CULTURAL ○ HERITAGE

COMPETENCIES GAP MAP

Overview of Competency Gaps of CHOs' Staff, HEI Academics & HEI Students

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TITLE

Competencies Gap Map: Overview of Competency Gaps of CHOs' Staff, HEI Academics & HEI Students

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The Cultural Heritage Project 2.0: Business Model Evolution, an Erasmus+ project (2021-1-IT02-KA220-HED-000032050) is designed to support Higher Education Institutions to effectively assist the regeneration of the European cultural heritage sector in a highly digitised (post-Covid-19) world, through Cultural Organisations' business models evolution. The project also aims to provide Higher Education's academic staff and educators with the knowledge, skills and resources relevant to the future to support the sector. This publication is part of the project's first deliverables and outcomes (Project Results 1; PR1), next to a 1. "Future of Cultural Heritage Sector Scenarios" Book, 2. "Cultural Heritage Challenges and Needs" Status Quo Report, and 3. Good Practice Cases Collection; all accessible through the project's website.

Our partnership consists of 6 organisations from 5 countries, all with a direct interest in using the project's results to (1) drive university-cultural heritage organisations' collaboration, (2) contribute to revitalisation of the cultural heritage sector and (3) increase their contribution to society. The partners have been selected based on their diversity of knowledge and experience in social sciences and humanities, institutional commitment to external engagement, and strong networks with cultural heritage organisations.

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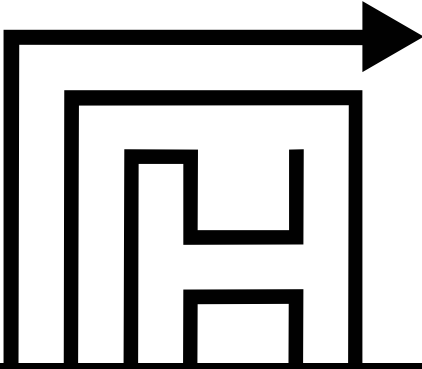**Momentum [Educate+Innovate]**
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01 | INTRODUCTION

1.1 What is the Competencies Gap Map?

As part of the Cultural Heritage 2.0 project's research and horizon scanning process (informed and guided by Bespoke's Futures Design Framework), to conceptualise and develop Future Scenarios for the Cultural Sector (CH; find the complete methodology in the "The Future of Cultural Heritage Sector Scenarios" Book), the consortium partners paid special attention to the identification of competency gaps among **I.** cultural heritage organisations (CHOs) staff and leadership to transform and future-proof the CH sector, as well as among **II.** higher education institutions (HEI) academic staff and educators to deliver digital challenge-based and problem-based learning approaches to support CHOs with student projects.

Hence, the Competencies Gap Map presents an overview of the competency deficiencies of three target groups, **I.** the CHOs' staff and leadership (referred to as CHOs' staff), **II.** HEI academic staff and educators (referred to as HEI academics) on the topics of Cultural Heritage (for the working definition of CH, see the Status Quo report, chapter 1.2), and **III.** HEI students in (digital) humanities, art and cultural study programs (referred to as HEI students). The documented competency gaps were identified through desk research and the qualitative analysis of 34 interviews with both **I.** CHOs' experts and leaders, and **II.** social and technology trend experts across nine countries (see Annex 1 for the complete list of the interviewed experts). However, the Competencies Gap Map is not an exhaustive list of all the competencies required to transform and future-proof the CH sector.

1.2 Who is the Competencies Gap Map for?

The Competencies Gap Map has a two-pronged audience:

I.   **HEI academic staff and educators** who design challenge-based learning projects and learning interventions for HEI students with real-life practical examples of CH sectoral transformation (e.g., the development of a comprehensive pedagogy and set of open educational resources as part of the project's Digital Student Consultancy Approach Course (Result 2; PR2), and

II. **CHOs' staff and leadership** who aim to consolidate the competency gaps that European-wide organisations face in a post-COVID-19, culturally diverse, future-oriented, and highly digitised era and take action to address them, as well as evolve the CHOs' business models.

1.3.1 Competencies Working Definition

The term competencies can be conceptualised as the triad of attitudes, knowledge, and skills (Williams, 2002) that an individual draws upon to bridge between different actors within their organisation and the ecosystem beyond the organisation. Therefore, the umbrella term "competencies" incorporates one's **knowledge**, defined as the theoretical understanding of a specific subject or a number of areas and disciplines. On the other hand, we define **skills** as practical know-how, which includes applying and disseminating knowledge, mobilising resources and achieving goals. Finally, **attitudes** encompass norms, beliefs and/or values that mobilise one's behaviour.

1.3.2 Competencies Clustering Logic

Initially, we **clustered the competency gaps per the three target groups**: 1. CHOs' staff; 2. HEI students, and 3. HEI academics.

