# AI4Media Results in Brief: **AI for Audiovisual Archives**

Current Challenges and Future Paths

Authors:

Anna Schjøtt Hansen, University of Amsterdam, Rasa Bocyte and Johan Oomen, Netherlands Institute for Sound & Vision, Lidia Dutkiewicz, KU Leuven, Georg Thallinger, Joanneum Research.

This report provides insights into the current challenges, potentials and good practices for implementing and using artificial intelligence (AI) in audiovisual archives in the Balkan and Mediterranean region, which previously has been less explored in AI4Media research. It is based on a workshop organised in March 2023 with seven audiovisual archives from the region.
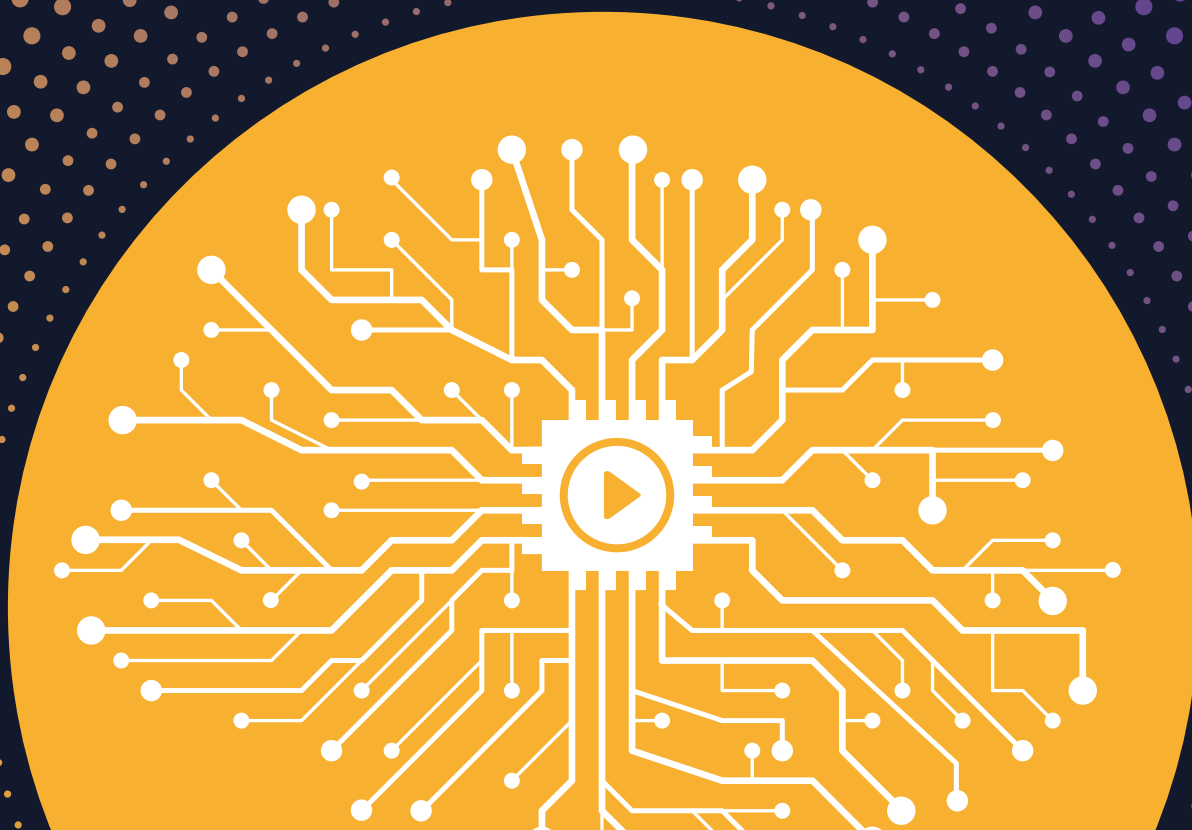
Key insights: AI readiness and strategies

Previous reports have found that audiovisual archives remain focused on experimenting with rather than implementing AI directly into archival workflows (Rhem, 2020). This sentiment was confirmed by seven organisations from the Balkan and Mediterranean region the who took part in the workshop "AI for Audiovisual Archives: Current Challenges and Future Paths". It is clear that there is a growing awareness of AI amongs these organisations. Many have started developing AI strategies as well as initiated various experiments and proof-of-concept implementations. These include: the use of face recognition to identify public personalities, generating subtitles and sign language avatars, using sentiment analysis to analyse user interaction with content, shot and face detection.

