

Challenges Regarding the Accessibility of Library Services in Heritage Conservation Using the Matrix of Users' Consumption Behaviors

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Abstract

This article seeks to explore the multifaceted challenges inherent in ensuring accessibility to library services for the preservation of cultural heritage, with a particular focus on understanding user consumption behaviors from a lifelong learning perspective. The article aims to analyze the complexity and variables surrounding the imperative to preserve cultural heritage through libraries, juxtaposed with the various behavioral patterns displayed by users who engage with cultural resources. Based on the diverse learning interests of contemporary library users - from academic pursuits to professional development and personal enrichment - the present article initiates a matrix of factors responsible in shaping various cultural consumption behaviors. These factors comprise demographic variables such as age and education level, as well as contextual influences including cultural background, technological competence and responsiveness to innovation. By capitalizing on the information analysed within the Horizon project entitled SHIFT - MetamorphoSis of cultural Heritage Into augmented hypermedia assets For enhanced accessibiliTy and inclusion, currently under implementation, the present article will illustrate how advances in AI technology can be capitalized to adapt personalized solutions in library ecosystems. These solutions are designed to increase the accessibility and the attractiveness of modern library services and favor the inclusion of different user types, especially vulnerable groups, thus strengthening the value, relevance and degree of monetization of cultural assets in library collections. For this purpose, the author will analyze relevant SHIFT project use cases and will explore how AI technology can help libraries by configuring customized technological solutions, oriented to the current users' needs.

Keywords: Smart Library, Stakeholder Matrix, Behaviour Patterns, Library Service Accesibility, Appealingness of the Library Service Offer, Library Responsiveness to Innovation, Cultural Assets Monetisation

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Introduction

In recent years, there has been a growing recognition of the critical role that libraries play in the preservation of cultural heritage. As gatekeepers of knowledge, librarians must navigate the interface between technology and cultural diversity, ensuring that libraries continue to provide wider access to a variety of information sources. This article explores the multifaceted challenges inherent in ensuring accessibility to library services for the preservation of cultural heritage, with a particular focus on understanding user consumption behaviors from a lifelong learning perspective.

The article aims to analyze the complexity and variables surrounding the imperative to preserve cultural heritage through libraries, juxtaposed with the diverse learning interests and behavioral patterns displayed by contemporary library users. Demographic variables such as age and education level, as well as contextual influences including cultural background, technological competence, and responsiveness to innovation, shape the various cultural consumption behaviors that libraries must cater to.

To address these challenges, the article explores how advances in AI technology can be capitalized to adapt personalized solutions in library ecosystems. The author analyzes relevant use cases from the SHIFT project, which aims to leverage AI to increase the accessibility and attractiveness of modern library services, and favor the inclusion of different user types, especially vulnerable groups.

In the era of digital culture, libraries play a key role in preserving and making cultural heritage accessible. This article focuses on the complex challenges faced by Library and Information Science (LIS) professionals as custodians of printed materials, records, photographs, audiovisual materials, and other minor ephemeral documents of everyday life, both in analog and digital form, in ensuring accessibility to cultural heritage conservation services in libraries. Starting from the importance of understanding users' consumption behaviors, the author focuses on how curators of cultural heritage assets in library collections can adapt their offer to the diverse needs of their audiences using the User Consumption Behavior Matrix.

The current research examines the intersection between the need to preserve cultural heritage and the behavioral variability of library users. In the light of the Horizon project SHIFT - MetamorphoSis of cultural Heritage Into augmented hypermedia assets For enhanced accessibiliTy and inclusion, this paper examines the way in which AI technology can contribute to the adaptation of personalized solutions in modern library environments. Starting from the SHIFT use case, the author surveys the main methods based on behavioral analyzes of cultural consumption to better position SHIFT technological solutions, designed to improve accessibility and increase the relevance of library services, aiming at inclusiveness and supporting different types of users, including people belonging to vulnerable groups. By providing concrete examples of how AI-based technology solutions can be applied in library ecosystems to personalize user experiences and enrich access to cultural assets, this research brings a refreshed approach to library best practices in configuring service offerings to respond challenges and opportunities in a society in continuous digital and cultural transformation.

Public Libraries– Searching an Improved User Experience

Ensuring accessibility to library services for the preservation of cultural heritage is a complex process that requires a nuanced and comprehensive approach. In a digital age, where technology is rapidly transforming the way we interact with information and culture, maintaining the relevance and usability of cultural resources becomes essential. The modern library is no longer just a repository of books and documents, but a vibrant knowledge resource center that must adapt its services to meet the demands of diverse and ever-changing audiences.