Then, each target group's **competency gaps were organised under five domains**, each approaching the topic of CHOs transformation through a distinct perspective: the **Why, How, With Whom, Who and What** behind CHOs' transformation. These domains emerged whilst researching and highlighting areas of interest for the Future of CH (see "The Future of Cultural Heritage Sector Scenarios" Book). In the following sections, each of these domains will be described in more detail and broken down into subdomains that encompass respective competency gaps per group of interest. The descriptions derive from the consortium's collective reflection of the CH sector's status quo and future scoping. Briefly, the domains cover:

I. The *Why*: the belief and value system that the sector aims to preserve and protect;
II. The *How:* the suggested approaches and processes for the sectoral transformation;
III. The *With Whom:* the collaboration and partnerships potential within the CH sector and beyond;
IV. The *Who*: the proposed changes in behaviour, habits and routines that will ease transformation;
V. The *What*: the forms and types of CH that can facilitate the sector's transformation.

Finally, each subdomain's and target group's competency gaps are organised under **three levels of implementation** i.e., the CHOs' staff and HEI students' competency gaps are arranged under implementation on individual, organisational and ecosystem-wide levels. More specifically, for implementing competencies for each level:

I. The *Individual level:* CHOs' staff and HEI students are able to understand or articulate the different competencies and point out their value for the sector;
II. The *Organisational level:* CHOs' staff and HEI students can demonstrate an ability to effectively use the competencies to achieve certain outputs or outcomes across the CHOs, and
III. The *Ecosystem and Community level:* CHOs' staff and HEI students are able to disseminate the competency through training, mentoring or outreach across the ecosystem surrounding their CHOs.

The HEI academics' competency gaps are organised under **different implementation levels** compared to CHOs' staff and HEI students. Implementation levels for HEI academics are based on **HEIs' mission levels;** education (first mission), research (second mission) and engagement (third mission). More specifically, for implementing competencies for each level:

I. The *Education level:* HEIs' academics are able to articulate, apply and disseminate the different competencies in their educational practice;
II. The *Research level:* HEIs' academics can articulate, apply and disseminate the different competencies in their research, and
III. The *Engagement level:* HEIs' academics can articulate, apply and disseminate the different competencies throughout engagement activities within HEIs and/or with CHOs.

02 | COMPETENCIES GAP MAP

2.1 The *Why*: Competencies for CHOs' staff and Students

With changing priorities, external shifts, pressure, and an overall environment growing in uncertainty, CHOs are driven to redefine their role in society and reconsider the skills and competencies needed. Driven by the next generation, such **institutional values of innovation** and emerging values around climate justice, inclusivity, diversity, equity, privacy and ownership, amongst others, are challenged. Protecting the values that are the most significant for the sector will drive the institutions' innovation and their relevance to their local context, purpose and impact. This domain covers the following subdomains: **I. Museums as Mediators for Local Challenges**; **II. Decentralise Heritage through Tech**; **III. Giving Back to Whom it Belongs**; **IV. Healing Through Heritage**, and **V. Upskilling Through Heritage**. These subdomains are described in more detail below.

Museums as Mediators for Local Challenges

Global business around tourism allows hidden cultural sites to be appreciated by a wider audience. Yet, the COVID-19 pandemic has demonstrated that CHOs' practices often rely heavily on tourism to survive, creating an economic dependency for the surrounding regions. Throughout the pandemic, CHOs recognised the need for understanding the **broader social, political and economic context within which the sector functions**. Such understanding would allow **CHOs to connect their mission** to **local communities' needs**.

Decentralise Heritage through Tech

Thanks to the continuous development of new technologies, the CH sector witnesses a **wide variety of possible typologies of artwork** and CH **ownership frameworks**, e.g., native digital CH and NFTs, respectively. Moreover, **decentralisation and democratisation** of information lower the barrier to accessing CH for a wide audience. These breakthroughs push CHOs to widely adopt **open data infrastructures** and support policies on fair use of data principles.

Giving Back to Whom It Belongs

Driven by a shift to acknowledge new perspectives and world views, CHOs have already been undergoing **critical ethical reviews**. Through such reviews, they revisit foundational questions of what is considered CH and to whom this CH belongs, ultimately fighting for **CH ownership by the rightsholder communities** and **acknowledging the CHO's colonial past**. However, like with all change, the sector experts recognise that drifting away from Western-centred **to more inclusive CH** goes hand in hand with intense opposition.

Healing Through Heritage

With growing **awareness of social justice** and the **acceleration of activist movements,** CHOs could be challenged to speak up and act about complex social challenges. A few ways through which CHOs could support activist movements include, stepping up to fight **global warming**, offering **refugees safe (digital) spaces for belonging,** and tools to **celebrate marginalised groups' art** and creativity.

Upskilling the Workforce

If CHOs want to inspire, and lead social change by example, they ought to exemplify the importance of starting change from within their institutions. CHOs are challenged to fight the **pay gap inequality** that prevails in the CH sector and **secure work dignity** for their staff. Upskilling the CHOs' workforce also includes **fostering lifelong learning paradigms** and equipping CHOs' staff with the **competencies for change**, such as 21-st century competencies and digital, communication and collaboration skills, among others.

A summary of competency gaps of CHOs' staff and HEI students under the Institutional Values Innovation domain and subdomains can be found in the table below. For more analytical competencies, see the table in Annex 2.1.

