

WORKFLOWS

Digitization Projects in GLAM and Research Institutions

This publication is driven by the belief that data saved on a shared technological structure becomes an invaluable asset, enabling GLAM institutions to display unique online collections and facilitate interdisciplinary collaborations.

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As a winning project of the Dariah Theme Call 2022-2024 on Workflows, this publication can serve as a guide for digitization projects with GLAM - It was written as part of the evaluation of a showcase project called "[curiositas 5.0](#)", initiated by the [Digitales Schaudepot Association](#) (DSD) and is intended to assist in planning digital projects and, above all, in avoiding unwanted missteps. Keep in mind that each project is distinct and may necessitate alternative measures.

To capture voices from the community and provide insight into the different working methods, expertise, and backgrounds of the people collaborating on the curiositas 5.0 project, we conducted complimentary interviews. They are linked in the document and can be accessed on the [Spotify channel of Virtual Culture](#).

These publications would not have been possible without the support and commitment of many people. Therefore, we would like to express our deepest gratitude at this point.

Special thanks go to all those who have accompanied and encouraged us on the path of the curiositas5.0 project.

This thanks also goes to the experts and professionals who have shared their knowledge and experience with us, particularly in the context of the podcasts.

Last but not least, we would also like to mention family and friends, whose tireless support and encouraging words have always accompanied us.

Without the trust and support of these wonderful people, and the professional support of the Virtual Culture team, these publications would not have materialized, just as without the financial support of the [DARIAH Theme Call 2022-2024: Workflow](#).

Authors: Prof. Dr. Lucas Burkart, Prof. Dr. Peter Fornaro, lic. phil. Jane Haller.

**DIGITALES
SCHAUDEPOT**

Published in 2024 by Virtual Culture, Switzerland.

Arnold Böcklin-Strasse 17, 4051 Basel (Switzerland)

Editorship and graphic design: Virtual Culture GmbH, www.virtualculture.ch

License: cc by, DOI: <https://doi.org/10.5281/zenodo.11501686>



Production of podcasts:

Virtual Culture, Podcast "Culture Digital - Hear all about Digital Humanities" on

Spotify: <https://open.spotify.com/show/5OATecu8o2bUFX5bpSksFN>

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Background of Digitales Schauderpot Curiositas 5.0 Project

The [Digitales Schauderpot Association](#) (DSD), tackles the challenges of digital cultural heritage in a dual approach. Firstly, in collaboration with GLAM institutions, DSD develops showcases that aim to make selected objects visible and accessible and secondly it aims to give the viewer added insight into a collection or object through storytelling. This approach shifts the focus from technology to application, aligning with the diverse needs of GLAM institutions. The choice of digital technology is determined by the needs of each project. It uses best-practice standards to ensure sustainability and aims to leverage digital technology for the research and propagation of cultural heritage.

The DSD acts as an intermediary between GLAM institutions and digital technology developers. Its role is to facilitate communication among partners and coordinate complex workflows and processes to digitize cultural heritage. This requires an understanding of the content as well as the latest technology.

The Curiositas 5.0 project (a cooperation of various GLAM institutions, curators, academics, researchers, and digital service providers) was carried out by the DSD between 2021 and 2023 and finalized with the [website](#) launch. The curiositas 5.0 web implementation tells the story of a cabinet of curiosities and its objects in a diachronic perspective, from the early 17th to the 19th century. Furthermore, it creates a user experience that illustrates the historical significance of such a collection as a laboratory of knowledge and science and highlights its historicity in contrast to a modern understanding of collections and museums.

Current Challenges

Many GLAM entities are inadequately equipped to transition their collections into the digital realm. They often need both the technological knowledge and the policy power for effective implementation. An equitable dialogue between museum curators and digital humanities practitioners is seldom established.

Even now, curators frequently view themselves as protectors of a collection, making selected pieces accessible to the public each time a new exhibit is unveiled. However, offering access to an institution's database and to the information stored within could significantly contribute to both the scholarly community and the broader public. This could result in increased visibility, participant engagement, and strengthened relationships between communities and cultural heritage.

The use of digital technology is often limited to either database administration or the distribution of content, events, and information on websites and social media platforms. Understanding and cultivating the potential of digital curation and digital storytelling offers an immense opportunity. This needs to be integrated into the academic background of curators and the organisation structure of GLAM institutions.

Merging data from various organizations entails a great deal of effort. Even within a single organization, data is often chaotic. Between institutions data is rarely (completely) compatible. This is particularly the case

is a vast gap between the aspiration of cross-institutional interoperability and the condition of the preexisting data.

