

Progress report on the Task Force Audiovisual Media in Europeana

04 November 2016



Image: Stage manager Paul Römer and camera operator Joes Odufé are filming the opening credits of the AVRO (General Free Radio Broadcaster) game show 'Weest op Uw hoede' (Be careful), 1955.
Provider: Netherlands Institute for Sound and Vision via EUscreen.

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Introduction

This task force was proposed in February 2016 to make audiovisual media a first-class citizen on the Europeana portal and in the wider Europeana ecosystem. The original task force aim was to formulate recommendations regarding audiovisual content in Europeana in three specific areas:

1. **Improving the use**
 - a. improving search on time-based media (including an assessment of audiovisual media standards in relation to EDM),
 - b. Multimedia hyperlinking (incl. definition of a pilot / exhibition),
 - c. Crowdsourcing
2. **Accessibility**
 - a. Support of subtitles and multilinguality emerging media formats (payout on mobile devices)
3. **Editorial**
 - a. How to embed audiovisual content in Europeana Collections and other Europeana-related sites reusing AV materials assessment of multimedia content (topics)
 - b. editorial use of AV content externally (length, edit)

This progress report shines a light on the current status of the research done by the Task Force, and explains a set of high-level recommendations. In the remaining three months of work, and during a face-to-face meeting in February, the Task Force will further concretize these recommendations to a level of possible implementation. The current progress report and high-level recommendations are the result of one face-to-face kick-off meeting at the Netherlands Institute for Sound and Vision and five Google Hangout sessions with the Task Force members.

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Audiovisual Media in Europeana

The amount of content on Europeana with a relationship to audiovisual media exists of two interlocking venn-diagrams. One is the topic of audiovisual media: documents on the history of broadcasting, film posters, cinema stories, photos of equipment, audio recordings of interviews with producers and audiovisual engineers, 3D images of musical instruments and the likes. The other is medium-specific, and in turn this category spreads its net widely beyond merely the realms of broadcasting, cinema, home recording.

Audiovisual documents speak of the entire 20th century - its fictions, its realities, its politics, its high culture and its daily lives. Increasingly so, throughout the 20th and 21st centuries, audiovisual documents have become a major source of both entertainment and information. On the web, streaming video accounts for 70 percent of broadband usage.¹ This is reflected to some extent in the collections accessible via Europeana, that have been made available via dedicated projects - domain aggregators such as the European Film Gateway, EUscreen, Europeana Sounds, all participants in this Task Force - but also via singular partnerships with audiovisual archives, national aggregators and as part of topic aggregators such as Europeana Fashion.

Its popularity remains uncontested - reports have consistently quoted a greater interest for AV items from Europeana visitors than for other formats. Its quantity has massively increased with projects such as EUscreenXL intent on boosting the amount of audiovisual items with 1.000.000.000 and Europeana Sounds, with comparable numbers. Its presence, meanwhile, leaves room for improvement. Many of these are technical in nature, and are related to the time-based nature and complex composition of the medium. None of these are unsolvable, however. We live in a world that is technologically advanced enough to have video as a daily part of our learning, sharing, communicating environments, and with it the standards and best practices that Europeana can rely upon to improve the experience of these items for its various user groups.

¹ Peter Kafka, 'Streaming Video Now Accounts for 70 Percent of Broadband Usage', Recode, 7 December 2015, <http://www.recode.net/2015/12/7/11621218/streaming-video-now-accounts-for-70-percent-of-broadband-usage>.

Improving the Use of AV to Improve Usage

Recommendation 1 Offer a Unified AV player

Current Best Practices

Video available via Europeana is mostly available in Tier 1 form: the `is:ShownAt` URL points to a web page with contextual information on the provider's or aggregator's website. Videos where the `is:ShownBy` points directly to the source URL are displayed on the portal and come from a variety of sources. YouTube embedding has been activated as a proof of concept - but is not permitted when advertisements are shown. Other videos are displayed from a variety of sources and video platforms. Offering a unified AV player on the Europeana Collections platform would greatly enhance the user experience and allow advanced features and services that could greatly improve the use and consumption of AV content in Europeana. Features like subtitles, time-aligned metadata and annotations (all described further in this document) could only be supported in a coherent and generalised way through the use of a unified AV player. The need of such a unified player becomes even stronger if the video streaming service should become part of the DSI Core infrastructure.