Table 1. The Why behind CHOs' transformation | Competencies for Institutional Values Innovation

		The *Why* behind CHOs' transformation | Institutional Values Innovation				
		Museums as Mediators for Local Challenges	**Decentralise Heritage through Tech**	**Giving Back to Whom It Belongs**	**Healing Through Heritage**	**Upskilling the Workforce**
Competency gaps of CHOs' staff	Implementing on an individual level	Knowledge and skills to understand the broader social, political and economic context within which the CH sector functions and connect the CH sector's broad mission to other social challenges				Attitude to consider reshaping CHOs' hierarchy: bottom-up inclusive decision-making
		Knowledge to balance effort and resources for preserving local CH	Knowledge of different copyrights, licensing and frameworks	Attitude and skills to use CHOs as platforms to promote critical thinking	Knowledge of social justice needs to be able to preserve CH for future generations	Attitude and knowledge to foster a learning culture: immersion in real situations and challenges
		Knowledge of what the digital world brings to the table for local communities			Attitude that time is one of the sector's fundamental elements	Skills for data analysis, interpretation and usage of information
	Implementing on an organisational, CHO-wide level	Knowledge and skills for developing more inclusive, participatory online communities	Knowledge and skills to make conscious choices of tech tools	Skills of storytelling for CHOs to be curators of their history through independent narratives	Knowledge and skills to make a climate pledge via CHOs' strategy and activities	Knowledge and skills for digital transformation: transdisciplinary teams combining humanistic with business and commercial competencies
		Attitude and skills to transition from a tourism-oriented to a service-oriented concept for CHOs	Skills to incorporate tech intuitively, realistically and barrier-free in CHOs, so it's an enabler	Skills to work on projects of both artistic quality and dissemination potential to a wide audience	Skills to develop factual and counterfactual indicators for complex place-dependent scenarios	Knowledge and skills for effective communication: outreach, digital storytelling, online branding, etc.
			Skills to employ ethical use of data to understand CHOs' needs		Skills to facilitate safe spaces for debates that cannot take anywhere else	Knowledge of shared tech vocabulary, and Digital skill: social media, digital security, graphic design
			Knowledge and skills to balance the hype around new technology, like NFTs			Skills for technical tasks: stage management, basic aspects of (digital) archiving
	Implementing on an ecosystem or community level	Skills of collaborating with local government bodies to meet local communities' material and non-material needs	Knowledge and skills for adopting open access data, open science and fair use data principles for democratising CH across the sector	Skills to generate an ethical framework of delivery and services map for CH's rightsholders, and source communities	Attitude, knowledge and skills to embed knowledge systems deeper in the society	Attitude and skills to reshape the sector's value system around its social responsibility to its employees: foster dignity of work, quality over quantity, tackle pay gap
			Knowledge and skills for a barrier-free business model for accessing CHOs		Skills for leaders to unite the CH sector and think about it holistically	Skills to foster creativity, visionary thinking, conviviality, and flexibility to make dynamic changes
Competency gaps of students	Implementing on an individual level	Specialist-focused (subject matter expertise) competencies to support project strategy and implementation				
		Challenge-based learning (support project strategy and implementation)				
		Skills of open mindset ethos, like experimentation, risk-taking, creativity, flexibility, and complex problem-solving				
		Skills for (digital) communication, like outreach methodology, relational competencies and networking, but also outreach, digital present and social media				
		Attitude of responsibility and knowledge of sector challenges and sustainability, e.g., Environmental, Social, Economic) gaps and needs				

2.2 The *How*: Competencies for CHOs' staff and Students

Long before the COVID-19 pandemic, CHOs and cultural companies were challenged to become more versatile and proactive in how they can financially sustain themselves. As a result, new **business and financing models** for institutions and artists have appeared, replacing traditional structures with alternative, participatory, crowdfunded platforms, and hybrid business models are being tested and explored. Furthermore, in the future, CHOs may be expected to innovate and focus on 'entrepreneurial' approaches to secure financial self-reliance while still being funded by the state. This domain covers the following subdomains: **I. Experimentation of Strategic & Pricing Models,** and **II. Alternative Financing Models to Involve Visitors.** These subdomains are described in more detail below.

Experimentation of Strategic & Pricing Models

The area of strategically experimenting with pricing models has been an area previously ignored by researchers and CHOs, but it is a promising opportunity to create future value. Unprecedented uncertainty increasing in Europe and commercial pressures urge CHOs to experiment with their **strategies and new pricing models** for charging visitors for their visit. Simultaneously, technology inspires CHOs to rethink pricing models to reshape a personal visit through **subscription, new membership, loyalty, and hybrid business models**.

Alternative Financing Models to Involve Visitors

The increasing success that **alternative financing models** encounter seems to be linked to participation culture: the role of visitors is wildly evolving in all fields, highlighted by the success of initiatives playing with imm ersive designs and experiences. Indeed, **crowdfunding**, defined as the use of small amounts of capital from a large number of individuals, is becoming a tangible option to access funding for some CHOs that might allow them to tell their own stories and own their narrative. Moreover, crowdfunding offers visitors **insights into CHOs' needs and challenges** and this knowledge then **translates into a sense of ownership**.

The full list of the mapped competency gaps of CHOs' staff and HEI students under the Business and Financing Models domain and subdomains can be found in the table below.