**Plan,
Milestones and Roles
iterative!**

Lessons Learned

Clear and regular communication among team members and stakeholders is crucial for project success. It is important to establish accountability and ensure that everyone understands their roles and responsibilities.

Establishing a change control process can help evaluate and assess the impact of changes, ensuring they are properly vetted and approved.

Write down the goal of your digitization project. Even if it shifts during the project due to new data coming to light or new insights, this ensures that everybody working on the project is working towards the same goal and it helps team members communicate together. Changes to the goal should therefore also be documented in writing. Rarely does the initial plan remain unadjusted; it is therefore an iterative process that must be continually adapted and discussed.

The goal will encompass the research question to be answered as well as the curation and final online visualization.

Common Challenges

Communication is key. Poor communication among the team can lead to misunderstandings, delays, and misalignment of goals. Project stakeholders need to communicate effectively and regularly to ensure everyone is on the same page.

Scope creep refers to uncontrolled changes or additions to project scope without proper evaluation and approval. It can affect project timelines, budgets, and resource allocation.

- **Masterplan**

A masterplan gives an overview of the whole project, including the different phases, milestones (time plan), deliverables, even the individual work packages, and their interdependencies. A work package if necessary can describe the planned activity, the methods and tools to be used, and the resources needed (quantity and quality).

Such digitization initiatives necessitate a wide range of skills, encompassing numerous procedures and operations. Consequently, it demands a comprehensive structure that allocates explicit tasks and duties to each team player. The project has both a supervisory content and a technical aspect, which is reflected in its roles and responsibilities.

The project administration must monitor and verify the milestones in depth. Any incorrect suppositions and hidden misunderstandings of project associates need to be promptly identified and rectified. It necessitates robust management capabilities and a profound comprehension of digital projects to accomplish this task.

● Project Team Roles

<u>project leader content:</u>	curatorial concept, content overview, frontend design & website function overview, quality assurance content
<u>project leader technology:</u>	technological concept, compliance with standards (FAIR, CARE, LOUD), quality assurance capturing and technology
<u>project management:</u>	organization and coordination, control schedules, team management
<u>curators:</u>	research and elaboration of content (textual & visual), storytelling
<u>capturing:</u>	2D, 3D, video, audio
<u>post-production:</u>	2D, 3D, video, audio
<u>data steward I:</u>	data collection (import from GLAM institutions), curation & editing, elaboration of metadata schemes for interoperability
<u>data steward II:</u>	data import to the backend, copy-editing for frontend, data controlling, social media
<u>editor:</u>	editing & copy-editing of texts
<u>translator:</u>	translation, editing & copy-editing of German texts in English
<u>database provider:</u>	Storage, virtual machine, data management, servers
<u>backend programmer:</u>	interface to frontend, providing API-documentation
<u>frontend designer:</u>	frontend design
<u>frontend programmer:</u>	programming of frontend, design & functionalities, interface to back end, using API-documentation

Project Budget

Common Challenges

Budgeting for specialized knowledge required in such initiatives can be daunting.

For each project, it is necessary to calculate the contributions to infrastructure expansion and development, as well as its specific requirements. This logic should be communicated to funding organizations, who are often primarily invested in their own product and its visibility. However, upon closer inspection, the interoperability, reusability, and transferability of the data present persuasive arguments for long-term storage and sustainability, which funding organizations should recognize and accommodate.

Lessons Learned

When preparing the project plan, it is important to accurately estimate the resources required for project administration, including both monetary and workforce needs. For many GLAM projects, funds primarily originate from private or public funders. However, it is essential that the design and execution of digital initiatives in the GLAM domain also adopt a business mindset. This fosters both appreciation and cost clarity, mitigating (self-)exploitation and (self-)devaluation of completed work. Resources for internal team communication and external liaison (with GLAM institutions and technology providers) are often underestimated. Therefore to ensure all costs are accounted for, it is recommended to include an 'overhead' category comprising 20% of the overall budget.

Risk Analysis and Interdependencies

Risk analyses are conducted to identify weaknesses or factors that may impede project completion. This allows for timely measures to be taken against identified risks. Therefore, it is crucial to proactively analyze the project during the planning phase rather than waiting for issues to arise. Weaknesses can appear in any project element, from the planning process to the implementation process or even within the team itself.