Currently, the Europeana Collections platform is only supporting the embedding of third party video players (Youtube, Vimeo, etc.) for the playout of video content. Aggregators like EFG have taken a similar approach. For its core collection (ie. the videos accessible via `euscreen.eu`), EUScreen provides a secure unified HTML5 player for its AV content.² Only very recently, in the framework of the Europeana Sounds project, the Europeana Radio Player³ has been developed. This player is based on the Amplitude.js audio HTML player, and could be used as a unified player for audio content on the Europeana Collections site. Europeana is also participating in the IIF working group, in which a subgroup has been established in order to discuss specific issues related to AV playout⁴. Considering this involvement and also the fact that Europeana is planning to invest in the implementation and support of the IIF standard in the DSI projects, it's worth to take into account the development of an IIF AV player.

Recommendations for Implementation

When thinking about offering a unified player, there is no reason for reinventing the wheel. The first step to take, is looking at existing open source AV players (based on HTML5) that support the features we need (subtitles, time-aligned metadata/annotations), using open standards like WebVTT.⁵ A first candidate could be the EUScreen player, which is based on HTML5 and is available under an open source license.

² Themistoklis Karavellas, 'HTML 5: A Security Solution for EUScreenXL' (EBU Developer Conference, Geneva, CH, 7 October 2015), http://www.slideshare.net/nisv_rd/html-5-a-security-solution-for-euxscreenxl.

³ See <https://github.com/europeana/radio-player> and <http://www.europeana.eu/portal/en/radio.html>

⁴ See <https://github.com/IIF/iif-av/issues?q=is%3Aissue+is%3Aopen+sort%3Acreated-asc>

⁵ See <https://w3c.github.io/webvtt/>

Other candidates to investigate are jPlayer and MediaElement.js. More in general, any player using the W3C HTML5's Media API⁶ should work, even if support for WebVTT should be checked separately. As mentioned above, the possibility of utilising an IIIF player for video should also be taken into account, even if support of features like subtitles and time-aligned metadata is still under development.

Work Ahead

The Task Force aims to investigate and deliver the requirements for a unified video player for Europeana collections and a matrix of available playout technologies that can deliver.

Its impact will be that making the use of video assets in the Europeana environment will become a richer experience, that utilises state-of-the-art technologies in order to present video in an enriched context amidst Europe's cultural and historical collections.

⁶ See <https://developer.mozilla.org/en/docs/Web/API/HTMLMediaElement>

Recommendation 2

Bring Audiovisual Assets to the Semantic Web

Current Best Practices

The semantic possibilities of the web - making information shared online more meaningful to the systems exchanging it by using elements such as RDF that describe the content - have been at the forefront of development interest for Europeana's infrastructure. It is a major topic for the Europeana Tech community and the topic has been central in the development of EDM. Likewise, it is a major topic for several organisations working on the online availability of audiovisual assets. EUscreen made its entire collection available as linked data for the first time in 2011.⁷ The 'Metadata Standards for Cinematographic Works' (CEN TC 372) have ample provisions for film catalogues to be made semantic web-ready. Broadcasters such as the BBC use a linked data approach for structuring not just its online programme pages, but all its online activities and broadcast organisations EBU, VRT and NRK make ample use of DBpedia's work on converting unstructured data available on Wikipedia into RDF to extract contextual information for their programmes, based on automatic metadata extraction from natural language processing methods, like Named Entity Recognition, speech to text or text to speech.⁸ Additionally, the International Association of Sound and Audiovisual Archives (IASA) has a task force dedicated to the topic of semantic publishing. The technology offers ample potential to properly contextualise audiovisual collections published on the web.

Recommendations for Implementation

Applications such as the HyperTED⁹ demonstrator, developed in the research project LinkedTV, show the potential of multimedia hyperlinking in order to link video fragments to other collections and items on the web. It is type of interrelation within a collection of objects in all sorts of media that makes the technology such a compelling feat for the Europeana infrastructure.

