ZBIÓR WIADOMOŚCI DO ANTROPOLOGII MUZEALNEJ
ISSN 2391–6869, Nr 12/2025, s. 141–158 doi: 10.12775/ZWAM.2025.12.07

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Frictions of the Digital: Rethinking Expertise and Innovation in Museums[1]

Introduction

The terms 'digital transformation' and 'digital innovation' are increasingly common in policy documents, funding frameworks, and the everyday language of heritage institutions, yet their meanings remain fragmented. Digital transformation is often equated with digitising collections. There are suggestions that technological progress drives the cultural sector [see, for example, *Culture is Digital* 2018; Wagner 2023] and that organisations need to step up as open infrastructures for digital innovations. This view risks overlooking the broader digital cultural sphere in which museums operate. In these approaches, the term digital is used for products and technological applications and not for the changes individuals and communities think, learn and operate by [see, for example, Bounia 2023].

Beneath this vision of the technology-driven process lies a more ambivalent reality. While many of the existing studies focus on digital transformation

[1] This work was supported by the Estonian Ministry of Culture's research and development program "Estonian Culture Research and Development Program 2023-2026" under grant KUM-TA 43 "Digital Cultural Heritage as a Societal Resource" and Horizon Europe project 101132449 i-Game: Building a Community for the Co-creation of Games with High Impact on Innovation, Sustainability, Social Cohesion and Growth.

at societal or institutional levels, less attention has been paid to the everyday experiences of heritage and museums: their hopes, experiences, interpretations, and resistances. By bringing people's perspectives to the centre, we see that digital transformation is not a linear process but is shaped by technological, institutional, and epistemological frictions.

The article draws on a study of heritage and museum professionals in Estonia, Finland, and Latvia. We understand digital transformation as an evolving set of tensions and negotiations. This approach enables us to foreground the lived, situated dynamics of digital change in museums and heritage institutions, for example, the misalignment of workflows with the speed of technological change and the translation gaps that arise in collaborations between cultural institutions and their partners. We propose four analytical frameworks – mediatisation, temporal acceleration, translation, and institutional change – as tools for understanding how digital transformation in museums is negotiated and sometimes resisted.

Study context and methodological framework

This study was developed within the framework of the Digital Cultural Heritage as a Societal Resource research project, which explores how digital heritage can be understood and mobilised as a cultural, social, and economic resource. The focus of this article is how museum professionals perceive, engage with, and articulate digital transformation in their institutions.

The research is based on qualitative fieldwork conducted between September 2024 and April 2025. Twenty semi-structured interviews were carried out: 10 with heritage professionals in Estonia and 10 with professionals in Finland (7) and Latvia (3). A comparative analysis positioned the Estonian case in a broader regional context. The interviewees included curators, researchers, exhibition producers, directors, and communication professionals. Participants were selected based on their active engagement in digital development. Participants represent various types of museums, including natural history, art, and cultural history. This diversity ensured that a broad spectrum of curatorial perspectives and organisational missions was covered. Professional experience ranged from early-career museum workers to professionals with over forty years in the field. The participants come from medium-sized institutions, typically employing around 20 staff members, which is the average museum size across Europe [NEMO 2021].

The interviews explored how museum professionals experience digital transformation in their day-to-day work. Topics included institutional readiness for digital initiatives, available infrastructure, collaboration with external partners, and the tensions that emerge between curatorial integrity and the push for digital experimentation.

To protect participant confidentiality, interviews were anonymised. Participants are referred to using numerical identifiers.

Given the frequent use but often limited conceptual clarity of terms such as digital heritage, digital innovation, and digital transformation, the study left these terms undefined during interviews. This allowed participants to describe their interpretations and experiences in an open-ended way. The interviews captured a range of digital practices and tools from collection databases and exhibition interactives to social media content, video and VR games. This provided a grounded understanding of how digital transformation is perceived and implemented in various institutional settings and professional roles.

Theoretical context

Digital transformation in museums is not just about new technologies, but about navigating the institutional, technical, and epistemological frictions that shape innovation. This article proposes four theoretical perspectives that reflect the tensions and frictions we identified.

