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1.03 Kratki znanstveni članek

1.03 Short Scientific Article

AN ARCHIVAL REPOSITORY OF ARCHIVAL REPOSITORIES: INTEGRATING METADATA IN ARCHIVES PORTAL EUROPE

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Abstract:

Since 2009, in parallel with the creation of national or local research portals, countries around Europe have started to design a system to integrate these online allowing to access Europe's archival heritage through one single entry point. In 2012, after three years of research, Archives Portal Europe (APE) opened up to all institutions holding archival material about Europe. Today, the portal enables new types of digital archival research, freed from geographical limitations and based on cross-country comparison and multilingualism. At the same time, establishing a common basis for the central services of the portal to allow for the searching, processing, and displaying of the archival material of thousands of institutions comes with important technical (as well as political) challenges. This paper presents challenges and solutions adopted by Archives Portal Europe as a multi-level international aggregator.

Key words:

European Archival Heritage, Discovery, Aggregation, Interoperability, Access

Izvleček:

Arhivsko skladišče arhivskih skladišč: integracija metapodatkov v Evropskem arhivskem portalu

Od leta 2009, vzporedno z nastankom nacionalnih ali lokalnih raziskovalnih portalov, so evropske države začele ustvarjati sistem za integracijo svojih spletnih prostorov v skupni katalog, ki bi omogočal dostop do Evropske arhivske dediščine preko enotnega raziskovalnega portala. Po treh letih raziskav je bil leta 2012 objavljen Evropski arhivski portal, odprt vsem institucijam, ki hranijo arhivsko gradivo o Evropi. Danes portal omogoča nove tipe digitalnih arhivskih raziskav, ki niso omejene z geografskimi razdaljami in temeljijo na meddržavnih primerjavah ter večjezičnosti. Po drugi strani pa se je potrebno pri ustvarjanju skupne baze za potrebe iskanja, obdelave in prikaza arhivskega gradiva tisočernih ustanov soočiti s pomembnimi tehničnimi (in tudi političnimi) izzivi, še posebej pri oblikovanju metapodatkov. Prispevek predstavlja izzive in rešitve Evropskega arhivskega portala, ki deluje kot večnivojski mednarodni agregator.

Ključne besede:

Evropska arhivska dediščina, združevanje, odkritje, medoperabilnost, dostop

1. INTRODUCTION

Archives Portal Europe (www.archivesportaleurope.net) is the gateway to archives from and about Europe; it was set up in the context of various European directives from the early noughties on the usage of new web technologies to allow easier access to the European archival heritage and to better connect the archives spread across the enlarging European Union. While the portal does not hold any digital items directly, it brings together descriptive metadata from more than 30 countries, in more than 20 languages (and 5 different alphabets), and from a large variety of institutions: from national archives to community archives, from private institutions to parish and university archives. The portal currently holds information on around 7000 archival institutions, of which over 1100 actively contribute with content, providing more than 270 million archival descriptive units – currently the largest online archival repository in the world.

By being the single entry-point to the European archival heritage, the portal enables new types of digital archival research, freed from geographical limitations and based on cross-country comparison and multilingualism. At the same time, establishing a common basis for the central services of the portal to allow for the searching, processing, and displaying of the archival material of thousands of institutions, comes with important challenges, particularly with regards to metadata design. This paper presents the history of Archives Portal Europe (APE), the new directions for historical research it allows, and the challenges (and solutions) adopted by this unique multi-level international aggregator.

2. BACKGROUND TO THE ARCHIVES PORTAL EUROPE REPOSITORY

Archives Portal Europe (APE) went online as a pilot in 2011, with 14 million descriptive units, a milestone of the “APEnet” project (“Archives Portal Europe network,” 2009-2012) funded by the European Commission, which aimed at establishing an “Internet Gateway for Documents and Archives in Europe.” (European Commission, 2005) The project was conceived within the European Archives Group (EAG), the European Commission experts group, and stemmed directly from a set of recommendations proposed by the European Council between 2003 and 2005, which aimed at reflecting on the opportunities and challenges of two new phenomena of the time: the enlargement of the European Union to the East, and the digitisation process (European Commission, 2005). In particular, the 2005 *Council Recommendation on priority actions to increase cooperation in the field of archives in Europe* suggested the:

establishment and maintenance of an Internet Gateway for documents and archives in Europe [for the] provision, through the national archives services of the Member States and the archives services of the institutions of the Union, of an Internet Gateway which would give easier and cross-border access to documents and archives of the Member States and institutions of the Union. (European Commission, 2005)

The *Report on Archives in the enlarged European Union*, from the same year, suggested as a concrete action to

establish an ad hoc working group [...] which will coordinate the creation of the Gateway and regularly report on progress, to the proposed official Archivists Committee of the EU-Member States and EU-Institutions

[with the aim to] enable all citizens in the EU-Member States to carry out searches on the Internet for information held on digital form across national boundaries and to access and download copies of the digital documents of interest to them. (National Experts Group on Archives, 2005)

Interestingly, the *Report* identified in archival institutions the most apt bodies to shape the web, intended as an infrastructure for information retrieval. It also recognised that the Internet was helping to “*position archives as irreplaceable professional providers of information about the past and the roots of the common identity of communities*” (National Experts Group on Archives, 2005). In other words, the web was seen as an instrument to promote European integration by incentivising archival institutions to operate with a supranational mindset.

