

E-ARK FINAL REPORT

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European Archival Records and Knowledge Preservation

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E-ARK PROJECT FINAL REPORT

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1. Introduction, Summary and Project Objectives

What were the issues and challenges that E-ARK had to address?



In recent years, there has been a fundamental change in the notions surrounding what constitutes archiving. With the onset of open access and e-government policies, the image of the archive as the place where precious documents are kept hidden away forever has had to give way to alternative scenarios. E-government legislation across Europe and beyond has brought about a situation whereby archives are obliged to accept, store, and provide access to digital data on an ongoing basis. However, relatively few memory organisations have the sophisticated digital archiving infrastructure required to handle all aspects of these activities.

The process of gathering electronic content must take into account changed relationships between governments, governments and citizens, and governments and business. The move to e-interactions is supported by new business systems that streamline and automate transactions, enable integration of information and service delivery, and enhance collaboration between participants. Such changes in the way government business is carried out have significant implications for how public administrations document their activities, and make that information available to both government and citizens to aid future decision making and accountability.

These changes also need to be addressed in the archival environment within memory organisations. We need to ensure that all such digital information is appropriately gathered, along with all the contextual information required to ensure it remains comprehensible and accessible over the long term. The process of developing, implementing, and maintaining the tools, standards, and administrative processes required to support this activity, is by no means a straightforward exercise.

Another issue which memory institutions must address is changed expectations: everyone in the value chain now demands more in terms of discovery, access and re-use. The desire to valorise archival material and make it widely accessible is also part of the sea-change overtaking archival practice. Academic researchers; analysts from enterprise and commerce; and citizens must be supported as users of the valuable digital holdings residing in European multifarious digital archives. New and enhanced discovery methods need to be developed to support the full exploitation of our shared digital cultural heritage, and the expansion of the European Digital Single Market which underpins our digital economy.

There are also implications brought about by the scale of operations involved. The vast quantities of data of ever increasing complexity are potentially overwhelming. The rapid influx of material poses real challenges for archivists and administrators managing the process, as well as for the businesses, researchers, and citizens who use them.

Big Data is often hailed as a solution, but the underlying mechanics of Big Data are generally not well understood by end users. Perhaps more importantly, many researchers are not sufficiently familiar with the basic metadata practices required to enable them to track and query their data in the future. With the ever-increasing amounts of data involved, the failure to employ best practice is more than simply 'problematic', the adage: 'garbage in garbage out', takes on renewed significance when the scale of operation makes recovery more or less infeasible. Addressing these issues formed part of the grand challenge posed by the European Commission (EC) in the eArchiving services Pilot B element of the Policy Support Programme (PSP) within the Competitiveness and Innovation Framework Programme (CIP). One grant of just under €6million was awarded to the E-ARK consortium comprising five national archives (Denmark; Estonia; Hungary; Norway; Slovenia); four research institutions (Austrian Institute of Technology; University of Brighton, UK; University of Köln, Germany; University of Portsmouth, UK, Instituto Superior Técnico, Lisbon, Portugal); three SMEs (ES Solutions, Sweden; KEEP Solutions, Portugal; Magenta, Denmark); two government Home Offices (Portugal, Spain); and two pan-European umbrella organisations (the DLM Forum and the DPC).

E-ARK was thus conceived as an intensely practical project where modularity, extensibility, openness and inclusivity were design imperatives. Throughout the project, advisory boards, provided vital external input and validation from commercial and technical, archival, and data provider sectors.

E-ARK analysed existing pan-European best practices and discovered these to be inadequate without further modification, extension, and standardisation. In response, metadata specifications were drawn up for the preparation, ingest, transfer of digital content into archives, and for continued access to this material. For example, with data content types, E-ARK initially defined a number including Electronic Records Management Systems (ERMSs) such as SharePoint; databases; geo-spatial data; and simple file-based systems. These were explicitly designed to be extensible, making it possible to continue to add further data content types such as 3D scans for use in museums.

Existing open source software tools were examined, tested, and where appropriate modified to meet the new E-ARK specifications. Where necessary, completely new open source software components were designed, developed and implemented to cover the archiving workflow end-to-end.

The resulting eArchiving infrastructure was piloted in seven different scenarios across six countries. An end-to-end reference implementation, E-ARK Web, was produced and is available to be downloaded and installed locally. A data mining showcase demonstrated how to use Big Data techniques such as OnLine Analytical Processing (OLAP) on large datasets, which included geo-spatial data among the exemplars used. The scalable E-ARK infrastructure makes use of Big Data technologies such as Hadoop, Lily and Solr.

All this development was set against a European legislative framework and was supported by a legal study covering recent EU law on data protection, copyright and the reuse of Public

Sector Information (PSI). On the business side, a maturity model was produced to assist institutions in assessing how well they are performing in their eArchiving activities. The results of the project are hosted in a knowledge centre¹, and will be maintained there for a minimum of ten years from the conclusion of the project.

Although geared towards national archives, the E-ARK methods, tools and infrastructure are of real use to regional and local archives, as well as archives in business; higher education; scientific and research data centres; the creative and cultural industries, etc. One of the highlights of the E-ARK project is the end-to-end approach towards database preservation and reuse which facilitates continued access to digital archives across the board, including e-government systems, website-driven research outputs, cultural heritage databases, and many more. The discovery methods developed within the project included Big Data techniques such as 'faceted search', which open up interdisciplinary research avenues across multifarious datasets. E-ARK's pan-European specifications and standards make it possible to search more easily across archives, and to open up new research questions.



¹ See kc.dlmforum.eu
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2. Main Results



Between 2014 and 2017 the E-ARK project brought together a consortium of five European national archives, five leading research institutions, three systems providers, two government institutions, and two membership organisations to work on the development and implementation of the tools, standards, and administrative processes required to support digital archiving. The project exceeded its objectives and achieved significant results in numerous areas. In particular, it met all ten milestones; produced all 31 deliverables (plus some extra) <http://www.eark-project.com/resources/project-deliverables>; was assessed as excellent in the final year review; and was dubbed a "European Showcase Project" by the Project Officer, Alina Senn, together with the two external project reviewers Adrian Brown (Parliamentary Archives, UK), and Hannes Kulovits, (Austrian National Archives)². Finally, robust measures were adopted to sustain the project outputs, which are now listed by category.

2.1. Guidance on digital archiving



E-ARK developed a number of outputs that were aimed at providing practical help and guidance for digital archiving. These outputs were developed using specific user focused questions as the starting point. The outputs included: the E-ARK General Model; the E-ARK Knowledge Centre Service; use cases that guided technical development within the project and a legal report.

1. The E-ARK General Model provides a view of the E-ARK tools and services and shows the connections between them.³
2. The Knowledge Centre Service is an aggregator of services developed under the scope of the E-ARK Project.⁴ These services aim to provide a comprehensive, but simple and easily understood, set of services that allow users to understand, contribute to and validate Information Governance good practices. The Knowledge Centre is divided into:
 - **The Resources Centre** where users can learn more about Information Governance terms, requirements and practice. It is composed of the Vocabulary Manager Service (EVOC) and the Reference Requirements Management Service (REQs). EVOC allows users to:
 - learn more about Information Governance terms and definitions

² We are extremely grateful to our project officer and two reviewers for their rigorous and expert evaluation of our outputs, and their supportive attitude throughout the project.

³ see <http://kc.dlmforum.eu/gm>

⁴ see <http://kc.dlmforum.eu>

- contribute to the development of the current Information Governance terminology, and
- create their own reference vocabularies based on the existing terms and definitions of the service.

REQs allows users to learn more about Information Governance requirements and practices by consulting and analysing reference documents. Additionally, REQs supports the evolution and maintenance of knowledge through a set of functionalities such as revision and feedback management.

- **The Assessment Service** allows users to assess their Information Governance practices. It comprises:
 - the MoReq Schemas Validator Service, which allows users to validate XML data files according to the MoReq2010 Export Schema
 - the MoReq Assessment which supports the process of assessing if record management systems are MoReq2010 compliant
 - the Maturity Assessment allows organizations to assess their digital archiving maturity level according to the information governance maturity model defined in deliverable D7.5 of E-ARK.

3. E-ARK has developed a set of use cases⁵ and user stories⁶ that guided technical development within the project. The use cases informed and are incorporated into the General Model.⁷ The use cases also served as the basis for developing the specifications for the seven pilot implementations which are documented in deliverable *D2.3 Detailed Pilot Specifications*.
4. Rounding out the guidance developed for digital archiving is a lengthy legal report, which provides a greater understanding of the legal framework as it impacts on cross-border co-operation in the area of digital archiving. An additional 'Advice to Archives' guide summarises the issues identified in our fuller Legal Report on the implications for archives of the requirements of Directive 95/46/EC, which have been implemented by Member States in a variety of legislative instruments since the adoption of the Directive in 1995. While this document can only provide guidance, it does contain checklists of things which we recommend that archives should monitor, consider and enable.

2.2 Standards and specifications



The core of E-ARK activities has been the development of standards and specifications for digital archiving, and interoperability between archival systems, and these core activities have formed the springboard for tool development.

⁵ <http://www.eark-project.com/using-e-ark>

⁶ <http://www.eark-project.com/stories>

⁷ This is fully documented in deliverable *D2.1 E-ARK General Pilot Model and Use Case Definition*.

Specifications

The development of specifications to achieve interoperability and efficiency in digital archiving operations has been central to all the work of E-ARK. The core of the specifications developed by the project is the Common Specification for Open Archival Information Standard (OAIS)⁸ Information Packages. This document, which is not a project deliverable, sets out to identify a common set of interoperability and transformation needs; and then presents a series of requirements which an OAIS Information Package needs to follow, regardless of the implementation at any given point in time. The requirements detail the structural and metadata requirements for constructing information packages and form the basis for more specialised requirements for each of the OAIS Information Package types:

- Submission Information Package Specification (D3.3)
- Archival Information Package Specification (D4.3)
- Dissemination Information Package Specification (D5.3)

The SIP specification was further refined by the development of a content type-specific export profile for records in Semantically Marked Up Records Formats (SMURF). This covers records kept in Electronic Records Management Systems (ERMS) and managed in simple file-systems (SFSB).

