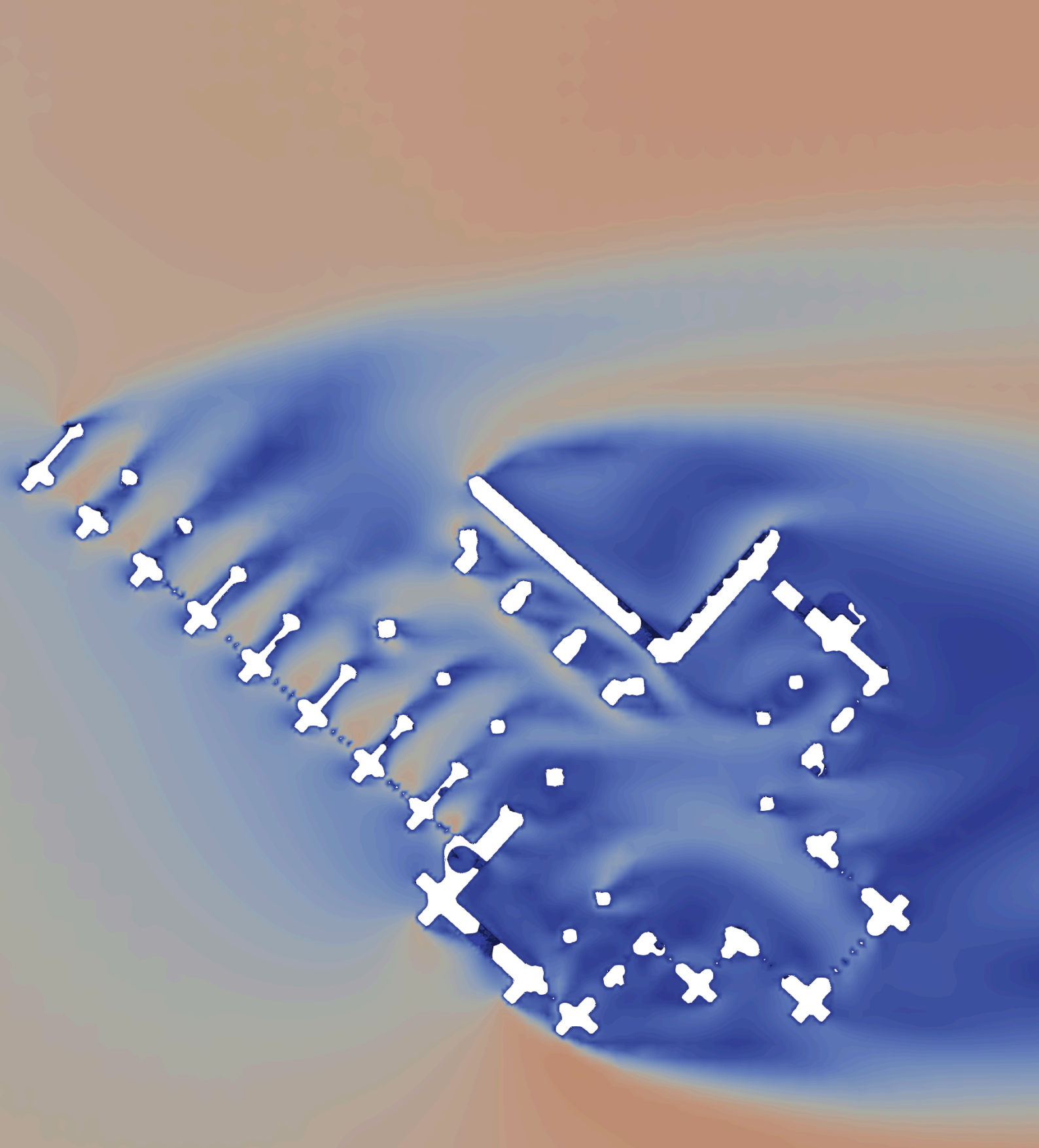


AI Futures in the Heritage Sector - Research Report



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Computational Fluid Dynamics (CFD) is the science used to study the relationship between wind-driven rain, water runoff from building surfaces and processes linked to moisture causing decay to porous building materials.