Work Ahead

The aim is to investigate how Europeana can support this at present, draft a user story in the context of Europeana Collections and identify areas of technical innovations (from Minimal Viable Product to more elaborate use of Multimedia Hyperlinking).

The Task Force will further develop use and a concrete proposal on how multimedia hyperlinking can be used in the context of Europeana. We will do so on at least two ambition levels, including an assessment of the added value for Europeana users/personas.

⁷ Johan Oomen, 'Television Archives Join Linked Open Data Movement', 29 September 2011, <http://blog.euscreen.eu/archives/2027>.

⁸ Jean-Pierre Evain, Mike Matton, and Tormod Vaervagen, 'Wikipedia and DBpedia For Media - Managing Audiovisual Resources In Their Semantic Context', in NLP&DBpedia Workshop Proceedings - Preprint (NLP&DBpedia Workshop, Kobe, JP: Springer LNCS, 2016), https://nlpdbpedia2016.files.wordpress.com/2016/09/nlpdbpedia2016_paper_1.pdf.

⁹ José Luis Redondo García et al., 'HyperTed: Searching and Browsing TED Talks like You Never Imagined' (LinkedUp VICI Challenge at ISWC, Trentino, Italy, 20 October 2014), <http://es.slideshare.net/JosLuisRedondoGarca/hyperted-40494120>.

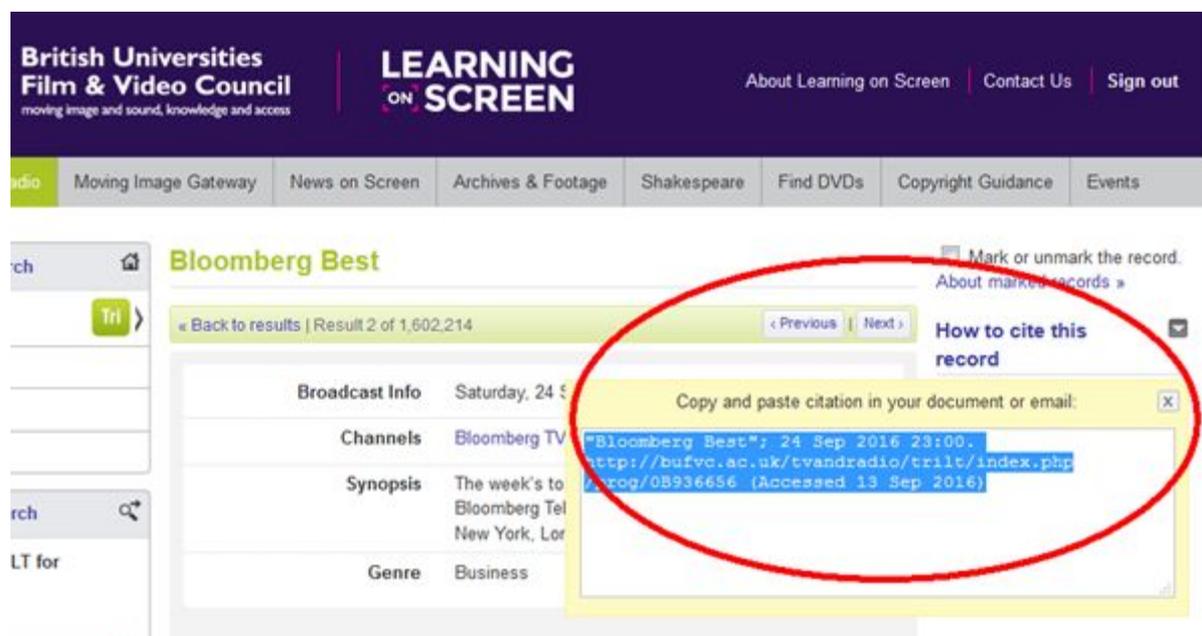
Recommendation 3 Include Citations for Research

Current Best Practices

As the Europeana Cloud project established, fetching and automatically importing bibliographic references into bibliography applications was considered as “very” or “extremely” important by scholarly audiences.¹⁰ Facilitating the citation of sounds and moving images, whether published, broadcast or unpublished, should be better supported by a source for investigation such as Europeana. The rationale for improving the possibilities of citing audiovisual sources was explored by JISC’s Film & Sound Think Tank and is clearly explained in the summary report by Gerhardt & Kaufman:

“We have been developing, during these centuries, an entire scholarly apparatus for quoting, citing, excerpting, and crediting books, journals, newspapers, and other printed sources, but the equivalent conventions of attribution – footnotes, endnotes, bibliographies – remain challenging for moving images and recorded sound.”¹¹

One of the Think Tank’s 10 strategic recommendations was the creation of citation guidelines, which were duly issued by EUscreen partner BUFVC in 2013. BUFVC has deployed citation guidelines for audiovisual citation and a citation tool that is available on its website.¹²



The screenshot shows the Learning on Screen website interface. At the top, there is a navigation bar with the British Universities Film & Video Council logo and the Learning on Screen logo. Below the navigation bar, there is a menu with various categories like Moving Image Gateway, News on Screen, Archives & Footage, Shakespeare, Find DVDs, Copyright Guidance, and Events. The main content area displays a record for 'Bloomberg Best' on Saturday, 24 Sep 2016. A red circle highlights a yellow box containing a citation tool. The citation text is: "Bloomberg Best"; 24 Sep 2016 23:00. <http://bufvc.ac.uk/tvandradio/trilt/index.php?prog/0B936656> (Accessed 13 Sep 2016). The citation tool also includes a 'Copy and paste citation in your document or email' button and a 'Mark or unmark the record' checkbox.

Technologies that support automated citation retrieval are well supported in the academic publishing environment. Likewise, technologies exist to expose the metadata to academic

¹⁰ Stavros Angelis et al., ‘D1.3 User Requirements Analysis and Case Studies Report. Content Strategy Report.’, Europeana Cloud project deliverable (Europeana Cloud, November 2015), http://pro.europeana.eu/files/Europeana_Professional/Projects/Project_list/Europeana_Cloud/Deliverables/D1.3%20D1.6%20User%20Requirements%20Analysis%20and%20Case%20Studies%20Report%20Content%20Strategy%20Report.pdf.

¹¹ Paul Gerhardt and Peter B. Kaufman, ‘Film and Sound in Higher and Further Education: A Progress Report with Ten Strategic Recommendations’ (JISC, June 2011), <http://filmandsoundthinktank.jisc.ac.uk/>.

¹² See <http://bufvc.ac.uk/projects-research/avcitation>

reference tools such as Zotero, Mendeley, EndNote, for example ContextObjects in Spans (COinS).¹³ Other academic projects such as Clipper¹⁴ further stimulate the enhanced academic possibilities for audiovisual materials, by including annotation options.

Recommendations for Implementation

It might be a relatively trivial task to deploy a 'cite this' button on the Europeana portal, for any media type. For sound and moving image it needs investigating to what extent they can currently be easily integrated. A time-based citation at a more granular level within a media file will only work for direct links, and the citation needs to be persistent if it is to be effective.

Adding a citation tool will:

- Likely increase use of and referral to Europeana
- Enhance the credibility of sound and moving images in scholarly works, and use by general public
- Encourage data providers, since many don't deploy such a tool themselves
- Make Europeana more useful to this specific community of academic researchers.

Work Ahead

The Task Force will, in conversation with the Europeana Research team, further investigate and weigh the availability and implementability of citation tools and their adaptability to the audiovisual record.

¹³ See <http://ocoins.info>

¹⁴ See <http://blog.clippertube.com/>

Recommendation 4

Implement Content-based Indexing for Audiovisual Materials

Current Best Practices

Automatic or semi-automatic extraction of metadata (descriptors) from video and audio is a topic explored in several research projects (in the FP7 and H2020 calls). But real production systems that automatically extract features, like person names, objects or landmarks from a video or a still image are not easily deployable due mainly to scalability reasons. Some effective work has been done to extract low level features, like dominant colors and speech to text transcriptions.

The British Library, for example, is planning to incorporate a speech-to-text facility in 2017-18, as part of its digital radio archive plans, after experimenting it in a previous project on its broadcast news.¹⁵

In the Europeana DSI project, partner AiT is experimenting low level feature extraction from images, with concrete use cases also presented in the Europeana Creative project, while in Europeana Sounds a module that enables querying by melody or pitch has been prototyped.¹⁶ In Europeana Fashion, dominant colors extraction has been performed on more than 400.000 catwalk images, analysing not just the whole picture, but automatically isolating the dress silhouette.