First, the mediatisation framework offers insights into how digital technologies reconfigure the cultural, organisational, and temporal logics of museums and heritage institutions. Building on the work of Stig Hjarvard [2008], Nick Couldry [2012], Sonia Livingstone and Peter Lunt [2014], and Michelle Henning [2006], we understand mediatisation as a process through which media become integrated into the operation and logic of institutions, thereby reshaping how they function and communicate. Through digitisation, museums become embedded in the rhythms of broader digital media ecosystems where they are confronted with social media logic [Ringel & Ribak 2024; Burkey 2021] and the inherent need to keep up engagement for financial results [Karppi 2018]. In the study, this tension is manifested in the way museum professionals feel when striving to enhance the accessibility and visibility of cultural heritage in the digital environment, and in the perceived risk of simplifying, fragmenting, or losing the meanings of heritage collections.

Second, the temporal perspective highlights the mismatch between the accelerated pace of digital innovations and the temporality of museums, which is perceived as slower and not immediately reacting, but instead responding to societal changes. Drawing on Hartmut Rosa's [2013] theory of social acceleration, Judy Wajcman's [2015] analysis of time politics, Sarah Sharma's [2014] exploration of power and temporal regimes, and Wolfgang Ernst's [2013] distinction between media time and archival time, we frame the digital transformation of a museum or heritage institution as a site of temporal conflict. These institutions, oriented toward permanence and preservation, find themselves ill-matched to the short innovation cycles, product development logics, and iterative dynamics of the tech industry, as well as the rapid obsolescence of digital solutions. This mismatch was a recurring theme in our interviews.

Thirdly, we draw on the sociology of translation and Actor-Network Theory to understand how collaborations in digital projects unfold. Actor-Network Theory is a framework that views humans, objects and ideas as interconnected within dynamic networks of relationships. According to Callon [1987], innovation is not a straightforward application of expertise but a process of negotiation across actors with divergent roles and interests. The concept of 'translation chains' describes how temporary alignments are formed to enable project success. Our interviews revealed how distributed expertise across curatorial, technological, and managerial domains often resulted in fragile collaborations. As Suchman [2007] argues, development processes are dialogical and ongoing, and as Akrich [1992] notes, technologies are not neutral but have embedded assumptions about users. These perspectives help explain why digital initiatives can falter: not because of resistance to technology, but due to the complexity of aligning goals, practices, and understandings among collaborators.

Fourthly, institutional theory offers tools to understand why digital transformation, though often emphasised in strategy documents, is uneven in practice. Even when digital transformation is framed as a strategic priority, its implementation is fragmented and reactive, as suggested by both research literature and our interview data. Drawing on Thelen's [2004] work on slow and layered institutional change, and more recent contributions from digital governance studies [Lips 2019], we argue that digital development in museums and heritage institutions is shaped both by internal structural tensions and by external pressures. Our informants

reported that digital innovation lacked long-term coordination and was a response to temporary funding opportunities rather than to strategic institutional vision.

Together, these four perspectives enable us to see digital transformation not as a linear, technology-driven process, but as a contested and situated evolution with frictions and tensions. Professionals do not describe their work using these theoretical terms, but their everyday experiences reflect larger tensions around meaning-making, resource allocation, collaboration, and institutional readiness to change.

Mediatisation as a friction in digital transformation

A key concept for understanding digital frictions in museums is mediatisation, which challenges the idea of digital heritage as mere stored data. Mediatisation highlights how media logics reshape institutions and create new spaces where new meanings, dispositions, and practices emerge. The concept of mediatisation addresses media logics and their transformative impact on institutions.

A significant friction with mediatisation is the struggle to adapt to new regimes of visibility, proliferated by platforms [Livingstone, Lunt 2014]. For one, museums and heritage institutions have multiple platforms through which they can communicate with audiences. Another issue is maintaining curatorial agency in the way digital cultural heritage is presented and interpreted when trying to reach audiences. As one driver of visibility in a mediatised environment is engagement [Karppi 2018], the value of knowledge is related to users' experience and the meanings they give it [Couldry 2012; Witcomb 2003]. This renders "public heritage and memory institutions, which were historically treated as public service", increasingly dependent on popularity among users and economic value [Ringel & Ribak 2024: 2].