Table 2. *How* behind CHOs' transformation | Competencies for Business and Financing Models

		The *How* behind CHOs' transformation	Business and Financing Models	
		Experimentation of Strategic & Pricing Models	**Alternative Financing Models to Involve Visitors**
Competency gaps of CHOs' staff	Implementing on an individual level	Knowledge of European, country and regional models for CHO digital transformation and state political circumstances	
		Attitude and skills by leadership to lead by example toward digital transformation and help staff be open-minded on a tactical and operational level	Attitude and knowledge to experiment with alternative business and financing models: crowdfunding, subscription-based services (inspired by entertainment and gaming sectors)
	Implementing on an organisational, CHO-wide level	Skills to identify new layers of offerings and services: online ticketing, steaming of collections, merchandise, membership options, and partnerships	Knowledge and skills to create effective risk-reward digitalisation strategies for CHO: digitalisation as a future investment and creation of structures to identify, test, and introduce innovative models complementary to the governmental funding
		Attitude and skills for CHOs with a different vision to stand for it through funding opportunities: fight for establishing hybrid infrastructures to bridge analogue and digital content creation	Skills to draft funding proposals that do not fixate on proposed solutions but trust the iterative process to reveal them, incl. participation of customer, user or audience
		Skills to overcome the slowness of bureaucracy and scarcity of funds to sustain the CHOs: be creative in securing funding, a scope beyond the 3–5-year CHOs policy process periods, hire external consultants to help CHOs' internal team	

Competency gaps of HEI students	**Implementing on an ecosystem or community level**	Attitude, knowledge and skills by leadership to support long-term digitalisation and cohesively implement it on strategic, tactical and operational levels across CHOs as a means to support CHOs' message and identity
		Skills to adapt and prepare CHOs for unprecedented incidents, but also implement budget models to make CHOs fit for needs of time: creating meaning, sustainable approaches and public outreach
		Attitude and skills in managing CHOs: combine CHOs that are largely publicly driven (and funded with tax money) with a more business-oriented approach (to diversify funding) to innovate through new business models
	Implementing on an individual level	Specialist-focused (subject matter expertise) competencies to support project strategy and implementation
		Challenge-based learning (support project strategy and implementation)
		Skills of open mindset ethos, like experimentation, risk-taking, creativity, flexibility, and Complex problem-solving
		Skills for (digital) communication, like outreach methodology, relational competencies and networking, but also outreach, digital present and social media
		Skills for defining the post-digital and hybrid opportunities for CH
		Skills in business, marketing and project management

2.3 The *With Whom*: Competencies for CHOs' staff and Students

Enabling **collaboration and partnerships** to foster innovation seems essential for the survival and flourishing of CHOs. In the future, collectivism could become a fundamental principle, motivating people to create transdisciplinary teams and systems to explore the possibilities beyond the CH sector's borders. Moreover, local communities of practice could create synergies between CHOs and their local audience. This domain covers the following subdomains: **I. Organisations as Part of The Local Space,** and **II. One Plus One Makes Three**. These subdomains are described in more detail below.

Organisations as Part of The Local Space

Besides displaying artwork (tangible CH), CHOs are also used as a site for hosting events and performances (intangible CH). However, these events have often been exclusive in their content, restricting the general public from participating. As the role of CH is shifting, CHOs could become spaces to connect visitors, local communities, and **local embeddedness** through **events and peer-learning hubs.** They could become **places for dialogue** between the two, requiring the environment to have the flexibility to be able to adjust itself.

One Plus One Makes Three

Addressing and facing complex and interconnected challenges will only be done when CHOs can **build radical partnerships**. Connecting with **atypical partners outside the CH sector** can help CHOs shift their perspective and create a stronger value proposition for the future. Moreover, CHOs need to tackle the collaboration challenges within them: **bridge close-minded habits**, **break silos** and **engage multidisciplinary employees** to collaborate in transdisciplinary projects.

The full list of the mapped competency gaps of CHOs' staff and HEI students under the Collaboration and Partnerships domain and subdomains can be found in the table below.

Table 3. *With Whom* behind CHOs' transformation | Competencies for Collaboration and Partnerships