Standards

One of the particular areas of interest for E-ARK was databases, and special attention was paid to developing approaches for the archiving of databases, including the development of the specification for the already-established database preservation format, SIARD (Software Independent Archiving of Relational Databases). This is an open file format for the long-term archiving of relational databases in the form of XML-based text data that is packaged in a container file (SIARD archive). E-ARK worked closely with the owners of the SIARD standard: the Swiss Federal Archives and the Swiss Koordinationsstelle für die dauerhafte Archivierung elektronischer Unterlagen (KOST) to develop version 2.0 of the SIARD standard.⁹

2.3 Tools and workflows



The Common Specification allows for the development of generic tools and code libraries which can either be applied commonly across the whole life cycle of digital data, or reused as the basis for developing more specific, content- or process-aware tools. The E-ARK project worked closely with the project's commercial partners to:

- integrate available software components into a common workflow which can be used in various organisational and legal contexts;
- develop tool functionality which addresses specific legal or national requirements and is configurable (in practical terms, remove hard-coded national/legal references);

⁸ OAIS <https://public.ccsds.org/pubs/650x0m2.pdf>

⁹ This was published in July 2015.

- provide guidelines and support on how to set up the software in various production environments.

This work enabled the provision of replicable and scalable workflows to automate record interoperability, and it allows seamless access to records within, and across, European jurisdictions.

E-ARK developed a range of tools, some based on existing near to market software already in use within archival institutions, and some built from the ground up. All the E-ARK software tools are available on the E-ARK project GitHub site.¹⁰

- ***Pre-Ingest Tools***

This section lists the tools capable of preparing Submission Information Packages (SIPs) according to the E-ARK SIP specification:

- **The ERMS Export Module** is a tool which allows for the controlled and selective export of records and their metadata from any Content Management Interoperability System (CMIS) 1.0 compliant records or Content Management System (CMS). The tool allows users to set up a CMIS connection to the source system, acquire an overview of the records and their aggregations, select required records, and finally export selected records and their metadata into the structure defined by the E-ARK Common Specification. The module now supports the mapping of metadata into the EAD3 format¹¹ so technically it is possible to create mappings into any destination format. The module consists of two separate technical components, the **E-ARK ERMS Export Bridge** as the backend component and the **ERMS Export UI Module** for the user interface.
 - **RODA-in** is a tool specially designed for producers and archivists to create SIPs which are ready to be submitted to an Open Archival Information System (OAIS). The tool creates SIPs from files and folders available on producers' local file systems. Version 2 of the software revolutionized the way SIPs are created in order to satisfy the need for mass processing of data. This version allows the creation of thousands of valid SIPs with just a few clicks, complete with data and metadata.
 - **ETP (ESSArch Tools for Producer)** is a tool designed to support the creation of SIPs by the data producer, and their delivery to archival repositories. The tool is highly configurable and allows for the setup of complex archival description profiles and validation. The tool is fully compliant with the E-ARK SIP specification.
 - **ETA (ESSArch Tools for Archives)** is the archives counterpart of ETP, developed to receive and validate packages created according to the E-ARK SIP Specification.
- ***Database preservation tools***

¹⁰ <https://github.com/eark-project>

¹¹ EAD 3 <https://www.loc.gov/ead/>

This section lists the tools and components which allow for the migration of live databases into the SIARD2 preservation format, and subsequent reuse of databases stored in the SIARD2 format.

- [Database Preservation Toolkit \(DBPTK\)](#) allows conversion between Database formats, including connection to live systems, for the purposes of digitally preserving databases. The toolkit allows conversion of live or backed-up databases into preservation formats such as SIARD 2.0, a XML-based format created for the purpose of database preservation. The toolkit also allows uploading of the archived database into a live DBMS (such as Oracle, MySQL, etc).
- [dbptk-gui-backend](#) is a RESTful¹² service designed to provide a graphical user interface for controlling the DBPTK.
- [db-visualization-toolkit](#) is a relational database viewer that allows access to databases preserved in the SIARD 2.0 database format.

- ***Digital repository solutions***

This section lists the repository solutions which are provided for those institutions wanting to implement the E-ARK Information Package specifications. These repositories were used by E-ARK partners during the project.

- [RODA](#) is a complete digital repository that delivers functionality for all the main units of the OAIS reference model. RODA is capable of ingesting, managing and providing access to the various types of digital objects produced by large corporations or public bodies. RODA is based on open source technologies and is supported by existing standards.
- [ESSArch Preservation Platform](#) is a practical implementation of the OAIS (Reference Model for an Open Archival Information System). ESSArch includes both pre-ingest and pre-access functions, and storage methods, and has the flexibility to allow addition of any metadata standard required. The main conceptual functions of the platform are based on traditional archiving preservation processes.

- ***E-ARK Integrated Platform (and its components)***

The E-ARK Integrated Platform is a reference implementation of all the E-ARK specifications. The main component of the Integrated Platform is the E-ARK Web which is a digital preservation system supporting all OAIS functions. E-ARK Web can be extended with additional components for scalable computing, data mining and natural language processing.

- [E-ARK Web](#) is an open source web-based archiving, digital preservation and access system. It is OAIS-oriented which means that data ingest, archiving and

¹² RESTful: https://en.wikipedia.org/wiki/Representational_state_transfer
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dissemination functions operate on Information Packages, bundling content and metadata in contiguous containers, and which conform to the E-ARK IP specifications. The following components listed in this section are optional add-ons which primarily provide support for scalable infrastructures (i.e. Lily and Hadoop technologies):

- [dm-etl](#): used to extract content from AIPs and load that content into the Lily repository platform¹³.
- [dm-parent](#): a Common Maven¹⁴ configuration of the Java-based tools used in the E-ARK full-scale deployment.
- [dm-nlp](#): the data mining and natural language processing modules used in a cluster environment (Hadoop¹⁵).
- [dm-text-classification](#): a MapReduce¹⁶ job to run a text classifier.
- [dm-hdfs-storage](#): a tool which provides a REST service for transferring large files into HDFS¹⁷.
- [dm-file-ingest](#): the map/reduce file ingest tool of the full-scale E-ARK deployment. It unpacks TAR¹⁸ packaged E-ARK information packages and initiates the indexing of the individual files using the Lily API¹⁹. The Java-based tool runs as a service and consumes RabbitMQ²⁰ messages notifying when new packages are available for indexing in HDFS
- [end user gui](#): a prototype for an end user interface.
- [dm-hdfs-storage-client](#): Java²¹ example client for the file upload service (dm-hdfs-storage).
- [global-configuration](#): shared Maven and other global configuration parameters of the Java-based tools.
- [denormalize-db](#): a reference implementation to generate csv²² files from archived databases.

- **Access tools or components**

This section lists all tools or components which support access to E-ARK Information Packages:

- [Peripleo](#)²³ is a geospatial search engine for the Pelagios universe, with a comprehensive JSON²⁴ API.

¹³ Lily repository platform <https://www.ngdata.com/press-release/lily-1-0-smart-data-at-scale-made-easy/>

¹⁴ Maven: <https://maven.apache.org/>

¹⁵ Hadoop: <http://hadoop.apache.org/>

¹⁶ MapReduce: <https://hortonworks.com/apache/mapreduce/>

¹⁷ Hadoop Distributed File System

¹⁸ TAR file: <http://www.bitzipper.com/tar-file.html>

¹⁹ API: Application Programming Interface

²⁰ RabbitMQ: <https://www.rabbitmq.com/>

²¹ Java: [https://en.wikipedia.org/wiki/Java_\(programming_language\)](https://en.wikipedia.org/wiki/Java_(programming_language))

²² csv: comma-separated values

²³ Peripleo / Pelagios: <http://pelagios.org/peripleo/map>



- [E-ARK CMIS Viewer](#) facilitates remote access to any CMIS 1.0 compatible digital preservation system.
- [E-ARK Order Management Tool](#) allows for querying, ordering and viewing of E-ARK Dissemination Information Packages from any compliant repository. The tool consists of a backend, the [Order Management Service](#), and a frontend called the [E-ARK Platform UI](#).

- **Other tools or components**

This section lists other E-ARK sub-projects available.

- [EAD Editor](#) is a tool which allows for simple form-based editing and creation of EAD3²⁵ compliant archival descriptions.
- [Data Warehouse and OLAP](#) includes all documentation about the E-ARK data warehousing and OLAP pilot.
- [commons-ip](#) provides a generic API to manipulate Information Packages in the E-ARK Common Specification format.
- [E-ARK Information Package examples](#) is a GitHub project to include examples of the Submission, Archival and Dissemination Information Packages.
- [SIARD2 format](#) is a GitHub project to include the SIARD 2 format specification and examples.

- **Workflows**

The E-ARK project aimed to standardise the workflows used in the archival pre-ingest, ingest and access processes.²⁶ The existence of specific national and institutional exceptions meant it was not practical to attempt complete workflow synchronisation. Therefore, the project established the following core principles:

- the outcome shall be a general best-practice oriented reference model and not a definitive set of implementation requirements
- the workflows shall include only these tasks which are common across different systems, institutions and countries
- the workflows shall not include local expectations or needs which ultimately do not play a role in the quality of the Information Packages
- the workflows shall be extensible, i.e. allow the addition of any other steps needed under local circumstances.

²⁴ JSON: Java Script Object Notation www.json.org/

²⁵ EAD3 Encoded Archival Description 3 <https://www.loc.gov/ead/ead3available.html>

²⁶ The mapping of available best practices is documented in deliverables D3.1, D4.1 and D5.1.

An initial set of E-ARK workflows were published as deliverable D2.1: E-ARK General Model, with refinements being added in the light of insights and experiences gathered through the development and piloting phase. The E-ARK General Model v2.0 included a set of detailed workflow recommendations for archival processes.²⁷

2.4 Professional development

- **The E-ARK Maturity Model for Information Governance**



The E-ARK Project harmonized previously fragmented solutions that support Archives services, particularly in regard to Ingest, Archival Preservation and Dissemination of information. These were tested in open pilots in various national contexts, using existing, near-to-market tools, and services developed by partners. The goal was to develop an Information Governance Maturity Model that allowed the assessment of the use cases of

the project, before, and after the pilot implementations, in order to assess the value and alignment of E-ARK solutions to existing best practices.

The Maturity Model has ongoing use as a tool for to enable the assessment of information governance practice in organizations. It focuses on the most relevant references for Archival services especially those that were improved in the context of the project.