The image shows wind velocity calculated through CFD simulation where there is a south-westerly wind at Melrose Abbey; areas of high and low velocity are apparent in the plan horizontal section through the Abbey as indicated by the colour gradient. Together with another image representing pressure associated with the flow, they show a broader pattern that includes an upwind stagnation associated with high pressure and low velocity caused by the 'wind block effect' of the windward facade.



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27 April 2026

AI Futures in the Heritage Sector – Final Report

Executive Summary

A heritage sector AI Futures workshop was held on the 26th November 2025 at the Scottish Storytelling Centre, to explore how AI might shape the sector over the next decade, and how we can enhance sectoral resilience and prepare for potential challenges and opportunities.

A total of 35 external and internal participants came together from across the sector. The workshop started with a talk by Dr Dave Cowley, HES, on how AI is being used in archaeology. Dr Cowley's talk was followed by a scenario-based workshop.

During the workshop, participants were asked to think how, in an imagined future ten years from now, AI might impact the sector, and come up with three key things the sector should start considering.

The outputs from this workshop will support the delivery of both [*Our Past Our Future: The Strategy for Scotland's Historic Environment*](#) and the [*Skills Investment Plan for Scotland's Historic Environment*](#), inform sectoral planning for skills and resources, and unveil further research focus.

Key themes and shared priorities:

Most of the participants felt that heritage must remain people-focused, with AI used to improve staff productivity and visitor experiences rather than reflexively replacing everything.

Key themes emerging from the discussion included: the need for conscious adoption of AI; building structural capacity for the sector; and careful planning on resources and risks to create resilience.

1. Conscious Adoption & Human-Centric Approach

Participants felt that AI adoption should be carefully planned, to ensure that it serves strategic aims without damaging the authenticity of heritage.

Participants thought that it is also important to emphasise the value and the significance of the human element at our sector's work. People, places, and stories form a crucial part of our heritage, and the sector needs to recognise that they cannot be replaced by AI.

2. Building structural capacity for the sector

The need for transparency and ethical frameworks on the use of AI was another key theme mentioned during the workshop, as they will be essential to maintaining trust between professionals, visitors, and service users.

AI can be a viral tool to help deliver retrofit and conserve traditional skills. For instance, the computational algorithms developed could allow accurate and cost-effective digital building fabric inspections for conservation and maintenance, using terrestrial laser scanning data. To unlock its potential, skills training on the use of AI, together with rich sources of heritage data, would be pivotal to prepare the sector for constant and everchanging evolution of AI technologies.

An innovative approach to AI adoption would be required to retain ownership of our data and content; to promote equitable access to AI technologies for smaller organisations and individual practitioners; and to avoid AI 'hallucination' or the generation of inaccurate and biased information.

3. Careful Planning on Resources and Risks to Create Resilience

AI adoption requires conscious long-term investment and resource planning. The everchanging nature of AI technology means risks and uncertainty, such as confusion that is caused by a fragmented legislative framework, or cyber threats that are caused by 'dodgy operators'. Therefore, careful planning and due diligence must be undertaken before the deployment of any AI-enabled programmes.

With the new financial risks, further research on developing innovative and sustainable funding models would be needed to ensure an equal access to AI for all organisations.

Last but not least, the sector needs to proactively and regularly review our position and plan for the future in light of the constant change in AI technology, to ensure that the sector can embrace the opportunities ahead, and to enable prompt and effective reaction to any challenges.

Background

The emergence on AI and machine learning technologies have created a fundamental shift in how we work and disseminate information. To help the heritage sector prepare for various possible futures, a sectoral workshop was held at the Scottish Storytelling Centre in Edinburgh. A total of 35 internal and external participants, from various backgrounds within the heritage sector, participated in the workshop and shared their thoughts on how the development of AI technologies might impact the heritage sector. A full list of organisations represented in the workshop can be found in the appendix.