		The *With Whom* behind CHOs' transformation | Collaboration and Partnerships	
		Organisations as Part of The Local Space	**One Plus One Makes Three**
Competency gaps of CHOs' staff	**Implementing on an individual level**	Knowledge of cultural events and exhibitions that are reflective of the CH sector's values and meaningfully accommodate audience/users	Attitude change toward partnerships: hire external services providers to create the translation from scientists to the public and have short exploratory meetings with non-CH experts instead of rushing into cooperation commitment
		Knowledge and skills for curators to become more digital-based: to perceive the physical space differently and see thy hybrid offerings' potential	Knowledge and skills to manage projects and understand the importance of the process design; awareness of where each role adds value, explore interdisciplinarity and transdisciplinarity to break siloes of work
			Attitude and skills from leadership to join forces with other CHOs vs. project gatekeeping and protectiveness CHOs' artistic message, only contributing to the sector's closeness
	Implementing on an organisational, CHO-wide level	Knowledge and skills to balance knowledge and experience economy: (small) CHOs to build 'infotaining', high-quality offerings that engage audience or users, make offerings as appealing as the experience- and sensation-oriented approaches	Knowledge sharing between CHOs' art and tech departments: currently there is a lack of knowledge about exhibitions from the tech department and a lack of knowledge about digitalisation from the art department
		Skills to make (local) people visit CHOs more than once: extend offerings into the community/city as performances	Knowledge and skills of shared services and infrastructure to empower small CHOs to co-invest and share needed digital literacy capacity building, tools, licences and infrastructure
			Skills for the tangible and intangible CH subsectors to connect, exchange knowledge and work together by creating digitalised stories or collections and bringing them to the audience
	Implementing on an ecosystem or community level	Skills to organise "hackathons" for CHOs' staff from different fields and backgrounds to co-create solutions for the CH sector	Attitudes for teamwork with HEI students, through challenge-based projects and more collaborations with local schools, for student visits & open schooling platforms for teachers to use
		Skills to engage in public research and involve the general public in CHOs' processes	Knowledge and skills to recognise, scout and foster innovation coming from outside the CH sector and create new collaboration possibilities with 'unexpected' partners: entertainment, sporting, video game sector, merchandise sector, hotel and restaurant education, IT sector
		Knowledge and skills to create participatory-safe community tools: for networking, intersectoral peer-to-peer learning and communities of practice across the wider sector to support democratic debating of new CH and narratives	Knowledge and skills to collaborate with start-ups, explore mutually beneficial business models and get access to start-up connections to venture capitals
Competency gaps of HEI students	**Implementing on an individual level**	Specialist-focused (subject matter expertise) competencies to support project strategy and implementation	
		Challenge-based learning (support project strategy and implementation)	
		Skills of open mindset ethos, like experimentation, risk-taking, creativity, flexibility, and Complex problem-solving	
		Skills for (digital) communication, like outreach methodology, relational competencies and networking, but also outreach, digital present and social media	
		Combination of generalist and specialist competencies (e.g., Inter and Transdisciplinary mindset)	
		Skills for collaboration and teamwork	

2.4 The *Who*: Competencies for CHOs' staff and students

Human behaviour, habits, and routines, though rooted, undergo subtle changes over time. For the CHOs' professionals, **social behaviour change** may occur gradually, but this emergent phenomenon could introduce more diverse ways of looking at the sector at large, leading to new audience interests and expectations. In the future, 'participatory' could be the default, with CHOs adopting crowdsourcing, (digital) co-producing or owning content instead of 'just' consuming it and creating stepping stones for new open ways of engaging and activating audiences to experience a collection. Lastly, with new channels and audiences, digital heritage and culture may be consumed as something more populist, diverse, and even mundane as it blends with media, entertainment and other forms of culture. The domain covers the following subdomains: **I. Cultural Organisations Memefied; II. Audience Become Artists**, **III**. **Ladder of Participation**. These subdomains are described in more detail below.

Cultural Organisations Memefied

Geared up with their digital devices, the younger generation (Generation Z) visits CHOs ready to capture, post and share their visits to their social media accounts. CHOs can utilise this social behaviour to adopt playful engagement approaches that **enable frequent and casual interactions** with art and culture outside traditional settings. In the future, CHOs may need to step up and not only **create expositions that fit the virtual worlds** as well as their real-life experiences and **engagement with digital devices,** but also develop content that triggers the audience (including Generation A) to share with their friends and the world.

Audience Become Artists

CHOs are faced with their audiences' rising expectations to be more involved in building collections and exhibitions; the sector's audience strives for a new way to interact with the CHOs' environment as **artists and creators, co-producers and stakeholders**. Audience-involved production can be **community-run and crowdsourced**, run with **open**

software and tools to allow a democratisation of voices. Such suggestions start a future dialogue – how can the CH's co-production impact future collections and creations? How will the perception of value shift when the audience becomes the artist?

Ladder of Participation

New digital technologies, the **abundance of data** and the **rise of connectivity** continue to change how CHOs' audiences interact with art and culture. New technologies offer more possibilities to make and create together, developing our collective intelligence. Already, more and more visitors expect that their experience will invite and enable participation when they visit a CHO. By introducing more participation, the social role of CHOs could also increase, and **knowledge access** and transfer will **become a collective process**.

The full list of the mapped competency gaps of CHOs' staff and HEI students under the Social Behaviour Change domain and subdomains can be found in the table below.

Table 4. *Who* behind CHOs' transformation | Competencies for Social Behaviour Change

		The *Who* behind CHOs' transformation	Social Behaviour Change		
		Cultural Organisations Memefied	**Audience Become Artists**	**Ladder of Participation**
Competency gaps of CHOs' staff	Implementing on an individual level	Attitude and skills to observe the dynamics, phenomena and issues taking place outside CHOs and design CHOs' digital/social communication accordingly	Attitude to recognise the audience as co-producers of digital offerings based on their use habits	Attitude to use more online workshops and events targeted at specific audiences for more engagement from a user behaviour perspective
		Skills to adopt the perspective of Generation Z: in terms of needs, narratives and communication possibilities		Attitude to experiment with technology to renew the audience's visiting paths