Some professionals adopt a guarded outlook on digital productions in museums or associate triviality with productions that involve screens or games (6, 7). Others were concerned about putting children behind screens, hijacking their attention (5). At the core lies a wariness about how the logic of mediatisation contrasts with the values of being a museum.

Curatorial agency can conflict with the logic of mediatisation. Museum professionals may feel pressured to appeal to audiences. One informant struggled to balance engaging a wider audience with maintaining historical

accuracy in a gamified exhibit (8). Another informant felt that they "were trapped into listening to the users too much" and made minor adjustments that, in the end, did not increase the quality of their service (10). This exemplifies a perceived demand to compromise when working in a mediatised space: "We need to discern whether the game serves the purposes of the exhibition, or it is just a commercial endeavour" to make the player happy (8). Data-driven "services that valorise audience engagement could prioritise the most attention-grabbing aspects of a collection and diminish the importance of a curator's view in presenting a more nuanced story [Terras *et al.* 2021: 8–9]. This has led museum and heritage professionals to stress the "subordinate role of technologies and data, which are utilised to bring the exhibition's narrative to life" [Derda 2023: 1605].

At the same time, with the rise of social media platforms, expectations for accessing digital heritage have increased. As many heritage databases were initially built for museum professionals rather than the public [Pruulmann-Vengerfeldt, Aljas 2009], users now often turn to social media to find information. "One of the biggest surprises for me, one that I haven't had before, is that so many queries are received from Facebook Messenger" (1).

This shift demonstrates that heritage curators must now participate in the co-created and mediatised life of digital heritage. The museum curator must be able to steer heritage discourse within the complex power dynamics that emerge from mediatised logic [Taylor & Gibson 2016], as, for example, "dialogue communicated through digital heritage initiatives and social media platforms can be particularly difficult to manage when everyone is enabled to provide their own opinions, perspectives, and insights" [Burkey 2021: 193].

For some museum workers, mediatisation raises the question of how much can be sacrificed from scientific integrity to gain online attention. So, when it comes to implementing new media technologies, some took the stance that technology should only be used for something "that cannot be resolved in any other way" (1) even though, as they put it, "people think that as soon as others do it, you also have to do it the same way" (6). A dilemma arises: whether to use standardised solutions for digital development, resembling an easier route at the cost of less curatorial authority, or so-called tailor-made solutions, requiring more effort. One informant feels that many representatives of the IT industry are more interested "in selling their product. It is not in their best interest to meet you halfway and tell

you what you really might need" (2). According to Burkey [2021: 193], key decisions shaping public understanding of digital heritage, such as what to save, where to store it, and which applications to use, are increasingly delegated to technology specialists.

Interviewees expressed their scepticism about being involved with many digital projects at all, because participating in the mediatised landscape and having to compete with other easily accessible media was seen as not worth the high cost. "The cost of development plus your own labour — it still comes as a result of a lot of work and in terms of cost it never really gives back" (1). Tackling mediatisation can be too costly and take too much effort, leaving some to hold themselves back and "keep [their] output simple" (4), especially when, from the visitors' perspective, these efforts do not provide significant value.

Temporal acceleration as a friction in digital transformation

Statements such as "we ran out of time" are frequently voiced by museum and heritage professionals involved in digital initiatives. At first glance, these concerns seem tied to logistical issues, such as unrealistic project timelines or failed planning. Underneath these lies a deeper structural friction that Hartmut Rosa [2013] calls social acceleration. This reshapes how museums experience and manage time. The tension between digital and institutional temporality creates one of the most persistent frictions in digital transformation.

Social acceleration refers to the compounding speeds of technological change and everyday life rhythms, often exceeding the adaptive capacities of both institutions and individuals. This process also frames the temporal conflict in the context of digital development. While digital logic is driven by iterative development and speed, museum work is grounded in continuity and longevity.