The challenges encountered in the process of ensuring accessibility are many and varied, including technological barriers, the diversity of user needs and the need to protect the integrity of cultural heritage. For example, digitizing collections is essential to facilitate access to information, but requires significant resources and can raise copyright and data protection issues. In addition, ensuring accessibility for people with disabilities or disadvantaged communities adds new challenges to inclusion and access. Therefore, there is a need for a good knowledge of the consumption profile of users and innovative technological solutions that respond to these challenges.

The Matrix of User Consumption Behaviors– A Critical Indicator for the Configuration of Library Services

Understanding user behavior is an essential aspect in the process of creating and diversifying the service offer. The consumption profile of users is a critical indicator in the configuration of library services, having a direct impact on the way in which these cultural institutions, in this case libraries, develop and diversify their offer. Deep understanding of user behavior becomes essential to effectively respond to the needs of a diverse audience. In an ever-changing world where technology and access to information play a major role, libraries must be proactive in adapting their services to remain relevant and accessible.

Libraries are constantly concerned with meeting the very varied requirements and demands of different types of audiences. This is why these info-documentary institutions are increasingly interested in involving users in the design, validation and diversification of modern library services. Investment in modern technological tools has become a sine qua non condition for the configuration of cultural products and services that meet the increasingly refined needs of different user groups, including people belonging to vulnerable groups.

Analysis of the Behavior of Users of Cultural Goods and Services

In the context of the SHIFT project, the consortium partners identified, through research and analysis based on observation, the diagnosis of the main stakeholders. This information about the stakeholders' typology is essential to develop effective strategies for interacting with audiences and implementing new technological developments. This detailed classification was included in the SHIFT Stakeholder Matrix.

No.	Stakeholder	Role	SHIFT influence on Stakeholders	Stakeholders' influence on SHIFT
	Leaders of Cultural Institutions: <ul style="list-style-type: none"> - Museums - Libraries - Archives - Cultural institutes - Memorial houses, etc. 	Primary beneficiaries	High	High
	Specialists in Cultural Heritage: <ul style="list-style-type: none"> - Curators - Specialists in Heritage Conservation - Archivists - Librarians - IT Specialists from cultural institutions 	Primary beneficiaries	High	High
	Digital Content creators and entertainment: <ul style="list-style-type: none"> - Culture Vloggers and YouTubers - VR and AR Content Creators - Cultural Podcasters and Digital Historiographers - Specialists in 3D Animation and Design - Educational Game Developers - Digital Artists and Illustrators - Experts in Translation and Digital Subtitling - Screenwriters and Digital Copywriters - Experts in Speech Recognition and Interaction - Specialists in Gamification and User Experience Design (UX) - Producers of Audio Content and Audiobooks, etc. 	Secondary beneficiaries	Medium	Medium
	Haptics Industry: <ul style="list-style-type: none"> - Engineers in Tactile Haptics 	Primary beneficiaries	High	High

Figure 1: SHIFT Stakeholder Matrix

Among the stakeholders, commercial, community, political and various other decision-makers, the SHIFT partners focused in particular on two main categories: Cultural Heritage Institutions (CHIs) and their visitors, including non-users. The focus on these two categories of stakeholders was driven by two main rationales. First of all, the functional diversity of the stakeholders' types and the need for differentiated approaches regarding the development of customized solutions were followed. Secondly, it reflects a pragmatic rationale: the general public, including visitors and non-visitors, is the ultimate target audience of the SHIFT project. These end-users, who will benefit from the technologies and cultural content proposed by SHIFT developers, often require prior mediation and adaptation by CHI professionals.

Library Professionals– Key Role in Mediating Cultural Content for Users

Library professionals act as certified implementers of the technologies introduced by the SHIFT project. They are responsible for acquiring, processing, transforming, preserving and/or mediating collections and content for their visitors and, by extension, the general public. Therefore, understanding the needs and expectations of these professionals is essential to be able to effectively reach the target audience.

Adapting to the ever-evolving demands of stakeholders is essential for libraries to remain relevant and indispensable. This adaptation requires a deep understanding and a proactive approach to meet the diverse needs of users of all age groups. The SHIFT consortium advocated a comprehensive examination of user behaviors in cultural consumption. They deeply delved into users' cultural consumption interests, examining current stakeholder influences while anticipating future strategies for SHIFT project development. At the heart of the SHIFT partners' approach were innovative technology solutions designed to directly address these evolving requirements.