By 2005, many countries in Europe had set up national-level projects to create national databases of finding aids available on the web, and to gather into one web space the different instances created by single archives; the *report* listed 47 projects in 14 countries, as well as 7 supranational initiatives for interoperability, listed in Table 01.¹ In 2008, 12 national archives,² together with the newly-established Europeana (www.europeana.eu), the portal for digitised European cultural heritage, obtained funding to set up the “APEnet” project (“Archives Portal Europe network”, 2009-2012), with the aim of building the Gateway as an online metadata repository from European archives that would offer access:

- *finding aids covering millions of digitised and not yet digitized [sic] documents;*
- *the individual documents and digital objects through these finding aids;*
- *information about individual collections, the institutions that house them, and their creators; and [...]*
- *facilitate their contribution to Archives Portal Europe and in the end to Europeana. (APEnet, 2009)*

Starting from an analysis of the existing standards and national-level projects, APEnet developed and tested a series of technologies to allow the interoperability amongst different datasets and methods to provide web access to the information. The first version of APE went online in January 2012, with 14 million descriptive units (descriptions of archival records) from 61 European archival institutions, or “content providers,” and linked to 64 million digitised pages. (López Cuadrado, 2018) While the APEnet project laid the basis for such a gateway to national archives, its successor, the “APEX” project (“Archives Portal Europe network of excellence”, 2012-2015), expanded horizontally, towards a network of more than 30 partner countries,³ as well as vertically, by including a broad variety of institutions with archival holdings into the portal. At the

¹ A full list of the national-level projects is available in National Experts Group on Archives (2005). *Report on Archives in the enlarged European Union. Increased archival cooperation in Europe: action plan*, p.61.

² Spain, Poland, Slovenia, Germany, Greece, Portugal, France, Finland, Latvia, The Netherlands, Malta, Sweden. Furthermore, the National Archives of Ireland, Belgium, Bulgaria, Czech Republic, and Estonia joined after the project started, for a total of 17 institutions.

³ In addition to the countries participating to APEnet, APEX comprised Austria, Croatia, Hungary, Italy, Liechtenstein, Lithuania, Luxembourg, Norway, Slovakia, Denmark, Iceland, Switzerland, United Kingdom, Romania, Serbia, Georgia.

end of the APEX project, 20 of the partners⁴ decided to continue the project through the establishment of the Archives Portal Europe Foundation (APEF), registered as a non-profit organisation under Dutch law. Unlike the APENet and APEX projects, APEF is not financed through EU funding; it is an independent and self-sustained body, which allows for more independence in the strategies adopted.

3. DESCRIPTION OF THE PORTAL

APE provides access to descriptive metadata from over 1100 institutions of various types, as well as data on more than 7000 institutions with archival holdings. It operates in more than 24 languages (and five different alphabets) and holds descriptions of more than 560000 archival fonds and collections, making it the largest aggregator of its kind in the world. The scope of the portal is to gather archival descriptions *from* Europe or *on* Europe, without limitations on the nationality or type of archival institution holding the material. While the bulk of initial collections belonged to administrative archives based in Europe, mostly national archives, the portal is now expanding to include private and community archives, as well as archival institutions of countries not yet involved.

3.1 Content and Access

The portal hosts archival heritage held in Europe-based institutions (material *from* Europe), or that relates to European cultures and history (material *on* Europe). The archival material described is extremely varied, spanning from antiquity to the 20th century. From an end-user perspective, the Portal allows three levels of access:

- a directory with information on the archival institutions;
- holding guides, finding aids, and descriptive units of the archival material held by the institutions;
- links to the digital objects of the documents and/or to the description in the original portal.

The first level is the directory of archival institutions that already provide, or will provide, content to the portal. As of February 2020, the portal hosted a register of more than 7000 institutions, providing address, contact details, information on access, and other information on the institution.

The second level is the archival descriptions themselves. Currently the portal hosts more than 560000 archival fonds and collections with a total of nearly 279 million descriptive units at the time of writing from around 1100 institutions (APEF, 2020). The archival material is organised around holding guides, finding aids, and descriptive units, which provide different levels of description of the archival material; APE has maintained the traditional structure of the archives, and translated it for the digital environment.

The third level of access, when available on the web, is the link to the original description of the document on the webpage of the institution, or to the digital object of the document itself if it exists. It is important to stress that APE only contains and displays metadata, not digitised collections, and it does not require institutions to provide digitised representations of their material. Digital objects mainly play a role in APE in the form of links provided as part of the metadata, but they remain on the websites of the institutions

⁴ *The national archives of Belgium, Bulgaria, Denmark, Estonia, France, Germany Hungary, Italy, Liechtenstein, Lithuania, Luxemburg, Malta, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland.*

holding the materials in question. Furthermore, as an aggregator of records that are already publicly available, the portal does not deal with digital-born records for the time being.

The information held in APE can be accessed via different routes depending on the research interest and approach. The portal offers three ways of searching data: through the more traditional list of finding aids and holding guides offered by each institution; through a curated topics lists; or through a Solr-based search engine that allows multilingual functionalities. Given the enormous amount of information, a series of filters are available both before and after a search has been conducted. When a finding aid or descriptive unit is visualised, the interface of the portal allows to retain the provenance of the document by displaying its hierarchical structure. Finally, through its Featured Documents, the portal regularly presents highlights from specific collections from selected content providers; these are virtual archival exhibitions based on a specific collection, which offer the digital objects in display together with a guided tour of their historical relevance.

3.2 Ingestion and Standards

In the backend of the portal, the dashboard, all archival material is provided by the content providers (CPs). CPs are given an institutional login to the dashboard where they can create a profile for the institution following the EAG (Encoded Archival Guide) standard which provides a common set of information about archival centres in the digital environment; they can then proceed autonomously to the ingestion of the finding aids as HTTP uploads, via an FTP connection, or to automated harvesting through OAI-PMH.