The day started with a talk by Dr Dave Cowley, HES, on how AI is being used in archaeology. Dave's talk stressed the importance of understanding our workflows and own thought processes as a precondition for finding the places where AI can genuinely add value.

Dave's talk was followed by a scenario planning exercise, where participants were split between six tables and asked to consider how, in an imagined future ten years from now, AI might be impacting the heritage sector.

After this deep dive, each table was asked to come up with three key things related to AI for the sector to start considering right now.

Future Scenario Planning Exercise

There was a total of three scenarios for participants to consider: a steady state option (A), a disruptor option (B) and a wildcard option (C). Each table was given one of these scenarios to consider, and participants were asked to reflect on this scenario using the FORWARDS methodology.

The FORWARDS framework is a traditional future scenario planning methodology, which guides participants to consider the scenario from the following perspectives:

- **F**unding & finances;
- **O**pportunities;
- **R**isks;
- **W**orkforce (including skills, training);
- **A**udiences & communities;
- **R**egulation & legalities & policies;
- **D**ata & Technology; and,
- **S**tandards & Ethics.

Priorities shared by groups

We asked each table to reflect on their scenario: 'What does this future mean for the sector? What might we be doing differently?'

The below is a combined thematic output based on feedback from all tables.

1. Human-Centric Approach & Authenticity of Heritage

- While AI can be a useful tool serving heritage, communities, and strategic aims and supporting decision-making, participants felt that the role of humans remains important to ensure the responsible use and oversight of AI.
- Heritage should be celebrated for its people, places, knowledge, and stories. While AI can broaden access and help share heritage more widely, it is important to avoid over-reliance on the use of AI, to preserve the human elements and authenticity that make heritage meaningful, and to ensure heritage experiences don't become 'plastic' or overly synthetic.
- Local skills and knowledge remain essential as they often represent local history and culture, and participants felt that the emergence of AI might threaten their existence. Therefore, the sector needs to recognise its importance and explore approaches to preserve them.

2. Conscious Adoption and Risk Management

- Participants felt that Adopting AI in the heritage sector should be a mindful, well-planned, and slow process that avoids knee-jerk reactions, in order to mitigate risks.
- Rapid rollout of AI-enabled programmes should be avoided without proper safeguards, especially given the risk of unreliable or unethical providers.
- Since legislation is still fragmented and likely to remain uncertain, organisations need to plan for flexibility and be prepared for different regulatory approaches.
- It's also important not to become over-reliant on AI at the expense of human skills and value, as AI is a tool and it cannot replace human thinking.
- Organisations must be prepared for increase in cyber threats owing to AI.

3. Standards, Ethics & Trust

- The sector should approach AI with clear guidance on permitted uses, and prioritise transparency by clearly communicating when and how AI is used, ensuring people understand what is AI-generated and what is not.
- Maintaining trust requires strong ethical frameworks and clearly defined boundaries for the use of AI. Because of the limitations of AI, human oversight must remain central, with humans validating outputs, avoiding reliance on AI for major decisions, and checking for errors or hallucinations.
- To support ongoing reflection, a regular sector-wide symposium would help reassess AI's role and guide responsible practice.

4. Skills, Data & Infrastructure

- The sector can use AI to support many key priority areas, including retrofit, supporting decision-making processes, and helping to conserve traditional skills.
- To make this effective, the workforce needs to be equipped to use AI consciously and competently, with training becoming a standard part of professional development.
- A dedicated AI officer role should be established within large organisations to ensure responsible leadership and oversight of these technologies.
- It is also important to have strong data protection and to treat heritage data as a national asset that must remain clean, trusted, and secure.

5. Financial & Resource Considerations

- AI adoption in the heritage sector demands long-term, intentional investment, supported by government funding, cross-party agreement, and ethical financing models.
- The adoption of AI might also create new financial risks, from licensing and compliance costs to potential premiums for human-led experiences.
- Since not all organisations can afford safe or well-supported AI, further research must be carried out to consider who can provide financial support and how equality can be maintained.
- Embracing the synergy between human strengths and AI intelligence requires clarity about where human value is greatest, and the sector must avoid adopting cost-saving measures that undermine the human elements of heritage.