Recommendations for Implementation

While investing directly in research and development of new technologies on the topic of automatic metadata/features extraction is out of the scope of the actual Europeana DSI framework, experimenting, reusing and applying third party technologies and tools on the Europeana audiovisual corpus could lead to interesting results. There are promising tools coming out from research projects, like LinkedTV¹⁷ or Mekanex,¹⁸ that could eventually be tested on Europeana AV content. Another interesting development is the surge of available APIs that could be integrated and tested in the Europeana platform, like the Cognitive Services APIs from Microsoft,¹⁹ which offer a wide set of possibilities of features extraction and indexing from audio, video and images.

Work Ahead

In the terminology of Operation Direct, the availability of content-based indexing for audio and video is rapidly moving from Horizon 3 to Horizon 2. Additionally, the technologies are an important mechanism to improve the much-sought after quality improvements for the collections. The Task Force therefore recommends structural assessment for these technologies on the currently available data set.

¹⁵ See <https://www.bl.uk/projects/opening-up-speech-archives>

¹⁶ Alexander Schindler and Harry Van Biessum, 'D2.6 Music Information Retrieval Pilot Delivery Report', Europeana Sounds project deliverable, (4 December 2015), http://pro.europeana.eu/files/Europeana_Professional/Projects/Project_list/Europeana_Sounds/Deliverables/europeanasounds-d2.6-music-information-retrieval-pilot-delivery-report-v1.0.pdf.

¹⁷ See <https://www.linkedtv.eu>

¹⁸ See <http://mekanex.eu/about-2/mekanex-tools/video-annotations-tool>

¹⁹ See <https://www.microsoft.com/cognitive-services/en-us/apis>

Accessibility of Audiovisual Media

Recommendation 5

Create an Infrastructure around Subtitled Media on Europeana

Current best practices

A tremendous challenge to making audiovisual, time-based materials - be it sounds or moving images - accessible to international audiences, is translating the seen or heard content into a language accessible to the viewer/listener. As video grows to be an increasingly important part of online communications, the importance of clear captions becomes more clear. e.g. on Facebook, where subtitles are a main requirement for online engagement.²⁰

Closed captioning (CC) and subtitling are both processes of displaying text on a television, video screen, or other visual display to provide additional or interpretive information. Subtitles can be burnt-in, as is the case with several film and video materials made available via EFG and EUscreen. The closed-captioning method whereby viewers can select captions, or language versions, is by far preferable. There are currently no de facto standards for online captions, and various platforms use various methods - oftentimes based on the BBC guidelines for closed captions.²¹ The EBU working group has for a long time been working on making subtitles presentable by means of XML.²²

Recommendations for implementation

Integrating subtitles via XML would potentially provide integration of the text version as a part of the item metadata, thus making the video material better searchable and findable. Challenges to creating and implementing subtitles on Europeana include questions about using automated captioning, and involving crowd engagement - both topics widely researched in the EUscreenXL project.^{23,24} A notably easy-to-implement technology is the WebVTT standard, which is fully supported in HTML5. The HTML5 element and WebVTT file format can not only add closed captions to videos, but also subtitles, descriptions, chapter markers and other timed metadata, such as preview thumbnails. All major browsers support WebVTT captioning, styling and scripting, although Firefox is missing a closed caption button in its controlbar, and IE 10+ and Edge support TextTracks but not yet the 'onchange event'.²⁵ The largest challenge is the creation of captions and subtitles itself - often not available for heritage materials from broadcast or film collections. We see promising developments here from combining automation (see previous chapter) with

²⁰ Ben Kew, '85% of Facebook Video Watched Without Sound', Breitbart, 1 June 2016,

<http://www.breitbart.com/tech/2016/06/01/85-facebook-video-watched-without-sound/>.

²¹ 'BBC Subtitles Guidelines Version 1.1.3', 3 June 2016, <http://bbc.github.io/subtitle-guidelines/>.

²² 'Subtitles in XML', EBU Technology & Innovation, accessed 4 July 2016, <https://tech.ebu.ch/groups/pdfxp>.