As explained more in detail in the next sections, the metadata for the archival collections follow the EAD (Encoded Archival Description) standard, which allows to preserve the hierarchical relations amongst different descriptive levels, while making it possible to be retrieved and displayed through general queries within a search engine (López Cuadrado, 2018). APE also provides descriptions of the creators of the archival material, through the EAC-CPF (Corporate bodies, Persons, and Families) standard. All these are the most common standards for archives in the digital environment, developed since the 1990s by the Society of American Archivists (SAA) and based on the descriptive standards published by the International Council on Archives (ICA). As part of the "APEnet" project, the use of these standards was harmonised based on how the partner institutions of APE had implemented EAD for their collections. The application profiles of these standards as used by APE (apeEAD, apeEAC-CPF, and apeMETS) are maintained and updated by the foundation, and they include specifications that promote the best technical usage for the web.⁵

⁵ For a full list of corrections between EAD and apeEAD, please refer to APEnet (2011), *Mapping towards and normalisation in APEnet EAD – Best Practice Guide [pdf]* Available at http://www.apenet.eu/images/docs/apenet_mapping_normalisation_guide.pdf Accessed 04 Mar 2020. The apeEAD schema is available at <http://www.archivesportaleurope.net/Portal/profiles/apeEAD.xsd>

3.3 Organisation and Workflow

Since 2015, the Archives Portal Europe Foundation (APEF) has taken over all responsibilities and rights from both the APENet and APEX projects, most prominently the maintenance and further development of the portal and its network. The management of such an international and diverse collaboration, whose scope extends to thousands of institutions amongst many different languages, archival traditions, policies, and cultures, is made possible through a “glocal” management approach, that combines centralised organisation with decentralised data ingestion workflow.

In addition to the staff, the foundation is structured around three main bodies: the Assembly of Associates (AoA), the Governing Board (GB), and the Country Managers’ network. The AoA is the governing body of APEF, mainly representing national archives and national archives bodies of its partner countries. It provides the funds and it decides over future steps and development. The GB, elected by the AoA and represented by members of the national archives, oversees the day-to-day management of the foundation, which is carried out by a team of three employees for all aspects of development, communication, promotion, and organisation. Finally, the Country Managers are country-level representatives of the institutions that contribute to the portal; they liaise between the foundation and the content providers disseminated over their territories. They contribute to local dissemination and communication projects, and they collaborate to data preparation projects and technical solutions; they are also part of a permanent Working Group on Standards (WGoS) that oversees the metadata structure upon which the portal is based.

Unlike other web-based aggregators, APEF has made the choice to give to the single institutions complete control over every step of data processing, from ingestion to quality control, leaving to the central foundation team the role of IT support, maintenance, and further development of the overall services provided by the portal. This allows each institution to decide on the amount and timing of uploads and updates according to their own schedule. On the other hand, such a set-up enables institutions to break down the data processing in single steps if needed - e.g. when updates to the local data model require more detailed testing. To get acquainted with, to test, and to manage the data processing, content providers to Archives Portal Europe have access to a variety of tools that can be used online and centrally or, up to a certain point, offline and locally. This is to cater for differences in resources and capacities of the institutions as well as differences in personal preferences and time of the colleagues responsible for data preparation and ingest. All developments in the context of Archives Portal Europe are open source and freely available via the portal itself, or on its GitHub repository.⁶ One important division in the data ingestion workflow of the Portal is between countries that have a national-level portal aggregating material from local archives at a country-level, such as France (France Archives, <https://francearchives.fr/>), or the UK (Archives Hub, <https://archiveshub.jisc.ac.uk/>), and countries that do not have such a centralised system, and in which the ingestion process is left to single content providers. The ingestion process is therefore discussed and organised by the Country Managers and the APEF staff on a case-to-case basis.

Finally, APEF also collaborates with other initiatives for digital archival heritage; from the active relationship with Europeana as aggregator, to other infrastructures such as DARIAH (Digital Research Infrastructure for the Arts and Humanities, www.dariah.eu), SNAC (the Social Networks and Archival Context, <https://snaccooperative.org/>), and Wikipedia.

⁶ Available at <https://github.com/archivesportaleuropefoundation>.

4. THE CHALLENGES OF INTEGRATION: CURATING THE INGESTION PROCESS

When it comes to aggregating information from so many different institutions and countries and integrating this information into one common workflow for processing and presenting, the word part “multi” quite quickly takes the stage. From its very beginnings, Archives Portal Europe has operated in a multicultural, multi-institutional and multilingual environment and each of these “multi-s” has brought its own challenges along the way.

Starting with the multicultural aspects of bringing together archival institutions from more than 30 countries, one soon is reminded of the fact that especially archives of public administrations on all levels have been influenced and are to a certain extent bound to the administrative organisation of the state. This is not only reflected in the materials these institutions hold and in the way they have described their materials, but also in the organisational relationships between national, regional and local institutions. In Europe, this comes down to two main approaches which can be found with some variations across the continent: centralised and decentralised. From the perspective of an aggregator such as APE, there is a lot that could be said in favour of centralised structures, because they remove complexity when trying to connect with many players at the same time, especially when it comes to systems and infrastructures that are jointly used. On the other hand, a centralised organisation also comes with some challenges, namely the stricter rules that may apply in accepting institutions that are not yet present in the national-level aggregator (for example, private archives *vis à vis* an aggregator of institutional archives). The Archives Portal Europe Foundation, in this respect, tries to act as a mediator.

