D.2.5 Recommended Practices and Final Public Report on Pilots

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Executive Summary

E-ARK project

The goal of the European Archival Records and Knowledge Preservation (E-ARK) Project is to pilot archival services to keep records authentic and usable based on current best-practices. These will address the three main endeavours of an archive – acquiring, preserving and enabling re-use of information. E-ARK will demonstrate the potential benefits for public administrations, public agencies, public services, citizens and business by providing easy and efficient access to the archived records.

The project brings together a core group of European national archives, four leading research institutions, three providers of archiving software solutions and services, two government agencies, and two international membership organisations that represent the communities who stand to benefit from the project: data owners/providers, archives, software vendors and solution providers.

E-ARK will, over a three year period, harmonise archival processes at a pan-European level supported by guidelines and recommended practices that will cater for a range of data from different types of source including record management systems and databases.

Work Package 2 (description from DoW)

The E-ARK General Model definition is a public deliverable of Work Package 2.

The overall objective of this work package is to ensure that the scenarios implemented at 7 identified pilot sites are both realistic and relevant, that they bring together a meaningful subset at each site of the use cases in order to establish a general model of the E-ARK service.

WP2 will

- Identify specific use cases that will each be implemented in at least one pilot scenario, covering:
  - Export from business systems
  - Creation of SIPs from unstructured and structured data
  - Execution of the complete SIP -> AIP -> DIP data-flow to support migration and submission/access scenarios
  - Existing use cases for access to content in physical and virtual reading rooms (with appropriate access controls) and as web-applications
  - Additional use cases that augment the main pilot programme including short “stretch tests” and 3rd party validation
- Identify and mitigate legal and regulatory constraints.
- Provide support and advice about the operational environment of the pilot sites to the teams in WP3-6 during the planning phase (which corresponds to their main cycles of iterative (agile) design and development.

- Support the teams working at the pilot site in the planning and deployment phase
- Ensure smooth execution of the pilots.
- Document the recommended practices and lessons learned in the project knowledge base.

T2.4 Future pilot deployment (M25-M27)
The objective of this task is to finalize the pilots in harmony with D2.1.

The Electronic Archiving Service consists of a series of activities covered by software tools and manual workflow steps. These tools are currently partly in existence, some are being developed by E-ARK project, many more are to be added by developments of the digital preservation community in the future. The role of this task is to identify the most relevant scenarios for the E-ARK Service, define for each scenario which level of activity is needed in order to bridge the gaps of the currently existing solutions (e.g. integration, software development, interface definition).

In order for the E-ARK service to demonstrate the functionality of the service built on D2.1 as fully as possible, the pilot will be finalized around the 7 pilot sites. In order to plan ahead for the pilots, the project previously identified three activity levels:

1. Full scale project pilot activities – implementation, by consortium members, of one or more scenarios at one or more locations for a period of six months or longer. Members of DLM forum and DPC will receive details of the pilot implementation and be invited to participate as observers. There are seven full scale pilots.

2. Additional project pilot activities – implementation, by consortium members of shorter 'stretch' pilots that extend the scenarios or apply them in different contexts. This may include the participation of members of DLM Forum and DPC who are not directly members of the E-ARK consortium

3. External validation activities – implementation of project results by members of DLM Forum and DPC as part of an extended 'Beta' program with limited involvement from consortium members. Outcome of this task is the high-level requirement specification of the full scale pilots and also scenarios, sites and requirements of the 2nd and 3rd level pilots.

T2.5 Support and execution of pilots. (M7-M33)
The task is concerned with the implementation of the pilots defined in D2.3. The Task Leader contributes to providing an appropriate methodological framework for all pilots for specifying the input/output points and the uniform principles applied in the different areas, such as source data management, user training, user documentation, interim reports and the final reports. In this way the results of the pilot sites are comparable and can be reliably proven in this E-ARK-service pilot. There are seven 6-month pilot sites running concurrently and these are defined in Section B3.2a, Approach.

This document corresponds to the deliverable:

D2.5 Recommended practices and Final public report on Pilots

Arising from the experiences acquired during the 7 pilot deployments, this report describes the achievements and results of the pilot activities over the entire three-year period with emphasis on the final year of the project. The report lists the resources used and provides an evaluation of progress and final result against the project objectives and milestones and documents the remaining problems. It summarises the recommendations and lessons learned from each pilot and provides input for the overall final report of the project. This report will also be included in the final, publishable project report [month 36]

Structure of this deliverable

This document summarizes pilot activities, achievements and best practice recommendations using the following chapter structure:

Chapter 1 - This introductory chapter.

Chapter 2 - Planning and executing the E-ARK pilots
Summary of all pilot related activities in the 3 years of the pilot, from planning to evaluation.

Chapter 3 - Pilot overview
A brief overview of the full-scale and additional pilots.

Chapter 4 - Pilot report
Summary of the pilot execution and results with recommended practices and further development recommendations. The chapter consists of the following sections for each full-scale pilot:

- Pilot scenario details
- Execution report
- Changes to previous plans
- Feedback report, and
- Recommended practices and lessons learnt.

Chapter 4 ends with an overview of the external evaluations performed by non-EARK member organizations.

Chapter 5 - Pilot evaluation
Evaluation of the full-scale pilot against project objectives and success criteria.

Chapter 6 - Referenced documents and web pages

Appendix 1 – Extract from E-ARK Description of Work

Planning and executing the E-ARK pilots

This chapter summarizes all the pilot related activities of the E-ARK project. The seven full-scale pilots were already quite well planned in the Description of Work (DoW) document when we started the real project work at the beginning of 2014. From that point until the very end, Work Package 2 (WP2) was focusing on pilot planning and, later on, on execution and evaluation.

Phases of pilot related activities coordinated by WP2:

- Pilot planning in the Description of Work (DoW) document
  The starting point of our work was the pilot descriptions in the DoW.
- Pilot planning during the project
  In the first year our main goal was to define the use-cases and processes to serve as the basis of tool development and format specification. The first version of the E-ARK General Model defined the use-cases and processes along with cross-reference tables between E-ARK processes, tools, work packages, and pilots. After the publishing of E-ARK General Model, colleagues at the pilot sites were developing part of the requirement specification of the E-ARK tools.
- Pilot preparation
- Pilot execution
- Pilot evaluation

This chapter is organized according to the above phases.

Pilot planning in the Description of Work (DoW)

The starting point of our work was the pilot descriptions in the DoW. The Description of Work (DoW) document defines the pilot related tasks and the role of Work Package 2. Appendix 1 is an extract of the relevant part of the E-ARK DoW.

Pilot planning during the project

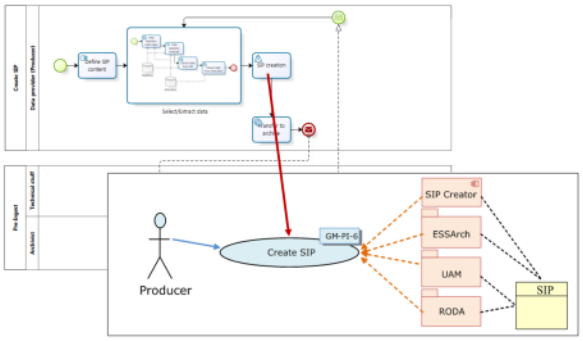
Pilots were planned to take place in the third year of the project when all tools and format specifications were ready to be tested, but pilot related activities started at very beginning and accompanied the tool development and format specification work throughout the project.

General Model 1.0

One of the first deliverables was the D2.1 E-ARK General Model of Use-cases and Processes. In the General Model we defined the use-cases and processes which were the basis for further project activities like planning and development of the E-ARK tools, and specification of E-ARK information package and content types.

The General Model was a joint work by the tool developers of the partner IT companies, and archivists from the pilot sites. Along with the use-case definition we tried to reach a common understanding of the project. At that point – at the very beginning of the work – every partner had some ideas about their own goals and tasks but hardly anyone could see what the other partners would provide to the project. We found that some overall birds-eye approach would help people better see their place among the various activities planned so we have included some cross-

reference tables in the General Model as well. The cross-reference tables present relations between the different project activities and products like work packages, tools, formats, and pilots.



Use Case View

E-ARK General Model

Use Case		Pilots							Work Package				Tools
		Pilot 1 (DNA)	Pilot 2 (NAN)	Pilot 3 (NAE)	Pilot 4 (EBA)	Pilot 5 (NAS)	Pilot 6 (KEEP)	Pilot 7 (NAH)	WP3	WP4	WP5	WP6	
Pre-Ingest													
GM-PI-1	Define SIP content	x	x	x	x	x	x	x					
GM-PI-2	Select data (with rules)	x		x	x		x	x	x				DBExport tool
GM-PI-3	Select data (manual)		x	x	x	x			x				DBExport tool
GM-PI-4	Extract data from DB	x				x		x	x				ESSArch Tools
GM-PI-5	Extract data from DMS/RMS		x	x	x		x		x				ESSArch Tools, Noark, Alfresco, RODA
GM-PI-6	Create SIP	x	x	x	x	x	x	x	x				DBExport tool, ESSArch Tools, SIP creation tools, RODA-in, UAM
GM-PI-7	Start transfer to archive	x	x	x	x	x	x	x					
GM-PI-8	SIP reception	x	x	x	x	x	x	x					
GM-PI-9	Validate SIP	x	x	x	x	x	x	x	x				SIP to AIP conversion tools
GM-PI-10	Manipulate SIP	?	?	?	?	?	?	?	x				
GM-PI-11	Create fond(s)	x	x	x	x	x	x	x					SDB, EPP, RODA, AIS
GM-PI-12	Start generating E-ARK SIP	x	x	x	x	x	x	x	x				SIP to AIP conversion tools
Ingest													
GM-I-1	Upload SIP	x	x	x	x		x	x					Preservica, EPP, RODA, AIS
GM-I-2	Start AIP generation workflow	x	x	x	x		x	x	x	x			SIP to AIP conversion tools, Preservica, EPP, RODA, AIS
GM-I-3	Validate AIP	x	x	x	x		x	x		x			SIP to AIP conversion tools, Preservica, EPP, RODA, AIS
GM-I-4	Start AIP finalization workflow	x	x	x	x		x	x		x			SIP to AIP conversion tools, Preservica, EPP, RODA, AIS

The General Model helped us better understand every partner's planned contribution to the overall objectives and gave us a better picture of the whole project. As a result of this common approach the pilot representatives at the meetings tried to think ahead about what they really need and wanted to try out later in the third year, and tried to gently lead tool developers towards solutions which better suited their demands.

Requirement specification

After completing the General Model the Pilot site members took part in the next project phase, the requirement specification work. On the basis of the General Model (and the discussions about it) they could articulate their requirements better at the technical work package (WP3-6) requirement specification meetings. The results of this work were the requirement specifications of the pre-ingest, ingest and access tools, along with E-ARK information package (SIP, AIP, DIP) and content type (SIARD 2.0, SMURF) specifications.

Tool development and format specification

Cooperation between archivist of the pilot sites and tool/specification developers continued during the development and specification phase, keeping the pilots in mind.

Changes to the planned pilot activities

At this phase there were no major differences identified compared to the plans written in the Description of Work.

Pilot preparation

Actual pilot preparation work started in the second year. WP2 and the pilot sites wanted to make sure that the tools being developed and format specifications being defined were in line with their planned piloting activities. Therefore we started to define the pilots very early.

Early pilot preparation works

At the 2015 Portsmouth and Lisbon meetings we held pilot preparation sessions. We agreed on the organization of preparation activities and a schedule. In the summer of 2015 the structure of the pilot definition document was also approved by project members.

Pilot Cards

In order to promote early understanding of the pilot activities and requirements and to provide a quick overview at a central point of information we developed the Pilot Cards. Pilot Cards were the first formalized appearance of the pilot activities in the E-ARK community.

The Pilot Cards provide an overview of the pilot including scope and objective, contact info of the pilot leader and contributors, OAIS relevance, usages of E-ARK tool and information package as well as status information about the definition, installation and execution. Pilot Cards can also serve as a central information point for the EARK community to find detailed pilot information descriptions and corresponding documents.

Pilot Card example

Pilot #1	**SIP Creation on relational databases**									
Status	• Pilot defined √ • Installation started √ • Installation ready - • Pilot execution started - • Pilot execution completed -	**OAIS relevance**	**Pre-Ingest**	**Ingest**	**E-ARK SIP**	**E-ARK AIP**	**Preservation**	**Data Management**	**E-ARK DIP**	**Access**
			X							

Task leader	Danish National Archives		
Supported by	Magenta		
Contacts	Name (Title)	e-mail	Skype
Contact Person	Phillip Mike Tømmerholt	pmt@sa.dk	philliptommerholt_rigsarkivet
Contact Person	Anders Bo Nielsen	abn@sa.dk	
Pilot staff members			
Scope	The scope of this Pilot is to test the E-ARK SIP Creation tool with not less than 4 databases of different sizes and complexities (one contains several million records)		
Object	Creating SIPs for relational databases using the tool created in WP3, T3.3: SIP Creation Tools, for further evaluation		
Short description	The goal of the pilot is to create SIPs in EARK-SIP format of each selected database with the DBextract tool. After quality assurance on each SIP, a feedback will be given to WP3		
Timeframe	M28-M33		
Preconditions	M03.3, M03.4 (DoW)		

E-ARK tools	**Database Preservation Toolkit**	**Alfrsco Export Module**	**RODA-In**	**ESSArch Tool Producer (ETP)**	**ESSArch Tools Archive (ETA)**	**UAM**	**SIP creator (E-ARK Web)**	**SIP2AIP (E-ARK Web)**	**RODA Repository**	**ESSArch Preservation Platform**	**HDFS-Storage**	**Catalogue (E-ARK web)**	**OMT - Search and Dsiplay GUI**	**Order Submission Service**	**OMT - Order Management Tool**	**Lily - Ingest**	**ESSArch Preservation Platform**	**E-ARK Web (Search)**	**AIP2DIP (E-ARK Web)**	**DBPTK**	**IP Viewer**	**DB Viewer (Sofia)**	**ERMS Viewer (Alfresco)**	**Single file Viewr**	**QGIS**	**Geoserver**	**Peripleo**	**Oracle (OLAP Viwer)**	**CMIS portal/viewer**
	X																											

Pilot Scenarios	
Scenario 1	Extracting records from database (Data Set 1) - database with no documents
Scenario 2	Extracting records from database (Data Set 2) - database with no documents (large)
Scenario 3	Extracting records from database (Data Set 3) - database with documents
Scenario 4	Extracting records from database (Data Set 4) - database with documents (large)

Links		
	Process and use case information	Pilot definition
	Test data specification	Pilot documentation

Pilots Definition

At the fall of 2015 we had the first draft of the document D2.3 Detailed pilot requirements. The most important part of this document was the “Pilot Definition”.