Krista Lepik [2023] has pointed out that one of the specific features is that these are institutions whose work and structures have remained relatively intact over long periods of time. This creates a mismatch between institutions' operational rhythms and the expectations of digital development. The result is not merely a capacity challenge, but a tension between two different temporal logics. In our informants' experience, the sense of temporal pressure manifests as a need to keep up with the external temporal logics and pressure for immediate action imposed by funders, partners,

and public expectations of digital development. While the adoption of digital might signal innovation on the surface, it often embeds museums in time structures that are difficult to sustain.

Media theorist Wolfgang Ernst [2013] distinguishes between fast, ephemeral, and iterative media time and archival time, which is oriented towards preservation, duration, and continuity. This mismatch was reflected in interviews: digital technologies in museums (such as exhibits, games, or VR) operate on media time. They age quickly, require frequent updates, demand constant adaptation, and lack archival stability, risking obsolescence within a few years.

The pressure to keep digital outputs up to date is challenging for museums, meaning they struggle to keep up with media time: "Games are expensive, development cycles are unstable, and their impact is weak" (5). Younger visitors quickly notice outdated content: "It becomes off-putting rather than engaging" (2).

A key driver of temporal mismatches is project-based digital development, where initiatives rely on temporary funding, functioning as one-time investments. Digital initiatives in museums are externally funded, delivered in collaboration with tech companies or creative partners under compressed timelines. The interviews reveal that museum staff prefer genuine partnerships over client–provider relationships in digital projects, but such collaboration requires time and mutual understanding. Knowledge loss and lack of institutional memory were frequent concerns, as significant investments don't happen very often. "Projects begin with excitement, then funding ends, and energy fades. We fall back into routines" (6). These quotes highlight short-lived innovation – a pattern of discontinuity in which each new project starts from scratch.

While routine is seen as an obstacle to innovation, our interviewees emphasised its protective and sustainable qualities. In overstretched institutions, maintaining manageable routines becomes a conscious strategy. "Looking back, we really haven't jumped on the VR or AR bandwagon, because we haven't seen any real results come from it – just doing it for its own sake isn't a goal.... We keep ourselves informed, but we're waiting to see how these technologies could actually serve us" (5). This reluctance reflects not resistance to innovation, but a desire to avoid wasteful investment in unstable formats.

Judy Wajcman [2015] argues that it is social structures, not technology itself, that assign speed as a value. In museums, this is visible through externally imposed deadlines, platform cycles, and shifting policy expectations. This temporal mismatch reflects institutional power and often forces museums to abandon ambitious digital visions due to incompatible timeframes. As informants noted, digital initiatives are frequently ad hoc and disconnected from the core missions of museums (3, 4, 7, 9). Barbara Adam [1998] critiques the modern emphasis on linear and standardised time, suggesting that such temporal frameworks can obscure the complex, multifaceted nature of social processes. Building on Adam's insights, we see how the imposition of digital development timelines in museum contexts can create friction, potentially overlooking the diverse temporalities inherent in museums' practices. This misalignment forces changes in workflows and processes.

Digital development in museums often relies on overstretched professionals who lack long-term support for maintenance and integration. Our interviews show that digital transformation fails not due to weak ideas, but because the pace of digital projects is incompatible with museum workflows. These temporal mismatches cannot be solved by planning alone; lasting digital innovation must align with both institutional goals and institutional time.

Distributed expertise and the issue of translation

A common issue in digital transformation for museum professionals is the unwieldy distribution of necessary expertise [Cameron, Kenderdine 2007]. Despite growing digital competence, development remains fragmented and underfunded. In many cases, employees feel isolated from digital knowledge. The usual way for the museum professional to overcome this is to communicate and translate the subject of their expertise to parties who have technological expertise. This poses a problem wherein a museum professional might feel that "[IT professionals] don't understand the teaching and education side of things" (5) or "I don't understand what they say to me, they don't understand what I say to them.… I don't know who to turn to" (2).

Michel Callon [1986] describes innovation as a process of aligning diverse interests through translation, which he breaks down into four phases: problematisation, where the problem is defined; interessement (or interposition), for example engaging actors; enrolment, where the roles are negotiated;

and mobilisation, in which the necessary steps are taken to ensure that the actors in fact represent their constituents, who- or whatever they are. The main challenge for these translation chains in digital museum projects is maintaining stability amid rapidly changing technology and differing stakeholder goals. As each actor brings unique perspectives, successful cooperation depends on ongoing communication and mutual translation. "To translate is to displace", and this displacement is necessary to achieve "a discourse of certainty" that unifies the different actors in this network [Callon 1986: 18–19].

