management*, 4(5), 338-352.
06	Russell Michalak & Monica DT Rysavy. (2020. Gerenciando Projetos Remotos Efetivamente com um Painel de Ação, *Journal of Library Administration*, 60(7), 800-811.
07	Chang, M. (2010). An Agile approach to library IT innovations. *Library Hi Tech*, 28(4), 672-689.
08	Melissa Bauer & Sara Klink. (2021. Two Libraries, One Synchronous Workshop *Series: Creating a Shared Learning Experience, Technical Services Quarterly*, 38(1), 54-63.
09	Shen, Y. (2018). Library Space Information Model Based on GIS — A Case Study of Shanghai Jiao Tong University. *Information Technology and Libraries*, 37(3), 99-110.

According to the results obtained, there was little literature on the topic researched from the perspective of Information Science due to the low number of items retrieved and selected. According to Viola (2019), there is a significant gap in the literature on Information Science and Library Science and Project Management, very little literature, thus being a field to be further explored. It should also be noted that no article was retrieved written by Brazilian authors or referring to project management or visual management in libraries in Brazil. From the reading of the selected articles, no indication or reference to digital visual project management tools was explicitly found. Some papers, such as those by De Zhang and Bishop (2005) and Michalak and Rysavy (2020), reported using the tools MsProject and Notion; however, none of them was whol-

ly aimed at the visual project management mode but had screens with dashboards for following up and monitoring project activities and actions.

In this sense, we highlight the article by Michalak and Rysavy (2020), in which the authors described the entire process they carried out in Notion to create the Actio Dashboard to facilitate the visualization of high-level tasks for everyone in the team as problems were occurring such as missed deadlines by some of the members, and variety of projects occurred simultaneously, making it impossible to have clarity and certainty of the status of a given project; consequently, the team faced difficulty in future planning due to lack of clarity in project schedules. Thus, the solution visually organized and prioritized the information regarding the tasks in progress, status, date and time requested by the manager, the person responsible, priority, requested by, task, last updated, last updated by, project, deadline, manager's comment to the team, and clarity of directions. According to the authors, using these panels in the Notion tool enabled better compliance with deadlines by the team, ease of understanding, and progress of the project by all involved. It should be noted that the paper reported was because the library service became home-based due to the COVID-19 pandemic, requiring a new way to manage library projects.

In the paper by Bauer and Klink (2020), tools for sharing content in digital environments by video, audio, and text were mentioned to help create websites; however, no project management tool was described. The study by Mitchell (2017) described tools the authors used to create dashboards for following up and monitoring projects, including Google Sites, Google Docs, and Google Script platforms. In this paper, the author highlighted the relevance of information visualization for better communication by the project

team, facilitating its management from the most strategic to the operational level and prototyping panels and tools stemming from other existing ones. In the other selected papers, descriptions and reports on using tools in library project management were not identified, especially regarding visual management.

6. FINAL CONSIDERATIONS

It was noticed that both project management and visual management are still poorly addressed topics in Information Science and Library Science, thus requiring further studies on this theme. Regarding the identification of visual project management tools in libraries, the closest found was the adaptation of panels in the Notion tool for the project management of the Hirons Library & Learning Center (HLLC) and the Office of Institutional Research & Training (OIRT), reporting benefits of this approach for strategic and operational decision-making and planning of their projects.

Thus, it is concluded that research on visual management of projects and libraries is relevant, both for being an approach that optimizes its management and for understanding how this new dynamic happens from the perspective of Digital Humanities. Therefore, we suggest future similar studies conducted in other databases and surveys through questionnaires and interviews with library managers and teams to identify the use of such tools and their informational flow regarding the Digital Humanities.

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