Pilot definitions came in the form of Excel files and defined the pilot scenarios in detail. The sheets of the excel file are:

- Overview
- Scenario description
- Data description
- Pilot preparation checklist
- Step-by-step process description sheets for Pre-Ingest, Ingest and Access processes

The logical structure of the Pilot Definition description:

Pilot

- **Scenario**
  - Business use-case (from General Model)
  - Used Information package types
  - Used E-ARK tools
  - Data Set description
    - Content description
    - Metadata description
  - Pilot preparation description and status information
  - Process description
    - Process step and low-level use-case (from General Model)
      - Used E-ARK and local tools
      - Preliminaries and start condition
      - Input/output description
      - E-ARK (and local) tools usage details

The scenarios, data and tool usage along with pilot preparation and step-by-step process activities are defined in detail in the Pilot Definition excel documents. The final version of the Pilot Definition excel file of each pilot is part of the deliverable D2.4 Pilot Documentation.

Detailed Pilot Requirements

Beside the pilot definition excel files, the D2.3 Detailed Pilot Requirements document defined the following requirement types:

- Schedule
- Success criteria
- Support requirements
  Requirements for tool developers in regard to supporting pilot preparation and execution activities
- Feedback requirements
  Requirements for pilot staff members about how to provide feedback on tools and format specifications
- Documentation requirements

Here are some example pages of the pilot definition from the deliverable D2.3 Detailed Pilot Requirements:

Pilot 5	**Preservation and access to records with geodata**
Task leader	National Archives of Slovenia
Supported by	Danish National Archives
Scope	Pilot will prove that the SIP and DIP implementations fulfill specific requirements for the records containing GIS data, test the instructions (for the producer and for the archive) regarding all phases of ingest, to prove that the archival use of GIS data is possible (via open data method, direct access in the archives and use GIS data as search criteria in the DIP contents).
Object	Pilot report with recommendations about urgent improvements and possible future improvements support for WP6 & WP7 setting up the work environment of selected E-ARK archival tools provide real life examples how the project deliverables can be used
Short description	During the e-ARK project the standardized method for ingesting geo data will be developed. This will allow the archives to offer geodata as a selection and display criteria of records by means of integration of current state of the art tools.
Timeframe	M25-M27: setting up the pilot sites; M28-M31: running the pilots; M32-M33: testing and reporting
Preconditions	M03.3, M03.4, M04.2, M05.4, M05.6 (DoW)

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Pilot staff member	Alenka Starman ()	alenka.starman@gov.si	
Pilot staff member	Joze Skofljanec ()	joze.skofljanec@gov.si	

OAIS Relevance

Pre-Ingest							**Ingest - Storage**				**Storage - Access**																
						E-ARK SIP	X				E-ARK AIP	X														E-ARK DIP	X
Database Preservation Toolkit	**Alfrsco Export Module**	**RODA-In**	**ESSArch Tool Producer (ETP)**	**ESSArch Tools Archive (ETA)**	**UAM**	**SIP creator (E-ARK Web)**	**SIP2AIP (E-ARK Web)**	**RODA Repository**	**ESSArch Preservation Platform**	**HDFS-Storage**	**ICA-AtoM Catalogue**	**OMT - Search and Dsiplay GUI**	**Order Submission Service**	**OMT - Order Management Tool**	**Lily - Ingest**	**ESSArch Preservation Platform**	**E-ARK Web (Search)**	**AIP2DIP (E-ARK Web)**	**DBPTK**	**IP Viewer**	**DB Viewer (Sofia)**	**ERMS Viewer (Alfresco)**	**Single file Viewr**	**QGIS**	**Geoserver**	**Peripleo**	**Oracle (OLAP Viwer)**
			X	X					X		X	X	X	X	X	X	X			X				X	X	X	

E-ARK Tools

Scenario 2	Search and Access information using Geadota
Description	Create DIP from AIP containing record with Geodata. Present Geodata information with QGIS along with content and metadata from DIP. A data object containing geodata can be identified by using search criteria as specified by E-ARK Tool requirement specification. Selected data objects are selected and order is issued. DIP is prepared according to order specification and end user credentials. DIP file structure with file descriptions (mime type, short description) is presented to the enduser. Geodata from the order can be accessed in the designated viewer (QGIS). The user checks authenticity of the DIP by accessing PREMIS documentation. Access to DIP is documented and captured metadata can be exported.

OAIS Relevance	Pre-Ingest							Ingest - Storage				Storage - Access																	
	E-ARK SIP							E-ARK AIP			X	E-ARK DIP																X
E-ARK Tools	Database Preservation Toolkit	Alfrsco Export Module	RODA-In	ESSArch Tool Producer (ETP)	ESSArch Tools Archive (ETA)	UAM	SIP creator (E-ARK Web)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	ICA-AtoM Catalogue	OMT - Search and Dsiplay GUI	Order Submission Service	OMT - Order Management Tool	Lily - Ingest	ESSArch Preservation Platform	E-ARK Web (Search)	AIP2DIP (E-ARK Web)	DBPTK	IP Viewer	DB Viewer (Sofia)	ERMS Viewer (Alfresco)	Single file Viewr	QGIS	Geoserver	Peripleo	Oracle (OLAP Viwer)
												X	X	X	X	X	X	X			X				X	X	X	
Use-case	**Access geodata via QGIS**																											
Note	Access records with Geodata and present geodata with QGIS																											

Pilot 5	Pilot Data

Information Packages (IP)	IP		Note
	E-ARK SIP	X	Focusing on Geodata preservation
	non E-ARK SIP		
	E-ARK AIP	X	Focusing on Geodata preservation
	non E-ARK AIP		
	E-ARK DIP	X	Focusing on Geodata access
	non E-ARK DIP		

Pilot data description	
Data Set 1	Records and metadata of administrative units until 1994 exported from GURS (The Surveying and Mapping Authority of the Republic of Slovenia)
Description	Records and metadata of maps with Geodata
Data type	GML document with metadata in XML format, ESRI Shapefile, csv
Metadata format	ISO 19115 (INSPIRE)
less	62 records (cca. 3MB)

Data Set 2	Records and metadata of Natura 2000 areas, exported from ARSO
Description	Records and metadata of maps with Geodata
Data type	GML document with metadata in XML format
Metadata format	ISO 19115 (or INSPIRE)
less	1209 records (cca. 10 MB)

OAIS Process				Pre-Ingest					
Main Process Stepps	Content definition Technical feasibility Legal issues etc.	Create/Review transfer agreement	Select data	Data Extraction	Manual compilation of non ERMS content	Metadata mapping	Create SIP	Post-packaging quality control	Submit SIP
Scenario 1	**SIP Creation and Ingest of geodata in GML format**								
Used E-ARK tool				QGIS			ESS Arch ETP		ESS Arch ETP
Used local tools			Existing archival system	Producers tools	Producer tools, open convesion tools	MS Excel, Inspire Metadata Creator			
Perfomer (actor)		Producer + Archivist + Technical Specialist	Producer	Producer	Producer	Producer	Producer		Producer
Prelemineries and Start condition		Official archival records definition							
Input		Official archival records definition and technical documentation	Submission Agreement	Submission Agreement	Subission Agreement	INSPIRE.xml, Submission Agreement, MS Excel template for EAD conversion	Extracted data Additional Data and documentation Inspire.xml, MS excel w. metadata		Subission Agreement, SIP
Output		Submission Agreement	Data selection list	Extracted data	Additional Data and documentation	Inspire.xml, MS excel w. metadata	E-ARK SIP		Submited SIP
Scenario 3	**SIP Creation and Ingest of geodata in GML format**								
Used E-ARK tool							ESS Arch ETP		ESS Arch ETP
Used local tools			Existing system	Producers tools	Producer tools	Producer GIS system, MS Excel			
Perfomer (actor)		Producer + Archivist + Technical Specialist	Producer	Producer	Producer	Producer	Producer		Producer
Prelemineries and Start condition		Official archival records definition							
Input		Official archival records definition and technical documentation	Submission Agreement	Submission Agreement	Subission Agreement	INSPIRE.xml, Submission Agreement, MS Excel template for EAD conversion	Extracted data Additional Data and documentation Inspire.xml, MS excel w. metadata		Subission Agreement, SIP
Output		Submission Agreement	Data selection list	Extracted data	Additional Data and documentation	Inspire.xml, MS excel w. metadata	E-ARK SIP		Submited SIP

Pilot 5	**Pilot Preparation**								
				Preparation status					
Software component Preparation tasks related to the software components	**Tool / Version number** from Software Component Matrix (for E-ARK tools)	**Scenario** from Scenarios sheet	**Process** from Processes sheets	**Tool selected** Yes /No / (issue)	**Tool available for Pilot** Yes / (planned date of availability)	**Tool/Version installation** Installed / (issues)	**Tool configuration** No needed / Configured / (issues)	**Knowledge overtaken** Yes / (issues)	**Tool ready for Pilot** Ready / (issues)
Component 1.	ESSArchive ETP	Scenario 1, 3	Pre-ingest	Yes	Yes	Not installed	Need support form ESS	Basic training completed	No, local installation needed
Component 2.	ESSArchive ETA	Scenario 1, 3	Ingest	Yes	Yes	Not installed	Need support form ESS	Basic training completed	No, local installation needed
Component 3.	ESSArchive EPP	Scenario 1, 3	Ingest (Access?)	Yes	Yes	Not installed	Need support form ESS	Training in progres	EAD Support, Some validation features
Component 4.	Integrated Platform (EARK WEB)	Scenario 1, 2, 3, 4	Ingest, Access	Yes	No	Not installed	Need support form AIT	Training required	???
Component 5.	QGIS	Scenario 1, 2, 3, 4	Pre-Ingest, Ingest, Access	Yes	Yes	Installed	None needed	Yes	Yes
Component 6.	Inspire metadata editor	Scenario 1	Pre-ingest	Yes	Yes	Online	None needed	Yes	Yes
Component 7.	EAD metadata editor	Scenario 1, 3	Ingest	No	No	Not installed	Need support form ESS	Further knowladge transfer	???
Component 8.	Search and display GUI	Scenario 2, 4	Access	No	No	Not installed	Need support form AIT	Further knowladge transfer	NO
Component 9.	Peripleo	Scenario 1, 2, 3, 4	Ingest, Access	Yes	Yes / in 2/2 April	Not installed	Need support from AIT	Further knowladge transfer	Yes
Component 10.	OMT	Scenario 2, 4	Access	No	No	Not installed	Need support form Magenta	Further knowladge transfer	NO
Component 11.	Archival Catalogue (EAD based)	Scenario 1, 2, 3, 4	Ingest, Access	No	No	Not installed	Need input	Further knowladge transfer	NO
Component 12.	Lilly	Scenario 1, 2, 3, 4	Ingest, Access	Yes	Yes / in 2/2 April	Not installed	Need support from AIT	Further knowladge transfer	Yes
Component 13.	Geoserver	Scenario 2, 4	Access	Yes	Yes	Installed	None needed	Yes	Yes

			Prepration status			
Pilot dataset Preparation tasks related to pilot data	**Dataset #** from Pilot Data sheet	**Scenario** from Scenarios sheet	**Data selected** Yes / (issues)	**Legal issues** None / (issue)	**Data available** Yes / (planned date) / (issue)	**Dataset ready for Pilot** Ready / (issue)
Slovenian Register of spatial units selecte	Data set 1	1,2	Yes	None	Yes	Yes
Natura 2000 dataset	Data set 2	3,4	Yes	None	Yes	Yes
...						

			Prepration status		
Infrastructure Preparation tasks related to pilot infrastructure	**Scenario** from Scenarios sheet	**Process** from Processes sheets	**Element selected** Yes / (issues)	**Issues** None / (issue)	**Element ready for Pilot** Ready / (issue)
Virtual server - Linux					

For details please examine the complete D.2.3 Detailed Pilot Requirements document here:

http://eark-project.com/resources/project-deliverables/60-23pilotsspec

Weekly pilots meeting

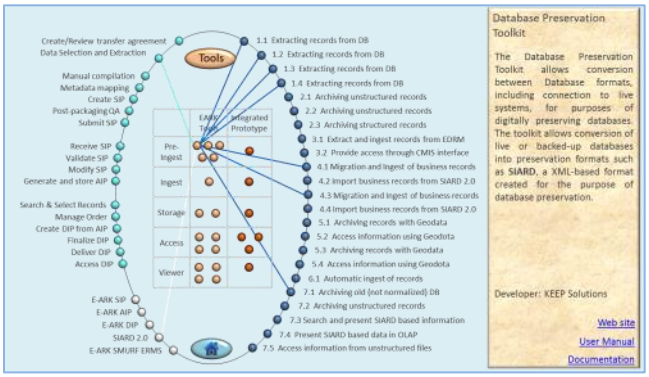
From the beginning of 2016 weekly progress meetings were held via a Webex teleconference service. The pilot representatives and staff members along with technical work package leads and some of the tool developers were regular members of these meetings.