The effort required to achieve a unified understanding among different parties (museum professionals, designers, IT specialists, and end-users) is rarely directly addressed in our interviews, although it is implied. There is the implied effort of communication and persistent feedback (2, 4, 5, 6), which in Callon's framework could refer to interessement or negotiating the roles of a production; and there is the courage to "ask silly questions" (2), i.e. the problematisation or identification of the elements necessary to start work on a new development.

Lucy Suchman argues that design and use are dialogical processes, meaning that all collaboration must be responsive and adaptive [Suchman 2007]. However, there is first an imperfect commission with an imperfect result and, as one interviewee put it, "afterwards, when everything is already done, we'll try to fix things" (2). One informant explains that "right now there is no genuine initiative" to get their museum interacting with customers to get feedback (1), indicating the effort needed even to start a dialogue.

Madeleine Akrich [1992] argues that technologies are co-constructed through negotiation and adaptation. Her concept of scripted technologies explains miscommunications between museum professionals and IT specialists, as mismatched assumptions often lead to project failures. For example, a museum educator noted that a digital solution, designed for a single user, remained unused because it would have been more effective if used by the entire class (3). This highlights how digital solutions may not align with actual user needs.

In an interesting twist from the perspective of translation, a lack of resources and employees can foster more intense communication between museum professionals. When discussing how people know to assume their roles, an informant said that "it is revealed through cooperation with each other. Because, well, if we're forced to work like sardines in a can … then

it becomes cooperation" (5). Another emphasised: "Since we have a small organisation, where everyone needs to do everything … developing anything comes with having the digital aspect in mind" (4). Tied to Callon's framework, people are forced to learn multiple roles, reducing instances of translation between different people, while making colleagues more available for recurring dialogue and communication. That is also why personal enthusiasm and initiative are valued highly: "Proactiveness is very important, because when someone has a problem, they must be willing to make some noise about it" (5). These examples underscore the genuine need for digital development and skills, as professionals must rely on enthusiasm and extra effort to overcome challenges.

A positive example comes from the creation of a digital game, where ongoing dialogue and non-monetary motivation enabled productive collaboration and shared goals between design students and museum professionals (1), leading back to the ideas of Schuman [2007]. In addition to this, informants implied that to have a successful digital development project, there needs to be a strong vision, or one needs to be a "smart client" (5), or have something to say (7). Another staple that goes together with having a clear direction is continuous communication and dialogue, which comes with an understanding that no development is ever really finished. Any new development, if done correctly, seems to go with the extra burden of having to be maintained indefinitely: "if you create a digital solution, that means you get an extra task in your workflow" (2).

Institutional change as friction in digital transformation

Several factors determine the trajectory of digital developments within organisations. Internally, digital development is influenced by management and leadership, resources, organisational structure, knowledge management, and organisational culture [Ekosaari 2023]; externally, by consumer expectations, stakeholder collaborations, and digital governance. Thus, digital transformation unfolds not as a matter of technological advancements but as a complex negotiation with institutional structures, external pressures, and museum practices. This points to a deeper friction: while transformation appears as top-down strategic intent, it is often experienced as a bottom-up accumulation of small, uncertain, and unsupported practices.

Drawing on Thelen's [2004] theory of slow, cumulative institutional change and Lips' [2019] critique of fragmented digital governance, institutional

change appears to be an uneven, contradictory process. These perspectives are complemented by practice-based approaches [Schatzki 2002; Shove, Pantzar, Watson 2012] that examine how change appears through everyday practice. Rather than being implemented through coherent digital strategies, change is layered over time and shaped by the experiences and challenges of employees.

But while Thelen [2004] argues that institutional change is slow and cumulative, this is not necessarily evident in the everyday practices of museum professionals. The interviewees described digital transformation as reactive short-term tasks, driven by external funding and policy pressures rather than long-term vision, with few institutions having digital strategies (1, 3, 8, 9). Digital development might be a stated priority, but in practice, it is project-based and opportunistic. Digital initiatives might solve immediate needs, but are rarely integrated into regular workflows.