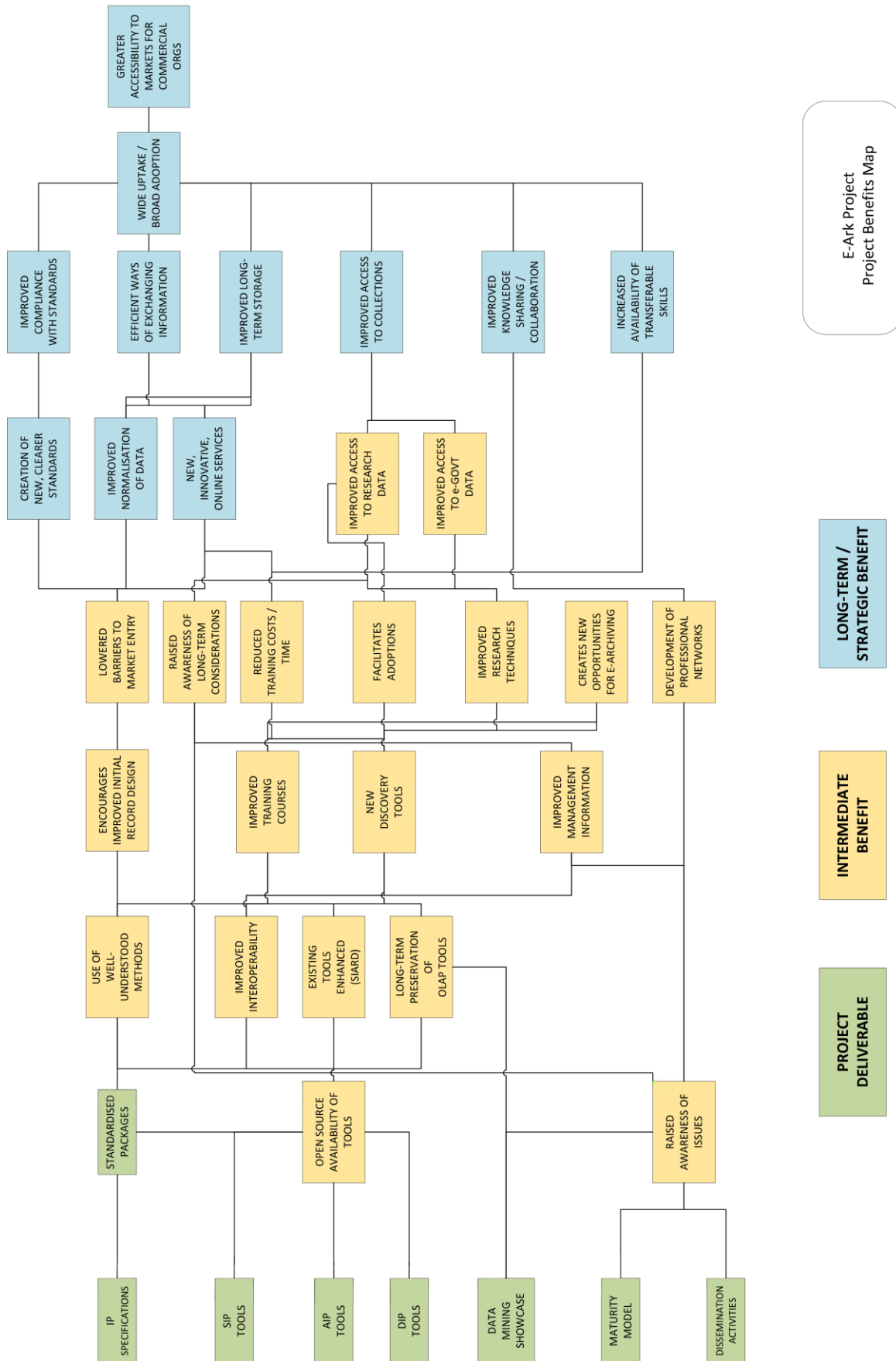
- **The Knowledge Centre**

The E-ARK project contributed to harmonizing currently fragmented archival approaches for ingest, preservation and re-use through the definition of the E-ARK SIP, E-ARK AIP and E-ARK DIP. The proliferation of standards and references together with the recognition that problems should be analysed from different stakeholder perspectives, and mindful of the motivations which predominate in different communities, the project identified a need for a knowledge system that provides stakeholders with a consolidated view of existing knowledge. The E-ARK Knowledge Centre represents exactly such a system. It provides a comprehensive, but simple and easily understood, set of services that allow users to understand, contribute to and validate information governance good practices.

- **Benefits Map**

The E-ARK benefits map is a visual representation of how project benefits relate to E-ARK outputs. The E-ARK project has identified 30 benefits, which have been categorised as being short, medium or long-term. The project also identified 10 business areas in which these benefits might have an impact, either in terms of general quality and efficiency or in terms of actually achieving financial savings. The benefits map is based on the Managing Successful Programmes[®] methodology which shows the dependencies between different benefits, some of which are dependent on the prior achievement of other benefits.

²⁷ See <http://kc.dlmforum.eu/gm>



3. Impact



The following data on the project impact / outcomes was collected using structured interviews with key respondents from the six E-ARK pilot sites. Structured interviews were conducted to allow for comparison between organisations. The interviews took place in the premises of the organisations being studied. All interviews were undertaken by Professors Janet Delve and David Anderson between September and December 2016. Since then there have been developments in the project which will further enhance the outcomes observed (such as the creation of the DLM Archival Standards (DAS) Board²⁸ for managing the specifications).



3.1 E-ARK: project outcomes

Impact / Outcome Questionnaire responses Government perspectives on digital archiving

Question 1: How do you think the government sees the benefits and drawbacks of a pan-European approach to digital archiving?

Perceptions of how governments perceive the benefits and drawbacks of a pan-European approach to digital archiving yielded a range of answers.

Benefits:

- The emphasis on standardisation and common solutions was seen as beneficial, and a need to disseminate the benefits of interoperability in the future was identified.
- The importance of standardisation was highlighted, together with the caveat that standardisation could produce challenges because of the varying needs of different archives.
- In one country, requirements with respect to digital spatial data are now being addressed as there had previously been no methods in this domain. A methodology was required to deal with ways to archive the government records based on digital spatial data, like land taxes, building permits, environmental regulations, etc. The

²⁸ <http://dasboard.eu/>
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need to draw maps necessitates input and collaboration with the Environment Agency and this work requires the development of new working methods.

- There has been discussion of harmonisation between records agencies and National Archives, and a next step is to legislate for the use of E-ARK schemas.

Some drawbacks and problems were also noted:

Responses include the following observations / comments:

- Whilst E-ARK is an investment, there are issues with funding and the need to pay for E-ARK staff.
- It is hard to implement new standards, and consequently it will take time to bring a new service to market. Also noted was the need for proactivity and authority in the future in order to implement any E-ARK outcomes.
- E-ARK appeared to be a big and complicated project, which may prove to be a stumbling block for some users.
- There was some friction when it became apparent that there was a new task for government agencies as a result of the data exchange format between records creators. Also, the local systems are not compliant with E-ARK tools.

Economies of scale

Question 2: One of the main objectives of E-ARK is to adopt a joint approach to piloting digital archiving in several countries. Is it your experience that you have found this joint approach to procurement of digital archiving services has brought economies of scale?

Responses include the following observations / comments:

- There were economies of scale derived from enhanced competition driven by open source and open standards. Overall this would accrue a long-term benefit. The joint approach was useful for SIP creation, DBPTK, the DB viewer and the SIARD 2.0 standard.
- There was specific interest in using tools that filled gaps in their portfolio (e.g. a metadata conversion tool for creating EAD3 for the INSPIRE²⁹ tool. The Peripleo tool is now compatible with O/S services.)
- "It is already clear that E-ARK has improved archiving tools, for example E-ARK provided motivation for KEEPS to improve RODA. In doing this, and providing better tools for all, E-ARK has provided a benefit to the wider community."
- The importance of the joint approach to piloting and developing was highlighted: "we are able, working together, to develop better tools than is possible working on our own. In an individual archive, there are usually not enough available resources even to develop requirements."
- Future success will depend on at least 90% of the same participants being involved.

Insights into using the project results

Question 3: What insights have you gained from the pilot into ways of utilising the project results?

²⁹ <https://inspire.ec.europa.eu/>
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- One archive stated that in their pilot it was “very useful for tools developers to see their tools in different settings. Without E-ARK, we would have had much greater difficulties in tools development. E-ARK has really pushed developers to improve their tools.”
- Several archives valued the opportunity to test the capabilities of the tools, allowing them to see what they could do. For example, one archive noted that “It is possible to use different tools for the same purpose, different tools have different features, and this enables us to see the whole process from different perspectives. We could see the limitations of the tools. We could get conclusions, results, and analyses on the process as a whole. It could be that the process is wrong – not the tool. Is the data handling optimised?”

Business benefits

Question 4: Do you envisage any business benefits coming from your pilot experience? If yes, what are these benefits?

To some organisations, the business benefits stemmed from improved productivity and workflow derived from the use of the E-ARK tools.



- In one case, the specialised formats and improved tools will lead to improved workflow and output. Similarly, the E-ARK pilot allowed another organisation to re-evaluate its processes, thus making them more effective. “As a result of E-ARK we have moved a step forward”, though it was also noted that larger archives will need to lead the way for smaller archives to be able to follow.
- Another archive benefited greatly from the improved tool version, and noted that “There is a real distinction between Access activities, and Storage activities. In terms of AIP and SIP, we need to consider “Preservation”, but with the DIP, the approach is very different. The difference lies in a ‘Technical’ versus ‘Archival’ emphasis. One

pleasing aspect of the E-ARK dissemination approach is that we have conceived of DIP as a 'front end' through which someone constructs an 'order' (or request) and someone else fills that order."

- One archive benefited greatly from E-ARK geodata functionality which has led to the creation of a joint service with their national Surveying and Mapping Authority to start developing a web based solution for viewing of all cadastral maps dating from the 18th century to the present date in one viewer. The ability to join archived data with geodata is entirely derived from E-ARK functionality. Notably, the national Surveying and Mapping Authority for that country perceives a business opportunity in helping organisations to produce the correct data for the archives.
- In some instances, the E-ARK functionality could have knock-on effects such as enhancing competition thereby influencing pricing. For example, one organisation can now provide SIPs on systems produced by others. Currently the archives only accept documents in TIFF and JPEG2000 formats. This pressurises the SIP delivering authorities to convert their documents. As the respondent noted: "This is a task that has to be done 'on top of' the complex task of exporting the data from their system to the structure of our SIP format. The tool developed in E-ARK can export to our SIP format, so the costs for this process of delivering data to the archives can be decreased, and they might even be able to do it in-house. So, when there are documents in the system, SIP delivering authorities might be able to only get offers for the TIFF-converting process, and since it is an explicit task it might be easier to get more offers (more competition, better price)."