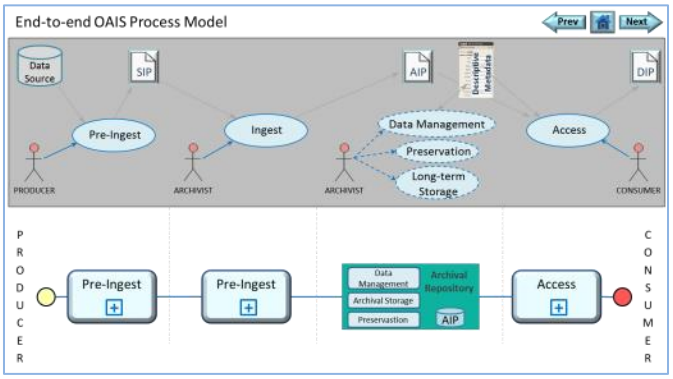
Changes to the planned pilot activities

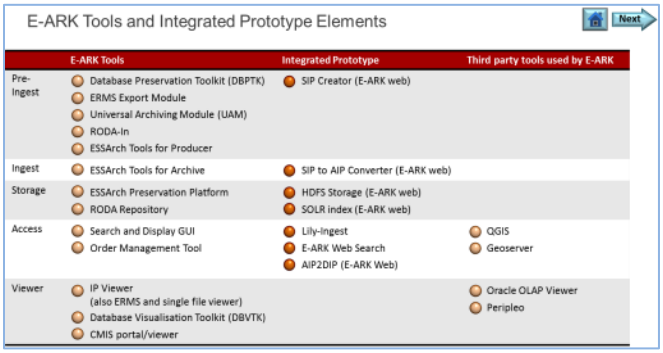
Only smaller changes were necessary at this phase. Some of the data providers were not ready with the planned input data so the archives needed to arrange different data sets. Some tools were not completed in accordance with the original timetable so we rescheduled some of the scenarios, but fundamentally nothing threatened the successful pilot execution.

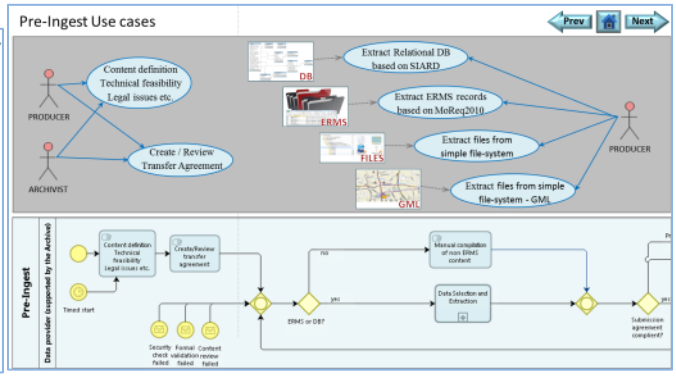
General Model 2.0

The creation of the General Model was originally planned to be a one-time activity in order to be the foundation of tool development and format specification. No goals or requirements in the DoW corresponded to any further developmental work. But after seeing how important a role it played in the common understanding of the various goals and approaches of the E-ARK community, we have decided to update the General Model in order to keep the model alive as a reference for the most important E-ARK elements such as tools, formats, use-cases and pilots. The 2.0 version of the model was an online PowerPoint presentation, but we soon discovered that an HTML version would be more suitable both for project members and the wider public. The Power Point version was soon followed by an online presentation in HTML format.









The General Model in its present form is a perfect starting point to get acquainted with the E-ARK project. It includes a complete general reference to present the relationship among tools, use-cases, formats and pilots along with thematic overview chapters with links to more detailed documents and corresponding web pages.

The latest version of the General Model can be found in the E-ARK Knowledge Base and is also accessible from the E-ARK project web site: http://eark-project.com/resources/general-model

Pilot execution

The execution of the full-scale pilots was planned for a 6 month period between month 28 and 33 (from May to October 2016.). All technical and organizational arrangements were in place in April 2016. The full-scale pilots started on 1 May 2016 as planned. Not every scenario was planned to start in May, but every pilot site started with some scenarios in that month.

Software deployment

The software components for the first scenarios were all deployed and configured. Pilot staff members got preliminary knowledge of the tools from the user manuals and on-demand consultations with the developers. The interrelationships among tools were not clear enough so those pilots using many tools (Pilot 5 and 7) tried to create the appropriate tool portfolio to cover all the steps and transitions being tried.

Feedback about tools and format specifications

The pilots were required to give feedback about the deployment, installation, execution and documentation of the E-ARK tools and about format specifications. The developers managed the issues, wishlists and comments on the GitHub sites of the product, while feedback to format specification providers and information on recommended practices was collected respectively in excel files provided by WP2 on the project's Google drive.

Feedback lists

Feedback list	Description	Provided by
For tool developers		
- Bug list	Bugs (issues) found during product execution	Developer on GitHub
- Wish list	Tool extension or modification demands	Developer on GitHub
- Comments list	Comments on tool functioning (anything worth to inform developer about)	Developer on GitHub
- Installation recommendations	Comments or recommendation about the installation process, install kits or installation documentation	WP2 on Google drive
- Feedback on documentation	Comments or suggestions to tool documentation	WP2 on Google drive
- Recommended practices	Experiences with tool execution and recommended practices	WP2 on Google drive
For specification providers	SIP: WP3, AIP: WP4, DIP: WP5	
- General comments and wishes	Issues, comments or wishes related the specific IP	WP2 on Google drive
- Recommended practices	Experiences with IP implementation (structure, mapping, etc.) and recommended practices	WP2 on Google drive

Early progress

As with all large scale projects, at the beginning progress was very slow. We had to accept that only a part (and probably the smaller part) of the archives' work is the actual technical ingest or dissemination of the information. The creation and approval of the formal submission agreements with the data providers took months in some cases. Also some tools (like export modules, and some interfaces) needed adjustments according to the specific data types they were to process. This was a normal procedure which could only be started after the formal agreement with the provider of the data. In some cases (Estonian and Portuguese pilots) this activity required input from a local developer who was not part of the E-ARK project. And we have to confess that the first versions of the new or modified tools had bugs or incompatibility issues with each other and the format specifications. Newly recognized requirements appeared, too, because despite all the discussions and consultations the archivists' knowledge of the tools and the developers' knowledge of the archival work were initially incomplete.

It was originally intended before the execution started that many scenarios would be ready by mid-summer but found that at the end of July there was only one completed scenario.

Weekly pilots meeting

At the weekly pilots meetings every pilot representative reported on progress. We were able to discuss the issues with the tool developers, find solutions to problems, or formulate questions to other project members who were not present. The weekly pilots meeting continued until the end of the project.

Half-time report

At the end of the third month of the pilot WP2 created a (project internal) Half-time Report. The Half-time Report summarized the progress of each scenario with status, and progress overview information and gave a list of the most important issues.

Completing the scenarios

Then things speeded up. The tool developers' response time was very quick. Right after an issue had been recorded at GitHub it was possible to tell when the bug had been corrected or the new requirement could be implemented. Archivists got better understanding of the tools. All legal issues with the submission agreements were solved and at end of August and in September work normalized. Pre-ingest and ingest scenarios were close to reaching their goals and almost all access scenario were able to be started. Only two permanent issues slowed the two scenarios at the Estonian and the Slovenian National Archives. These were due to the late development of the required versions of the ERMS Export Module and the Order Management Tool.

By the end of October – except for the two scenarios – all the full-scale pilots were completed according to the workplans. These two scenarios were also completed later in 2016.

Monthly reports

The pilot progress was tracked in Monthly Pilot Reports produced at the end of each month by the pilot sites. The report summarizes the activities of the last month, any issues and possible solutions, other comments and recommended practices.

The monthly pilot report contained:

- Scenario overview
- Tools overview
- IP feedback overview
- Scenario details per scenario

Scenario Overview

Scenario	Started Completed	Status	Comment
Number and Title of pilot scenario	date date	0 % Not started	
Number and Title of pilot scenario	date	0-100 %	reason for delayed status or any

	date	Delayed	important comments at scenario level
Number and Title of pilot scenario	date date	0-100 % Started	
Number and Title of pilot scenario	date date	100 % Completed	
Number and Title of pilot scenario	date date	0-100 % Pending	reason for pending status or any important comments at scenario level
Number and Title of pilot scenario	date date	0-100 % Aborted	reason for pending / aborted / delayed status or any important comments at process step level

Tools Overview

E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
Tool name – version	
Used in tasks	list of process steps (or tasks)
Data (input / output)	Input: summary of input data Output: summary of input data
Performance	Excellent / OK / Pure
Issues	issues that were entered to the bug list provided by the tool developers
Wishes	wishes that were entered to the wish list provided by the tool developers
Comments	comments that were entered in the comment list provided by the tool developer
Experiences and recommended practices	any info on tool execution that could be important to tool developers

Scenario execution

Scenario	**1. SIP Creation and Ingest of old (not normalized) database in SIARD 2.0 format**
Started Completed	date date
Status	Not started, Started, Delayed, Pending, Aborted, Completed
Comment	reason for Pending / Aborted / Delayed status or any important comments at process step level

Pre-Ingest / Ingest / Access steps

Process step*	**name of the process step from Pilot Definition excel**
Started*	date
Completed*	date

Status*	status at the end of the reporting period (Not started, Delayed, Started, Pending, Aborted, Completed)
Duration*	duration of the process (only for Completed tasks)
Comment*	reason for Pending / Aborted / Delayed status or any important comments at process step level
Task*	name of the task within the process step (each task must have a separate process step table, see sample on Pilot 7)
Used tools*	empty if detail fields are filled or summary of tools if detail fields are empty (Manual, Local tool name)
Tool	tool name (Indicates if a tool is not developed by using E-ARK → "local")
Version	(mandatory for E-ARK tools)
Input	input summary
Output	output summary
Performed by	task actor (e.g. Archivist, IT specialist, Technical administrator, etc.)
Performance	any performance related info
Issues	all bugs, wishes, comments (that were entered in any of the lists provided by the tool developer)
Experiences / Recommended practices	any important info on tool execution
Data	empty or "None" or "Not relevant"
Input data*	empty if detail fields are filled or summary of input data if detail fields are deleted
Description	input data description
Content type	type of content
Metadata format	format of the metadata
Volume	volume of input data
Data manipulation tasks	further data manipulation activities (if any)
Output data*	empty if detail fields are filled or summary of input data if detail fields are deleted
Description	output data description
Content type	type of content
Metadata format	format of the metadata
Volume	volume of output data
Data manipulation tasks	further data manipulation activities (if any)
Internal data manipulation tasks	further task-internal data manipulation (if any)
Task description	description of the data manipulation activities
Input	internal input

Output	internal output
IP usage*	empty if detail fields are filled or summary of IPs implemented if detail fields are deleted
IP type	SIP, AIP, DIP (indicate if not E-ARK specification compliant → "local")
Description	IP description (structure, content)
Mapping concerns	any important metadata mapping related info
Content concerns	any important content related info
IP related issues, comments	important information for WPs responsible for the IP specification
Data related issues, comments	issues/comments worth mentioning (but not tool or IP related)
Data management experiences and best practices	any important info on data handling
Used resources*	empty or "None"
Human resource	number of Archivists, IT specialists, Technical administrators, etc.
IT resource (PCs, servers, architecture, OS, DB, …)	IT environment, hardware and base software (any resources important to reproduce the pilot)

Pilot documentation

At the end of October 2016 we had published deliverable D2.4 Pilot Documentation. This document had two parallel goals. On one hand it is the latest version of the documentation followed by the pilots. It contains an updated version of the pilot definition excel spreadsheet, the latest version of the actions to be performed with the latest tool versions within the pilot period (month 28-33). It also provides the latest snapshot with the most up-to-date information on pilot execution as we have performed it. On the other hand this documentation is the most comprehensive set of instructions and information that could be provided to archives outside the project. It is useful for archives and archivists who would like to use our outputs and repeat, in whole or in part, the pilot activities. The documentation includes an overview document by WP2, the updated pilot definition files and detailed description of the scenario execution by each of the pilot sites. These documents, created by the pilot representatives, lead the user through the pilot process via a step-by-step explanation with user screen examples.

An updated version of the documentation has been delivered in January 2017 along with updated documentation for Pilot 3.

For details, please read the complete D.2.4 Pilot Documentation here:

Part 1: http://eark-project.com/resources/project-deliverables/87-d24docs-p1-1

Part 2: http://eark-project.com/resources/project-deliverables/88-d24docs-p2-1

Changes to the planned pilot activities

At the execution phase there were some changes compared to the original workplans. These mainly extended the scope of the pilots and are shown below:

Pilot 1 – No changes

Pilot 2 – The National Archives of Norway (NAN) wanted to test the full spectrum of the ESSArch tool set. The ESSArch Tool for Producers (ETP) is a component to help producers create SIP packages. The producer partners of NAN on the other hand use a previous version of this tool which creates NOARK (the Norwegian standard) output. NAN has therefore performed an additional scenario to test ETP. The ETP tool has also been tested in Pilot 5.

Pilot 3 – Pilot 3 was supposed to perform pre-ingest scenarios with the ERMS Export Module but used the native export functionality of their DELTA ERMS system because of the late deployment of the appropriate ERMS Export Module version corresponding to the local producer's requirements. The ERMS Export Module was tested in 2 additional scenarios.

Pilot 4 – Pilot 4 had planned only 1 scenario with DBPTK but actually performed 3 more scenarios and all 4 were extended by a DBVTK restore database step as well.
RODA-In was not used in this pilot because the native SIP creation tool was required to ingest into the preservation system of the Business Archives. RODA-In, on the other hand, was tested in Pilot 5 and 7.

Pilot 5 – No changes

Pilot 6 – At the pilot planning phase the Porto Municipality in Portugal also showed great interest in participating in an automatic ingest scenario. So a second scenario was planned with the same E-ARK component and infrastructure. Subsequently, there were some resource planning problems with their local developer who was needed to implement the producer-side infrastructure. The discussions and preparations continued until August 2016, when the Porto Municipality finally decided to delay the project. It is still possible that in the near future this scenario can be executed, but this will be beyond the timescales of this project.