The biggest challenges, however, relate to multi-institutional aspects in the context of an aggregator. Archives Portal Europe deals with institutions of all kinds: big and small, with diverse as well as one-person teams, with differing levels of resources, capacities and experiences. As an aggregator that aims at a high level of autonomy and flexibility for its content providers, the portal hence has to cater for a variety of approaches to data ingest, processing and management. This is addressed by:

- providing online as well as offline versions of the tools for data preparation;
- allowing for a choice of delivery methods from simple HTTP uploads to automated harvesting with OAI-PMH;
- giving direct one-to-one support if required;
- extending the support network via the Country Managers who are knowledgeable not only in their countries’ archival traditions, but also in the systems and software used by institutions from their countries, in the national approaches to archival description and, to certain extent, in other administrative and organisational aspects that might impact the workflows and processes.

Another part of the multi-institutional challenge is the variety of archival management systems used throughout Europe. Even for institutions using the same system there often is no one-size-fits-all approach possible, due to differences in versions and especially differences in the actual implementation - with customised fields being added and existing fields either not being used or being used for different purposes. National aggregators, either domain-specific or cross-domain, are of great help in this respect, as the portal can get its content in a form that is already prepared.

National portals also play an essential role in normalising and standardising the archival descriptions for institutions within their countries. So far, such normalisation and standardisation only happen in selected areas, which are of importance for the data management within an aggregator's context as well as for certain functionalities one would want to make available. Examples include identifiers for the institutions themselves, but also for the metadata files that they provide, as well as dates, which often are normalised towards the according ISO standard 8601 to allow for date-based searches. Most other aspects of the archival descriptions are kept in their original form and structure, as the way an archival collection or fonds is described also tells a story about its context of creation, use and maintenance. Hence these differences, which one could find when comparing the materials of e.g. a national or regional state archive with the documents of a locally operated business archive, are kept intact as valuable insights for researchers, even if they sometimes can make cross-comparisons more challenging.

The third "multi" that Archives Portal Europe deals with is multilingualism. Language, in an international aggregator such as APE, plays a role on different levels. The first level is the portal's interface, which is currently available in 24 languages thanks to the translations provided by the Country Managers. While this seems relatively straightforward, the intent to provide appropriate, human-made translations for archival terminology also means that the initial task as well as continuous updates and extensions rely on volunteers and their availability.

A second level of multilingualism refers to the archival descriptions themselves, which - in the same way as the records that they describe - remain in the language of the institution and country providing the information. As of now, Archives Portal Europe has no integrated translation tool as a potential service to users, but rather works on the basis that a researcher interested in specific documents will - to a certain extent - be required to understand the language in which these documents are written and described. In the future, the foundation is exploring the possibility of providing automated translations for the descriptive units.

The third level of multilinguality concerns the central service of the portal, the search, which allows multilingual search at a topic level and at a keyword level, as explained in section 6.

5. THE CHALLENGES OF INTEGRATION: METADATA

As mentioned in the previous chapter, aggregation of metadata with the goal to make them interoperable across countries, institutions, systems, languages, and domains, requires a certain amount of normalisation and standardisation. In the archives' domain, international description standards have been around since the mid-1990s, most notably in the form of the *General International Standard Archival Description (ISAD(G))*, published in its first version by the International Council on Archives (ICA) in 1994 (ICA, 1999). Nowadays, most archival management systems in the market as well as national description standards around the world follow ISAD(G) - if not completely, then at least with regard to its basic principles concerning a small set of expected elements of description such as a title, identifier, dates, and multilevel description with a variety of available hierarchies. Next to ISAD(G), the ICA has since published the *International Standard Archival Authority Record for Corporate Bodies, Persons and Families (ISAAR-CPF)* (ICA, 2004); the *International Standard for Describing Functions (ISDF)* (ICA, 2007); and the *International Standard for Describing Institutions with Archival Holdings* (ICA, 2008).

While these description standards provide a relatively stable basis for comparability and even harmonisation, an online service such as APE needs a machine-readable version of these ICA standards to work with. This is where communication and exchange standards, where XML formats and schemas come into the picture. In the archives' world, such standards are most prominently represented by the set of Encoded Archival Standards which currently encompass:

- Encoded Archival Description (EAD) as a reaction to ISAD(G);⁷
- Encoded Archival Context - Corporate Bodies, Persons, and Families (EAC-CPF)⁸ as a reaction to ISAAR(CPF);
- Encoded Archival Guide (EAG)⁹ as a reaction to ISDIAH.

EAD and EAC-CPF are maintained and developed further by the Technical Subcommittee on Encoded Archival Standards (TS-EAS) at the Society of American Archivists (SAA), while EAG is currently maintained and developed further by APEF in close cooperation with the colleagues at TS-EAS. In addition to these three standards, APE also uses the Metadata Encoding and Transmission Standard (METS),¹⁰ with a specific focus on providing detailed rights information for digital objects.

As the Encoded Archival Standards follow the ICA description standards with regard to defining only a small set of elements as mandatory, while allowing for a variety of elements and attributes to be used optionally, APE has defined implementation profiles of EAD, EAC-CPF and METS that are fit for the portal's specific services and purpose. EAG is currently implemented to full extent in APE, though this will be re-evaluated in the context of the current major revision of the standard that the WGoS is undertaking.¹¹ These profiles determine some more mandatory elements required for managing the data in the back-end such as an institution identifier and a (globally) unique identifier for each metadata file, which is created by combining the inherent identifier with the institution identifier that usually would be a registered ISIL (International Standard Identifier for Libraries and Related Organizations) code or at least follow the structure defined by the according ISO standard 15511.¹²

⁷ The EAD homepage at the Library of Congress includes all current official technical documentation as well as background information to previous versions. Available online at <https://www.loc.gov/ead/> (last accessed on 29 February 2020).