Common Challenges

Typical examples include looking at copyright and data protection issues too late, underestimating or failing to consider necessary tasks, underestimating costs for unfamiliar tasks, agreeing on tasks with external partners orally and not having a contract, miscommunication within teams, such as between technical team members and researchers, even certain standards or clunky approval processes can hinder a project. Additional examples include hosting services, publication rights or procedures in case a supplier does not deliver on time or as agreed. Scale the analysis to the size and complexity of the project. If the research is conducted within a team that has previously worked well together and it is a familiar type of research, a brief brainstorming session or listing the risks may be sufficient. However, if the team has never undertaken a digitization project before, it is advisable to spend more time on a comprehensive



Talk with Joana Meier



(BA in Sociology and English Literature, Master's student in Digital Humanities, works in museum education and digitization)

risk analysis. A risk analysis typically involves identifying all potential risks, assessing their likelihood of occurrence, and evaluating their potential consequences. It is important to assign a task and person to mitigate each risk and keep track of the list throughout the project. Focus on the risks that are most likely to occur and would have the most severe consequences. To identify risks, consult with all relevant experts and review the project plan. Consider past issues that have arisen in similar projects.

Lessons Learned

Conducting a thorough risk analysis at the start of a project can help to avoid making hasty decisions within a constrained framework. It is also advisable to monitor and update the list of risks and corresponding solutions as more information becomes available throughout the project.

It is recommended to ensure that all required competencies are present and that external companies possess the necessary expertise and resources to undertake a task within a specified timeframe. It is also advisable to agree on the deliverables and timeline in writing.

Quality Management and Standardization iterative!

Talk with Sorin Marti



(Background in software engineering, Master's student in History and Digital Humanities, works as a data steward at the Research and Infrastructure Support of the University of Basel)

Common Challenges

Common issues include the absence of information regarding digital rights management, and particular content capabilities. The impermanence of organizations is another issue, typically seen in any academic setting. Academia pursues projects rather than product sustainment.

Lessons Learned

Numerous repositories and databases seem to be transparent, fair, and interoperable, but they seldom interconnect with other platforms. This is because they only offer an API (Application Programming Interface) for data access, but do not develop APIs that meet the specifications of common harvesting platforms. It is essential for public institutions that operate within the GLAM sector to establish a new norm of transparency and accessibility. To do this, they should implement APIs that are not only open but also thoroughly documented. An open API allows developers and researchers to access and integrate the data and services of an institution into their own projects. This can lead to innovative ways for the public to

Quality is a multifaceted concept that can be deciphered in a multitude of ways.

The objective and the importance of the digital entity should always be primary during the whole procedure.

Who constitutes the final user, buyer, or participant in the digital solution? What communication should be disseminated? What data is linked with it?

How can a digital exhibition (not restricted to online) communicate the correct information? What technology – originating from the consumer – is necessary to reach the expected result?

Often, the digital annotation of unique resources serves as the base of the project. Throughout the progression, a lack of essential data in the information might become apparent, impeding the accomplishment of predetermined tasks. As a result, there might be a necessity for re-recording, or the final digital presentation may appear inadequate. Therefore, it is recommended to consider retaining some potential work packages.

engage with collections and knowledge. Meanwhile, comprehensive documentation is vital because it guides users through the API, showing them how to effectively utilize it. By making open and well-documented APIs, public GLAM institutions can ensure that their valuable resources are more readily available and usable by a broader audience, fostering a culture of openness and collaboration that aligns with the educational and cultural mission of these institutions.

- **Checklist**

Quality related layers of digital infrastructure

The front end and its structure (user interface)

The data models that depict all content and functional elements

The APIs needed to transfer the data to and from the front-end

The required back-end to store and provide the data

Quality-related aspects intertwined with technical performance

Quality tied to the software architecture

Quality tied to accessibility (open programming interfaces)

Quality of coding documentation

Quality tied to data security and access control

Elements of media content production

Consistency in content generation, for instance, FADGI

Reproducibility of content creation

Thoroughness of substance (physicality, origin, hybridization)

Equilibrium of media and metadata

FAIRness and data transparency

Elements related to content re-distribution

Intellectual property and licensing

Accessibility and Sustainability

Accuracy and novelty (AI generated or modified content issue)

Quality of infrastructure and operational team

How effectively is the data storage and organisation

How stable is the political landscape

Is the organization devoted to sustainability

Regulation requirements

Data privacy, copyright, cc licenses, compliance requirements

From the agile world: the definition of done

Standards (eg. formats, iiif, cidoc-crm, linked-art) that make content open

Digital (Project) Tools

Digital project management tools can help to streamline and enhance project management tasks and to stay organized by managing tasks, timelines, budgeting, and team collaboration. It eliminates time-consuming paper trails and manual tracking.