Pilot 7 – No changes

Additional scenarios and External evaluation

Beside the 25 scenarios of the 7 full-scale pilots we have performed several additional scenarios. Additional scenarios, according to the Description of Work, are other, simpler scenarios also performed by the E-ARK members. Additional scenarios are either parts of the planned full-scale scenarios that, for some various (timing, not enough support from producer, late development), could not be performed within scope of the full-scale pilots or additional steps the pilot team wanted to try.

An external evaluation or validation, according to the Description of Work, is an evaluation or implementation of E-ARK products by members of DLM Forum and DPC or third parties outside the project with limited involvement from consortium members. We have supported 5 external evaluations by 5 different institutions from around the world. Some scenarios are completed and highly successful, some are still in progress or in preparation phase.

Additional scenarios and external evaluations, because they were outside the scope of the Description of Work, could not be planned in the same manner and in the same detail as the full-scale pilots were. They were prepared according to the results of other project activities and according to the needs and resources of the external partners.

Additional scenarios are presented along with the full-scale scenarios in this document because they were performed by the same pilot team. External evaluations are detailed in a separate chapter (Chapter 4.8).

Pilot evaluation

Evaluating success criteria

In the D2.3 Detailed Pilot Requirements document we have defined several success criteria at project, pilot and scenario level for the 25 scenarios of the 7 full-scale pilots. The evaluation of the pilots against these criteria can be found in Chapter 5. of this document.

E-ARK Final conference

At the E-ARK Final conference we had a session related to the experiences with the pilots. After an overview of the piloting activities each full-scale pilot representative gave a presentation on pilot execution, results and lessons learnt. The session ended with a panel discussion with all the pilot staff at the table and the audience could provide their opinion and ask questions about the pilots.

Recommended practices and lessons learned

Collecting and publishing recommended practices along with other pilot results is one of the most important objectives of the E-ARK project. Recommended practices and lessons learned are the essence of the all the pilot planning and execution activities.

With this in focus we have been collecting our experiences in the form of recommended practices and other comments during both the planning and execution phase of the pilots. During (and) after the execution period of the pilots recommended practices and comment have been registered at different levels.

- Tool related notes – at the GitHub page of the tool developers
- Format specification related notes – in a Google Drive Excel table
- Other recommended practices – in a Google Drive Excel table
- All kinds of comments on pilot experience - in the Monthly pilot report

Pilot level recommendations about the usage of the tools and specifications are presented as separate chapters in the main chapter for each pilot in the Pilot report part of this document.

D2.5 Final public report (this deliverable)

This deliverable summarizes the pilot planning and execution activities of the project. It provides details on the pilot execution and recommended practices when using E-ARK tools or format specifications.

Overview of the E-ARK Pilots

In the scope of the E-ARK project the format specification and tool development have been performed by the 4 technical work packages:

WP3

- Supplier Information Package (SIP) – information package format specification
- SIARD 2.0 – content type standard for archiving databases,
- SMURF (ERMS) and SMURF (SFSB) - content type defined by E-ARK to archive ERMS system or simple file system based records,
- Content type specification to store Geodata information during the archival and dissemination processes,
- Data export and SIP creation tools supporting pre-ingest processes.

WP4

- Archival Information Package (AIP) – information package format specification,
- SIP validation and SIP to AIP conversion tools supporting ingest processes.

WP5

- Dissemination Information Package (DIP) – information package format specification,
- DIP creation and content viewers tools supporting access processes.

WP6

- Integrated Prototype (E-ARK Web) – a complete reference implementation consisting of several stand-alone tools supporting the full spectrum of OAIS processes.

In order to test the format specifications and tools developed by the project several pilot scenarios have been planned and performed during project. The pilots have been organized in seven full-scale pilots, each performed by one of the archival institution partners in E-ARK. (And one performed by an archival solution provider KEEP Solutions).

In the scope of the seven full-scale pilots we have defined 25 scenarios testing all the tools and formats developed and specified by E-ARK in different combinations, different business and IT environments, according to different archival strategies.

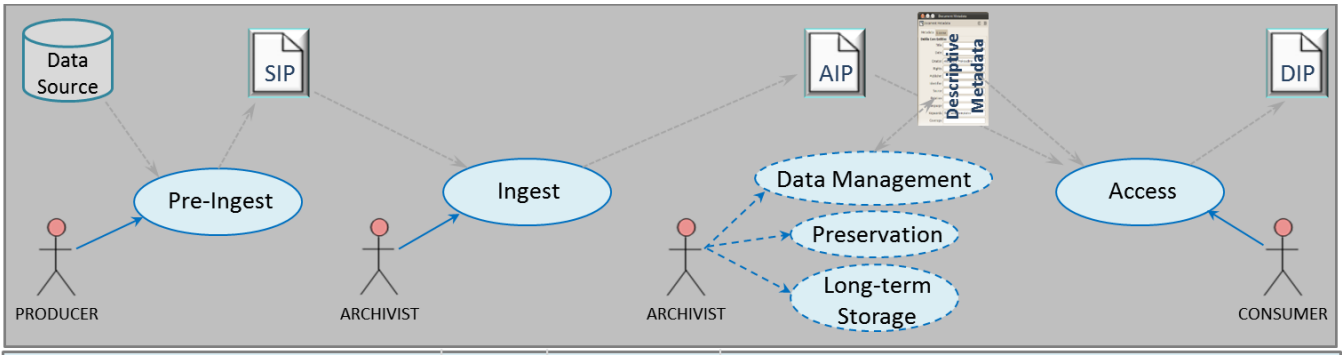
Some pilots were focusing on specific tools or processes of the OAIS models (1, 2, 4, 5, 6), others on archival and access of specific content types (4, 5, 7), one on automated ingest (6), and two pilots had scenarios to test the full spectrum of the OAIS processes along with the reference implementation: E-ARK Web (5,7). Some pilots followed a business-as-usual strategy (1, 2, 4, 6), some piloted the tools in a combination of a test and the production environment (3, 5, 7). We have tested both deployment versions of the E-ARK Web toolset, the virtual (5), and the full deployment (7).

Beside the 25 full-scale pilot scenarios the project has performed some smaller-scope additional scenarios and external evaluation scenarios, too. Additional scenarios are prepared and executed by the same pilot teams as the full-scale pilots. External evaluations are performed by non-E-ARK member organizations.

The following tables and graphs present the pilots and their relationships to other E-ARK elements. They help positioning the pilot scenarios on the OAIS map and among the various E-ARK tools and format specifications.

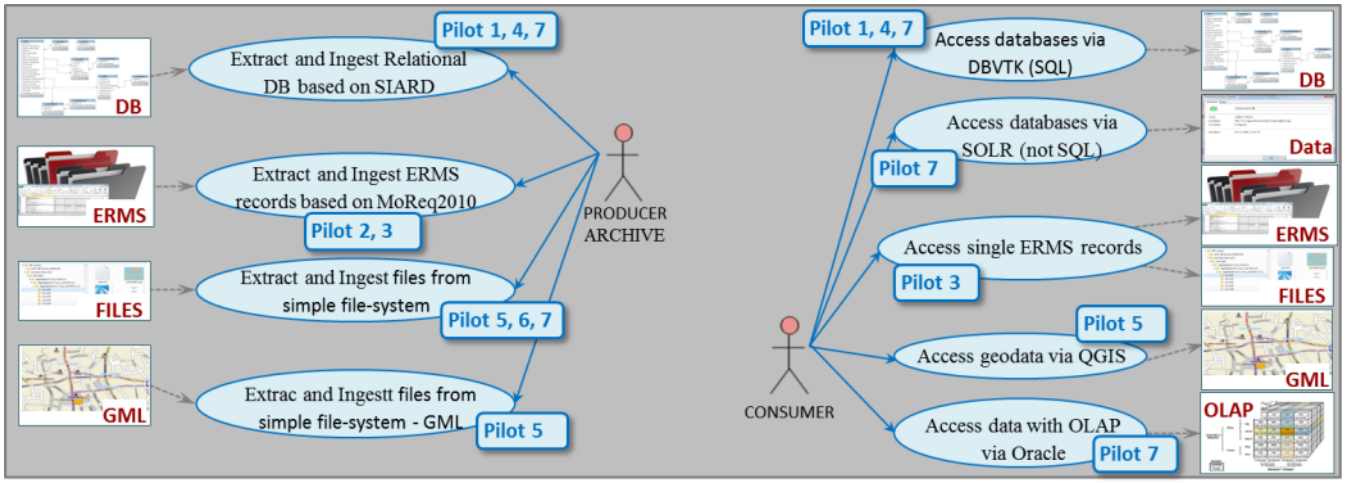
(The figures are from the E-ARK General Model version 2.2.)

Full-scale pilots and OAIS process



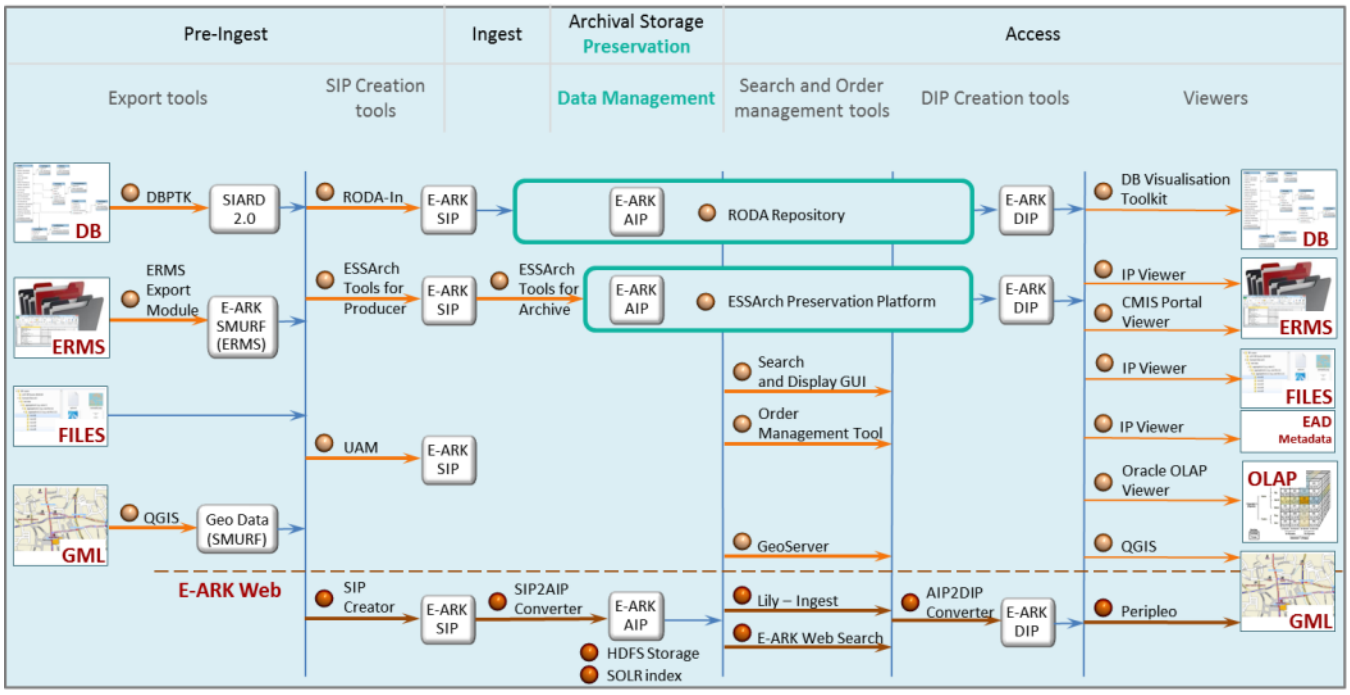
Pre-Ingest		Ingest	Archival Storage Preservation	Access		
Export tools	SIP Creation tools		Data Management	Search and Order management tools	DIP Creation tools	Viewers
Pilot 1 - SIP Creation on relational databases						
Pilot 2 - SIP creation and ingest of records						
Pilot 3 - Ingest from government agencies						
Pilot 4 – Business Archives						
Pilot 5 - Preservation and access to records with geodata						
Pilot 6 - Integration between a live document management system and digital archiving and preservation service						
Pilot 7 - Access to Databases						