⁸ The EAC-CPF homepage at the Staatsbibliothek zu Berlin includes all current official technical documentation as well as background information to previous versions. Available online at <https://eac.staatsbibliothek-berlin.de> (last accessed on 29 February 2020).

⁹ The EAG homepage at Archives Portal Europe includes all current official technical documentation as well as background information to previous versions. Available online at <http://www.archivesportaleurope.net/eag> (last accessed on 29 February 2020).

¹⁰ The METS homepage at the Library of Congress includes all current official technical documentation as well as background information to previous versions. Available online at <http://www.loc.gov/standards/mets/> (last accessed on 29 February 2020).

¹¹ For more information on the revision process for EAG, please refer to Arnold (2019) Describing institutions with archival holdings. The Archives Portal Europe Blog, available at <https://archivesportaleurope.blog/2019/12/11/describing-institutions-with-archival-holdings/> [Accessed on 29 February 2020].

¹² Technical documentation to all implementation profiles used by Archives Portal Europe can be found on GitHub. See <https://github.com/ArchivesPortalEuropeFoundation/apeEAD> for apeEAD, <https://github.com/ArchivesPortalEuropeFoundation/apeEAC-CPF> for apeEAC-CPF, and <https://github.com/ArchivesPortalEuropeFoundation/apeMETS> for apeMETS (all last accessed on 29 February 2020).

Furthermore, APE's implementation profiles only represent a subset of the complete standards. Examples include element pairs such as <controlaccess> and <index> or <scopecontent><p> and <abstract> in EAD, which allow for various ways to encode very similar information, while apeEAD only allows one option to ease the data processing and publication process. Similarly, the portal uses predefined values for certain attributes for presentation and search, such as predefined types of digital objects and encodings for licence and rights statements, which reflect the recommendation by Europeana.¹³

From a technical perspective, the combination of specific application profiles with the large flexibility allowed by the official standards requires metadata mappings and metadata conversions in order to bring all variations into the central and jointly used format. This also covers cases, where institutions cannot provide their data directly in the selected standards, but either use other standards such as Dublin Core or MARC21, or only have a proprietary export format at their disposal. In the initial steps, this often requires one-to-one communication with the relevant content provider(s), to ensure striking a balance between keeping and showing as much of the local differences as possible, while still providing a stable base set of information aiming at functionality and usability. To help in this process, APE offers a series of tools for testing that allow for technical checks and include the option to show and analyse a test display.

Once the mapping has been agreed and tests have been successful, the conversion will run automatically for every data processing initiated by the institution, and will only need to be adapted when changes or updates happen on either side. In addition to this standard process, content providers also have the option for further customisation via specific functionalities in Archives Portal Europe's backend, and for automatisation of the complete transfer to publication process if wanted.

6. A NEW APPROACH TO HISTORICAL RESEARCH

Archival research has traditionally been based on descriptive tools; whether inventories, registers, catalogues, special lists, indexes, calendars, or electronic documents, holding guides and finding aids have always been the basis to open access to archives by users. Archival descriptions are usually organised hierarchically, either top-down or bottom-up, and they are based on the records creator. In fact, archival material cannot be understood without knowing the context of its creation; its significance and the understanding of it increase when associated with the corresponding documents. Provenance is the one of the basic principles of both archival practice and research practice. Before the digital age, the starting point of archival research was the records creator, within those archival institutions known to be hosting the records produced by that entity.

The digitisation process at the archives is now allowing for a completely different approach, based on horizontal keyword queries that cross between different institutions, different finding aids, and different creators, to give back horizontal results that are topic-based rather than provenance-based. Digital repositories, and APE in particular, allow to preserve the principle of provenance, while leveraging the existing archival descriptions in order to create topic-based connections amongst resources that are distributed in different institutions, and which were previously impossible to connect and

¹³ For more information on rights statements available in Europeana - and thereby - in Archives Portal Europe, please refer to Europeana (2020), Available rights statements, available at <https://pro.europeana.eu/page/available-rights-statements> [Accessed on 29 February 2020].

to access at the same time. This has the potential to create new strands of historical research, and completely new methodologies.

In first instance, it is important to explain more in detail what the portal offers as a research tool. There are three main ways to access the repository of Archives Portal Europe. The first, more traditional way, is to consult the holding guides and finding aids published by an institution. This allows to immediately reconstruct the context of the documents under analysis, but it presupposes to have already identified, at least on a generic level, which fonds to consult. In this respect, the main advantage offered by APE is to be able to access several institutions in one go.

The second search option is through curated topics on different subjects, events, themes. Topics vary strongly in size and types of classification. There are generic theme topics such as "Agriculture", "Crime", "Economics"; topics that relate to the type of history methodology adopted, such as "Genealogy", or "Social History"; topics related to specific events or sets of events such as "Revolution of 1848" or "German Democratic Republic"; topics related to types of documents, such as "Maps", "Photography", "Population censuses". Once a topic is selected, further filters and keyword queries can be used to navigate inside a specific topic. Topics lists are also not a new feature of archival research, which has relied on source guides and special collections for centuries; in the case of APE, the added element is again the cross-institutional approach. Topics are assigned by the CPs during ingestion, and matched amongst different languages through a controlled vocabulary, allowing to link collections from many countries, traditions, and cultures; however, the fact that topics need to be "manually" assigned, means that the topics are far from being exhaustive, and much relevant archival material is not assigned to topics yet. One research strand for future development of APE is the study of automated topic modelling; for the time being, the topic research tool suffers from the limitations of human-curated taxonomies in a big data scenario.