²³ Rob Turnock et al., 'Development and Design Brief of User Engagement Pilot Excl Annex', Project deliverable (Utrecht, NL: EUscreenXL project, 23 October 2013),

<https://my.alfresco.com/share/euscreen.eu/proxy/alfresco/api/node/content/workspace/SpacesStore/ac736274-b27e-432f-b9e5-63727896fd29/D3.3%20Development%20and%20design%20brief%20of%20user%20engagement%20pilot%20excl%20annex.pdf?a=true>.

²⁴ Arne Stabenau et al., 'Pilot Services', Project deliverable [Confidential] (Utrecht, NL: EUscreenXL project, 10 April 2015).

²⁵ 'HTML5 Report', JW Developer, 18 July 2016, <http://developer.jwplayer.com/articles/html5-report/>.

crowd-sourced quality control processes, applied for example by the MLLP unit at the University of Valencia and the Participatory Culture Foundation's tried and tested Amara platform.

Work Ahead

Implementing the necessary technology and workflows is a sizeable challenge. Yet the outcomes are a tremendous improvement to the accessibility of cross-border materials. The Task Force recommends a proper embedding of captioning and translation activities in the Europeana DSI infrastructure by supporting pilot projects testing out the installation of an end-to-end subtitling process for highlighted collections.

Recommendation 6 **Allow Time-based Annotation and Metadata Creation to Make More Relevant Search Queries**

Current best practices

Audiovisual content is time-based content. This creates a number of medium-specific challenges. Time-based metadata relate to some of the technical improvements proposed under the topics of citations and semantics, but we offer them a separate spot in this document, as their relevance is broader than a merely technological approach. Annotation as a whole is discussed in a number of related fora, such as Europeana Tech and Europeana Sounds, where use tagging is involved and AIT is working on Entity and Annotation APIs.

Recommendation 7 **Visualise Results and Object Pages**

Current best practices

Improving user exploration on the Europeana Collections portal²⁶ has been a recommendation in the most recent round of user testing. Improving user exploration for time-based works specifically would benefit from a few different improvements.

²⁶ User Intelligence, 'Europeana - Integrated Report v1.0' (Europeana Foundation, March 2016).

Editorial Context of Audiovisual Media on Europeana

Recommendation 8 on Collection Building

Current Best Practices

It is a well-known fact and has been confirmed in many surveys that AV content, especially video content is the most sought-after content for Internet users. At the same time it has proven to keep users engaged on a website longer than any other content, raising the time spent on a certain website. This fact has already in the early days of Europeana been acknowledged by EF and one of the main concerns of Europeana since its beginnings has been to bring in more AV content to Europeana. Still today, around 54,7% of the content accessible via Europeana is image content, with TEL as the largest aggregator 42,1% of the content on Europeana is text, leaving AV and other content such as 3D at a bottom of just 3,2%.²⁷

Despite the underrepresentation of AV content in Europeana, the search algorithm of the Europeana portal does not seem to surface AV content properly. When entering a search term in the Europeana portal, usually the first couple of result pages will surface image and text content only, before any AV content is listed. This is true even for AV content that comes with a direct link and a thumbnail as well as rich metadata.²⁸

Recommendations for Implementation

The task force recommends to rank AV content more prominently in general to bring the diversity of content offered through Europeana to the users' attention in a better way. This could also mean to feature video content prominently, even if it only comes with a `is:ShownAt` link (which is the case for many videos in Europeana). A search for Battle of the Somme for example currently returns over 75 result pages with images, before the film "The Battle of the Somme" is listed. Still, when it was released in 1916 the film was a massive success, watched by about 20 million people in Britain in the first six weeks of exhibition and distributed in eighteen other countries. Since 2005, it has been inscribed in UNESCO's Memory of the World Register.

Listing video and audio content more prominently in the search result list will help users to appreciate the richness of materials available in Europeana more easily as they won't have to make use of filters in order to find other content than images or texts.

With regard to thematic collections, to raise the proportion of AV content, it should be investigated if items that come with a thumbnail and good metadata quality but without a direct link (as is the case for most AV material) might still be integrated in a thematic collection. According to the new Policy for Thematic Collections this is not possible, however the strict implementation of this might mean that the gap between numbers of images, texts and AV items available to the users will grow further.