6. Creating Resilience & Futureproofing

- The sector should recognise that AI will continue to evolve rapidly, which means regular scenario planning to prepare for further risks, such as reduced human connection or overly impersonal decision-making.
- The sectors need to keep asking ‘Where are we now?’ and commit to continuous evaluation to ensure the use of AI remains aligned with sector priorities without damaging the authenticity of heritage.

Follow up workshop

A follow up workshop was held on 12th March 2026 to offer an opportunity for people who could not make the in-person workshop to participate virtually. A total of 5 participants came together to reflect on the findings of the in-person workshop, and to deep dive into the scenarios.

Similar to the previous workshop, participants were asked to reflect the steady state scenario, 10 years from now: 'What does this future mean for the sector? What might we be doing differently?'. They were then asked to consider the following areas: the emergence of new job categories; areas we should prioritise our investment in; opportunities around partnerships and skills training; and emerging challenges.

The below is a summary of the outputs from the discussion:

1. Job landscape:

1.1. Articulating and building a strong case of a human-centred approach to AI

- Although the concept of 'authenticity' frequently appears in research reports, there is a lack of clarity around what 'authenticity' actually depicts, and why it remains fundamental to heritage experiences.
- Addressing this gap requires deeper contextualisation of the cultural and social narratives that underpin heritage. Heritage embodies and reflects our past and our future – the idea of 'temporality of heritage' – and it encapsulates how our modern understanding and perception of culture and society are continually shaped by experiences of history.
- While AI can store and process information from the past, it cannot inherently articulate the relationship between past and future. As a result, there is a need to advocate for a more human-centred approach to AI adoption within the heritage sector and conduct future research to evidence the irreplaceable value of human element.

1.2. Role of AI in the workplace

- Consistent with findings from the previous workshop, several participants recognised AI's potential to enhance efficiency and productivity across the sector.
- However, participants also noted a rigid dichotomy between leaders and practitioners regarding the role of AI. Many heritage professionals view AI as an assistant that can support their work, while believing that the Government and some organisations are positioning AI as a replacement for human roles, particularly within the cultural sector.

- Participants also expressed concern that the Government's emphasis on efficiency may conflict with its stated commitment to fair work, noting that widespread AI adoption could negatively impact the job market.

2. Priority Areas:

2.1 Investing in AI infrastructure

- As demand for AI capabilities accelerate, the associated costs with hardware and data-centre capacity can be prohibitively expensive, especially for smaller organisations and sole traders.
- To ensure equal access to AI across the sector, reliance on existing commercial and technical AI models might be insufficient. Instead, the sector needs to be more proactive and comes up with innovative approaches, such as developing bespoke AI models tailored to the needs of the sector.

2.2 Generation and storage of data

- In areas such as the retrofit of pre-1919 buildings, AI has significant potential to enhance decision-making and support retrofit activity. However, without high-quality, accurate datasets AI systems risk producing unreliable and biased outputs or 'hallucinations', which could lead to potential public harm.
- Participants also expressed concern that introducing a commercial text and data mining (TDM) exception could legitimise large-scale AI training on data and contents protected by copyright laws, resulting in a loss of control over intellectual property, as well as potential economic harm to creators.
- Investment in robust data management practices and advocate for responsible, licensed-based AI development would be essential. Heritage data needs to be treated as a national asset, and the sector needs to ensure that the datasets are maintained to a high standard: clean, trusted, and secure.

2.3 Monitoring the environmental impact of AI

- The operation of data centres supporting large language models (LLMs) consume a substantial amount of energy and freshwater and contribute to a considerable amount of carbon footprint.
- Participants expressed concern over the rapid expansion of AI as it could defeat the Scottish Government's Net Zero targets. Hence, the sector needs to find sustainable approaches to monitor, audit, and run data centres, ensuring that emissions associated with AI remain aligned with broader decarbonisation commitments.