Barriers to commercial re-use of public sector data

Question 5: Have you come across any barriers to the commercial re-use of public sector data at the National Archives?

One of the principal barriers cited against the commercial re-use of public sector data was the protection of personal and sensitive information. However, the legal situation varies across Europe.

- For example, in Denmark, personal data is only made available to the public after 75 years.
- However, many archives indicated that there were no such barriers, for example the National Archives of Estonia noted that constitutionally data should be public-access unless there is a sufficient justification (e.g. private / trade secrets). Similarly, with the exception of one specific study, the Slovenian National Archives have not encountered any restricted data. In this context "restricted data" refers to classified data, personal data or copyright. The Norwegian National Archives also have not come across any restrictions. However, here, Personal Data Protection rules impede releasing born digital data.

Training opportunities

Question 6: Do you think businesses would be prepared to take up the necessary training opportunities required to benefit from any new access methods developed in the project? Why do you think this is the case?

- Some respondents felt that the market for training opportunities was limited to two or three records companies in the country.
- One archive noted that "if businesses see a commercial opportunity, they will do whatever is necessary to take advantage of it".
- In one country, the Geodetic Institute perceives that there is a business opportunity in providing training to help other organisations to produce correct data for the archives.

Type of impact

Question 7: What type(s) of impact could you expect to see arising from the deployment of the pilot (e.g. procurement policy, service delivery, organisational change, public awareness, training)?

When asked about what type(s) of impact could organisations expect to see arising from the deployment of the pilot, the respondents came up with a range of responses in the area of finance, service delivery and technical benefits.

Financial

- One archive saw considerable potential for cost savings, where the process of migrating data from live databases into the SIARD preservation format is costly for public institutions. Most institutions use suppliers to lead these migration processes, which can be expensive. Currently this archive can only guide institutions as to how the end product must look. The tool tested in this pilot has a great potential impact, since the archive will be able to direct organisations to an Open Source tool which undertakes much of the migration process – leaving the remaining small, well-defined tasks to be laid out for competitive tendering.
- Cost savings were predicted for one organisation within their IT budget due to an improvement in procurement due to the SIP format. Moreover, as the archive "is trusted to give out the tool" they note that "the agency costs go down." Similarly, at another archive there was a greater awareness of procurement issues.
- There is also evidence of wider economic benefits, such as recruitment of domain specialists, which is an indication that E-ARK can have an economic impact.

Service delivery

- At one archive, there were benefits to service delivery such as an improved quality of archival service and the access service.
- Public benefits were also evident at another archive with the development of the public GeoCloud and enhancements to the reading room.
- Similarly, one organisation expected to see an incremental improvement: "The improved tools produced by E-ARK impact significantly on our business operation, and provide a real potential for improved access."

Technical benefits

Technical benefits were widely observed.

- Providing a new service to store long-term databases in a "safe format".
- The archival practice will be modernised: with a full text index of AIP and DIP access for geodata.

There are however challenges.



- One archive considered the tools developed within E-ARK to be "better than those available in the production system". They noted the importance of having vendor neutral applications. However, implementing this can be problematic because of the issue of vendor lock-in. Consequently, a specific requirement will be that proprietary systems will in future need to be E-ARK compatible.

Timing of impact

Question 8: Is the impact likely to be witnessed in the short /medium / long term?

When asked about when the impact of the pilots was likely to be witnessed, all respondents felt that some effects were evident now or would be evident in the short term. In addition, some organisations felt that changes to processes, improvements to access, would be felt over the mid to long term.

Beneficiaries

Question 10: Who are the main beneficiaries?

As might be expected from such a diverse range of tools and organisations, the beneficiaries were wide-ranging, incorporating every level of the archiving ecosystem. These ranged from the memory institutions themselves (archives, repositories and their technical teams) to external organisations (often in the private sector) to end users such as the public, researchers and even the taxpayer.

- One archive considered that all users were beneficiaries of E-ARK because the archives were providing a better service. For some organisations, the range of E-ARK beneficiaries was not static, but had the potential to grow. For example, the one archive noted that while the current beneficiaries were archival institutions, repositories, and agencies: "If we manage access, then new groups, including the general public, and researchers will emerge."
- One respondent described the process whereby taxpayers would be a major beneficiary because it would be "less expensive and more effective to submit information packages to the archive, and any kind of public archive. The tool will hopefully make the suppliers compete on small well-defined tasks."

Maximising impact

Question 11: How will you ensure that the impact is maximised?

The pilot organisations have taken a highly proactive approach to ensuring that the benefits and impacts are maximised.

- One archive is making the tool available on their web site and promoting dialogue with agencies in the pre-ingest phase.
- Moreover, another archive is building E-ARK outputs into their new digital strategy and hiring a new member of staff to support the new functionalities made evident during the pilot phase. One archive will implement business processes to sustain beneficial aspects of E-ARK, and also ensure that the workflow used is the same as was used in the E-ARK pilot.
- The archives have actively promoted E-ARK through awareness raising both nationally and internationally.

Impact delivery

Question 12: How will you ensure that the impact is delivered?

A variety of strategies was proposed in order to ensure that the impact was delivered:

- Regular client meetings as a core part of the workflow.
- Implementing a suite of measures, including making the export format mandatory; training using E-ARK outcomes, giving the outputs to the international community; and Collaboration with the OPF³⁰. There was also a desire for supporting long-term sustainability.

³⁰ Open Preservation Foundation <http://openpreservation.org/>
E-ARK Final Report

- At one organisation, the involvement in GeoCloud, high-level representation on Geo issues and INSPIRE representation were all suggested. Moreover, state-level decisions (which had not been the case previously) were also seen as an important driver for impact delivery.
- Implementing business processes to sustain areas where benefit exists, and ensuring that the workflow used is the same as was used in E-ARK.
- Using the findings from the pilot in future developments and experiments.

Incremental impact or major departure

Question 13: Will the impact be incremental or a major departure from your normal situation?

The respondents found that the pilot represented both incremental and major changes to their normal situation. Some archives viewed the impact as incremental, while one Archive saw it as a major departure. The remaining respondents broadly considered the impact to comprise incremental steps that would eventually lead to a major departure from current working practices.

Benchmarks

Question 14: Are there any benchmarks or context you can provide to help show the distance travelled?

Responses include the following observations / comments:

- Some benchmarks can be derived from using the IST Maturity Model. New IT staff have been trained so can qualitatively review this benchmarking. New tools used in the production environment have speeded up these processes.
- The existing systems provide both context and benchmarks.
- Proposed introducing benchmarks related to sales, and the workhours spent for some tasks.
- Create a baseline based on interactions (time/money).

Meeting needs

Question 15: To what extent did the pilot outcome meet the original needs that were defined?

All the respondents felt that the tools tested met the original needs.

- The E-ARK SIPs met "98% of the original needs". Overall, the DBPTK is "a very good tool, which can be implemented in different systems."
- An archive noted that the goal was to "decouple the database from its provider and be independent and use whatever database provider was suitable for that moment." In this they felt DBPTK was successful.
- The pilot outcomes matched the original need in that they "were able to successfully get a package into the repository in a live setting", and the archive was "satisfied that this represents genuine improvement".
- An archive piloted "four varied databases" and the tools "did what we expected".

- Another archive considered that the pilot “went really well” although some of the IT developers felt that some of the tools would benefit from a more aesthetically pleasing front end.

What worked as intended?

Question 16: What do you believe worked in the way that was originally intended?

The majority of the archives felt that the pilots worked as originally intended. One archive noted that the tools “worked basically out of the box”, while another archive felt that the “SIP was better than hoped”.

What ended up being different?

Question 17: What ended up being different?

- When asked what was different, one archive considered that the tool tested functions very well, but felt that there may be some scenarios that have not yet been tested.
- Archives were extremely impressed with E-ARK Web which they described as being “very good for a young tool”. They also noted that “RODA-In does what it aims to”.
- One organisation had not originally expected to see any database development within SIARD, nor the development with the Swiss Federal Archives of SIARD 2.0.
- Another felt that the reference implementation required addition activity, but would be worth the investment. A nationally funded project was mooted as one means of achieving this.

New areas of impact

Question 18: Were any new areas of impact identified that were different from the original plan?

A range of new benefits and impacts were identified by respondents.

- Some archives felt that the DLM had been strengthened.
- One archive felt that they had extended collaboration.
- For one organisation, the Peripleo tool was an unexpected bonus that radically altered their service provision, while the re-use of existing metadata from INSPIRE was also highly beneficial.
- Another had not originally expected to see any database development within SIARD, but that the development proved particularly useful.
- The MOREQ-based export module has proven to be a broadly useful/practical tool.



Verifying impact

Question 19: What sort of evidence may be gathered to verify the impact?

The partners suggested various benchmark measures that could be used to verify the impact. For example, one archive will assess whether transfer times have shortened; the volume of transfers increased; the amount of collaboration increased; collaborative procurement undertaken; if agencies deem the service better and if there is there public awareness of international standards?

Available evidence

Question 20: Is this evidence available at this stage?

Only two archives felt that they could provide evidence at this stage.

Testimonials

Question 21: Can any of your partners/users/beneficiaries provide a testimonial in the future?

All respondents could suggest partners/users/beneficiaries who could provide a testimonial in the future, with the exception of one archive which did not have external partners, and one archive who could only provide one when they start providing a new service.

Evaluation by partners

Question 22: Do any of your partners have their own evaluation mechanisms/information/data about the pilot impact that could be accessed?

Most respondents did not indicate that their partners had their own evaluation mechanisms/information/data about the pilot impact that could be accessed, with two exceptions which did not know.

3.2 Results summary

The completed questionnaires provide an assessment of how the partner organisations viewed their participation in the project, and some comments about how the future might look. In order to reflect this, the summary below reports on existing and possible future outcomes, and is based on a general overview of the replies. Each partner questioned had significantly different experiences, and there is little specific comment that is common to all. The outcomes of the questionnaires have been divided into the following five categories: outcomes, beneficiaries, timing, methods and issues.