Most institutions lack the mechanisms to implement change systematically. Interviewees described institutions as overstretched: "In most museums, the team is so small – just managing to keep the floors clean, the lights on, and the collections from moulding – that there are no resources left to develop or optimise anything" (1). This absence of digital capacity extends to IT infrastructure, governance, and role ownership. Even when an IT unit exists, its tasks focus on maintaining IT systems rather than supporting cultural or curatorial needs. Digital projects become one-time investments, and institutions cannot sustain added costs, maintenance, updates, and staff time beyond the project (4).

Faced with limited capacity, professionals adopt strategic minimalism, doing only as much as can be managed. Rather than pursuing innovation opportunities, they opt to scale back. As one interviewee put it: "I actually tend to hold myself back. We look for outputs but try to keep those outputs simple" (4). This is not a failure of imagination but an adaptive strategy, a refusal to overcommit in the absence of systemic support. Interviewees expressed concern that pushing large-scale digital initiatives without adequate planning leads to burnout and disillusionment. At the same time, there is recognition that such minimalism can limit long-term development. Interviewees noted that the absence of necessary roles, such as change managers, means institutions easily slip back into old habits (6). Staff turnover and poor documentation contribute to the loss of institutional memory between projects.

Despite these constraints, change occurs. Thelen's [2004] model of institutional layering helps explain this: new practices are gradually added to old routines, creating slow-moving transformations. Some interviewees described change emerging through pressure, adaptation, and small shifts (2, 3). Others suggested that transformation could occur if new people brought fresh ideas into the organisation, or if existing roles were expanded to include responsibility for digital developments (4, 6). This aligns with practice theory, which sees institutions as evolving through the accumulation of repeated actions rather than top-down implementation. According to this view, the slowness of digital transformation is not necessarily a weakness. It can allow for learning and support sustainability. However, without frameworks that support gradual change, transformation risks remaining episodic.

Digital transformation in museums and heritage institutions should not be understood solely through the lens of technology or strategy. The core friction is not resistance to change but a mismatch between the logic of digital initiatives and the internal dynamics of cultural institutions. Some solutions suggested by the interviewees include the creation of centralised support systems (for example, national infrastructure such as Estonia's existing Estonian Museums Public Portal, MuIS)[2] (1) and the integration of digital into core job descriptions (6). Ultimately, digital transformation requires more than catching up with externally initiated change. It involves realigning digital ambition with organisational capacity, supporting the professionals who manage these processes, and treating change as a layered, ongoing, and institutionally embedded practice.

Discussion: Rethinking Digital Transformation through Frictions

This article set out to explore how museum professionals experience digital transformation in their everyday practices. Our approach revealed the complex processes through which digital change unfolds. We outlined four interrelated frictions: mediatisation, temporality, translation, and institutional change as key sites of negotiation.

Bringing digital innovations to museums requires museum professionals to operate within an environment shaped not just by their professional agency, but also by media and platform logic that favours greater visibility, continuous content creation, and audience engagement.

[2] https://www.muis.ee/ Estonian museums' public portal of digitised collections.

This creates a friction between curatorial integrity and the need to appeal to audiences through social media, digital interactives and gamified tools. Mediatisation signifies negotiation between visibility and authority, manifested in issues such as representing heritage or historical accuracy. It requires new communicative roles and balancing expectations posed by mediatisation with institutional values.

Digital development does not always align smoothly with the internal pace of an institution's life. The friction of temporal mismatch became visible in project-based developments, and the pressure to use digital solutions despite the risk of many becoming quickly obsolete. Balancing between institutional time and digital temporality logics affects the long-term planning capacity of the institutions.

Digital transformation depends on collaboration and translation between professionals with different expertise, values, and professional vocabularies. Applying the sociology of translation [Callon 1986; Suchman 2007; Akrich 1992], we examined how staff lack the time, capacity, or infrastructure to maintain effective translation chains.