We identified **four themes** that define the way participating audiovisual archives engage with AI:

Always Busy Digitising: This sentiment was very strong amongst all participants - organisations feel pressure and urgency to digitise their audiovisual collections while also dealing with limited resources. The organisational focus on digitisation limits possibilities to engage in research projects around AI. At the same time, there is a clear understanding that digitisation is not the end solution, but a prerequisite to the most uses of AI for archival content distribution and reuse. Beyond this it is clear that new challenges emerge as digital collections grow, such as ensuring sufficient and protected storage solutions and the need for new infrastructure to better manage the digital collection.

@ai4mediaproject · info@ai4media.eu

Key insights: AI readiness and strategies

Public Mission of Archives: The role that AI can play is shaped by the public mission that media archives serve. Organisations are eager to use AI with the goal to increase their societal contributions, for instance, by developing services specifically for minority groups or education purposes.

Archivists as Data Scientists: The fundamental shift from managing physical collections to managing data asks archivists to acquire new skills that are close to those of data scientists - including data analysis and visualisation, programming and basic understanding of how AI systems are designed.

Human vs Artificial Intelligence: A recurring theme throughout the workshop was the interaction between humans and AI systems. What kind of skills do humans need to meaningfully interact with AI? What information must AI system provide to its users in oder to deliver easily interpretable outcomes? This is crucial to address questions around the trustworthiness and transparency of AI systems.

@ai4mediaproject   •   info@ai4media.eu

Key insights: potentials and barriers

The workshop highlighted several core **potentials and challenges of AI** that both align with previous findings but also add new regional and archive-specific nuances.

POTENTIALS

- Improving the searchability of the archive

- Enriching the archival collections (Speech-to-text, Facial recognition, object recognition)

- Improving preservation and restoration of collections

- Increasing accessibility (e.g., sign language, subtitles) and providing new services directed at minority groups

- Increasing the valorisation of the archive and providing new revenue streams

- Enhancing the impact of public service media through new and better-tailored services

- Improving the accessibility and visibility of exponentially growing collections

- Enabling an increased focus on diversity issues (e.g. by providing information on speaking times of politicians and the representation of different gender or minority groups)

CHALLENGES

- Lack of AI models in local languages

- Pressure to spend available resources are focused on digitisation, not on AI

- Lack of existing AI solutions that can integrate into currently used tools and workflows

- High costs of developing or purchasing AI systems from third-party providers

- Expectation to deliver "perfect" solutions, little room for error and experimentation

- Lack of legal clarity about AI implementation in a legal landscape in flux (particularly blurry boundaries for European but non-EU countries)

- Limited access to human resources and (local) expertise relating to AI

- Lack of sufficient and interoperable metadata to efficiently implement AI systems

@ai4mediaproject

info@ai4media.eu

Five recommendation areas

The workshop identified five areas of recommendations that can support the future responsible use of AI in audiovisual archives and guide policy. They are directed both at practitioners in audiovisual archives as well as policy makers.

1 LEAPFROGGING VIA DIGITISATION

Many organisations are still in the process of digitising their vast audiovisual collections. This process was often viewed as a challenge and an economic burden, but in the context of AI, it could also be seen as a unique opportunity for organisations to leapfrog into AI. The digitisation efforts across archives in past years were predominantly focused on digitisation for preservation purposes, the future digitisation processes can learn from these past efforts but also have a unique opportunity to focus on digitisation for access by combining the digitisation processes with AI projects. Taking the perspective of accessibility means including the needs of end-users in the design of digitisation projects. This can help to define AI techniques that will make digitised data accessible and searchable in meaningful ways for the target audiences of the institutions.

→ **Good Practice Recommendation:** In applying for funding for digitisation processes include use cases for AI tools directly in the project descriptions. This might also open up for new streams of funding oriented towards AI usage.

→ **Policy Recommendation:** Increased focus on supporting combined AI and digitisation projects. Ensure that end-users (content producers, researchers, educators, etc.) are involved in AI projects by design - either as collaborators or as stakeholders consulted throughout the process.

2   THE STRENGTH OF LOCAL & REGIONAL COLLABORATION

Many of the consulted organisations described experiencing the same challenges with implementing AI, relating to language, costs and human resources. This could provide unique opportunities in the AI context as many of the countries share linguistic and cultural similarities and collaborative approaches would make AI more accessible and scalable across multiple archives. Current examples of the benefits of such collaborations can be seen in the newly established network for **Nordic AI Journalism** or the **Associated Press'** efforts to help facilitate scalable projects amongst local newsrooms. What became apparent during the workshop was the willingness to enter such regional collaborations. Next to regional collaborations, there are also unexplored opportunities to build partnerships with local actors active in the field of AI - such as universities and startups - who can provide resources and skills that archives might not have in-house.