Competency gaps of HEI students	**Implementing on an organisational, CHO-wide level**			Skills to transparently implement the use of technology without losing the human aspect
		Skills to bridge the generational gap between the CHOs' professionals and younger people; part of the sector's main audience	Skills to foster the audience/users' involvement in the offerings' concept design through more visitor research and participatory listening	Skills to better utilise CHOs permanent vs temporary offerings: balance accessibility of resource-draining 'backstage' exhibitions to 'front stage,' always changing offerings
		Skills to engage broader audiences through new channels of digital and tech means: test new languages on social media	Skills to turn the audience into contributors to grow the sense of community around CH, and the concept of community ownership of CHOs' offerings	Skills for proactively planning the operational aspect of hybrid experiences
			Skills to find cross-usage cases for CH, e.g., hybrid collections or co-create content with the audience	
	Implementing on an ecosystem or community level	Skills to use new tech and digitalisation to empower emerging new artists	Attitude for intangible CH CHOs to move from the old model (centred on single artists) toward aggregated forms of collaborations	
			Skills to foster audience engagement and participation vs on looking via hands-on, participative activities vs. one-to-one, isolating digital collections	
	Implementing on an individual level	Specialist-focused (subject matter expertise) competencies to support project strategy and implementation		
		Challenge-based learning (support project strategy and implementation)		
		Skills of open mindset ethos, like experimentation, risk-taking, creativity, flexibility, and Complex problem-solving		
		Skills for (digital) communication, like outreach methodology, relational competencies and networking, but also outreach, digital present and social media		
		Combination of generalist and specialist competencies (e.g., Inter and Transdisciplinary mindset)		
		Attitude shift related to the student internships' learning process: learnings in the process vs. in the end results		Skills of teamwork and communication within digital humanities

2.5 The *What*: Competencies for CHOs' staff and Students

New waves of artists and creators, fuelled with passion and purpose and with digital platforms at their fingertips, are likely to establish hybrid and altogether new forms of arts and cultures. Such a **drive for creativity and creation** could challenge the CH sector's status quo. Furthermore, these bursts of creativity could stretch the definitions of what constitutes art and culture, with new forms and genres, new formats of "performing," and interacting with creative works, resonating with new audience interests and expectations. This domain covers the following subdomains: **I. Inclusivity and Accessibility within Creations; II. Blending Tech with CHOs**, **III**. **Redefining Cultural Heritage**. These subdomains are described in more detail below.

Inclusivity and Accessibility within Creations

CHOs are already challenged to **better understand their audiences**, create an **inclusive environment and facilitate their accessibility**. CHOs should bridge the gap between the loyal 'cultural elite' and the wider portion of the population that is not frequent or represented in the CHOs. A wider audience includes **marginalised** or **differently-abled communities**, and **older adults**, among others.

Blending Tech with CHOs

More and more technological advancements are being established, slowly shifting cultural experiences can be reached via reality enhancement tech tools, such as **VR/AR, AI, and blockchain**, to name a few. We already witness visual and physical worlds merge, resulting in sophisticated digital experiences. All of this opens up the innovation playground for new technological tools to be understood and utilised to communicate CHOs' artistic message better.

Redefining Cultural Heritage

Supported by diverse leaders in the arts, a **new generation of diversified artists and creators** are likely to bring with them arts and culture that use **new references and technologies and come from other contexts**. Additionally, CHOs may see a shift from art as entertainment to art and culture as an impact medium.

The full list of the mapped competency gaps of CHOs' staff and HEI students under the Drive for Creativity and Creation domain and subdomains can be found in the table below.

Table 5. *What* behind CHOs' transformation | Competencies for Social Behaviour Change

		The *What* behind CHOs' transformation | Drive for Creativity and Creation		
		Inclusivity and Accessibility within Creations	**Blending Tech with CHOs**	**Redefining Cultural Heritage**
Competency gaps of CHOs' staff	Implementing on an individual level	Attitude to reformulate CHOs' mission statement interestingly and wide enough for different perspectives to engage marginalised/underprivileged	Attitude for a bottom-up digitalisation adoption approach is essential to reach critical mass and flip whole CHOs	Attitude to re approach CH as a common ground of enjoyment beyond cultural and language barriers, where tangible intertwines with intangible CH
		Attitude of adopting a feministic approach in designing the offerings and processes of tomorrow	Knowledge to follow breakthroughs in new tech and their potential & limitations for the CH sector in terms of audience reach and new funding	Attitude to consider digital, not as a new CH typology; the digital is unthinkable without tangible and intangible, and somewhat outdated, in the post-digital era
		Knowledge of non-traditional/young visitors' motivations and barriers to visiting CHOs to reach them eventually		
	Impleme nting on	Skills to create/expand offerings that bring both intangible CH artists (e.g., dancers) and audience on the stage	Skills to create a good technological framework and/or infrastructure to enable digital transformation: high-speed internet	Attitude to invite young people to participate in the process of (CHO's/offerings) reflection