Outcomes

- Working collaboratively and in partnership makes the results scalable with the opportunity for future economies of scale.
- New and changed skills have been developed and future training opportunities will arise as will new archiving and digital strategies. The results will improve public awareness and allow web-based access to tools. Archival processes will be more open to re-evaluation and the preservation and visualisation of archives will be enhanced. It has been useful for developers to see tools in different settings.
- Future benefits include harmonisation; integration; interoperability; common standards, specifications and solutions.
- The project has taken a holistic approach with a wide international (mainly) European base; it has been a rich experience working together with the prospect of future joint services.
- The piloting of the tools will lead to increased speed of use; the possibility of new access; improved tools; and improved knowledge about Big Data issues. Technical benefits will include increased efficiency in bringing archive data closer to the producer and the end user; access to 'real life' help; the value of different approaches and specialised formats; and greater reuse of data.
- Tangible benefits will be: increased competition; new procurement processes; potential reductions in IT budgets; opportunities to keep processes in-house; and improved service delivery.
- Sustainability of data will be improved, with incentives for further improvement, though authority will be required in future to demonstrate the validity of the tools and new approaches (but note that now we have the DAS Board to manage the specifications).
- New functionality and tools have led to the creation of at least one new job, with the potential for others, in conjunction with job sustainability, because of new opportunities (e.g. training).

Beneficiaries

Beneficiaries are evident at every level in the archive ecosystem. These include archive institutions, repositories, the taxpayer, researchers, technical teams and the end users of data. In addition, the private sector, SMEs and agencies (governmental) will also benefit. There will be greater competition for the European Union (EU) Digital Single Market and benefits for the Open Data Directive.

Timing

As might be expected future benefits or impacts are predominantly incremental and will be likely to 'trickle down'; small early steps have been taken so far.

Some short-term impacts are already evident (e.g. job creation) and will continue to be felt with some tools.

Other benefits may be seen in the five year horizon. The Pan-European approach is perceived to produce long-term benefits.

The work done represents one step forward and there will be a need for proactivity in the future to ensure further benefits.

Methods

The work will be implemented through business processes and the commercialisation of the tools and strategies and by marketing the E-ARK output.

Business opportunities and reduced costs will provide incentives as will increased automation.

Capitalising on joint services will be important.

Results will also be seen in new industrial benchmarks and statistics.

Miscellaneous Issues / Comments

Overall, the six archives responded very favourably regarding the pilot outcomes and impact. Here are a few miscellaneous issues identified by a small number of the respondents:

- *Financial*: an overall lack of funding of the archival sector was noted, matching or supplementary funding has often been required with more investment necessary; staff costs have increased and often only limited resources are available. Necessary further work is expensive and more research funding would be required to make the tools fully relevant.
- *The project*: for one respondent E-ARK was felt to be big and complicated and did not represent a new paradigm. It proved better for workflow than for implementation; the final appearance of E-ARK tools could make them difficult to 'sell', and there may be language barriers if all tools are in English.
- *Government support*: there was varying buy-in from different governments and very different attitudes to the value of archive work; some partners had little active engagement from government, some partners experienced barriers to use of public sector data, others faced fewer or no barriers.
- *Priorities*: varying priorities across different countries could mean that standardisation will be difficult to achieve; there is not only one way for each institution to go; there may be future difficulties in implementing new standards.
- *The future*: for some respondents: it was a little too early to precisely gauge the benefits; there will be challenges of integration; and the success of the tools depends on how well they work over time.

The situation will now have changed regarding some of these issues (e.g. the final appearance of the tools).

3.3 Conclusions

The E-ARK open source, digital archiving framework, complete with accompanying metadata and other standards, has been thoroughly tested and has made a significant impact on the institutions which carried out the pilots. This has been assessed by carrying out interviews at the pilot sites based on a detailed questionnaire.

Highlights from this analysis include: major savings in the cost of providing pre-ingest tools due to increased competition; harmonisation of geo-spatial data archiving practices which facilitate comparison of Natura 2000 sites across Europe; the benefits of using the E-ARK Web tool, together with advanced search and data mining facilities, in national, regional and local archives; and last but not least, robust, common standards and tools that can truly be used interchangeably across Europe.

However, to maintain these benefits in the mid to long term, the pilot archives noted that consideration needs to be given to the long-term sustainability of the outcomes and impacts of the project. This will require a proactive stance, and continuity of the E-ARK brand. As one archive noted the "key point is to be able to continue after the project is finished. This means at least 90% of the participants should continue to use and develop the software further."

3.4 Sustaining the E-ARK Outcomes

The E-ARK consortium has invested significant time and energy to ensure the sustainability of the project outcomes:

1. The DLM Forum is now the official custodian of the project website; the Knowledge Centre, the Maturity Model; and the DAS Board which looks after the specifications;
2. Project partners are collaborating with the Open Preservation Foundation to ensure the project software (available via Github) is maintained;
3. All the project outputs are open source, and in December 2016, Apache 2.0 licences were issued to the DLM, OPF and DPC for the use of the project outputs.
4. Project partners have committed to continue using and promoting the E-ARK brand;
5. E-ARK partners have submitted an eArchiving Building Block to the EU Connecting Europe Facility (CEF) programme, and this process is now at the final stage of negotiation.

4. Beneficiaries



The project brings together a core group of five European national archives with state-of-the-art experience of leading-edge tools and standards. These archives are joined by five leading research institutions who have developed suitable technologies for deployment in the project, three systems providers, two government institutions, and two membership organisations. These membership organisations represent the communities who stand to benefit from the project: data owners / providers, software vendors, solution providers and archives.

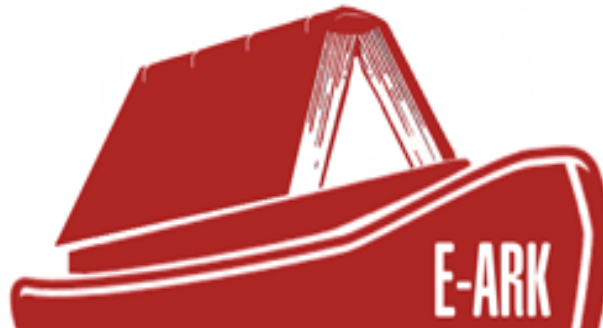
Organisation	Contact	Area of Expertise	Country
University of Brighton (E-ARK Project co-ordinator ³¹)	Janet Delve, David Anderson, Clive Billenness, Andrew Wilson, Jaime Kaminski, Corinna Hattersley-Mitchell, Hilary Williams, Dean Few	Project coordination, digital preservation, digital archiving, preservation and metadata standards development, impact and governance	UK
AIT Austrian Institute of Technology GmbH	Ross King, Rainer Schmidt, Sven Schlarb, Jan Rörden, Roman Karl	Software development, computer networks, digital library research	Austria
Arhiv Republike Slovenije	Jože Škofljanec, Anja Paulic, Gregor Završnik, Boris Domanjko, Aleksandra Mrdavsic, Tatjana Hajtnik	e-Archiving, software development	Slovenia
The DLM Forum Foundation	Zoltán Szatucsek, Beatrix Horvath, Levente Szilagyil	Digital libraries, digital archives, records management, peak sector membership organisation	Europe
Statens Arkiver	Anders Bo Nielsen, Alex Thirifays, Phillip Tømmerholt, Jan Dalsten Sørensen, Kathrine Hougaard Edsen Johansen	eArchiving, ingest tools, large database archiving, standards	Denmark
The Digital Preservation Coalition	William Kilbride, Sharon McMeekin	Advocacy, stakeholder representation, web site management, dissemination	UK
Universität zu Köln	Manfred Thaller, Jan Rörden	Research policy, digitisation, information theory	Germany
Instituto Superior Técnico	José Borbinha, Ricardo Vieira,	Digital libraries networks, software conceptualisation,	Portugal

³¹ Note that the University of Portsmouth was the Project Coordinator from 1st February 2014 – 31st December 2015. The University of Brighton took over coordination from January 1st 2016 to the project end.

	Diogo Proença, Antonio Higgs	industry best practice, information governance	
The National Archives of Hungary	Zoltán Szatucsek, István Alföldi, Zoltán Lux	eArchiving, producer relations, records appraisal, records management	Hungary
Rahvusarhiiv	Kuldar Aas, Tarvo Karberg, Karin Oolu, Lauri Leht, Lauri Ratsep, Kati Sein	eArchiving software, IT research, digital preservation, metadata standards	Estonia
Arkivverket	Hans-Fredrik Berg, Arne-Kristian Groven	eArchiving, records management standards, e-government	Norway
ES Solutions	Björn Skog, Henrik Ek, Karin Bredenberg	Archival software, OAIS, database management, metadata standards, packaging standards	Sweden
Magenta	Morten Kjærsgaard, Lanre Abiwon, Andreas Kring, Alex Thirifays, Lone Smith Jespersen, Torben Lauritzen	Software development, IT architectures, public administration	Denmark
KEEP Solutions LDA	Miguel Ferreira, Luís Faria, Hélder Silva, Bruno Ferreira	Archival software development, OAIS, database management, systems design	Portugal
Agência para a Modernização Administrativa IP	Claudia Barroso	e-government, cultural heritage, document management systems	Portugal
Ministerio de Hacienda y Administraciones Pública	Laura Flores Iglesias, Javier Hernández Díez, Aitor Cubor Contreras	Public administration, archives management, interoperability	Spain
University of Portsmouth	Richard Healey, Janet Delve, David Anderson, Clive Billenness, Andrew Wilson	Big Data, spatial data warehousing	UK

5. E-ARK Promotion

5.1. Project logo



The project logo utilized the notion of an ark, first encountered in the Sumerian tale of Ziusudra, as a vessel in which humanity is saved from the wrath of the gods. The protective covering of the ark depicted in the E-ARK logo, is a book. This is intended to draw attention both to the archival aspects of the project, and also to represent the capacity of (written) learning to protect humanity.