→ **Good Practice Recommendation:** Be open towards and work actively with setting up knowledge exchanges or smaller collaborative projects with other local or regional public broadcasters / audiovisual archives as well as research organisations or universities.

→ **Policy Recommendation:** Support the establishment of funding schemes that can help enable regional and local collaborations on AI that can allow for the development of scalable and open-source AI solutions to be used in multiple organisations.

3   THE UNIQUE CHALLENGE AND OPPORTUNITY OF MAMs

The centrality of Media Asset Management (MAM) systems in the archival workflow provides both a unique challenge and an opportunity for using AI. On one hand, it can constrain the use of open-source and third-party solutions as these need to integrate with the MAM systems which are often not flexible enough to support this. On the other hand, MAM system providers could play a valuable role in making AI applications more easily accessible for archives via easy plug-in solutions. Closer interaction with MAM systems providers (for instance, via participation in networks such as FIAT/FTAs Media Management Commission) can help in bridging the gap between the specific needs of archives in the region and the available solutions.

→ **Good Practice Recommendation:** When entering into the procurement process of a MAM system, aim to be clear about future AI needs and discuss these with potential service providers to ensure the viability of the specifications that are part of the procurement process.

→ **Policy Recommendation:** The need for open mechanisms to facilitate close collaborations between MAM providers and archives to ensure relevant AI applications can be integrated into and are made available in MAM systems (e.g., via standardised interfaces).

@ai4mediaproject • info@ai4media.eu

4 · AI & ORGANISATIONAL STRATEGY

It has become clear that organisational strategies often do not provide guidance and specific considerations for the use of AI. This could relate to procurement guidelines, accountability mechanisms and quality control procedures. Given the societal harms that the neglectful application of AI can produce (for instance, perpetuating the marginalisation of societal groups), a clear organisational strategy on AI is key. AI policies in audiovisual archives should be guided and aligned with their public mission but should not restrict experimentation with AI.

→ **Good Practice Recommendation:** Draft an organisation-wide strategy on responsible use of AI and/or add this to existing policies. Inspiration can be found in existing guidelines such as the EU's **'Ethics guidelines for trustworthy AI'**.

→ **Policy Recommendations:** Develop sector-wide responsible AI guidelines that take into account the unique role and requirements of audiovisual archives.

5 · AI & CAPACITY BUILDING

Implementation of AI puts additional pressure on resources and expertise that not all organisations currently have. As a starting point, archives should ensure that staff in different departments are equipped to constructively participate in conversations about the use of AI, especially in relation to potential risks, procurements and quality assurance processes, adherence to organisational policy and legal requirements. Next to this, new positions - such as AI engineers and data scientists - could be introduced to allow archives to experiment with existing AI tools or independently develop their own solutions without reliance on vendors. Since not all organisations have the resources to do this, regional and sectoral partnerships can be used to pool resources and benefit from expertise in local universities, start-ups or other archives. Such collaborations can be particularly important for developing localised and context-specific AI solutions.

→ **Good Practice Recommendation:** Good Practice Recommendation: Invest in upskilling of existing employees in AI (e.g., develop local training courses or utilise existing available sources, such as **Elements of AI**) and consider whether there is a need for new skill sets internally. Identify potential regional/sectoral collaborators who can share their knowledge or provide complementary resources and expertise to work on localised AI solutions.

→ **Policy Recommendations:** Facilitate opportunities for collaboration and regional and sectoral partnerships in regions that currently have limited access to local AI providers.

@ai4mediaproject · info@ai4media.eu

Journey map: Building AI in-house
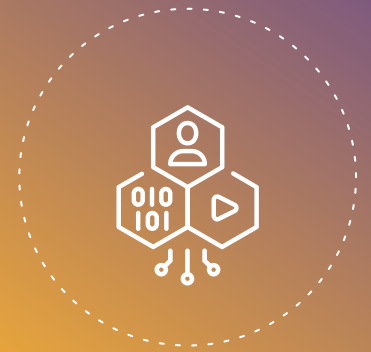
During the workshop AI4Media partners presented key insights related to core moments in the process of building AI, which we in this context divide into five interrelated and iterative steps. The journey map below summarises and highlights the core considerations /questions that audiovisual archives should consider at each of the five steps when having decided to build an AI system in-house. The list of questions raised is not exhaustive but can help to ensure that key questions are raised.

PROBLEM DEFINITION

→ What problem are we trying to solve with AI and does this particular problem require AI?