Full-scale pilots and E-ARK uses-cases

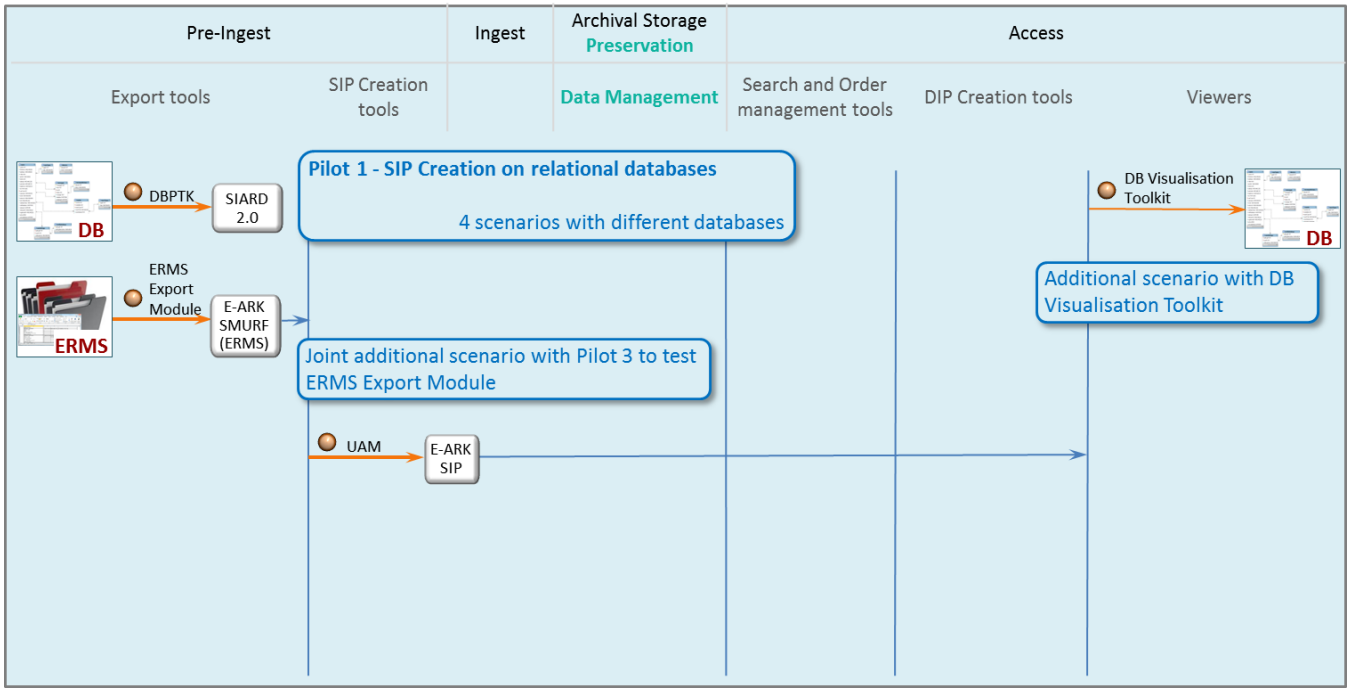


Pilots using E-ARK tools and format specifications

E-ARK Tools and Format Specifications



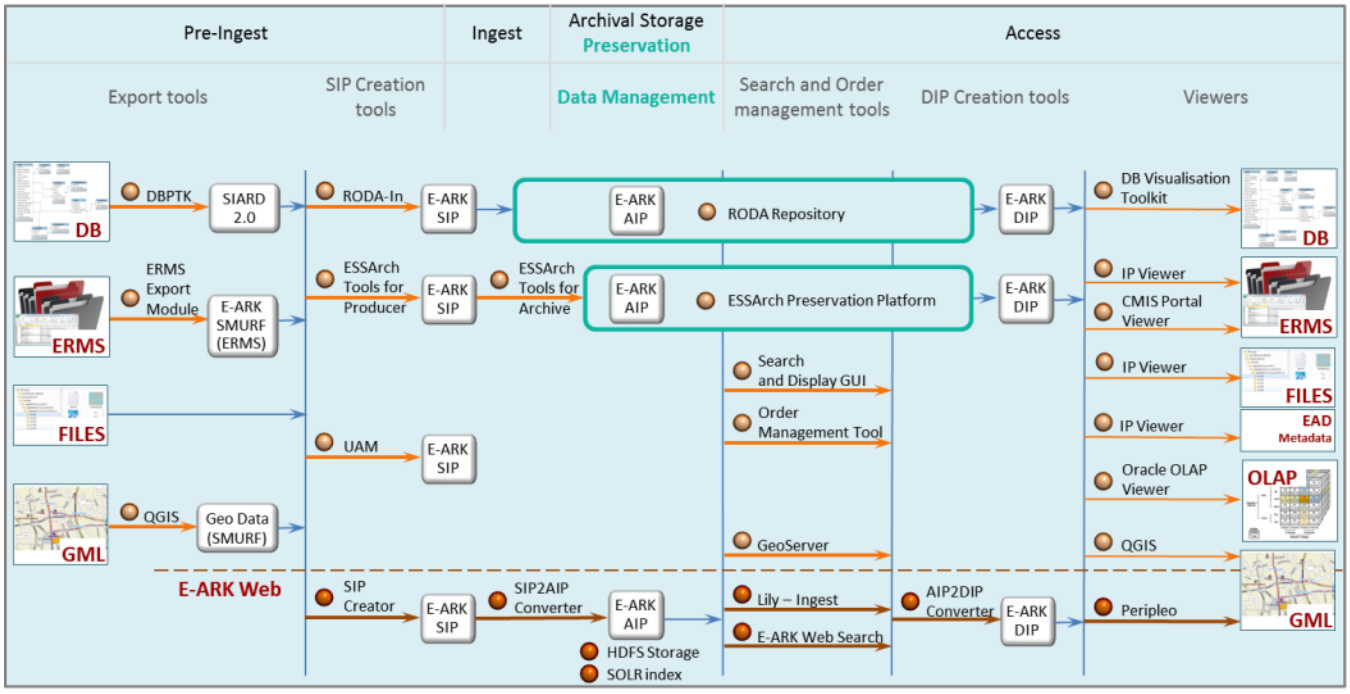
Pilot 1 – Danish National Archives

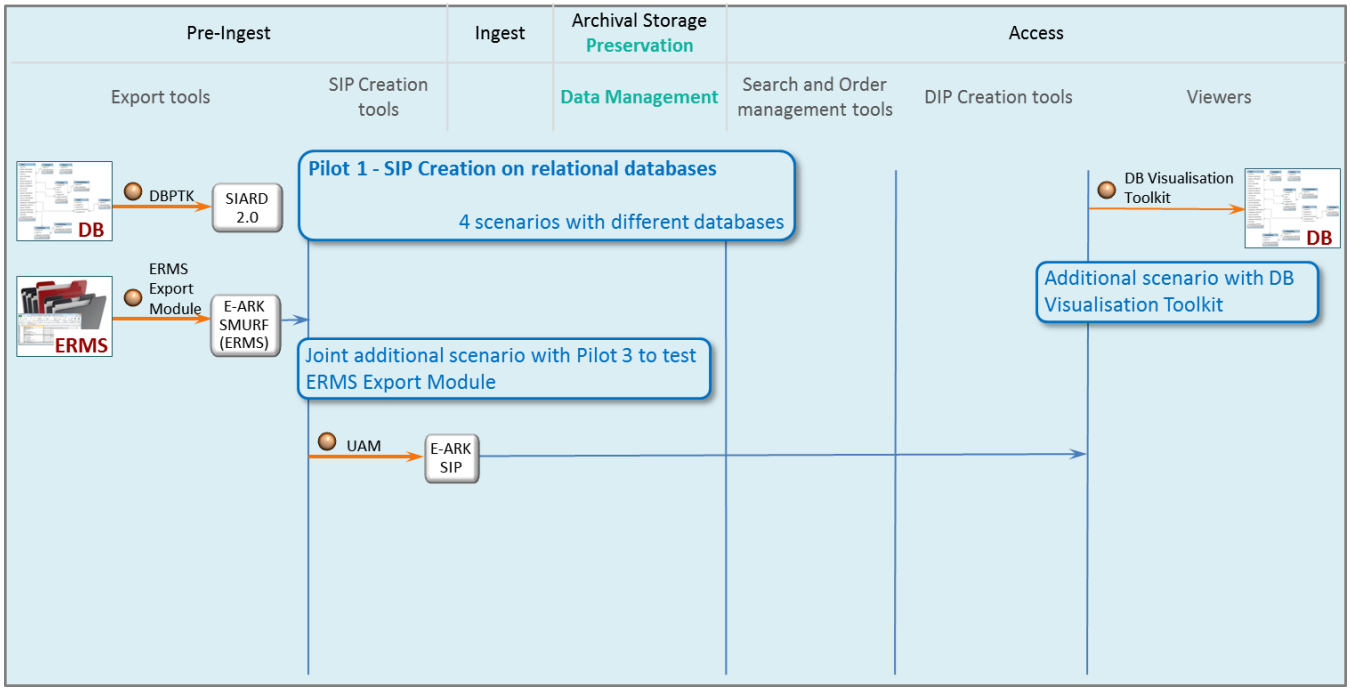


Pilot report

This section gives detailed information about the pilot scenarios performed in the scope of the E-ARK project.

Pilots 1 - SIP Creation on relational databases





Pilot 1	**SIP Creation on relational databases**		
Task leader	Danish National Archives		
Supported by	Magenta		
Scope	The scope of this Pilot is to test the E-ARK SIP Creation tool with not less than 4 databases of different sizes and complexities (one contains several million records)		
Object	Creating SIPs for relational databases using the tool created in WP3, T3.3: SIP Creation Tools, for further evaluation		
Short description	The goal of the pilot is to make four successful data extractions from live authentic databases into the SIARD 2.0 format.		
Contacts	**Name (Title)**	**E-mail**	Skype
Contact Person	Anders Bo Nielsen	abn@sa.dk	
Pilot staff member	Phillip Mike Tømmerholt	pmt@sa.dk	philliptommerholt_rigsarkivet

OAIS Relevance	**Pre-Ingest**						**Ingest - Storage**						**Storage – Access**													
E-ARK Formats	E-ARK SIP						E-ARK AIP						E-ARK DIP													
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB						Geodata							
E-ARK Tools	**Database Preservation Toolkit**	**ERMS Export Module**	**RODA-In**	**ESSArch Tool for Producer (ETP)**	**Universal Archiving Module**	**SIP creator (E-ARK Web)**	**ESSArch Tools for Archive (ETA)**	**SIP2AIP (E-ARK Web)**	**RODA Repository**	**ESSArch Preservation Platform**	**HDFS-Storage**	**SOLR Index**	**Search and Display GUI**	**Order Management Tool**	**Lily - Ingest**	**Geoserver**	**QGIS**	**E-ARK Web Search**	**AIP2DIP (E-ARK Web)**	**Database Visualization Toolkit**	**IP Viewer**	**Peripleo**	**Oracle (OLAP Viewer)**	**CMIS portal/viewer**
	X																									
Scenario 1	Extracting records from database (Data Set 1) - database with no documents																									
Scenario 2	Extracting records from database (Data Set 2) - database with no documents (large)																									
Scenario 3	Extracting records from database (Data Set 3) - database with documents																									
Scenario 4	Extracting records from database (Data Set 4) - database with documents (large)																									
Additional scenario	Experiments with Database Visualization Toolkit																									
Additional scenario	Extract records with ERMS Export Module and ingest into Preservica (Joint scenario with NAE)																									

Scenarios

Scenario 1	**Extracting records from database (Data Set 1)**
Description	Extracting records from database containing no documents.
OIAS relevance	Pre-Ingest
Use-case	Extract and Ingest relational database based on SIARD 2.0
E-ARK specifications	SIARD 2.0
E-ARK Tools	Database Preservation Toolkit
Data	Health system from The Danish National Serum Institute
Description	Database containing information from reported infectious diseases at a national level. 50-60 tables and about 90.000 records in the main table.
Data type	Microsoft SQL Server 2008
Metadata format	Not relevant
Quantity	small

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage - Access			
E-ARK Format specifications	E-ARK SIP		E-ARK AIP		E-ARK DIP			
	SIARD 2.0	X	SMURF ERMS		SMURF SFSB		Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
	X																							

Scenario 2	**Extracting records from database (Data Set 2)**
Description	Extracting records from database containing no documents.
OIAS relevance	Pre-Ingest
Use-case	Extract and Ingest relational database based on SIARD 2.0
E-ARK specifications	SIARD 2.0
E-ARK Tools	Database Preservation Toolkit
Data	Registry of Cultural Events from Kultunaut Aps
Description	Database from the commercial company Kultunat Aps, which holds information about cultural events at a national level, from events arranged by local communities to cultural events from the Danish cultural institutions. The database contains more than 5 million records.
Data type	MySQL
Metadata format	Not relevant
Quantity	large

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage - Access			
E-ARK Format specifications	E-ARK SIP		E-ARK AIP		E-ARK DIP			
	SIARD 2.0	X	SMURF ERMS		SMURF SFSB		Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
	X																							

Scenario 3	**Extracting records from database (Data Set 3)**
Description	Extracting records from database containing documents. The DNA will go to the producer's site with the tool on a USB. The DNA will together with the producer use the tool and make extractions into two formats: SIARDDK and SIARD2.0.
OIAS relevance	Pre-Ingest
Use-case	Extract and Ingest relational database based on SIARD 2.0
E-ARK specifications	SIARD 2.0
E-ARK Tools	Database Preservation Toolkit
Data	Administrative system from The Danish National Archives
Description	Database containing information about all incoming scientific research data, and public deliveries of research data. Database containing BLOBs/documents. Size 131 gigabyte.
Data type	Microsoft SQL Server 2008
Metadata format	Not relevant
Quantity	small

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage - Access	
E-ARK Format specifications	E-ARK SIP		E-ARK AIP		E-ARK DIP	
	SIARD 2.0	X	SMURF ERMS		SMURF SFSB	Geodata

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
	X																							

Scenario 4	**Extracting records from database (Data Set 4)**
Description	Extracting records from database containing documents. The DNA will go to the producer's site with the tool on a USB. The DNA will together with the producer use the tool and make extractions into two formats: SIARDDK and SIARD2.0.
OIAS relevance	Pre-Ingest
Use-case	Extract and Ingest relational database based on SIARD 2.0
E-ARK specifications	SIARD 2.0
E-ARK Tools	Database Preservation Toolkit
Data	Administrative and health records system from Ministry of Higher Education and Science.
Description	Studenterrådgivningen is an institution under Ministry of Higher Education and Science, whose purpose is to

	provide social, psychological, and psychiatric counselling, and treatment to students in their educational situation. The database contains about 100.000 BLOBS/documents.																							
Data type	MS SQL Server 2008																							
Metadata format	Not relevant																							
Quantity	large																							
OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage - Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP						E-ARK DIP											
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
	X																							

Please note that you can find more details with screenshots on scenario execution in the previous deliverable D2.4 Pilot Documentation.