3. Emerging opportunities

3.1 Everchanging skills needs and provision

- Various education providers and sectoral stakeholders, including universities, colleges, and leading architectural firms, are increasingly integrating AI-related skills training into their curricula or their continuous professional development programmes.
- Effective adoption of AI technology requires a consistent understanding and similar baseline of AI skills across both employers and employees.
- As AI will continue to evolve rapidly, the sector must recognise the need for ongoing AI skills development for both professionals and students. Education providers will also need to ensure that course content is regularly reviewed and updated to remain relevant.
- Participants were concerned that the rapid evolution of AI technologies may challenge the ability of education providers to keep their curricula current, potentially creating gaps in skills provision.
- To address this, the sector should adopt a proactive approach, committing to continuous assessment and evaluation of emerging AI developments and their implications for skills needs.

3.2 Opportunities for partnership

- Key sector stakeholders should explore strategic partnership opportunities with Schools of Computing and Schools of the Built Environment within Higher Education Institutions and Further Education Institutions. Such partnerships could help optimise approaches to retrofitting and improve planning and consent procedures.
- The public sector, specifically Local Authorities, should also work closely with developers to explore how AI can be used to streamline planning and listed building consent procedures, enabling more efficient delivery of projects on retrofit.

3.3 Opportunities to develop a bespoke AI model

- The heritage sector generates and holds a vast amount of data and content. Ensuring clear ownership and governance of those contents and data would be essential before feeding any of the data into an AI model.
- Participants felt that the heritage sector should develop its own bespoke AI model: this would allow inclusivity to be maintained, ensure safety and security of data, and minimise the risk of confirmation bias. However, the sector must carefully balance economic, ethical, and environmental considerations when assessing feasibility.
- Alternatively, the sector could adopt a more disruptive and innovative approach by establishing its own technical or commercial model, to promote equitable access to AI technologies for smaller organisations and individual practitioners.

3.4 Opportunities to intangible cultural heritage preservation

- AI can also be a vital tool to support the revitalisation of endangered languages and safeguard traditions. In reference to recent studies, participants stated that through documenting language patterns and speeches, generative AI could help record oral history and produce educational resources.

4. Emerging risks

4.1 Over-reliance on AI technologies and risks of biased and inaccurate outputs

- Not everything generated by AI is true and accurate. and the evolvement of AI doesn't always mean better outputs. AI can reinforce and amplify biases if the training datasets are not factually correct. It will be challenging to ensure that outputs remain inclusive, balanced, and appropriately decolonised.
- Over-reliance on AI may create accountability and liability challenges, particularly if inaccurate or biased outputs lead to public harm. Organisations adopting AI needs to make sure that their workforce is equipped to use these tools responsibly and to identify hallucinated, biased, or incorrect information.

4.2 Risk of commercial interest overhaul

- AI adoption requires a significant sum of capital investment. Organisations might therefore focus more on digitising any exhibits and contents with the highest commercial value, and ignore certain types of content or information.
- Careful planning, evaluation, and governance will be essential before adopting any AI model into work.

4.3 Risks associated with externalities

- We are living in a world where extreme weather is becoming more prevalent, and with the increase in geopolitical tensions, blackout or a loss of internet connection is increasingly possible. Overreliance on AI technologies might hinder the sector's ability to react quickly in case of any unforeseeable events, and it might even lead to a loss of valuable data.
- Strengthening data infrastructure, for instance firewalling our data infrastructure, might help mitigate the impact of such externalities.

4.4 Limited interest from major funders

- While there is some government interest in supporting ethical and inclusive AI research within the arts and humanities disciplines, most funding is expected to prioritise AI initiatives linked to economic development.

- Participants noted that, if there is any additional funding, the government would focus on workforce skills development and retraining rather than supporting the creation of new AI models, reducing opportunities for sector-specific innovation.

5. General comments and future vision

5.1 Resurgence of human-centred, ‘raw’, experiences

- Some participants referred to the idea of ‘AI slop’, and noted a decline of interest in AI-generated content online, especially within the younger generation. They foresee a shift in content preference with an emerging interest of human-centred experience, where social and cultural values are celebrated.