According to the research results of SHIFT partners, user behavior is influenced by a number of demographic and social factors, such as age, level of education and degree of familiarity with technology. Young people, for example, are often oriented towards using digital platforms, preferring quick access to online resources and virtual interaction. This behavior is influenced by their familiarity with digital technology and expectations of instant access to information. In contrast, seniors may have a greater affinity for traditional experiences, such as direct interaction with physical objects and in-person consultation of printed materials. These preferences reflect not only habits formed over time, but also varying levels of comfort with new technologies.

Diversification of the Service Offer– A Pre-condition for the Success of Libraries

In order to respond to the diversity of user behaviors, libraries must diversify their service offering. This involves developing solutions that integrate both digital and physical components. For example, creating intuitive and accessible online services based on AI can attract young users, while workshop-type programs or traditional exhibitions can maintain the interest of older audiences. SHIFT project partners have identified this diversity of needs and are working to customize technology-based solutions to increase accessibility and improve user experience.

By adopting a perspective based on the knowledge and motivation of stakeholders, libraries improve their service offerings, but also ensure that they are well equipped to face the challenges of the future. In order to meet the specific needs of users, libraries must continuously evolve and adapt their services. Maintaining a proactive approach, SHIFT partners not only anticipated the challenges, but used the opportunity of implementing the SHIFT project to improve collaboration with end-users, but also to optimize the user experience of direct beneficiaries. This strategic approach emphasizes the commitment of the SHIFT partners to, based on a deep and rigorous analysis of the stakeholders, achieve sustainable results both during the implementation of the project and during the sustainability period.

SHIFT Stakeholder Engagement Map

Complementary to the Stakeholder Matrix, SHIFT partners have also developed a tool called the Stakeholder Engagement Map, to facilitate understanding and managing the complex dynamics of stakeholders in relation to SHIFT's goals and mission. This map provides an integrated perspective on the development of the database, which compiles relevant information about the identified stakeholders. The tool is based on the previously developed Stakeholder Matrix and aims to analyze the distribution and influence of these categories on the future development direction of the project.