Additional scenarios

Additional scenario	**Experiments with Database Visualization Toolkit**																							
Description	The users search the database for information with real-life search scenarios.																							
OIAS relevance	Part of access																							
Use-case																								
E-ARK specifications	none																							
E-ARK Tools	Database Visualization Toolkit																							
Data																								
Description	Database containing film and related data																							
Data type	Microsoft SQL Server 2008																							
Metadata format	Not relevant																							
Quantity	small																							
OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage - Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP						E-ARK DIP											
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
																				X				

Additional scenario	**Extract records with ERMS Export Module and ingest into Preservica (Joint scenario with NAE)**
Description	NAE was supposed to use the ERMS Export Module to export records from ERMS but because of the late deployment of the tool NAE had to use a local export tool to complete the full-scale pilot. To test the ERMS Export Module a joint additional scenario has been executed. DNA exported the records from Alfresco ERMS with the newly deployed ERMS Export Module and sent the SMURF ERMS file to NAE where a SIP was created, and ingested to Preservica. With this additional scenario every step that was originally planned to be tested in Pilot 3 has been successfully tested.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Extract and Ingest ERMS records based on MoReq2010
E-ARK specifications	SMURF ERMS
E-ARK Tools	ERMS Export Module
Data	ERMS system of The Danish School of Media and Journalism (Danmarks Medie- og Journalisthøjskole) (DMJX)
Description	Different kinds of letters and documents
Data type	Records from Alfresco ERMS
Metadata format	EAD
Quantity	121 files, 17 MB

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage - Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP						E-ARK DIP											
	SIARD 2.0						SMURF ERMS					X	SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
																				X				

Execution report

Please note that SIARD DK is a standard database preservation format in Denmark. This is the reason for creating (non-E-ARK) SIARD DK packages besides the SIARD 2.0 packages in Pilot 1. SIARDDK is a slight deviation from the SIARD 1.0 format (created by the Swiss Federal Archives / Enter AG). It was deviated in order to support large amounts of files, a feature now supported by SIARD 2.0

Scenario	Started	Completed	Summary
1. Extracting records from database (Data Set 1) - database with no documents	May 2016	September 2016	*SIARD2.0:* 100% extraction of all tables and their data. The DNA has manually validated the SIARD-package up against the *"eCH-0165 SIARD Format Specification 2.0"*. There is no automatic tool for this yet. *SIARDDK:* 100% extraction of all tables and their data. The DNA has validated against *"Executive Order on Submission Information Packages"* and found no errors in the product.

2. Extracting records from database (Data Set 2) - database with no documents (large)	June 2016	September 2016	*SIARD2.0:* 100% extraction of all tables and their data. The DNA has manually validated the SIARD-package up against the *"eCH-0165 SIARD Format Specification 2.0"*. There is no automatic tool for this yet. *SQL Server:* SIARD-file was successfully uploaded to a MS SQL Server. First attempt failed due to differences in primary key names from PostgreSQL. Key names were manually altered and created new SIARD-file and successfully exported to MS SQL Server. *SIARDDK:* 100% extraction of all tables and their data. The DNA has validated against *"Executive Order on Submission Information Packages"* and found no errors in the product.
3. Extracting records from database (Data Set 3) - database with documents	July 2016	September 2016	*SIARD2.0:* 100% extraction of all tables and their data in one single SIARD-file. The DNA still has to export with a split to a SIARD-file and an external LOB-folder. The DNA also needs to validate the SIARD-package up against the *"eCH-0165 SIARD Format Specification 2.0"* *SIARDDK:* 100% extraction of all tables and their data. The DNA has validated against *"Executive Order on Submission Information Packages"* and found no errors in the end product.
4. Extracting records from database (Data Set 4) - database with documents (large)	August 2016	September 2016	*SIARD2.0:* 100% extraction of all tables and their data. The DNA has manually validated the SIARD-package up against the *"eCH-0165 SIARD Format Specification 2.0"*. There is no automatic tool for this yet. *SIARDDK:* 100% extraction of all tables and their data.

Additional scenarios

Scenario	Started	Completed	Summary
Extract records with ERMS Export Module and ingest into Preservica (Joint scenario with NAE)	December 2016	December 2016	Successful extraction of 120 files. The SMURF ERMS file was sent to NAE for SIP creation and ingest. (for more details see the documentation of Pilot 3)
Experiments with Database Visualization	November	December	4 archivists tested the DBVTK application with real life

Toolkit	2016	2016	scenarios on a movie database looking for answers to questions like “What langue is used in this film?” or “Which stars plays in the movie?” They compered DBVTK to the local search capabilities and screens of the database. The users were absolutely satisfied with the logic and design of the tool and mentioned several clever ideas compared to the search and display functions of Sofia. They had many recommendations for the tool developer. (see Recommended practices later in this chapter)

Changes to the original plans

There were no changes. The scenarios have been performed according to plans in DoW and D2.3 Detailed Pilot Requirements.

Feedback report

The following table summarizes the feedback communication between the pilot staff and tool developers or format specification providers.

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
Database Preservation Toolkit (version2.0.0-beta4.2)	For the complete issue history, please refer to the GitHub page: https://github.com/keeps/db-preservation-toolkit
Used in tasks	Data extraction – all scenarios
Data (input / output)	Input: 4 databases from different producers Output: 1 SIARD2.0 package + 1 SIARDDK package.
Performance	Excellent with SIARD 2.0 (OK with SIARD DK)
Issues	There have been several issues with DBPTK related SIARD 2.0 output. KEEP Systems has corrected all the bugs and the response time was excellent. After the completion of the scenarios no known issues remained.
Wishes	A tool or function for automatic validation of SIARD 2.0 would be nice to have.
Comments	None
Experiences and recommended practices	After correcting the early bugs the tool functioned properly.

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
Database Visualization Toolkit	
Used in Additional scenario	Experiments with Database Visualization Toolkit
Data (input / output)	Movie database
Performance	Good
Issues	No issues found
Wishes	Users recommend showing technical information about the database on a separate page.
Comments	
Experiences and recommended	

practices	

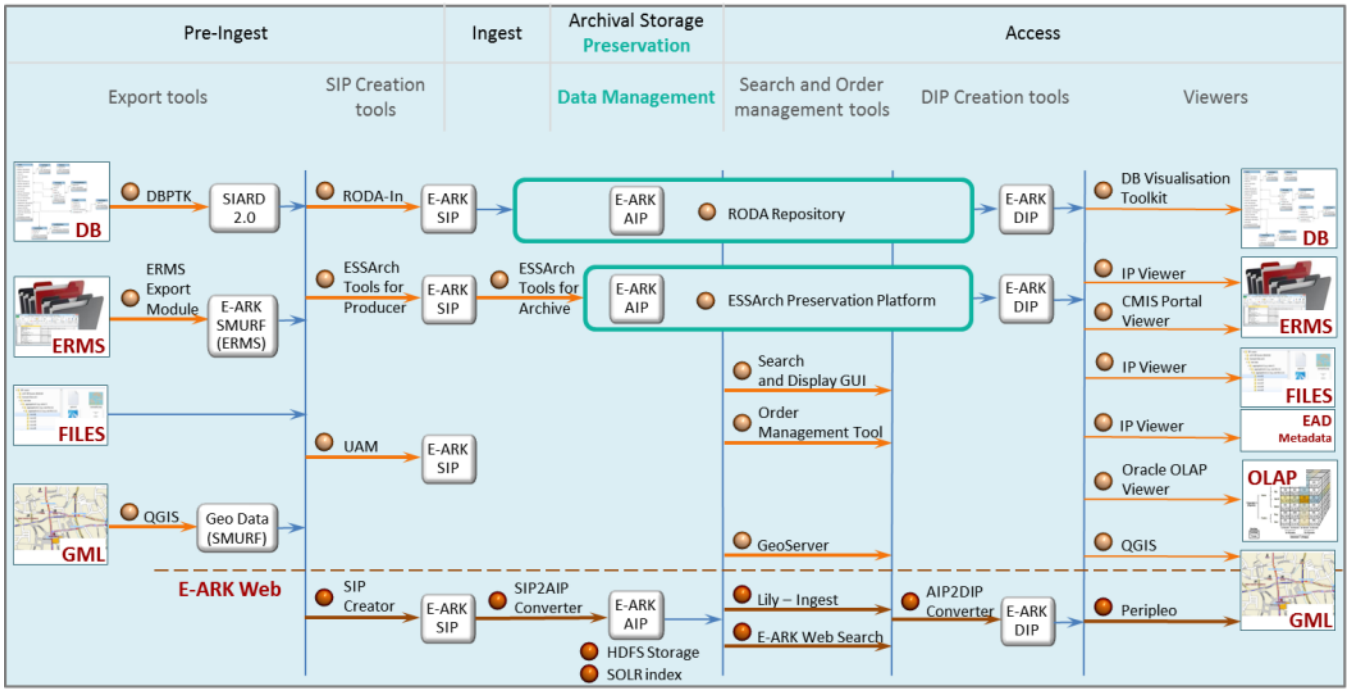
E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
ERMS Export Module	
Used in Additional scenario	Extract records with ERMS Export Module and ingest into Preservica (Joint scenario with NAE)
Data (input / output)	ERMS system of The Danish School of Media and Journalism (Danmarks Medie- og Journalisthøjskole) (DMJX)
Performance	Good
Issues	No issues found
Wishes	
Comments	
Experiences and recommended practices	

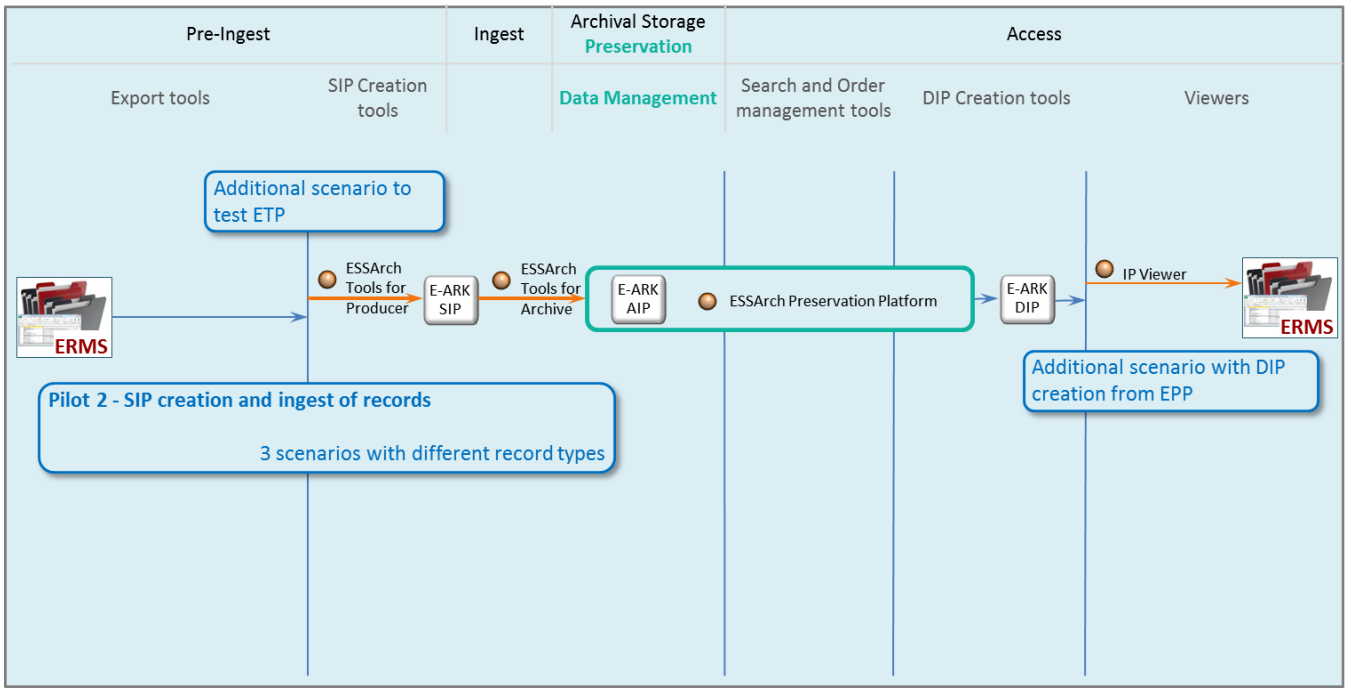
Recommended practices and further recommendations

The following table contains the recommended practices and further development suggestions collected during pilot execution and evaluation.

Category	**Relates to**	**Recommended practices / Further developments**
Further requirement	SIARD 2.0	A tool or function for automatic validation of SIARD 2.0 would be required
Further recommendation	DBPTK documentation	It would be nice if there were more documentation on which user roles and privileges the tool works best under
Further recommendation	DBVTK	Users made a very detailed analysis of the tool and have a lot of smaller recommendations and wishes. (for details see documentation of the additional scenario)

Pilots 2 - SIP Creation and ingest of records





Pilot 2	**SIP creation and ingest of records**		
Task leader	National Archives of Norway		
Supported by	ESS Solutions		
Scope	Not less than 2 transfers of unstructured records with mixed restricted and unrestricted material, and not less than 1 transfer of structured records.		
Object	Extract data from EDRMS and databases, create SIPs for structured and unstructured records using ESSArch Tools, ingest the SIPs to the repository using ESSArch Preservation Platform, for further evaluation		
Short description	The main part of the pilot includes the export of electronic records and their metadata from EDRM systems and databases of Norwegian public sector institutions, transfer and ingest them to the NAN digital repository.		
Contacts	**Name (Title)**	**E-mail**	Skype
Contact Person	Arne-Kristian Groven	arngro@arkivverket.no	
Pilot staff member	Terje Pettersen-Dahl	geihau@arkivverket.no	
Pilot staff member	Geir Haug	tepe@arkivverket.no	
Pilot staff member	Jørgen Ø. Vik-Strandli	jorvik@arkivverket.no	

OAIS Relevance	**Pre-Ingest**						**Ingest - Storage**						**Storage – Access**											
E-ARK Formats						E-ARK SIP **X**						E-ARK AIP **X**												E-ARK DIP **X**
						SIARD 2.0						SMURF ERMS **X**						SMURF SFSB						Geodata
E-ARK Tools	**Database Preservation Toolkit**	**ERMS Export Module**	**RODA-In**	**ESSArch Tool for Producer (ETP)**	**Universal Archiving Module**	**SIP creator (E-ARK Web)**	**ESSArch Tools for Archive (ETA)**	**SIP2AIP (E-ARK Web)**	**RODA Repository**	**ESSArch Preservation Platform**	**HDFS-Storage**	**SOLR Index**	**Search and Display GUI**	**Order Management Tool**	**Lily - Ingest**	**Geoserver**	**QGIS**	**E-ARK Web Search**	**AIP2DIP (E-ARK Web)**	**Database Visualization Toolkit**	**IP Viewer**	**Peripleo**	**Oracle (OLAP Viewer)**	**CMIS portal/viewer**
				X			**X**			**X**											**X**			
Scenario 1	SIP Creation and Ingest of unstructured records (Data Set 1)																							
Scenario 2	SIP Creation and Ingest of unstructured records (Data Set 2)																							
Scenario 3	SIP Creation and Ingest of structured records (Data Set 3)																							
Additional scenario	Creating SIP with ESSArch Tool for Producer																							
Additional scenario	Generating E-ARK DIP from ESSArch Preservation Platform																							