In addition to digital project management software, we also strongly recommend open-access tools. These digital resources are made freely available for anyone to use, without any legal or financial barriers. Open access tools democratize information, providing an even playing field for all users, regardless of their financial standing.

Unfortunately, as much as open-access tools are useful, they are relatively dynamic, changing rapidly as new ones are developed. Therefore, it might prove challenging for a lot of users to keep up with these changes and updates.

Common Challenges

From our perspective, the struggle of digital curation extends beyond just discovering technological answers. It is just as critical to generate suitable modes for the delivered content. For the latter, there are no off-the-shelf solutions; they must be discerned through iterative feedback and discourse between curators and front-end programmers. Predicting this process for the project timeline upfront is challenging.

Lessons Learned

We advise consulting curated platforms such as the [SSH Marketplace](#). The SSH Marketplace serves as a hub where professionals can find the latest advancements in (among other) open-access tools. This constant updating ensures that users of these platforms always have the latest and most effective tools at their disposal.

Implementation and Content Creation



Talk with Esaù Dozio



(Background in classical archeology, responsible for special exhibitions and for the vase collection, works as a curator at the Antikenmuseum Basel)

- **Create Metadata and Stories**

To enhance data sharing and reuse, it is essential to gather as much metadata as possible from a GLAM institution database. Best practices suggest making all data and metadata widely available for research, both as separate datasets and in a comprehensive bulk download.

In storytelling projects, it is not always necessary to use every piece of metadata from the datasets. Hence, it is helpful to define metadata standards to ensure datasets work well together and support the narrative. This becomes particularly important when dealing with mixed datasets that may have varied metadata standards. The use of metadata in storytelling should be guided by the story needs and how it will be presented.

Despite this, saving all metadata is vital for any project because it opens up possibilities for future use. It is imperative to document the data structure clearly and transparently.

- **Image Capturing**

High-quality images are essential for cultural heritage websites to connect viewers with historical artifacts. They capture the materiality and color of an artifact, offering insight into past cultures. This allows for an authentic experience and supports educational initiatives by preserving the integrity of the items.

Professional image capture goes beyond simple photography. It requires an understanding of the physical attributes and historical context of an object. This includes mastering shape, texture, color, light, and exposure control to produce images that are true to the original.

Standards like the Metamorfoze program are crucial for consistency and quality in cultural heritage imaging. These standards ensure accurate, detailed, and comparable digital reproductions, aiding preservation, research, accessibility, and interdisciplinary studies.

- **Storytelling Web Format**

This phase of a project should not be considered strictly consecutive, but rather executed as an iterative process with multiple feedback loops and mutual adaptations. The content must be appropriately designed, and the design must be linked to navigation.

Common Challenges

Some common challenges in this process include the time required for content creation, which can often take longer than expected. Additionally, the process of capturing 3D models can be particularly time-consuming and may involve a significant amount of human interaction.

Lessons Learned

It is important to note that these steps are not strictly sequential but rather an iterative process with feedback loops. This allows for adjustments and adaptations based on the content, design, and navigation requirements.

When creating and developing, it is important to focus on what is not already in existence. Reusing existing resources is often more efficient than building from scratch. Always consider the user experience and prioritize necessary actions over those that are merely possible.

Communication and Publication

To increase traffic to a digital application or website and receive feedback, it is important to have a solid plan in place. Proper advertising channels, such as newsletters, local press, and social media, can lead to a significant increase in traffic. It is recommended to use various methods to promote the project website, including sharing on partners' social media and seeking features.

Consider organizing a launch event for your project. The launch event of the Curiositas 5.0 website included a presentation on digital concepts in GLAM institutions and a demonstration of the website.

Analytics have shown that promotion through well-established channels has the greatest impact. DSD utilized social media, newsletters, newspapers, and presentations to promote our digital initiatives. A communication strategy should be developed using document control and archiving for the promotion of all digital initiatives. AI tools can be used to simplify communication tasks and automate content distribution. High-quality promotional content should be created, with outsourcing considered if necessary. Communication should be kept minimal and effective, with a focus on promoting interactive online results. Promoting digital projects requires careful planning and a lot of effort, as well as a focus on the target audience.