→ If we decide to use AI, what legal frameworks apply - are we using AI in a legal sense?

→ How do ensure that the chosen solution reflects the public values of the organisation?

MODEL SELECTION

→ Are there open-source solutions on the market that are suitable for our use case (incl. having an accessible licensing agreement e.g., terms of re-licencing)?

→ Does training the model include the use of "personal data" (e.g., according to GDPR) or copy-righted information and do we have legal grounds to use them?

→ How can we implement transparency for end-users (e.g., producing model cards)?

@ai4mediaproject   info@ai4media.eu

DATA COLLECTION, CLEANING, AND TRAINING

→ Do we have a suitable training dataset and if not, should we make or buy data annotation (hereunder consider needed expertise and ethics of data labelling companies)?

→ How do we ensure that we critically reflect on the biases of our dataset (e.g., legal and linguistic nuances when annotating the data);

→ How can we disclose the data practices transparently to the end-users? (e.g., datasheets for datasets).

EVALUATION AND OPTIMISATION

→ What measures can we use to assess the model's performance for a specific task and are there ways to benchmark the results?

→ Have we evaluated the model from different perspectives beyond assessing its accuracy (e.g., qualitative evaluations by domain experts)?

→ How do we comply with ethical principles for Trustworthy AI (e.g., do we explicitly acknowledge and evaluate the trade-offs between them?)?

DEPLOYMENT

→ How do we sustainably scale the solution (incl. considerations of cloud versus local computing)?

→ How to ensure the system can be maintained, both technically but also in terms of ensuring continued quality of the output?

→ How do we ensure accountability measures (e.g., human-in-the-loop or end-user disclosure policies)?

·   @ai4mediaproject 🐦 in f   ·   info@ai4media.eu

Journey map: Buying AI from third-party vendors
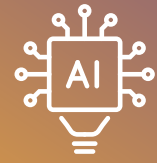
During the workshop the participants in groups discussed a concrete scenario of buying an AI system and determined where **compromises** could be made and where they had **strong demands**. The following journey is a compilation of the insights produced in the three groups that can help guide other audiovisual archives that are considering AI applications.

TEAM

In the process of selecting the provider, an interdisciplinary team from different departments is needed with the presence of at minimum the following expertise: (1) end-user if the intended AI solution (e.g., cataloguer or editorial staff) who can define the problem and the needed solution, (2) technological expert who can assess and evaluate the technical solution (e.g., engineer), (3) financial expert who can assess budget possibilities, (4) public procurement expert to help with the tendering process and legal expertise to ensure legal compliance.

DECIDING THE SPECS AND ALIGNING WITH VALUES

In the process of selecting the provider, an Before moving ahead with the tendering process, it will be important to decide on the non-negotiable specifications of the solution. This could include the level of accuracy or local language proficiency, but also consider negotiable preferences, such as local providers. In this process the team should consult local procurement guidelines/ethical principles for the use of AI and ensure ethical considerations and public values are included in the final decision specifications. If there are no such guidelines available, a separate process to discuss the ethical considerations should be carried out and new guidelines should be developed.

@ai4mediaproject   info@ai4media.eu

PROVIDERS

A good collaboration with future providers was highlighted as a key requirement. It is advised to start engaging in conversations with multiple providers in the early stages of the process to co-develop the final specifications of the project and develop long-term collaborations rather than one-off projects to ensure continued learning. Concrete requirements of providers included considerations for: (1) locality (both in terms of local knowledge and potential legal requirements for working with international providers, (2) ethicality (does the provider live up to the same ethical standards as public broadcasters), (3) maturity (does the provider have previous experience with projects like this and proven solutions).

TERMS OF SERVICE

In negotiating terms of service, several non-negotiable terms were highlighted, including: (1) Data ownership and sovereignty (data is stored and processed locally but the buyer can gain temporary access to data for training purposes), (2) GDPR compliance, (3), Modularity of the solution to ensure sustainability and the ability to integrate with future innovations, (4) Warranties and liabilities for non-performance, (5) possibilities of service level agreement, (6) proof of ethical conduct of the provider as well as potential transparency measures needed to ensure responsible use and disclosure to users.

NOTES ON METHODOLOGY

The insights on the two-pager are based on discussions from a one and a half day workshop in March 2023, hosted by HRT in Zagreb and co-organised with COPEAM. During the workshop, 12 participants from seven different countries in Eastern Europe and the Mediterranean participated, including Romania, Croatia, North Macedonia, Turkey, Serbia, and Kosovo.

@ai4mediaproject   info@ai4media.eu