The third and most effective way to take advantage of APE as a "repository of repositories" is the keyword search, which supports Boolean operators and wildcard characters. Keywords can be used in many different languages at the same time, and wildcards help to overcome the problem of different spellings. Using a language-specific term (for example, "Napoleon Bonaparte") will only return the documents in the languages (or the spellings) of the searched term – in this case, e.g. English, though also Dutch, German, or Polish. Searching for "Napol* OR Наполеон" will cover most of the languages in which the finding aids are available. Before or after the keyword search, it is possible to filter down the search results by country(ies), institution(s), date(s), topics, and others. It is important to underline that the keyword search drills down through the repository by giving back all queries containing that word or set of words, whether located in the archival catalogues, in the description of the records creators, or in the description of the archival institution itself. Search results through keyword search allow to query the repository as a whole, with results that are free from geographical or hierarchical constraints; however, "Context view" allows to reconstruct provenance both for a single search result, as well as for the whole search query.

The possibilities of "horizontal research" offered by web technologies, which set aside geographical distance barriers, are not just a convenience when planning for archival trips, but they allow new forms of historical research. The digitisation of archival material, while still covering an infinitesimal fraction of the European archival heritage, already allows to make comparisons previously impossible or extremely expensive; this has already had an impact on recent historiography, which is much more based on cross-country comparisons than before. Furthermore, the named entity search through keywords allows to concentrate on the subject of a research rather than on the archival material available *a priori*; it allows the individual scholar to go beyond his/her own

geographical and cultural limitations, to discover archival collections in places that would have never been taken into consideration before. For example, while it may not come as a surprise that searching for Napoleon Bonaparte gives back results from archives based in most countries in Europe, given the stature of the character and the relatively “globalised” times in which he lived, it is interesting to discover that the National Archives of Estonia host collections on the 13th century Italian poet Dante Alighieri, or that the German Bundesarchiv holds archival material on the local Sabaudian hero Pietro Micca. At this point in time, the process of metadata ingestion in APE, and that of digitisation on part of the single archival institutions are still in fieri; however, as a critical capacity is reached, the new types of archival research allowed by APE have the potential to reshape the ways in which we conceptualise historical research and historical analyses as a whole. We can hypothesise a future in which even the more genuine “local history” research will be based on a world-wide background of archival sources and, conversely, in which global phenomena will be analysed through the lenses of the archival heritage produced by the most peripheral parish archives in dozens of countries. In this sense, the geography of history is ready to be re-written.

7. FUTURE DEVELOPMENTS

Now in its ninth year, Archives Portal Europe is undergoing a general redesign, which considers important aspects of the future of archival heritage in the digital landscape.

7.1 Crowdsourcing and Volunteers

As part of the redesign of the portal, APEF is elaborating new tools to take advantage of the possibilities offered by crowdsourcing, particularly with regards to the processes of digitisation, topic modelling, and translation. In the new platform that will become available from the end of 2020 onwards, users will be able not only to save their searches and create personal collections, but to perform a series of functions that will create relevant connections amongst other data available on the portal and on the web:

- assign finding aids and descriptive units to specific topics;
- link finding aids and descriptive units to other documents in the portal or to external sources such as web pages, other archival repositories, Wikipedia pages;
- suggest translations for the archival descriptions;
- provide attachments for specific descriptive units, such as photographs (eg, of a digitised document) or text (eg, OCR-ed transcripts).

While automated technologies are being developed on topic modelling and digitisation processes continue, the portal wants to engage its community of users to enhance the information available in the portal. Similarly, because the portal is only as good as the metadata that compose it, APEF aims to engage and promote specific ingestion projects to increment its capacity, particularly in countries that do not yet have a full digitisation plan in place for their finding aids.

7.2 A Licence Basis

Archives Portal Europe allows for a variety of Creative Commons licences and general rights statements from rightsstatements.org to be applied for digital objects and to be included in the metadata. However, there is no licensing model in place from the organisational and administrative point of view at the moment. All the information held in the portal, at the moment, can be re-used by third parties only with the explicit consent of content providers.

With the aim to cooperate more with other initiatives and to make use of user-generated content as well as Linked (Open) Data, APEF is currently in the process of introducing a base licence which could be applied to all metadata provided to and published in the portal. Such base licence would mainly aim to provide a common denominator in cases where no other licences exist, and content providers would in any case retain control over choosing the appropriate licence for their metadata.

7.3 Born-Digital Material

As mentioned in previous chapters, Archives Portal Europe only holds descriptions of materials that are openly available and accessible to the public already, it only includes links to digital objects, and - for now - these digital objects only represent digitised versions of analogue records. However, with born-digital gaining momentum throughout the archives' domain, the question of how to address this new addition in the context of an aggregator such as Archives Portal Europe will soon be on the table as well. Sticking to the existing model of metadata with links to digital objects - might they be digitised or born-digital - could be an easy solution, but there might be additional aspects of born-digital that need to be catered for, even if only speaking with regard to additional metadata fields, e.g. for the inclusion of information on the file format or the software that might be required to view the records. On the other end of this scale sits the question of providing a search within the born-digital records, given that they would be machine-processable, but it remains to be seen whether this would be something to take on from an aggregator's point of view or would rather remain a service of the constituent institutions for their own holdings.