The screenshot shows the E-ARK website homepage. At the top left is the E-ARK logo (a red boat with a white canopy). To the right is a search bar with the text "Search ..." and a "GO" button. Below the logo are navigation links: "HOME", "ABOUT", "NEWS", "EVENTS", "COMMUNITY", "PARTNERS", "RESOURCES", "PILOTS", "USE CASES", and "STORIES". There are also links for "Site Map", "Register", "Login", and social media icons for SHRE, Facebook, and Twitter. The main content area features a large banner for the "E-ARK FINAL CONFERENCE" with a background image of a city at night. The banner text reads: "In co-operation with the National Archives of Hungary, E-ARK welcomes you to our closing conference in beautiful Budapest." and includes a "Find out more" button. Below the banner is a row of social media icons. The page is divided into three columns:

- @EARKProject on Twitter:** A list of three tweets from E-ARKProject, including one about Estonia's Independence Day and another about a magnificent epigraph.
- Welcome to the E-ARK Project (European Archival Records and Knowledge Preservation):** A section with a heading and a sub-heading. The text describes E-ARK as a multinational big data research project aimed at improving digital archiving methods and technologies on a Europe-wide scale. It also mentions the project's goals of developing technical specifications, tools, and an integrated archiving infrastructure.
- Latest News:** A section with a heading and two news items: "E-ARK Publishes Report on Pilots" (dated 13-02-2017) and "DLM Forum announces the launch of the DAS Board" (dated 02-02-2017).

5.2. Project website

The project's public website (eark-project.eu) was launched on day 1 of the project. This site uses the Joomla Content Management System, which enables individual members of the project team to insert and update content within a consistent overall style framework. All external deliverables and other items of news are placed on the site, which is connected to an RSS feed. The website has continued to be enhanced and developed over the life of the project.

Using a hierarchical, tabulated menu system, the website enables visitors to gain a rapid overview of the project or undertake more detailed research. All interactions are measured using a Google Analytics account.

During Project Year 3, we recorded a total of 33,000 page hits (an average of 2,081 per month) from 5,618 unique viewers, located in 114 identifiable countries, including every member state in the EU.

In addition, we set ourselves the 'stretch' target of 2,500 web page views per month averaged over the final three months of the project, and exceeded this by achieving an average of 4,020 page views per month during that period.

The website also permits visitors who wish to be informed directly of new developments to subscribe to a mailing list managed via the MailChimp online service. MailChimp is used by the project to send out bulk e-mailings in a structured manner and to measure the impact of these by monitoring the percentage rate at which these are opened by their recipients.

A report on the impact of E-ARK dissemination activities has been published in deliverable D8.3 which shows that engagement through our website is still the most common means of communicating with stakeholders.

5.3 Other dissemination activities

The project established an E-ARK LinkedIn group which currently has 279 members, covering all stakeholder communities. A variety of conversations have been posted on a range of different E-ARK topics.

The E-ARK Twitter Account (@earkproject) was actively used to promote the project over the three years of the project. A 'stretch' target of 350 followers on Twitter by the end of Year 3 was set, and by project end the project had achieved 381 Twitter followers. Twitter Impressions rose from 6,500 in Year 2 to 81,500 in Year 3.

The project also published a monthly online newsletter (<http://news.eark-project.eu>) which featured both news about the project and matters of general interest to the preservation and archiving communities. The newsletters achieved an average of 200 readers per issue, and included readers from every EU member state.

6. Dissemination Outputs



Over the three years of the project, E-ARK participants have engaged in hundreds of dissemination activities, not only within Europe but on the wider international stage as well. Highlights of the E-ARK Dissemination activities include:

- Dozens of articles and papers published in leading industry and professional journals
- Presentations and workshops at the major global digital preservation conference iPres
- Presentations and workshops at the major global archival event, the ICA Conference
- Presentations at a number of Big Data events
- Engagement with a wide range of stakeholders at numerous events in Europe, such as the eGov Conference, PASIG, Information Governance conferences, etc.
- Final Project Conference held at the National Archives of Hungary in December 2016

A complete list of the E-ARK dissemination activities can be found in the Appendix.



Appendix: E-ARK Dissemination Activities



A.1: Dissemination Activities Year 1 2014

Type of Activity	Title	Date / Period	Place
Publications	Making the information governance landscape in Europe	2014	http://purl.pt/26107
Articles in popular press	News about project start	01 Feb 2014	http://www.computerdk.com/2014/03/12/page/5/
Articles in popular press	News about project start	01 Feb 2014	http://www.version2.dk/artikel/europa-standardiserer-sine-digitale-arkiver-56736
Web	News about project start	01 Feb 2014	http://digitalbevaring.dk/paa-vej-mod-faelles-standarder-for-digital-arkivering/
Press releases	News about project start	01 Feb 2014	https://www.sa.dk/om/presse/paa-vej-mod-faelles-standarder-digital-arkivering-europa
Press releases	Press release announcing	04 Feb 2014	http://www.port.ac.uk/uopnews/2014/02/04/e-ark-gets-6m-to-save-our-digital-data
Conferences	XML Prague	14 Feb 2014	Prague, Czech Republic
Presentations	Presentation on E-ARK (including Advisory Board)	17 Feb 2014	Visit to the National Archives, UK
Conferences	Arkivforum 2014	12 Mar 2014	Stockholm, Sweden
Other	APEX meetings	14 Mar 2014	Paris, France
Web	News about release of deliverable D5.1	01 Apr 2014	http://digitalbevaring.dk/status-for-tilgaengeligoerelse-og-brug-af-digitale-materialer-paa-arkiver/
Presentations	Information about E-ARK	01 Apr 2014	Danish National Archives, Copenhagen
Other	Information about E-ARK meeting for staff	02 Apr 2014	National Archives of Sweden
Other	Information about E-ARK meeting for staff	29 Apr 2014	National Archives of Sweden
Other	Information about E-ARK meeting for staff	16 May 2014	National Archives of Sweden
Other	Information about E-ARK	20 May 2014	Bundesarchiv, Berlin, Germany
Workshops	E-ARK: Open data mining for government archives	22 May 2014	Krems, Austria

Type of Activity	Title	Date / Period	Place
Conferences	Nordic digital conference	04 Jun 2014	Copenhagen, Denmark
Workshops	ESSArch	04 Jun 2014	Växjö, Sweden
Presentations	Information about E-ARK for national archivists	09 Jun 2014	Athens, Greece
Conferences	E-ARK update	10 Jun 2014	DLM Forum, Athens, Greece
Conferences	Working together, looking forward	10 Jun 2014	Athens, Greece
Conferences	E-ARK: Integrating records systems with digital archives – current status and way forward	11 Jun 2014	Melbourne, Australia
Conferences	Best practice survey on the current solutions for digital archiving	11 Jun 2014	Melbourne, Australia
Conferences	The E-ARK model for general archiving	11 Jun 2014	Melbourne, Australia
Presentations	Information about E-ARK	01 Jul 2014	Danish National Archives, Copenhagen
Other	Society of American Archivists annual meeting	10 Aug 2014	DC, USA
Other	Startup meeting Swedish e-archive project	26 Aug 2014	Stockholm, Sweden
Workshops	METS workshop and board meeting	11 Sep 2014	London, UK
Presentations	Database archiving in the E-ARK project	17 Sep 2014	Karlsruhe, Germany
Conferences	Database archiving in the E-ARK project	17 Sep 2014	Zentrum für Kunst und Medientechnologie, Karlsruhe, Germany
Conferences	The E-ARK Project – Get involved! (E-ARK advisory boards with focus on commercial / technical advisory board)	17 Sep 2014	Zentrum für Kunst und Medientechnologie, Karlsruhe, Germany
Other	Education of Swedish e-archive project members	01 Oct 2014	Stockholm, Sweden
Conferences	E-governance day	08 Oct 2014	Sweden
Publications	iPres 2014: Integrating e-government systems with digital archives	09 Oct 2014	Melbourne, Australia
Publications	iPres 2014 poster: Outcomes of E-ARK best practice survey results on archiving of digital material	09 Oct 2014	Melbourne, Australia
Conferences	Integrating e-government systems with digital archives	09 Oct 2014	Victoria University Library, Melbourne, Australia
Publications	Integrating e-government systems with digital archives	09 Oct 2014	Melbourne, Australia
Publications	Database preservation toolkit: Past, present and future	12 Oct 2014	Girona, Spain
Conferences	National Archives archival conference	16 Oct 2014	Stockholm, Sweden
Presentations	Information about E-ARK for national archivists	03 Nov 2014	Turin, Italy
Publications	A maturity model for information governance	10 Nov 2014	Lisbon, Portugal
Publications	One consolidated view on information management references	10 Nov 2014	Lisbon, Portugal

Type of Activity	Title	Date / Period	Place
Conferences	Making the information governance landscape in Europe	10 Nov 2014	Lisbon, Portugal
Publications	Database Preservation Toolkit: A flexible tool to normalize and give access to databases	12 Nov 2014	Lisbon, Portugal
Publications	RODA and the developments on European research projects	12 Nov 2014	Lisbon, Portugal
Publications	Long-term preservation of databases the meaningful way	13 Nov 2014	Lisbon, Portugal
Presentations	Data valorisation and the application of Big Data techniques in archives	14 Nov 2014	Lisbon, Portugal
Other	XML specialist meeting	30 Nov 2014	Stockholm, Sweden
Workshops	ESSArch	04 Dec 2014	Växjö, Sweden
Presentations	Project board e-Arh.si	21 Jan 2015	Ljubljana, Slovenia

A.2: Dissemination Activities Year 2 2015

Type of Activity	Title	Date / Period	Place
Presentations	Course for new civil servants, level A1	10 Feb 2015	Instituto Nacional de Administración Pública (INAP), Madrid, Spain
Conferences	XML Prague	13-15 Feb 2015	Prague, Czech Republic
Workshops	E-ARK all staff meeting – Database archiving seminar	16-20 Feb 2015	Portsmouth, UK
Presentations	Introduction to data warehousing and Big Data	19 Feb 2015	Portsmouth, UK
Presentations	Introducing Big Data solutions: E-ARK Big Data techniques at AIT	19 Feb 2015	Portsmouth, UK
Presentations	De-normalising data for archival preservation	20 Feb 2015	Portsmouth, UK
Presentations	United Nations	27 Feb 2015	Copenhagen, Denmark
Conferences	PASIG – Preservation and Archiving Special Interest Group 2015 meeting	11-13 Mar 2015	San Diego, USA
Conferences	Is a data warehouse a data archive and why does it matter?	19-20 Feb 2015	Portsmouth, UK
Other	Discussion meeting	20 Apr 2015	Stockholm, Sweden
Other	Norwegian agency archivists visit to the Swedish National Archives	21 Apr 2015	Stockholm, Sweden
Presentations	The E-ARK project	27 Apr 2015	Swedish National Archives, Stockholm, Sweden
Presentations	Conference of administrative procedures and legal framework of public sector reform	04 May 2015	Centro Estudios Políticos y Constitucionales, Madrid, Spain
Workshops	NorDig	06 May 2015	Copenhagen, Denmark
Conferences	Nordiska Arkivdagarna	05 Jul – 5 Aug 2015	Copenhagen, Denmark
Presentations	Course "Cloud services of eAdmin"	11 May 2015	INAP
Workshops	E-ARK technical meeting	12-13 May 2015	Vienna, Austria
Presentations	Introducing E-ARK	20 May 2015	Webinar
Workshops	Course "Use of electronic documents and archive"	25-28 May 2015	MINHAP, Madrid, Spain
Presentations	Course "Use of electronic documents and archive"	25-28 May 2015	MINHAP, Madrid, Spain
Presentations	Progress of E-ARK	09 Jun 2015	Copenhagen, Denmark
Conferences	DLM Forum (AGM)	16-17	Riga, Latvia