²⁷ Europeana Statistics Dashboard 31-10-2016

²⁸ An example is the search for "Franz Ferdinand", whose assassination triggered the First World War: <http://www.europeana.eu/portal/de/search?q=franz+ferdinand>. The result lists ranks image and text documents higher than AV content, even if the exact string "Franz Ferdinand" is not even contained in the title or elsewhere in the record, while relevant video content is not to be found before the search results on page 7.

Recommendation 9

Assessment of Multimedia Content

Current Best Practices

With more than 54 million of archival objects searchable on the portal (October 2016) , Europeana.eu offers access to a unique combination of different content formats such as text, audio, images, animations and video. With such an immense stock in place, curation becomes a crucial factor molding the presentation form - it helps the user to better find his or her way on the portal, to better navigate through time and place, individual histories, etc. It is our understanding, that for the majority of users format plays a secondary role, they engage because of the topic. However, when creating a narrative or an online exhibition, it is important to keep the balance between different formats used in it. Multimedia content, with audiovisual archives being its impactful element, enrich the experience, show the variety of perspectives.

Good current examples of such an editorial approach are the thematic collections: Europeana Music²⁹ and Europeana Art.³⁰ These are impressive, immense initiatives, successfully attempting to create multimedia storytelling. It is worth noting that Europeana Music derives from the Europeana Sounds project. The vast expertise of its project partners - curators, musicologists, researchers - has made the content selection, and editorial work possible.

Recommendations for implementation

Storytelling and multimedia narratives can and do support historical or artistic storytelling online, therefore when thinking about editorial work on Europeana.eu even more focus should be put on the topic itself, and not the format. The Europeana Generic Services-call may help creating a model for ways in which different experts from different domains, hubs, aggregating or interested in different media types can work together. Europeana Network should facilitate those interactions, making collaboration between researchers, curators and technical experts possible. Having a procedure/ a model, or at least a address book at hand would make the curation process much more efficient. The cross-domain collaboration could enable an even better-considered and better-balanced presentation of the multimedia content gathered on Europeana.

²⁹ See <http://www.europeana.eu/portal/en/collections/music>

³⁰ See <http://www.europeana.eu/portal/en/collections/art-history>

Recommendation 10

External Editorial use of AV Content

Current Best Practices

External collaborations based on mutual support or potential for future income generation may meet the aims of European-level co-operation, expand the use of AV content and offer a new approach to content's presentation but at the same time they may raise a number of issues and can be resource intensive. The main challenges to increasing the visibility of audiovisual content outside of Europeana and its re-use in various spheres (be it education or creative industry) are related to its legal status, the accessibility of the video, and most importantly the context and amount of work needed to make the collaboration happen. Copyright issues and difficult access make the dissemination of videos and their integration in any external matrix extremely hard to achieve. Yet, by many, moving image is perceived as highly in demand, and a powerful tool in terms of communication and knowledge sharing.

According to the lines of Europeana Publishing Framework: 'if you want to enable Europeana to use your video material as part of thematic collections and make it more accessible on the Europeana Collections site, then you need to provide a minimum of a direct link to a video file in a format that can be played directly by modern browsers.' It's a threshold impossible to overcome for most of the audiovisual aggregators. Furthermore, Europeana Collection includes almost 1 123 000 videos, of which 1 091 000 cannot be re-used, significantly narrowing down the set of AV content with potential for any editorial re-use.

In case of many AV items available on Europeana.eu user needs to follow a few steps in order to access the video (start at Europeana, click-through to the provider website, sometimes download), which makes both sharing of the item and its re-use basically impossible. Some of the videos are relevant only locally because of the language issues and searchable only in a local language. Much extra work is needed in order to make them relevant and accessible to a bigger audience, which often collides with the lack of resources for subtitling, no unified player on Europeana, etc.

In its final recommendations the Europeana Task Force for Education listed seven keys to unlock the potential for re-use of digital heritage in education. Two of the seven are:

- Copyright allows for re-use. It must be legally possible to use the digital heritage in open educational research that can be shared.
- Easy and reliable access: the sources can be used beyond where they are found, for example through direct links or embed functions, and links don't change.