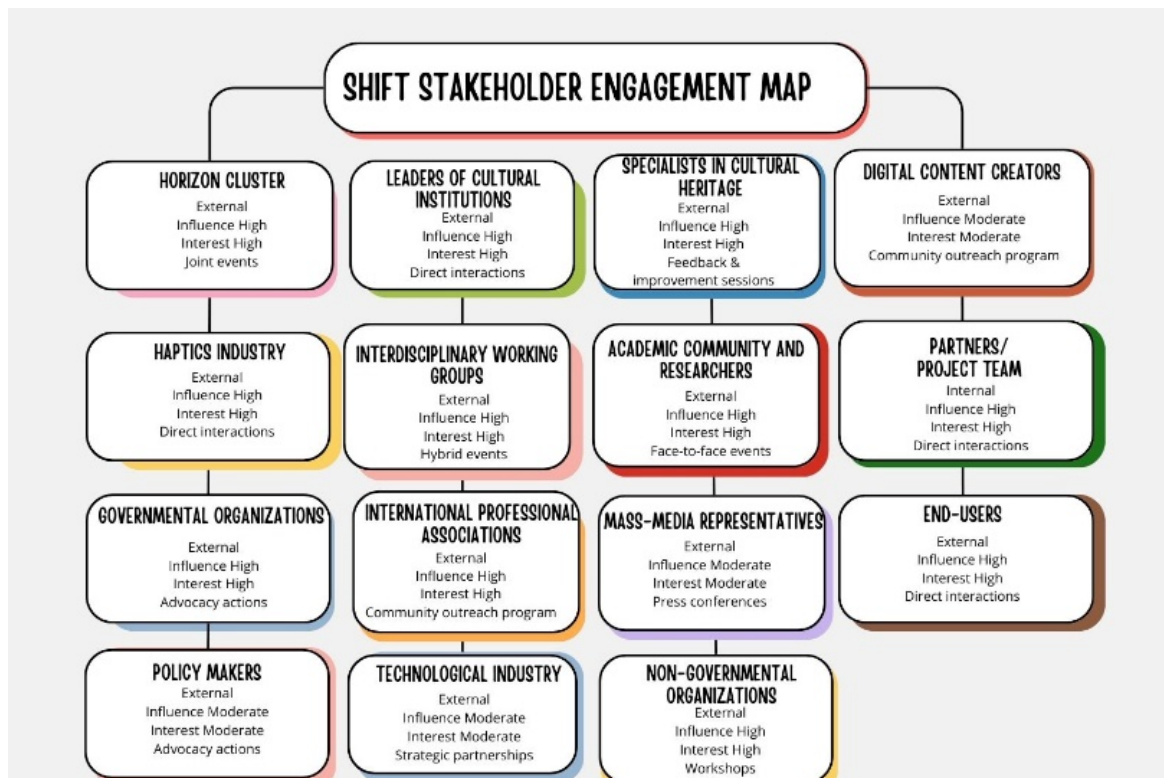


Figure 2: SHIFT Stakeholder Engagement Map

The research methodology included a systematic data collection, followed by their detailed analysis. Both office and field research methods were used, along with statistical analysis and facilitation of informal discussions. These methods enabled the aggregation of different data sets, providing a comprehensive and nuanced picture of the converging and diverging interests of the parties involved.

Detailed stakeholder review led to the identification of 16 distinct categories, each evaluated for their unique roles and contributions within the SHIFT ecosystem. The analysis highlighted the specific importance of each category and the anticipated impact on the development of the technological solutions offered by the project. The evaluation highlighted the way in which these interested parties influence not only the development trajectory of the project, but also the way in which its benefits are perceived and valued by the end users. The use of the SHIFT Stakeholder Engagement Map allowed project partners to plan and optimize the process of development, validation and exploitation of IT solutions, taking into account the particularities and specific needs of each category of stakeholders.

The project partners have identified 15 distinct categories of stakeholders, reflecting the diversity of the actors involved. These categories were selected based on their impact and influence on the SHIFT project. Stakeholder categories were divided into Primary stakeholders and Secondary stakeholders. Primary stakeholders are those who have a direct and immediate impact on the project, while secondary stakeholders have an indirect or long-term influence. This classification facilitated the prioritization of efforts and resources according to the importance of each category.

Stakeholder Identification and Classification Methodology

The identification and classification of stakeholders followed a systematic process, including:

- Selection of Categories: The choice of 15 distinct categories, representing the diversity of stakeholders.
- Detailed Analysis: Evaluation of each category according to the influence and impact on the project.
- Primary and Secondary Classification: Determining the importance of each category for the continuity of the project.

Taxonomy SHIFT Stakeholder Engagement Map

The taxonomy was developed to ensure a clear and comprehensive structuring of stakeholder categories:

- Structuring the Categories: Detailing the characteristics and particularities of each category.
- Integration of End-User Groups: Differentiating between current users and non-users of ICH services, for personalizing communication strategies.
- Mass Media Segmentation: Dividing media representatives into distinct categories to adapt communication strategies.

Scientific validation of the matrix was achieved by:

- Specialty Literature Review: Analysis of existing research and best practices.
- Validation by Experts: The involvement of SHIFT experts in the mobilization, involvement and loyalty of stakeholders to ensure the rigor and relevance of the methodology.

The Stakeholder Involvement Map developed within the SHIFT project is an essential tool for planning and optimizing interactions with stakeholders. Rigorous methodology and clearly defined taxonomy ensure an accurate representation of diversity and their influences, contributing to the success and sustainability of the project. This strategic approach can serve as a model for other initiatives that aim to effectively integrate stakeholders in their development and implementation processes.

Conclusion

Analysis of SHIFT partners revealed a varied distribution of stakeholder influence, highlighting the complexity of the SHIFT ecosystem. The SHIFT Stakeholder Engagement Map serves as a critical tool for anticipating and managing the dynamics between different categories of stakeholders. By detailing each category, the project can develop customized adaptation and implementation strategies that meet the specific needs of each stakeholder.

SHIFT partners collected and analyzed statistical data in order to identify the influence of the various stakeholders, but also to create a reference framework for the continuous evaluation of their impact on the evolution of the project. Therefore, the SHIFT Stakeholder Engagement Map has become a useful working tool for understanding and managing the complexity of multi-party audiences within the project. Through the detailed and rigorous methodological approach, the partners were able to create a dynamic tool that supports the strategic development and efficient implementation of SHIFT technological solutions, thus ensuring that the benefits of the project are optimized for all end users. This paper

emphasizes the importance of the active and continuous involvement of stakeholders in the process of development, validation and implementation of SHIFT technological solutions.

In light of the above, understanding the consumption profile of users is essential for the long-term success of libraries and research-innovation projects involving these info-documentary institutions. By analyzing the behaviors of different demographic groups, these institutions can implement customized solutions that better meet the varied needs and preferences of their audiences. This approach not only improves the user experience, but also contributes to keeping cultural institutions relevant and attractive in the digital age.

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