Type of Activity	Title	Date / Period	Place
		Jun 2015	
Presentations	DLM Knowledge Centre Services, DLM Forum members meeting	16-17 Jun 2015	Riga, Latvia
Conferences	DLM members meeting (two presentations)	16-17 Jun 2015	Riga, Latvia
Workshops	E-ARK Advisory Board meeting and project proceedings	16-17 Jun 2015	Riga, Latvia
Conferences	E-ARK Advisory Board meeting and project proceedings	16-17 Jun 2015	Riga, Latvia
Presentations	Database preservation: Data mining and denormalization of databases	17 Jun 2015	Riga, Latvia
Publications	The E-ARK project: Harmonizing social and cultural records across Europe	25 Jun 2015	Dublin, Ireland
Presentations	ARCHIVE presentation	1 Jul 2015	CDTIC (Comité de Dirección TIC), Spain
Presentations	Archive web application presentation	9 Jul 2015	S ^a Estado Cultura CSCDA, Madrid, Spain
Conferences	Society of American Archivists annual meeting	16-22 Aug 2015	Cleveland, USA
Conferences	APEX second conference	7-9 Sep 2015	Budapest, Hungary
Other	The E-ARK project	10 Sep 2015	The National Archives, UK
Conferences	ICA	28-29 Sep 2015	Reykjavik, Iceland
Workshops	Assessment of Information Governance Maturity, workshop, Third ICA annual conference	28-29 Sep 2015	Reykjavik, Iceland
Conferences	Third ICA annual conference: Archives – evidence, security and civil rights	28-29 Sep 2015	Reykjavik, Iceland
Conferences	Annual Conference/Conférence annuelle de l'ICA – Assessment of Information Governance Maturity, workshop, Third ICA Annual Conference	28-29 Sep 2015	Reykjavik, Iceland
Presentations	ARCHIVE presentation	01 Oct 2015	Comité Sectorial de Administración Electrónica, Madrid, Spain
Presentations	Meeting of the Member States' Expert Group on Digitisation and Digital Preservation	13 Oct 2015	Luxembourg City, Luxembourg
Presentations	Records management maturity model assessment, DLM Forum members meeting	14-15 Oct 2015	Luxembourg City, Luxembourg
Conferences	Presentation "Co-ordinators overview of E-ARK"	14-15 Oct 2015	Luxembourg City, Luxembourg
Presentations	E-ARK co-ordinator's address	14 Oct 2015	Luxembourg
Workshops	E-ARK Advisory Board meeting and project	14-15	Luxembourg

Type of Activity	Title	Date / Period	Place
	proceedings	Oct 2015	
Conferences	E-ARK Advisory Board meeting and project proceedings	14-15 Oct 2015	Luxembourg
Presentations	E-ARK format for storage and long-term preservation and the integrated prototype	15 Oct 2015	Luxembourg, Luxembourg
Conferences	Annual FAI conference	20-21 Oct 2015	Stockholm, Sweden
Presentations	Reunião aberta do Grupo de trabalho de Gestão de Documentos de Arquivo (GT-GDA), 12 th Congresso Nacional BAD	21-23 Oct 2015	Évora, Portugal
Conferences	Informationsförvaltning 2015	20-21 Oct 2015	Stockholm, Sweden
Other	Celebration of The National Archives 20 years in Arninge	22 Oct 2015	Täby, Sweden
Presentations	Conference of electronic administration	22 Oct 2015	Subdelegación Gobierno Bizcaia
Presentations	Horizontal e-administración services	28 Oct 2015	INAP
Media Briefings	Translation of E-ARK content to Spanish	Nov 2015	MINHAP, Madrid, Spain
Publications	Book chapter: "The new design of archives: The evolution from analogy to electronic model and security and interoperability requirements"	Nov-Dec 2015	MINHAP, Madrid, Spain
Conferences	iPRES	2-6 Nov 2015	Chapel Hill, North Carolina, USA
Presentations	The E-ARK project	05 Nov 2015	iPRES conference, Chapel Hill, North Carolina, USA
Presentations	Meeting of Estonian government IT policy makers	06 Nov 2015	Tallinn, Estonia
Videos	earkweb – create SIP, SIP to AIP conversion, upload to HDFS	09 Nov 2015	Online
Presentations	Course "Cloud services: Electronic documents and files – archive"	10 Nov 2015	Instituto Nacional de Administración Pública, Madrid
Workshops	Initial maturity model for information governance arrangements in organizations, Workshop, 5th International Conference: The Future of Information Sciences (INFuture)	11-13 Nov 2015	Zagreb, Croatia
Workshops	The E-ARK Project	13 Nov 2015	InFuture Conference, Zagreb, Croatia
Presentations	Conference about the new national administrative legislation	16 Nov 2015	INAP
Presentations	Course "Cloud services of eAdmin"	23 Nov 2015	INAP
Workshops	Course "Cloud services: Electronic documents and files – archive"	24 Nov 2015	SEAP, MINHAP, Madrid, Spain
Presentations	Electronic administration conference	25 Nov 2015	Centro de formación de la Seguridad Social Pozuelo Alarcón, Madrid, Spain
Conferences	eChallenges 2015	25-26	Vilnius, Lithuania

Type of Activity	Title	Date / Period	Place
		Nov 2015	
Other	State agencies lawyers meeting	27 Nov 2015	Stockholm, Sweden
Presentations	Course "Use of electronic documents and archive"	30 Nov to 3 Dec 2015	MINHAP, Madrid, Spain
Workshops	Course "Use of electronic documents and archive"	30 Nov to 3 Dec 2015	MINHAP, Madrid, Spain
Presentations	Meeting with European Commission regarding Digital Archives	09 Dec 2015	Brussels, Belgium
Workshops	E-ARK general technical meeting	14-16 Dec 2015	Lisbon, Portugal
Workshops	EAG/EBNA – Reporting on E-ARK EAG preparation board	21-13 Jan 2016	The Hague, The Netherlands
Publications	DPC Tech Watch Report on database preservation	2017	

A.3: Dissemination Activities Year 3 2016

Type of Activity	Title	Date / Period	Place
Presentations	Internationalising Design History seminar: Digital humanities research	18 Jan 2016	Brighton, UK
Workshops	Om E-ARK og Siard 2.0 (in Norwegian)	04 Feb 2016	Oslo, Norway
Presentations	SOCINFO.es (Fundación Socinfo) seminar "Electronic record and application archive"	16 Feb 2016	Madrid, Spain
Presentations	Lecture for students at the University of Tartu	25 Feb 2016	Tartu, Estonia
Presentations	Lecture for students at the University of Tallinn	26 Feb 2016	Tallinn, Estonia
Publications	Article in Boletic (http://www.astic.es/sites/default/files/articulosboletic/tecnologia_2_gerardo_bustos.pdf)	Mar 2016	Spain
Presentations	Conference on interoperability and E-archive on the European Framework (two presentations)	01 Mar 2016	CEDEX, Madrid, Spain
Workshops	Conference on interoperability and E-archive on the European Framework	01 Mar 2016	CEDEX, Madrid
Presentations	CNIS - National Congress on Innovation and Public Services	02-03 Mar 2016	FNMT, Madrid, Spain
Presentations	The use of E-ARK archiving tools within a judicial environment	09 Mar 2016	Pamplona, Spain
Presentations	Conference in Canary Islands Public Administration Institute	9-10 May 2016	Tenerife and Las Palmas, Spain
Presentations	Introduction to E-ARK	14 Mar 2016	National Archives of Abu Dhabi, Abu Dhabi
Presentations	DIACHRON Project end of project workshop	24 Mar 2016	Athens, Greece
Presentations	Conference of administrative procedures and legal framework of public sector reform	28 Mar 2016	Madrid, Spain
Conferences	PASIG conference	09-11 Mar 2016	Prague, Czech Republic
Conferences	Our digital future	15 Mar 2016	Cambridge, UK
Presentations	Conference of administrative procedures and legal framework of public sector reform	04 Apr 2016	Institute of Financial Studies, Spain
Presentations	Information session on state projects of electronic administration of shared use by the Autonomous Communities	07 Apr 2016	Zaragoza, Spain
Conferences	Archiving geospatial data	13 Apr 2016	Radenci, Slovenia
Presentations	E-ARK demo event	15 Apr 2016	Luxembourg
Presentations	Course in Riga	16-17 May 2016	Riga, Latvia
Presentations	Conference of administrative procedures and legal framework of public sector reform (two presentations)	18 Apr 2016	Madrid, Spain
Conferences	Archiving 2016	20 Apr 2016	Washington, USA
Workshops	Presentation on the use of E-Ark tools and services within the Spanish government	25 Apr 2016	Seville, Spain
Workshops	Presentation on the use of E-Ark tools and services	10 May	Ministry of Culture, Spain