Both aspects have been practically analysed under the EUscreenXL project, an attempt, at the time, to set-up a collaboration between EUscreen and EUROCLIO, creator of the on-line education multimedia tool: Historiana.eu. The project envisioned a close collaboration between Historiana educators and EUscreen content experts, with technical support from both parties. Audiovisual archival footage has been identified by educators as highly interesting and as meaningfully enriching the final presentation form. However, the project had to be temporarily put on hold, as at the time of implementation, there was no feasible way to have the EUscreen AV clips integrated (i.e. embedded) in Historiana's environment.

Recommendations for Implementation

Selection of content, including special focus on editorial approach, target language, item length, etc., may be challenging, especially in the audiovisual domain, especially if not supported by the

right set of manly skills and technical tools. There is no external collaboration without curators acting on both ends, responsible for creating an appropriate narrative for the exact context. However, without the ability to present the item in a requested form, there is a risk of losing majority of collaborations or having to go with very basic and unappealing to user presentation forms (i.e. usage of links). Hence when possible and allowed, it is important to facilitate the subscribing, time-based annotation, and other features that make the editorial work possible.

Development of an unified AV player (see 1.2 Unified Player) for audiovisual objects accessible on the Europeana portal could facilitate the use and potential re-use of the footage in a wider editorial and educational context. With embedding as one of the features of the player, the AV clips could be showcased in various external settings - as part of teaching resources or curated online presentation forms (exhibitions, etc.). A key issue here is control of content. Once content is translated, subtitled, made shorten or embedded in another project it is subject to concerns and anxieties about re-use and re-editing. Therefore AV collection holders must be given a final word before allowing their content to be used.

Work Ahead

Investigating possible scenarios to have AV content available online presented in an external environment. Historiana.eu might serve as a trial here.

Conclusions

In order to make audiovisual collection items first-class citizens on Europeana, work needs to happen on different levels. One is technical: there are currently available tools and technologies that could be better harnessed to improve the visibility and accessibility of audiovisual content displayed via Europeana. There are also solutions under development where Europeana could play a key role to demonstrate its usefulness in a large and varied data set. Besides the technical level, there are collaborations and human strengths that come into play to improve the visibility of audiovisual collections in the Europeana realm. Audiovisual works and items are primary witnesses of Europe's culture in the 20th Century - the task force is looking forward to bringing these recommendations forward to a more concrete level to be implemented in the wider digital service infrastructure.

Recommendations - Improving the Use of AV to Enhance Usage

Recommendation 1: Create or Use a Unified AV player

Recommendation 2: Bring Audiovisual Assets to the Semantic Web

Recommendation 3: Include Citations for Research

Recommendation 4: Implement Content-based Indexing for Audiovisual Materials

Recommendations - Accessibility of Audiovisual Media

Recommendation 5: Create an Infrastructure around Subtitled Media on Europeana

Recommendation 6: Allow Time-based Annotation and Metadata Creation to Make More Relevant Search Queries

Recommendation 7: Visualise Results and Object Pages

Recommendations - Editorial Context of Audiovisual Media on Europeana

Recommendation 8: on Collection Building

Recommendation 9: Assessment of Multimedia Content

Recommendation 10: External Editorial use of AV Content

Future planning

	November 2016	December 2016	January 2017	February 2017
Investigate and deliver the requirements for a unified video player for Europeana collections	Yellow			
Deliver a matrix of available playout technologies that can deliver		Yellow		
Draft user stories in the context of Europeana Collections and identify areas of technical innovations for semantic technologies for AV		Red		
Develop a concrete proposal on how multimedia hyperlinking can be used in the context of Europeana		Red		
Further investigate and weigh the availability and implementability of citation tools and their adaptability to the audiovisual record.	Green			
Structural assessment of content-based indexing for audio and video on the currently available data set		Orange		
Recommendations for a proper embedding of captioning and translation activities in the Europeana DSI infrastructure			Purple	
Set up pilot project under DSI-2 testing the installation of an end-to-end subtitling process for highlighted collections	Purple			
Investigate possible scenarios to have AV content available online presented in an external environment	Blue			
Connect with Historiana.eu to develop trial ideas			Blue	