Common Challenges

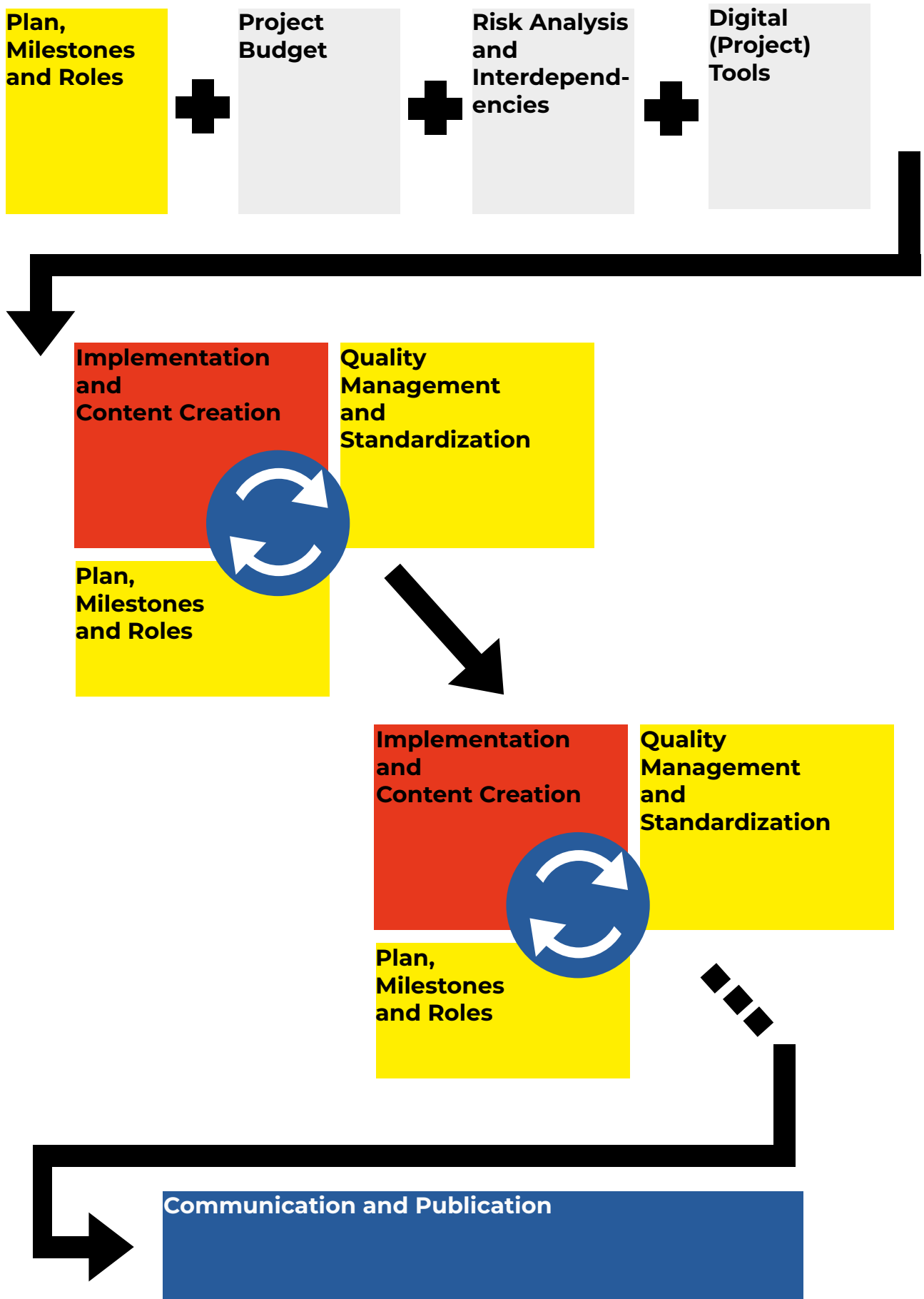
Direct communication between curators and developers can prevent the project manager from becoming a bottleneck.

Identifying the target audience for a project can be challenging, particularly without robust support. However, it is crucial to understand how to market your project once it is operational. You may question whether you require a distinct social media platform for each project or if you can customise content for specific groups using existing networks. Collaborating with GLAM institutions from the outset and utilising existing networks may be more feasible.

Lessons Learned

Marketing digital projects requires significant resources, a focus on target audience(s), and careful planning regarding content and presentation. It is crucial to follow these steps thoroughly for success. GLAM institutions often have loyal users who regularly attend events. Utilising these groups and gaining institutional support for promotion through various channels (such as newsletters, websites, and social media) can be highly beneficial.

Workflow-Diagram



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