Despite the importance of digital transformation, at the institutional level, digital initiatives remain disconnected from core institutional strategy. The interviews instead support Thelen's (2004) argument that institutional changes are slow and cumulative. Yet the museum professionals studied in this article perceived the risk that digital initiatives might turn out to be reactive, rapid and disruptive due to the lack of long-term strategies.

Digital transformation is not a technology-first process. Frictions in the four domains are overlapping and relational. Resistance and the hesitation of even digital enthusiasts in museums is often rational. Digital transformation should not be approached as a race toward a novel technical upgrade. Instead, museums and their partners should understand frictions as enablers to rethink how expertise is distributed and how innovation is supported as part of institutional change. If digital change is to be sustainable, it must be supported by an institutional shift towards facilitating open innovation.

There is a need for translational roles, or for generalists: professionals who can bridge curatorial, technical, and design languages, and who can guide digital projects from idea to implementation. The challenge is also to integrate digital development into the daily operations of institutions, making it visible and trusted at the level of the museum professional's work.

For museum and heritage institutions, the necessary change could be shifting from short-term projects, relying on enthusiasts making the most of opportunities, to long-term capacity building. Frictions could be treated as strategic feedback points.

Sustainability is one of the most prominent challenges museums face, as digital expertise and memory are easily lost between different initiatives and projects. Thus, digital transformation needs knowledge logs that are retained through documentation and peer learning.

This article contributes to a growing body of work that challenges techno-optimistic and linear descriptions of digital transformation as a key driver of innovation in the cultural heritage sector. By approaching transformation through frictions, we show that digital change in museums is an ongoing negotiation with institutional identity, professional values, and time pressures. Frictions are not obstacles but productive dynamics, indicators of where institutional rhythms, expertise, and infrastructures are under pressure. They help clarify the direction and meaning of digital transformation by revealing what institutions value and where their limits lie.

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Tarcia w świecie cyfrowym: Nowe spojrzenie na wiedzę specjalistyczną i innowacje w muzeach

Terminy „transformacja cyfrowa” i „innowacja cyfrowa” są coraz częściej obecne w dyskursie politycznym i praktyce instytucjonalnej, jednak pozostają koncepcyjnie fragmentaryczne. Często ujęte jako postęp technologiczny lub digitalizacja zbiorów, te liniowe, techno-optymistyczne narracje pomijają codzienne trudności muzeów. Opierając się na wywiadach z profesjonalistami z dziedziny dziedzictwa kulturowego, autorzy artykułu przeanalizowali, jak zmiana cyfrowa jest kształtowana w kontekstach: mediatyzacji, przyspieszenia czasowego, translacji i zmiany instytucjonalnej, z których każdy umożliwia, a czasem blokuje innowacje. Zmiana cyfrowa jawi się nie jako pojedynczy proces, lecz jako negocjowanie tożsamości instytucjonalnej, wartości zawodowych i presji czasu. Tarcia nie

są przeszkodami; skłaniają do refleksji nad znaczeniem i kierunkiem innowacji, obnażając ograniczenia strategii odgórnych i myślenia zorientowanego na produkt. Zmiana cyfrowa w muzeach pojawia się w codziennej praktyce, kształtowana przez strukturalne rozbieżności, fragmentaryczną wiedzę specjalistyczną i adaptację.

Słowa kluczowe: technologie cyfrowe, muzea, innowacyjność, zarządzanie dziedzictwem kulturowym

Abstract: The terms 'digital transformation' and 'digital innovation' are increasingly prevalent in policy discourse and institutional practice, yet remain conceptually fragmented. Often framed as technological progress or digitisation of collections, such linear techno-optimistic narratives overlook the daily complexities of museums. Drawing on interviews with heritage professionals, we analyse how digital change is shaped by four frictions: mediatisation, temporal acceleration, translation, and institutional change, each enabling and sometimes resisting innovation. Digital change appears not as a singular process, but as a negotiation of institutional identity, professional values, and time pressures. Frictions are not obstacles; they prompt reflection on the meaning and direction of innovation, exposing the limits of top-down strategies and product-driven thinking. Digital change in museums emerges through daily practice, shaped by structural misalignments, fragmented expertise, and adaptation.

Keywords: digital technologies, museums, innovation, cultural heritage management