		Skills to differentiate among digital users; experts, and casual users	Attitude and skills to work closely with developers and make content which meets specific metadata and format requirements	Skills to secure funding to offer young artists mentoring through the CHOs
		Skills to communicate knowledge in a detailed and educative way while simultaneously capturing broad audiences		Skills for CHOs to seize the opportunity of positioning themselves as unique institutions and not copying/imitating the narrative of other CHOs
	Implementing on an ecosystem or community level	Skills to redefine ill-defined needs of the CH sector's audience and stakeholders; anticipating and recognising their needs is the first step towards change	Attitude and skills to utilise AR/VR immersive tech as means to emotionally experience culture and art and make it more accessible	Attitude and skills of creating intergenerational, long-term perspectives instead of distances between young people and older generations
			Knowledge and skills to sustainably digitalise different types of CH & secure high-quality, rich data: 3D scanning infrastructure or digital guided tours	
			Knowledge and skills to use AI, automation and generative art as creative tools to complement human senses and linear thinking	
Competency gaps of HEI students	Implementing on an individual level	Specialist-focused (subject matter expertise) competencies to support project strategy and implementation		
		Combination of generalist and specialist competencies (e.g., Inter and Transdisciplinary mindset)		
		Challenge-based learning (support project strategy and implementation)		
		Skills of open mindset ethos, like experimentation, risk-taking, creativity, flexibility, and Complex problem-solving		
		Skills for (digital) communication, like outreach methodology, relational competencies and networking, but also outreach, digital present and social media		
		Skills for inclusivity of heritage, views and audiences' needs	Knowledge of available tools for creation and technical skills: Simple coding; Podcasting; Video production	

2.6 The Why, How, With Whom, Who & *What*: Competencies for HEI academics

The full list of the mapped competency gaps of HEI academics under all five domains and the three relevant implementation levels are included in the table below.

Table 6. The *Why, How, With Whom, Who & What* behind CHOs' transformation | Competencies across all domains

		The *Why, How, With Whom, Who & What* behind CHOs' transformation | Competencies across all domains				
		Institutional Values Innovation	**Business & Finance Models**	**Collaboration and Partnerships**	**Social Behaviour Change**	**Drive for Creativity and Creation**
Competency gaps of HEI academics	Implementing on an education-focused level	Approach for practical-oriented, 'hands-on' and experiential education knowledge & skills building: challenge-based learning through student consultancy projects, participatory learning approach for teamwork skills, etc. Approach for teaching trans- & Inter- disciplinary programs				
		Knowledge and skills to coordinate and provide internship placements and workshops for bachelor, master and PhD-level students to be mutually beneficial for students and CHOs				
		Attitude and skills for strengthening the CH sector's mission in students and reinforcing in them the CHOs' value-driven mission				
	Implementing on a research-focused level	Knowledge and skills for coordinating valuable (both tangible and intangible CH) CHOs research: practice-oriented research goals and timeframes				
		Attitude of a strong focus on open science, with a focus on open data	Skills to secure funding to pursue more research collaborative projects with CHOs	Competencies for involving external stakeholders, government & society in the university to facilitate collaboration with CHOs		
		Skills to communicate that scientific expertise is more important than digital knowledge; not all scientists can be digital specialists				
	Implementing on an engagement-fo used level	Knowledge and skills to help create (or develop further) CH databases and models Europe- and world-wide for linked open data		Attitude and skills to have collaborative conversations regarding the common challenges and needs between CHOs-HEIs	Attitude and skills to create new University-led projects together with young people for CHOs	
		Approach of inspiring students to pursue a career in the sector, both from an academic perspective and in CHOs		Knowledge and skills to expand collaborations with intangible CH-focused CHOs for more than applied sciences universities		
		Attitude and skills to help CHOs be more entrepreneurial and to measure their social and environmental impact				

03 | REFERENCES

Williams, P. (2002). The Competent Boundary Spanner. *Public Administration*, *80*(1), 103–124. https://doi.org/10.1111/1467-9299.00296

04 | ANNEXES

Annex 1

Table 7. The participants of the qualitative interviews. The full list of interviewees across Austria, Denmark, Finland, Ireland, Italy, Sweden, The Netherlands, Thailand and the UK.

Name	Gender	Focus	Position	HEI / Organisation Name	Country	Field of expertise
Carlo Presotto	M	CHO expert	President	La Piccionaia Theater Productions	Italy	Theatre; Live performance; Production; Children's Theatre
Pier Paolo Scelsi	M	CHO expert	Director	CREA - Cantieri del Contemporaneo	Italy	Visual Arts; Contemporary Arts
Andrea Barbon	F	Trend expert	Cultural Digital Manager	Mindware and Made in Heritage	Italy	Computer Science; Digitisation of Cultural Heritage; Digital content and processes research
Federico Borreani	M	Trend expert	President & Co-Founder	BAM! Strategie Culturali	Italy	Consultancy & Training for CHOs; Cultural Involvement
Stefania Zardini Lacedelli	F	Trend expert	Co-Founder	Dolom.it	Italy	Museum Studies; Participatory Processes; Art Management; Digital Humanities
Valeria Finocchi	F	CHO expert	Director	Grimani Palace Museum	Italy	Art history; Organisation of Exhibitions; Multimedia to communicate CH
Stefan Benedik	M	CHO expert	Digital Curator	Haus der Geschichte Österreich (House of Austrian History (hdgö))	Austria	Digital curation; Content Creation
Matthias Pacher	M	CHO expert	Managing Director	Niederösterreichische Museum Betriebs GmbH	Austria	Research and Participation in CH
Karina Grömer & Stefan Eichert	F & M	CHO expert	Director & Deputy Director	Naturhistorisches Museum Wien (Museum of Natural History)	Austria	Research Strategy; Science Communication; Digital Archaeology
Eva Mayr	F	Trend expert	Senior Researcher	Donau-Universität Krems, Department of Arts and Cultural Studies	Austria	Digital curation; Media Psychology; Human-computer interaction
Katharina Prager	F	Trend expert	Manager, Research and Participation Department	Wienbibliothek im Rathaus	Austria	Libraries; Digitisation; Participation
Oliver Hödl	M	Trend expert	Postdoctoral researcher	Faculty of Computer Science, University of Vienna	Austria	Computer Science; Interface between music and computer science; Experimental electronic music:
Martin Zerlang	M	CHO expert	Professor of Literature and Modern Culture	University of Copenhagen	Denmark	Literature; Cultural History; Urban Development
Michael Eigtved	M	CHO expert	Associate Professor	University of Copenhagen	Denmark	Museum Management; Journalism
Rasmus Holmboe	M	CHO expert	Postdoc	University of Copenhagen	Denmark	Storytelling & communication; Modern Culture Research
Anne Skare	F	Trend expert	Chief futurist	Universal Futurist	Denmark	Futurist; Entrepreneurship; Consultancy; Tourism
Line Bjerregaard Jessen	F	Trend expert	Director & Partner	Seismonaut	Denmark	Sociology; Consultancy; Business Development; Communication