5.2 Further research on the idea of ‘authenticity’ and the impact of AI

- Further research is required to conduct a holistic examination on the concept of ‘authenticity’: what constitute an authentic heritage experience, and how it is shaped and reshaped by the social and cultural values of heritage.
- Ongoing monitoring and proactive planning will be essential to ensure the sector can anticipate challenges, and react effectively and promptly to rapid developments in AI technologies, safeguarding both the integrity of heritage experiences and the sector’s long-term strategic direction.

Reflection and Conclusion

The workshops marked the first step for HES and the sector in collectively considering AI and what it might mean for the future. The session welcomed contributions from experts from a wide range of organisations within the heritage sector, such as the National Museum of Scotland; Historic England; the Heritage Network; and Perth and Kinross Heritage Trust. However, further contributions from fellow practitioners as well as academics will be necessary to create a full picture for the heritage sector. A full list of organisations represented in both workshops can be found in Appendix 1.

In general, participants felt the Scenario A (the steady state) and the Scenario C (backlash to using AI) are most likely to be the future, which indicates a slightly pessimistic attitude towards the adoption of AI in our work among heritage professionals.

Participants felt that there is a lack of consensus over the potential role of AI in the sector. Even though in some areas, such as traditional building conservation, AI can be a useful tool to **streamline procedures and boost efficiency**, participants feared that the Government and larger organisations might use the efficiency argument to justify **replacement of human roles**, and that this could lead to a **loss of job opportunities** across the sector.

Our heritage does not only embody and reflect our history, but also continuously shapes the perception of our society and culture. Participants also worried that overreliance on AI in our work might **strip away the humanness and authenticity of heritage**. Local cultural identities might be damaged as AI might not be able to capture the **traditional knowledge and cultural significance of local heritage**. The lack of human interaction between staff, volunteers, and visitors, on the other hand, might also have a **negative impact on the wellbeing** of local residents. However, participants identified a gap in our understanding of ‘authenticity’ and how it ties to our current society and culture, and further research will be needed to better evidence that for advocacy and policy-making purposes.

Participants also recognised that **an inconsistent understanding of AI technologies and a lack of digital and data analytics skills** would be the major blockers to an effective adoption of AI. The situation might be exacerbated due to **constant evolution of new AI models**, together with the **difficult financial situation** the sector is facing, where organisations might neither have any budget to catch up with the latest AI, nor any budget for skills training.

One further point worth considering was how we could maintain transparency of our work as a sector and ensure a responsible use of AI, while working with **fragmented or sometime outdated ethical and legal frameworks**. Participants were particularly worried that they would lose control of their own data and content.

The prospect of **ringfencing Scotland’s heritage data** and treating it as part of the national collection also came out strongly from the discussions. Such data could be

used as a trusted source for AI models to refer to, and might help to minimise hallucinatory content. In the follow-up workshop, participants **explored the possibility of developing ethical and inclusive AI model tailor made to the heritage sector**, to enable oversight of data and to ensure the information generated is both accurate and inclusive.

Lastly, in a world where the routine use of AI seems inevitable, it is crucial for the heritage sector to have a consensus over the role of AI. Participants felt that the sector needs to be **more proactive in risk assessment and future planning** and be clear how we want our role as humans and heritage experts to be.

Laura Diffey-Higgins and Man Wai Yim

27 April 2026

Appendix 1: List of organisations represented in the workshop

For ease of reference, the list below has been arranged in alphabetical order.

- Arts and Humanities Research Council
- AtkinsRealis
- Creative Scotland
- Development Trust Association Scotland
- Heritage Fund UK
- Heritage Network
- Historic England
- Historic Environment Scotland
- Inverness City Heritage Trust
- LDN Architects LLP
- National Museum of Scotland
- National Trust for Scotland
- Okana Global Ltd.
- Perth and Kinross Heritage Trust
- Scottish Historic Buildings Trust
- Visit Scotland

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