Scenarios

Scenario 1	**SIP Creation and Ingest of unstructured records (Data Set 1)**
Description	Extract unstructured records from EDRMS based on the Norwegian NOARK 4 standard. Create SIP using ESSArch Tools. Ingest the SIP to the repository using ESSArch Preservation Platform, for further evaluation.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Extract and Ingest ERMS records (similar to MoReq2010)
E-ARK specifications	E-ARK-SIP
E-ARK Tools	ESSArch Tool Producer (ETP), ESSArch Tool Archive (ETA), ESSArch Preservation Platform
Data	Noark 4 output from EDRMS
Description	EDRMS data from public producer converted into Noark 4 output (real production data)
Data type	Noark 5 XML file, documents in PDF/A (or a few other specified formats), in TAR file
Metadata format	XML: METS, PREMIS, ADDML (local)
Quantity	20GB

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage – Access	
E-ARK Format specifications	E-ARK SIP	X	E-ARK AIP	X	E-ARK DIP	
	SIARD 2.0		SMURF ERMS	X	SMURF SFSB	
					Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
				X			X			X														

Scenario 2	**SIP Creation and Ingest of unstructured records (Data Set 2)**
Description	Extract unstructured records from EDRMS based on the Norwegian NOARK 5 standard. Create SIP using ESSArch Tools. Ingest the SIP to the repository using ESSArch Preservation Platform, for further evaluation
OIAS relevance	Pre-Ingest, Ingest
Use-case	Extract and Ingest ERMS records (similar to MoReq2010)
E-ARK specifications	E-ARK-SIP
E-ARK Tools	ESSArch Tool Producer (ETP), ESSArch Tool Archive (ETA), ESSArch Preservation Platform (EPP)
Data	Noark 5 output from EDRMS
Description	EDRMS data public producer converted into Noark 5 output (real production data)
Data type	Noark 5 XML file, documents in PDF/A (or a few other specified formats), in TAR file
Metadata format	XML: METS, PREMIS, ADDML (local)
Quantity	5 GB

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage - Access	
E-ARK Format specifications	E-ARK SIP	X	E-ARK AIP	X	E-ARK DIP	
	SIARD 2.0		SMURF ERMS	X	SMURF SFSB	
					Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
				X			X			X														

Scenario 3	**SIP Creation and Ingest of structured records (Data Set 3)**
Description	Extract data from old database output, create SIPs for structured records using ESSArch Tools, ingest the SIPs to the repository using ESSArch Preservation Platform, for further evaluation.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Extract and Ingest ERMS records (similar to MoReq2010)
E-ARK specifications	E-ARK-SIP
E-ARK Tools	ESSArch Tool Producer (ETP), ESSArch Tool Archive (ETA), ESSArch Preservation Platform
Data	Old database (CSV)
Description	The data set here is the national registry of licenced hunters containing data from the period 1985-1999.
Data type	CSV format (input), tar file
Metadata format	XML: METS, PREMIS, ADDML (local)
Quantity	Containing 338.500 registered persons. 105 MB

OAIS Relevance	Pre-Ingest		Ingest – Storage		Storage - Access	
E-ARK Format specifications	E-ARK SIP	X	E-ARK AIP	X	E-ARK DIP	
	SIARD 2.0		SMURF ERMS	X	SMURF SFSB	
					Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
				X			X			X														

Please note that more details with screenshots on scenario execution are available in the deliverable D2.4 Pilot Documentation.

Additional scenarios

Additional scenario	**Creating SIP with ESSArch Tool for Producer**
Description	NAN wanted to test the EssArch Tool for Producer (ETP) in the full-scale pilot scenarios but because of the "business as usual" full-scale pilot strategy they had to use the previous version of this tool. NAN therefore tested ETP in an additional SIP creation scenario in a virtual environment. The SIP then was ingested to EPP (as

	with full-scale scenarios) in the virtual environment.
OIAS relevance	Pre-Ingest
Use-case	Extract and Ingest ERMS records (similar to MoReq2010)
E-ARK specifications	E-ARK-SIP
E-ARK Tools	ESSArch Tool Producer (ETP)
Data	
Description	Local test data
Data type	Microsoft and pdf documents
Metadata format	Not relevant
Quantity	small

OAIS Relevance	Pre-Ingest						Ingest – Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP					X	E-ARK AIP					X	E-ARK DIP											
	SIARD 2.0						SMURF ERMS					X	SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
				X			X			X														

Additional scenario	**Generating E-ARK DIP from ESSArch Preservation Platform**
Description	The EssArch Preservation Platform (EPP) is fully E-ARK compatible. In this additional scenario an E-ARK DIP is generated from EPP. The scenario could not be yet completed because of the strict Norwegian data handling regulations make it very difficult to use archived data.
OIAS relevance	Access
Use-case	Access ERMS records
E-ARK specifications	SMURF ERMS
E-ARK Tools	ESSArch Preservation Platform (EPP)
Data	Selected archived data
Description	Different kinds of letters and documents
Data type	Microsoft and pdf documents
Metadata format	Not relevant
Quantity	small

OAIS Relevance	Pre-Ingest						Ingest – Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP					X	E-ARK DIP											X
	SIARD 2.0						SMURF ERMS					X	SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
										X											X			

Execution report

Scenario	Started	Completed	Summary
1. SIP Creation and Ingest of unstructured records (Data Set 1)	May 2016	September 2016	After a longer testing period the scenario has been performed as planned.
2. SIP Creation and Ingest of unstructured records (Data Set 2)	June 2016	October 2016	After a longer testing period the scenario has been performed as planned.
3. SIP Creation and Ingest of structured records (Data Set 3)	May 2016	October 2016	After a longer testing period the scenario has been performed as planned.

Additional scenarios

Scenario	Started	Completed	Summary
Creating SIP with ESSArch Tool for Producer	November 2016	January 2017	The scenario has been performed successfully. The overall impression is that the tool is useful for data. providers/agencies.
Generating E-ARK DIP from ESSArch Preservation Platform	December 2016	Not yet finished	The scenario could not be yet completed because of the strict Norwegian data handling regulations make it very difficult to use archived data.

Changes to the original plans

The E-ARK compatible version of ESSArch Tool for Provider (ETP) could not be tested in the “business as usual” full-scale pilot because of data provider’s IT infrastructure. The tool has been tested in an additional scenario by NAN. The ETP tool has also been tested in Pilot 5.

Feedback report

The following table summarizes the feedback communication between the pilot staff and tool developers or format specification providers.

E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
ESSArch Tool for Producer (ETP) v0.95	For the complete issue history, please refer to the GitHub page: https://github.com/ESSolutions/ESSArch_Tools_Producer
Used in tasks	SIP Creation
Data (input / output)	3 different input sources at 3 data providers
Performance	Good
Issues	No issues left at scenario completion
Wishes	
Comments	NAN would like to evaluate on even larger data sets to conclude about scalability.
Experiences and recommended practices	The tool worked well

E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
ESSArch Tools Archive (ETA) v0.93.1	For the complete issue history, please refer to the GitHub page: https://github.com/ESSolutions/ESSArch_Tools_Archive
Used in tasks	Ingest preparations
Data (input / output)	SIPs from 3 different input sources
Performance	Good
Issues	No issues left at scenario completion
Wishes	
Comments	NAN would like to evaluate on even larger data sets to conclude about scalability.
Experiences and recommended practices	To tools has been tested very thoroughly and all the bugs issues been solved before deployed in production environment. The tool was able to produce satisfactory results.

E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
ESS Preservation Platform v2.7.3	For the complete issue history, please refer to the GitHub page: https://github.com/ESSolutions/ESSArch_EPP
Used in tasks	Ingest, Long-term preservation
Data (input / output)	SIPs from 3 different input sources
Performance	Good
Issues	No issues left at scenario completion
Wishes	
Comments	NAN would like to evaluate on even larger data sets to conclude about scalability.
Experiences and recommended practices	To tools has been tested very thoroughly and all the bugs issues been solved before deployed in production environment. The tool was able to produce satisfactory result.

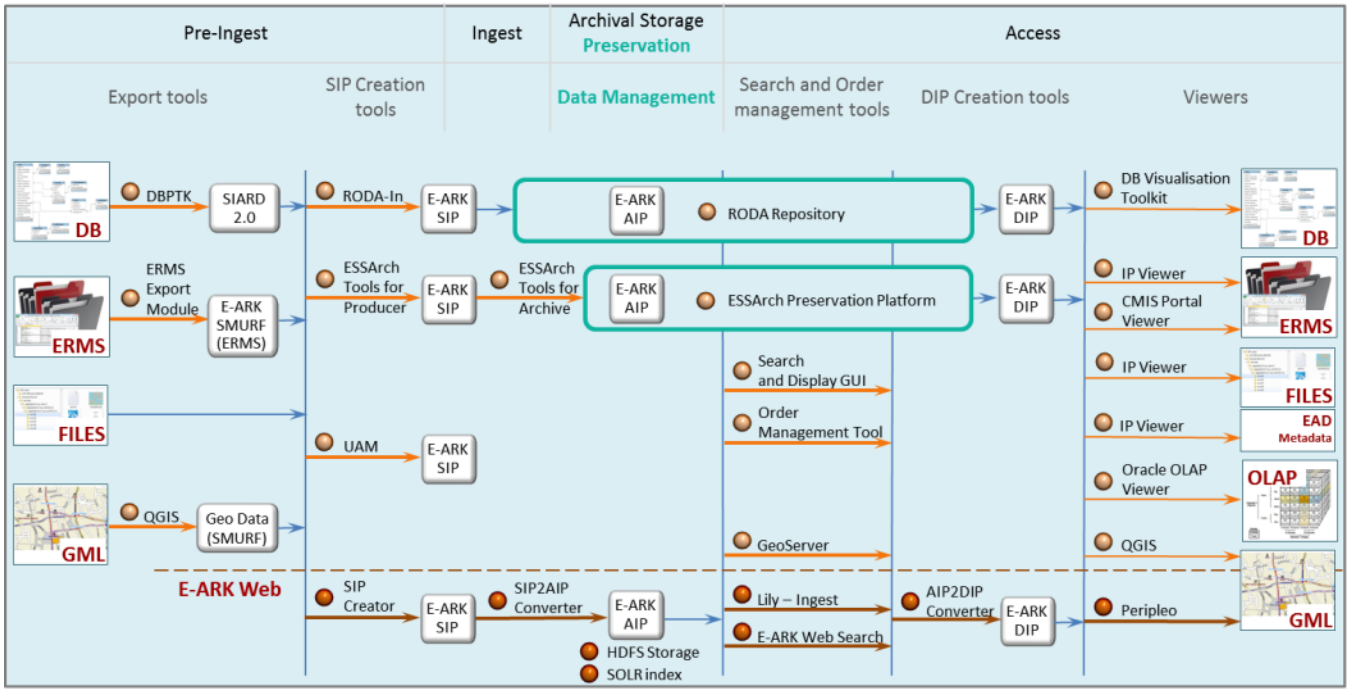
Recommended practices and further recommendations

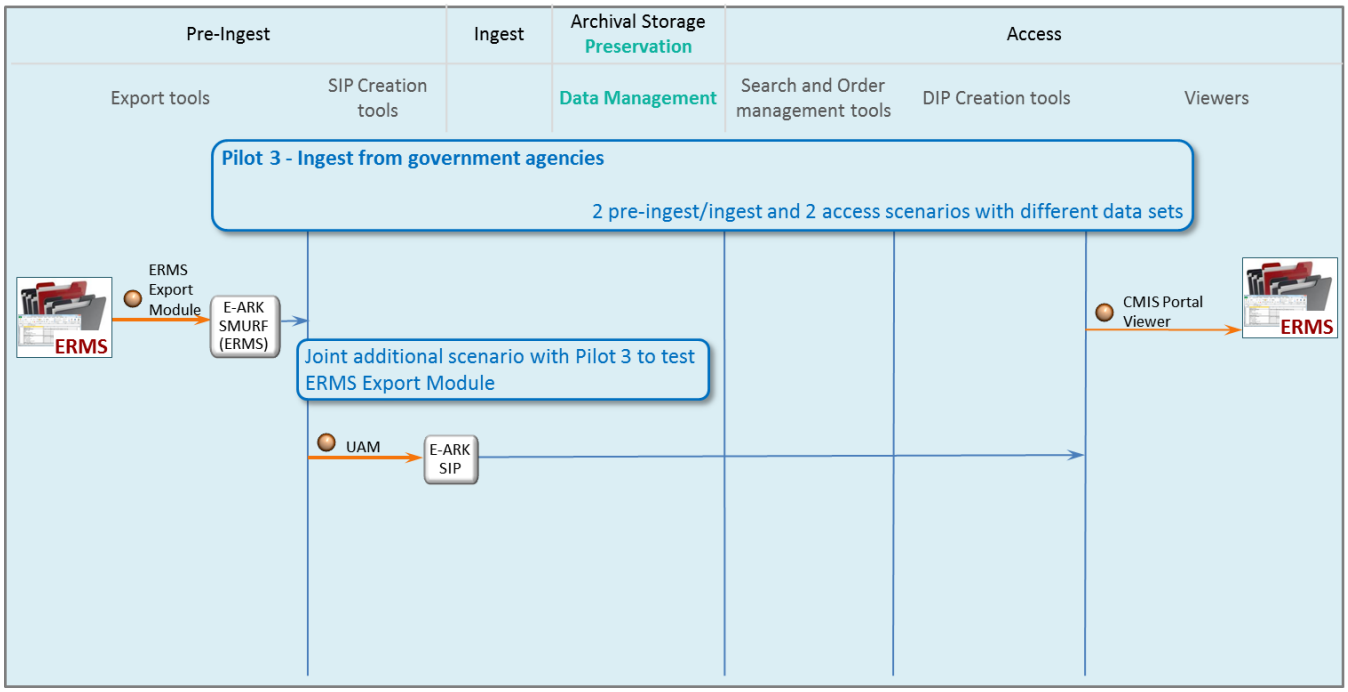
The following table contains the recommended practices and further development suggestions collected during pilot execution and evaluation.