Mikkel Malmberg	M	Trend expert	NFT Artist	Freelancer	Denmark	NFT & Blockchain; Digital Exhibitions; Tech Communication
Meta Knol	F	CHO expert	Director	Leiden European City of Science 2022	The Netherlands	Curation of modern & contemporary art; Art History; CHO management
Maaike Verberk	F	CHO expert	Managing Director	DEN (Dutch knowledge centre for digital transformation in CH sector)	The Netherlands	Art management; Business management; Policy in the CH sector
Aparna Tandon	F	CHO expert	Senior Programme Leader	ICCROM	Italy	Heritage conservation; Disaster risk reduction for all forms of heritage; Art curation & Conservation
Dick van Dijk	M	CHO expert	Creative Director & Head of Learn Programme & Lead	Future Heritage Lab	The Netherlands	Business economics; Art history; Visual art
Sirisilp Kongsilp & Krisada Chaiyasarn	M	Trend expert	Founder/CEO & CTO (respectively)	Perception Codes	Thailand & UK	Computer science; Human Computer Interaction; Computer Vision; NFTs & cryptocurrency; AI recognition
Aurore Belfrage	F	Trend expert	Tech Investor & Co-founder	SusTechable	Sweden	Business development & strategy; Digital marketing; Entrepreneurship; Venture capital
Marilyn Reddan	F	CHO expert	Head of Projects/Programmes	Galway culture company and Galway Capital of Culture	Ireland	Cultural Cities/Capitals; Bid writing; Cultural Policy Event Management
Paraic McQuaid	M	Trend expert	Artist/Lecturer	Institute of Art Design and Technology	Ireland	Cultural Policy; Arts Administration
Daniel Curley	M	CHO expert	Manager	Rathcroghan Visitor Centre	Ireland	Archaeology; CH communicator; CHOs operation
Aaste Helgesen Stegarud	F	CHO expert	Event Manager	SMK - National Gallery of Denmark	Denmark	Event Management; Content Creation; Business strategy; Marketing
Pirjo Hamari	F	CHO expert	Director of Development	Finnish Heritage Agency	Finland	Capacity Development; Funding/Grants; International affairs; Archaeology; Digital Heritage
Jenny Grettve	F	Trend expert	Strategic Designer & Co-director	Dark Matter Labs	Denmark	Strategic design; Future design
Sam Gilbert	M	Trend expert	Author	Freelancer	Denmark	Open Data; Economics and Business; Future trends; NFT and Blockchain
Martin Thörnkvist	M	Trend expert	COO	Media Evolution, Media Evolution City & The Conference	Sweden	Music; Social event designer; Collaborative foresight; Operational manager
Stina Gustafsson	F	Trend expert	Curator & Art Strategist specialising in art and blockchain	Freelancer	Denmark	Art communication; Blockchain art; Digital art

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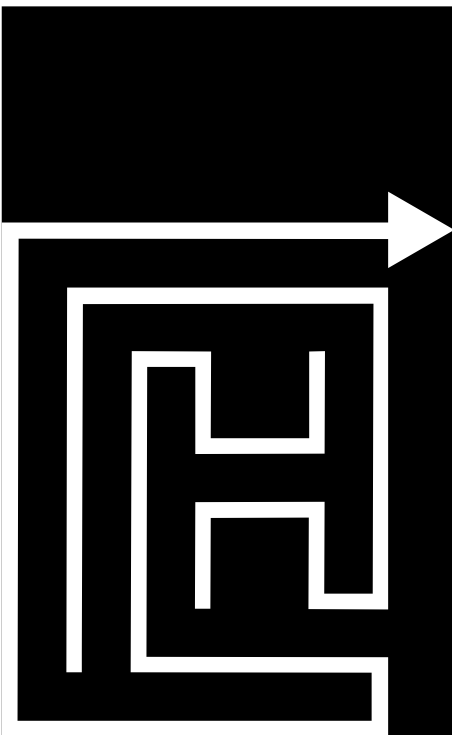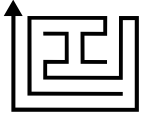
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