7.4 Standards Revision

The EAC-CPF standard, the underlying standard for the description of records creators, is undergoing a major revision at the Technical Subcommittee on Encoded Archival Standards (TS-EAS), and a new version is expected to be published in 2021. APEF is represented in the TS-EAS by its Technical Coordinator, and it is following the works with the aim to study how to make best use of the future iterations of the standard.

Furthermore, the WGoS has recently started a major revision of EAG. While certain parts of EAG are very specific to the entities, i.e. the institutions with archival holdings, that the standard describes, there is quite some overlap with EAC-CPF. The work carried out by the foundation will connect to, and pick up upon, the revision of the EAC-CPF as mentioned above.

Finally, APEF also continues to evaluate its use of EAD, particularly following the publication of the new EAD3 version in 2016, which was not adopted by the portal, nor by most of its partner institutions, which continue to use EAD2002. However, the new version is being used more and more often, and it includes additional functionalities that might prove valuable for APE, such as language attribution on a more detailed level.

8. CONCLUSIONS

This paper offered an overview of Archives Portal Europe in its technical and administrative aspects, as well as the new opportunities it offers to archival research. Taking the steps from pre-existing lower scale projects, the portal has been able to integrate the different archival traditions of the countries that collaborate to the initiative, and to establish a workflow for metadata ingestion that takes into consideration the different characteristics of each participating institution. While being dependent on the single partners for the continuous ingestion process and for the quality of the data presented, the portal plays an important role of coordination and of promotion of the digital future of the European archival heritage.

9. APPENDIX

Table 01 – Supranational archival web projects in 2005 (National Experts Group on Archives, 2005)

PROJECT NAME	Safeguarding European Photographic Images for Access (SEPIA)
COUNTRIES	The Netherlands, UK, Spain, France, Germany, Denmark, Sweden, Finland, Norway, Poland, Ireland
URL	http://www.knaw.nl/ecpa/sepia/home.html
DESCRIPTION	The project sought to ensure the preservation of original photographic collections held in European institutions (archives, libraries, museums, art galleries, research institutes) and at the same time to encourage their availability to the public by means of computerised cataloguing systems, digitisation and Internet dissemination.
ONLINE OUTPUT	website with information on digitisation processes of photographic heritage in partner institution
ONLINE REPOSITORY	NO
PUBLICATION DATE	2001
LINK STILL ACTIVE	NO
PROJECT NAME	European Union Archive Network (EUAN)
COUNTRIES	UK, Sweden, Italy, The Netherlands
URL	http://www.euan.org
DESCRIPTION	The project built a simple working model based on harvesting XML descriptions at fonds level and presenting them on a single server.
ONLINE OUTPUT	A series of reports and suggestions on best practice in archival standards
ONLINE REPOSITORY	NO
PUBLICATION DATE	2000

LINK STILL ACTIVE	NO
PROJECT NAME	European Archival Netwok (EAN)
COUNTRIES	Switzerland, USA, Canada, Israel + 49 "European" associate countries (eg Turkey, San Marino, Vaican City)
URL	http://www.european-archival.net/
DESCRIPTION	<p>European Archival Network (EAN's) site creation was initiated on May 15, 1998 at the European Summit on Archives, in Berne, Switzerland, organized by the European Board of the International Council on Archives (ICA). The Swiss Federal Archives are the site's webmaster. EAN provides an information host for all European archives, a search platform for and about archives, and exchange and contact platform for archives throughout Europe and the world.</p> <p>The EAN currently embraces 49 European countries and three other countries (USA, Canada, Israel). Archival institutions are listed in accordance with the recommendation to have basic INFORMATION about the institution in a standard form (The Swiss Federal Archives submits a proposition in this matter). Each National Archives is encouraged to adopt the standard ISAD(G) for the description of its record groups on the Internet.</p>
ONLINE OUTPUT	A repository of archives (address, phone number,email) for each country involved
ONLINE REPOSITORY	YES
PUBLICATION DATE	2000
LINK STILL ACTIVE	NO
PROJECT NAME	Linking and exploring authority files (LEAF)
COUNTRIES	USA / European Commission Information Society Technologies Programme
URL	ttp://www.crxnet.com/leaf http://www.library.yale.edu/eac/
DESCRIPTION	<p>The LEAF project started in March 2001, co-funded by the European Commission Information Society Technologies Programme and is developing a model architecture for a distributed search system harvesting existing name authority information aiming at automatically establishing a user needs based common name authority file. The three major objectives of the LEAF project are: a) provide shared access to authority information for all involved (cataloguer, reference librarians, end users, etc.); b) improve the quality of existing authorities; c) improve search and retrieval functionalities of a variety of applications. The methods/steps chosen to reach these objectives are: upload distributed authorities to a central system; link authorities which refer to the same entity; annotate authorities to improve content and provide additional information; support external services; save search results in</p>