Type of Activity	Title	Date / Period	Place
	within the Spanish government	2016	
Conferences	Course "Document management – Archive"	12 May 2016	INAP, Madrid, Spain
Presentations	Introduction to E-ARK	17 May 2016	University of Brighton, UK
Presentations	Curso IGAE Instituto de Estudios Fiscales (IEF)	17 May 2016	Madrid, Spain
Presentations	Course administrative procedures and legal framework of public sector reform – Military Health School	20 May	Carabanchel, Spain
Workshops	Presentation on the use of E-Ark tools and services within the Spanish government	27 May 2016	ACAL
Presentations	Legal sessions of the Port State ownership system	31 May	Málaga, Spain
Workshops	Internasjonalt arkivsamarbeid- Om Siard 2.0 og prosjektet E-ARK (in Norwegian)	07 Jun 2016	Trondheim, Norway
Presentations	Sessions for general secretaries	12 Jul 2016	Madrid, Spain
Presentations	Course "Incidence in the local regime of law 39/2015, of 1 Oct, of the common administrative procedure and law 40/2015, of Oct 1, on the legal regime of the public sector"	02 Jun 2016	Zaragoza and Huesca, Spain
Conferences	DLM Forum	08-09 Jun 2016	The Hague, The Netherlands
Conferences	Presentation at DLM Forum: E-ARK scalable computation layer and data mining showcase	08 Jun 2016	The Hague, Netherlands
Presentations	DLM Forum members meeting: Knowledge Centre – How can users access it and use it	08-09 Jun 2016	The Hague, The Netherlands
Presentations	E-ARK co-ordinator's progress report	09 Jun 2016	National Archives of the Netherlands, The Hague
Conferences	Course "Cloud services: Electronic documents and files – archive"	13 Jun 2016	INAP, Madrid, Spain
Conferences	Electronic administration – document management and archives	14 Jun 2016	Ministry of Justice, Madrid, Spain
Workshops	Presentation on the use of E-Ark tools and services within the Spanish government	14-15 Jun 2016	Lima, Peru
Workshops	CISTI 2016 – Methods and techniques for maturity assessment	15-18 Jun 2016	Gran Canaria, Spain
Conferences	CISTI 2016 – A maturity model for information governance	15-18 Jun 2016	Gran Canaria, Spain
Presentations	Knowledge preservation: Dealing with high volumes of high-value information	29 Jun 2016	European Parliament, Brussels, Belgium
Other	Meeting with John Sheridan, Digital Director, The National Archive, UK	29 Jun 2016	Kew, UK
Presentations	Encontro Curadoria Digital – maturity models for information management and digital preservation	29-30 Jun 2016	Lisbon, Portugal
Conferences	Digital humanities conference	14 Jul 2016	Krakau, Poland
Presentations	DH2016 Using Big Data techniques for searching digital archives – Use cases in digital humanities	14 Jul 2016	The Jagiellonian University and the Pedagogical University of Kraków, Poland
Presentations	Implementation of e-government	14 Jul 2016	Huesca, Spain
Other	Meeting with Chris Fryer, UK Parliamentary Archives	18 Jul 2016	Westminster, UK

Type of Activity	Title	Date / Period	Place
Press releases	Article about the E-ARK meeting in Madrid (https://administracionelectronica.gob.es/pae_Home/pae_Actualidad/pae_Noticias/Anio2016/Marzo/Noticia-2016-03-02-Balance-de-la-Jornada-de-interoperabilidad-y-archivo-electronico-en-el-marco-europeo.html)	Aug 2016	Spain
Videos	E-ARK video: Your story-MINHAP (http://administracionelectronica.gob.es/pae_Home/pae_Estrategias/Archivo_electronico/pae_herramientas_para_la_gestion_de_documentos_y_expedientes_electronicos0/e-ark.html)	Aug 2016	Spain
Presentations	Introduction to E-ARK	01 Aug 2016	The KEEP archive, Brighton, UK
Conferences	Conference "The document management legislation in Spain" and participation in multiple panels	25-26 Aug 2016	National Archives of Colombia (Bogota), Colombia
Presentations	ARA conference	31 Aug 2016	Wembley, UK
Web	Electronic administration webpage – Archive and E-ARK section (http://administracionelectronica.gob.es/ctt/archive/descargas)	Sep 2016	Spain
Presentations	New digital archives for old: How the E-ARK project is forging digital archiving in the 21st Century	04 Sep 2016	University of Brighton, UK
Presentations	eGov conference	05-07 Sep 2016	Guimaraes, Portugal
Conferences	TPDL 2016 – A maturity model for information governance	05-09 Sep 2016	Hannover, Germany
Presentations	ICA conference 2016	05-10 Sep 2016	Seoul, South Korea
Media Briefings	Electronic administration – document management and archive	14 Sep 2016	Ministry of Justice, Spain
Presentations	Course: "The new administrative procedure in the local area"	19 Sep 2016	Valencia, Spain
Presentations	The use of E-ARK archiving tools within the Spanish government	26-27 Sep 2016	Gijón, Spain
Other	Dissemination in regions (FLA) (http://www.minhafa.gob.es/es-ES/CDI/Paginas/EstabilidadPresupuestaria/Informacion CCAAs/CondicionalidadFLA2016.aspx)	Oct-Nov 2016	Spain
Conferences	iPres 2016 – Towards a systematic information governance maturity assessment	03-05 Oct 2016	Bern, Switzerland
Workshops	iPres 2016	03-06 Oct 2016	Bern, Switzerland
Publications	Conference paper: database preservation toolkit - A relational database conversion and normalization tool. 13th International Conference on Digital Preservation (iPres 2016)	03-06 Oct 2016	Bern, Switzerland
Publications	Conference paper: An OAIS-oriented system for fast package creation, search, and access. 13th International Conference on Digital Preservation (iPres 2016)	03-06 Oct 2016	Bern, Switzerland
Presentations	iPRES 2016	03-06 Oct 2016	Bern, Switzerland
Presentations	Lecture for students at the University of Tartu	05 Oct	Tartu, Estonia

Type of Activity	Title	Date / Period	Place
		2016	
Presentations	Seminar	06 Oct 2016	Vehendi, Estonia
Presentations	The use of E-ARK archiving tools within the Spanish government	06 Oct 2016	INAP, Madrid, Spain
Presentations	Centeris 2016 – Modeling the value of digital preservation activities	06-07 Oct 2016	Oporto, Portugal
Presentations	Centeris 2016 – Maturity models for information systems: A state of the art	06-07 Oct 2016	Oporto, Portugal
Presentations	The use of E-ARK archiving tools within the Spanish government	10 Oct 2016	INAP, Madrid, Spain
Workshops	E-ARK data mining workshop	10-11 Oct 2016	Budapest, Hungary
Presentations	Session: Administrative procedures and legal framework of public sector reform	20 Oct 2016	INAP, Madrid, Spain
Workshops	Presentation on the use of E-Ark tools and services within the Spanish government	17 Oct 2016	Málaga, Spain
Presentations	Archives in the digital world – opportunities and challenges for the sector	21 Oct 2016	Brighton, UK
Presentations	The use of E-ARK archiving tools within the Spanish government	25 Oct 2016	INAP, Madrid, Spain
Conferences	Archiving of digital spatial data	27 Oct 2016	Ljubljana, Slovenia
Conferences	Enabling access and reuse of digital spatial data	28 Oct 2016	Ljubljana, Slovenia
Web	OPF webinar	02 Nov 2016	
Other	Advisory board meeting	03 Nov 2016	Bern, Switzerland
Presentations	E-ARK for digital humanities	04 Nov 2016	The Digital Humanities Lab, University of Sussex, UK
Conferences	Experience with INSPIRE metadata and geospatial data archiving	08 Nov 2016	Ljubljana, Slovenia
Conferences	E-ARK demo day – Digital archiving for long-term preservation and access	08 Nov 2016	Brussels, Belgium
Workshops	Conference on modernization and quality in local administration (JOMCAL)	10-11 Nov 2016	Málaga, Spain
Workshops	Presentation on the use of E-Ark tools and services within the Spanish government	10-11 Nov 2016	Málaga, Spain
Presentations	The use of E-ARK archiving tools within the Spanish government	10-11 Nov 2016	Málaga, Spain
Workshops	ARCHIVE: Tool for document and file electronic archive	15 Nov 2016	Cantabria, Spain
Workshops	Electronic document management – Tools and legislation	16 Nov 2016	Community of Madrid, Spain
Presentations	E-ARK co-ordinator's progress report	16 Nov 2016	National Archives of Oslo, Norway
Presentations	Presentation on the use of E-Ark tools and services within the Spanish government	16 Nov 2016	Madrid, Spain
Conferences	DLM Forum members meeting	15-16 Nov 2016	Oslo, Norway
Presentations	DLM Forum members meeting – revised maturity model for information governance	15-16 Nov 2016	Oslo, Norway
Presentations	E-ARK demo day	17 Nov	Oslo, Norway

Type of Activity	Title	Date / Period	Place
		2016	
Presentations	Session of electronic archive	17 Nov 2016	Fuerteventura, Spain
Conferences	Presentation at DLM Forum: E-ARK scalable computation layer and data mining showcase	17 Nov 2016	Oslo, Norway
Other	Advisory board meeting	17 Nov 2016	Oslo, Norway
Presentations	Course "E-invoice and its relationship with the archive"	21 Nov 2016	Seville, Spain
Presentations	Electronic document management – tools and legislation	22 Nov 2016	Regions of Spain
Conferences	Seminar on database preservation	22 Nov 2016	Tallinn, Estonia
Presentations	Electronic document management – tools and legislation	23 Nov 2016	Regions of Spain
Conferences	eARH conference	23 Nov 2016	Ljubljana, Slovenia
Conferences	E-ARH.SI Conference	23 Nov 2016	Ljubljana, Slovenia
Conferences	Acquisition of digital spatial data in Slovenian National Archives – Preparation of a Geo IP specification (within E-ARK project)	24 Nov 2016	Ljubljana, Slovenia
Presentations	Electronic document management – tools and legislation	24 Nov 2016	Regions of Spain
Workshops	ARCHIVE workshop for archivists of the Community of Madrid	30 Nov 2016	Archivo Villa Madrid, Spain
Workshops	Electronic administration – document management and archive	01 Dec 2016	Madrid, Spain
Workshops	Course "Use of electronic documents and archive"	01 Dec 2016	INAP
Workshops	Electronic document management – tools and legislation	02 Dec 2016	Madrid, Spain
Conferences	E-ARK end of project conference (six presentations)	06-08 Dec2016	Budapest, Hungary
Workshops	Electronic administration – document management and archive	14 Dec 2016	Madrid, Spain
Presentations	E-ARK seminar	16 Jan 2017	Tartu, Estonia
Presentations	E-ARK end of project conference	06-08 Dec 2016	Budapest, Hungary
Presentations	Presentation on the use of E-Ark tools and services within the Spanish government	25 Jan 2017	Madrid, Spain
Presentations	Meeting with John Sheridan, Digital Director, UK National Archives, and his team	26 Jan 2017	National Archives of the UK, Kew, UK
Web	Highlights from the E-ARK conference	30 Jan 2017	http://www.dpconline.org/blog/e-ark-final-conference