	a pan- European “Central Name Authority File”. When the user finds an authorized name in the LEAF-database and wants to know more about the information connected to the authority record he or she follows a link to the repository where the information can be seen in context. An important part of the LEAF-project is the XML application Encoded Archival Context (EAC) for “describing the circumstances under which records have been created and used. This includes the identification and characteristics of the persons, organizations, and families who have been the creators, users, or subjects of records, as well as relationships amongst them.
ONLINE OUTPUT	?
ONLINE REPOSITORY	?
PUBLICATION DATE	?
LINK STILL ACTIVE	NO
PROJECT NAME	Electronic Resource Presentation and Access Network (ERPANET)
COUNTRIES	UK; Italy; Switzerland; the Netherlands
URL	https://www.erpanet.org/
	A virtual clearing-house and knowledge base for the preservation of cultural heritage and scientific digital objects. Partners: University of Glasgow; Institute for archival and library science, Urbino; Schweizerisches Bundesarchiv; Nationaal Archief of the Netherlands).
DESCRIPTION	Website with papers on projects and conferences, best practices, list of digital archives projects (eg The Internet Archives)
ONLINE OUTPUT	NO
ONLINE REPOSITORY	2002
PUBLICATION DATE	YES
LINK STILL ACTIVE	YES
PROJECT NAME	Open Archives Initiative (OAI)
COUNTRIES	USA / European Commission Information Society Technologies Programme
URL	http://www.openarchives.org
	The Open Archives Initiative develops and promotes interoperability standards that aim to facilitate the efficient dissemination of content. The OAI has its roots in an effort to enhance access to e-print archives as a means of increasing the availability of scholarly communication. Continued support of this work remains a cornerstone of the Open Archives program. The Open Archives Metadata Harvesting Protocol consists of six requests or verbs. The protocol is carried within

	<p>HTTP POST or GET methods. The intention is to make it simple for data providers to configure OAI conformant repositories by using readily available Web tools such as libwww-perl9. The structure of all OAI requests are base-url and keyword arguments. The actual version of the OAI protocol (OAI-PMH V2.0) supports Dublin Core as the exchange format. The OAI initiative has been especially focused on bibliographic metadata, but the potential to use it also for the exchange of authority metadata has been in the agenda</p>
DESCRIPTION	<p>Website with information and standards on web interoperability; an experimental repository merging different online library catalogues from scientific publications: CogPrints (Cognitive Science Eprint Archive), NCSTRL (Networked Computer Science Technical Reference Library), NDLTD (Networked Digital Library of Theses and Dissertations), NTRS (Nasa Technical Reports Services), RePEc (Research Papers in Economics) and arXiv.org (open access archive of scholarly papers)</p>
ONLINE OUTPUT	YES
ONLINE REPOSITORY	2000
PUBLICATION DATE	YES
LINK STILL ACTIVE	YES

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POVZETEK

ARHIVSKO SKLADIŠČE ARHIVSKIH SKLADIŠČ: INTEGRACIJA METAPODATKOV V EVROPSKEM ARHIVSKEM PORTALU

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Leta 2002 so smernice, ki sta jih izdala Mednarodni arhivski svet in Mednarodna zveza bibliotekarskih društev in ustanov, zastavile popolno digitizacijo in spletno dostopnost arhivskega gradiva kot glavni cilj arhivov v digitalni dobi. Od leta 2009, vzporedno z nastankom nacionalnih ali lokalnih raziskovalnih portalov, so evropske države začele ustvarjati sistem za integracijo svojih spletnih prostorov v skupni katalog, ki bi omogočal dostop do Evropske arhivske dediščine preko enotnega raziskovalnega portala. Po treh letih raziskav je bil leta 2012 objavljen Evropski arhivski portal kot spletni repozitorij, odprt vsem institucijam, ki hranijo arhivsko gradivo o Evropi.

Portal sicer ne hrani digitalnih objektov neposredno, združuje pa opisne metapodatke iz več kot 30 držav, v več kot 20 jezikih (in 5 različnih pisavah) iz velikega nabora institucij: lokalnih in državnih arhivov, župnijskih in univerzitetnih arhivov, zasebnih fundacij, arhivov skupnosti in zasebnih arhivov, mednarodnih zgodovinskih arhivov ... Vsak od teh arhivov pa ima različne tradicije in strategije popisovanja in urejanja gradiva.

Projekt vsebuje velik potencial za razvoj novih tipov digitalnih arhivskih raziskav, ki ne bi bile omejene z geografskimi razdaljami in bi temeljile na meddržavnih primerjavah ter večjezičnosti. Po drugi strani pa se je potrebno pri ustvarjanju skupne baze za potrebe iskanja, obdelave in prikaza arhivskega gradiva tisočeri ustanov soočiti s pomembnimi tehničnimi (in tudi političnimi) izzivi, še posebej pri oblikovanju metapodatkov.

Avtorici predstavljata izzive in rešitve, kot so:

- definiranje formata za skupno uporabo metapodatkov, ki bo kazal lokalne razlike, hkrati pa zagotavljal stabilen niz informacij za uporabnike;
- izdelava sheme metapodatkov za osrednjo uporabo, ki bo natančna in avtomatsko ustvarjena;
- iskanje ravnotežja med nudenjem natančnih opisov uporabnikom in postavljenimi zahtevami za metapodatke, ki so za ustanove precejšnja ovira;
- raziskovanje metod za prilagoditev obstoječih arhivskih popisov ter ustvarjanje takšnih, ki temeljijo na temah;
- razreševanje preprek, kot so avtorske pravice, zasebnost in lastništvo v mednarodnem okolju;

- ustvarjanje metod za promocijo množičnega zunanjega izvajanja (t. i. crowdsourcing);
- načrtovanje integracije izvorno digitalnih gradiv z digitiziranimi zapisi.

Prispevek črpa iz primerov, ki še posebej reprezentativno predstavljajo izzive in rešitve in so potekali več let. Prav tako je podana napoved za prihodnji razvoj in izboljšave. Namen študije Evropskega arhivskega portala kot digitalnega »skladišča vseh skladišč« je vzpodbuditi iskanje rešitev za vse izzive, s katerimi se arhivi v digitalnem svetu spopadajo.