Category	Relates to	Recommended practices / Further developments
Recommended practices	ETP	Submission Agreement (SA) profiles are configured in ETP, based on selecting sub-profiles of various categories such as “SIP profiles”, “Submit description profiles”, “Transfer project profiles” and more. The data providers/agencies using ETP should predefine their own sub-profiles according to their specific needs using the tool Profile maker, also developed by ES Solutions. Profiles must be locked before processing further, Therefore metadata must be edited before locking the profiles. Various degree of automation in ETP can be defined through definition of profiles. EAD and EAC-CPF schemas have to be provided with the content.
Recommended practices	ETA	ETA is a part of the Ingest process step and can be easily compared to a reception desk where you receive packages, performs the first checks of the packages and then places them at the appropriate shelves behind the reception desk, ready to be picked up by the persons responsible for the next steps of the Ingest process.
Recommended practices	EPP	In EPP, AIPs are generated in an automatic manner using a queue-handling system. The AIPs can be stored on either tapes or disks.
Recommended practices	ETP, ETA, EPP	For installing the ESSArch ETP, ETA and EPP tools we recommend to get support from ES Solutions for installation and configuration of the application.
Further	Testing	Content size should also be tested a bit further, since the largest content of the original pilots

recommendation		were 20 GB
Further recommendation	SIP Format	A more flexible format specification would perhaps be more suitable in the future.

Pilots 3 - SIP Creation and ingest of records





Pilot 3	**Ingest from government agencies**
Task leader	National Archives of Estonia
Supported by	
Scope	Export public records from an EDRM system of a governmental agency to the National Archives of Estonia and make these available through our own catalogue (i.e. Archival Information System, AIS) as well as provide an API for accessing the records from other systems (the original EDRMS at the agency); The whole set will include about 5000 records (but depends on the exact agency of course).
Object	Native EDRMS at a governmental agency (Alfresco DELTA), records preparation tool (UAM), digital preservation and access systems (Preservica, AIS)
Short description	The main part of the proposed pilot includes the export of electronic records and their metadata from EDRM systems of Estonian public sector institutions, transfer and ingest to the NAE digital repository. In addition Estonian agencies have the responsibility to make public electronic records with no access restrictions available on their web sites, which means that the pilot will also enable this through standardized linking/access methods that are implemented in the agencies' digital infrastructure / web site

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OAIS Relevance	**Pre-Ingest**						**Ingest - Storage**						**Storage – Access**												
E-ARK Formats	E-ARK SIP					X	E-ARK AIP												E-ARK DIP						X
	SIARD 2.0						SMURF ERMS					X	SMURF SFSB						Geodata						
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
		X			X																			X
Scenario 1	Extract records from EDRM (of a governmental institution), create SIP and ingest to Preservica (Data set 1)																							
Scenario 2	Provide access to records from governmental institution through RESTful services (Data set 1)																							
Scenario 3	Extract records from EDRM (of a governmental institution), create SIP and ingest to Preservica (Data set 2)																							
Scenario 4	Provide access to records from governmental institution through RESTful services (Data set 2)																							
Additional scenario	Extract records with ERMS Export Module and ingest into Preservica (Joint scenario with NAE)																							
Additional scenario	ERMS Export Module scenario with local ERMS system DELTA																							

Scenarios

Scenario 1	**Extract records from EDRM (of a governmental institution), create SIP and ingest to Preservica**
Description	Export public records from an EDRM system of a governmental agency, create SIP, and ingest to the Preservica system at the National Archives of Estonia.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Extract and Ingest ERMS records based on MoReq2010 (Alfresco is not Moreq-compliant system)
E-ARK specifications	E-ARK-SIP, SMURF
E-ARK Tools	Universal Archiving Module (UAM)
Data	Records and metadata exported from native ERMS (DELTA) Export Module at Ministry of Justice of Estonia
Description	Data set consists of different documents of Ministry of Justice from 6 series with different retention period.
Data type	ddoc, docx, PDF, TIFF
Metadata format	SMURF ERMS
Quantity	15 files

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage – Access	
E-ARK Format specifications	E-ARK SIP	X	E-ARK AIP		E-ARK DIP	
	SIARD 2.0		SMURF ERMS	X	SMURF SFSB	
	Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
					X																			

Scenario 2	**Provide access to records from governmental institution through RESTful services**
Description	Estonian agencies have the responsibility to make public electronic records with no access restrictions available on their web sites, which means that the pilot will also enable this through standardized linking/access methods that are implemented in the agencies' digital infrastructure / web site.
OIAS relevance	Access
Use-case	Access single ERMS records via CMIS Browser (To be consolidated with a CMIS interface access solution)
E-ARK specifications	SMURF
E-ARK Tools	CMIS Browser
Data	Records and metadata exported from native ERMS (DELTA) Export Module at Ministry of Justice of Estonia
Description	Data set consists of different documents of Ministry of Justice from 6 series with different retention period.
Data type	ddoc, docx, PDF, TIFF
Metadata format	SMURF ERMS
Quantity	15 files

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage - Access	
E-ARK Format specifications	E-ARK SIP		E-ARK AIP		E-ARK DIP	X
	SIARD 2.0		SMURF ERMS	X	SMURF SFSB	
	Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
																								X

Scenario 3	**Extract records from EDRM (of a governmental institution), create SIP and ingest to Preservica**
Description	Export public records from an EDRM system of a governmental agency, create SIP, and ingest to the Preservica system at the National Archives of Estonia.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Extract and Ingest ERMS records based on MoReq2010 (Alfresco is not Moreq-compliant system)
E-ARK specifications	E-ARK-SIP, SMURF
E-ARK Tools	Universal Archiving Module (UAM)
Data	Records and metadata exported from native ERMS (via DELTA) at Ministry of Justice of Estonia
Description	Data set consists of different documents of Ministry of Justice from different series.
Data type	DDOC (a file format holding Estonian digital signature information), DOCX, PDF, TIFF
Metadata format	SMURF ERMS
Quantity	200 files

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP					X	E-ARK AIP						E-ARK DIP											
	SIARD 2.0						SMURF ERMS					X	SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
					X																			

Scenario 4	**Provide access to records from governmental institution through RESTful services**
Description	Estonian agencies have the responsibility to make public electronic records with no access restrictions available on their web sites, which means that the pilot will also enable this through standardized linking/access methods that are implemented in the agencies' digital infrastructure / web site.
OIAS relevance	Access
Use-case	Access single ERMS records via CMIS Browser (To be consolidated with a CMIS interface access solution)
E-ARK specifications	SMURF
E-ARK Tools	CMIS Browser
Data	Records and metadata exported from native ERMS (via DELTA) at Ministry of Justice of Estonia
Description	Data set consists of different documents of Ministry of Justice from different series.
Data type	DDOC (a file format holding Estonian digital signature information), DOCX, PDF, TIFF
Metadata format	SMURF ERMS

Quantity	200 files																									
OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access													
E-ARK Format specifications	E-ARK SIP						E-ARK AIP						E-ARK DIP													X
	SIARD 2.0						SMURF ERMS					X	SMURF SFSB						Geodata							
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer	
																										X

Please note that you can find more details with screenshots on scenario execution in the previous deliverable D2.4 Pilot Documentation.

Additional scenarios

Additional scenario	Extract records with ERMS Export Module and ingest into Preservica (Joint scenario with NAE)																									
Description	The National Archives of Estonia was supposed to use the ERMS Export Module to export records from ERMS but because of the late deployment of the tool NAE had to use a local export tool to complete the full-scale pilot. To test the ERMS Export Module a joint additional scenario has been executed. DNA exported the records from Alfresco ERMS with the newly deployed ERMS Export Module and sent the SMURF ERMS file to NAE where a SIP was created, and ingested to Preservica. With this additional scenario every step that was originally planned to be tested in Pilot 3 has been successfully tested.																									
OIAS relevance	Pre-Ingest, Ingest																									
Use-case	Extract and Ingest ERMS records based on MoReq2010																									
E-ARK specifications	SMURF ERMS																									
E-ARK Tools	ERMS Export Module																									
Data	ERMS system of The Danish School of Media and Journalism (Danmarks Medie- og Journalisthøjskole) (DMJX)																									
Description	Different kinds of letters and documents																									
Data type	Records from Alfresco ERMS																									
Metadata format	EAD																									
Quantity	121 files, 17 MB																									
OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage - Access													
E-ARK Format specifications	E-ARK SIP					X	E-ARK AIP						E-ARK DIP													X
	SIARD 2.0						SMURF ERMS					X	SMURF SFSB						Geodata							

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
					X																			X

Additional scenario	ERMS Export Module scenario with local ERMS system DELTA
Description	This additional pilot combines several tools and tests the E-ARK workflow in full from the beginning to the end. Records from the local DELTA system were exported with ERMS Export Module then a SIP was created and ingested into Preservica. Finally the access was provided by CMIS Portal Viewer.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Extract and Ingest ERMS records based on MoReq2010
E-ARK specifications	SMURF ERMS
E-ARK Tools	ERMS Export Module
Data	Selected records from DELTA ERMS system from partner company Wisercat
Description	Different kinds of documents
Data type	Records from DELTA ERMS
Metadata format	Not relevant
Quantity	A small amount of records

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP					X	E-ARK AIP						E-ARK DIP											X
	SIARD 2.0						SMURF ERMS					X	SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
		X			X																			X

Execution report

The focus of Pilot 3 was the export of electronic records and their metadata from EDRM systems of Estonian public sector institutions, transfer and ingest to the NAE digital repository. In addition to that, Estonian agencies have the responsibility to make public electronic records with no access restrictions available on their web sites, which means that the pilot will also enable this through standardised linking/access methods that are implemented in the agencies' digital infrastructure / web site.

Data has been selected and extracted from the native ERMS (DELTA) Export Module in the Ministry of Justice in Estonia, exported to the Universal Archival Module (UAM) of the National Archives of Estonia (NAE) to create E-ARK SIP and ingested to Preservica (NAE) in the first scenario.

NAE was supposed to use the ERMS export module to select and export records from the ERMS but the version compatible with the local DELTA system could not be launched before November 2016. The half year execution period of the full-scale pilots ended in October so NAE has decided to use the native export functionality of DELTA ERMS to create the E-ARK SMURF input for the SIP and perform an additional scenario with ERMS Export Module later. At the end two complete additional scenarios have been run, one in cooperation with the Danish National Archives.

Scenario	Started	Completed	Summary
1. Extract records from EDRM, create SIP and ingest to Preservica (Data set 1)	May 2016	November 2016	After the very long preparation and local development period the scenario has been successfully executed.
2. Provide access to records through RESTful services (Data set 1)	September 2016	November 2016	Access scenarios could start only after the ingest scenarios have been concluded. The scenario successfully completed. The SMURF file content is accessible through CMIS Portal Browser linked from producers corresponding web page.
3. Extract records from EDRM, create SIP and ingest to Preservica (Data set 2)	May 2016	December 2016	After the very long preparation and local development period the scenario has been successfully executed.
4. Provide access to records through RESTful services (Data set 2)	September 2016	December 2016	Access scenarios could start only after the ingest scenarios have been concluded. The scenario successfully completed. The SMURF file content is accessible through CMIS Portal Browser linked from producers corresponding web page.

Experience with piloted tools and specifications within the Pilot 3 was positive, they are compatible and widely usable.

Additional scenarios

Scenario	Started	Completed	Summary
Extract records with ERMS Export Module and ingest into Preservica (Joint scenario with NAE)	November 2016	December 2016	The joint scenario was a real success story. The preparations at both sites resulted in a smooth cooperation in order to export the selected records at DNA and create the ingest and provide access to data at NAE.
ERMS Export Module scenario with local ERMS system DELTA	November 2016	December 2016	This pilot was actually more than an additional scenario. The complete full-scale scenario that NAE planned to execute within the full-scale pilot has been performed. It's a wall-to-wall scenario from pre-ingest to access.

Changes to the original plans

NAE was supposed to use the ERMS export module to select and export records from the ERMS but the version compatible with the local DELTA system could not be launched before November 2016. The half year execution period of the full-scale pilots ended in October so NAE decided to use the native export functionality of DELTA ERMS to create the E-ARK SMURF input for the SIP and perform an additional scenario with ERMS Export Module later. At the end two complete additional scenarios have been run, one in cooperation with the Danish National Archives.

Feedback report

The following table summarizes the feedback communication between the pilot staff and tool developers or format specification providers.

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
ERMS Export Module	For the complete issue history, please refer to the GitHub page: https://github.com/magenta-aps/erms-export-ui-module
Used in additional scenario	Exporting ERMS Records
Data (input / output)	Tested with real-
Performance	Good
Issues	No issues left at scenario completion
Wishes	
Comments	
Experiences and recommended practices	

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
Universal Archiving Module (UAM)	
Used in tasks	SIP creation
Data (input / output)	Tested with two data sets of DELTA ERMS records
Performance	Good
Issues	No issues left at scenario completion
Wishes	None
Comments	None
Experiences and recommended practices	None
E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
CMIS Portal Browser	
Used in tasks	Access
Data (input / output)	Tested with two data sets of DELTA ERMS records
Performance	Good
Issues	No issues left at scenario completion
Wishes	None
Comments	None
Experiences and recommended practices	None

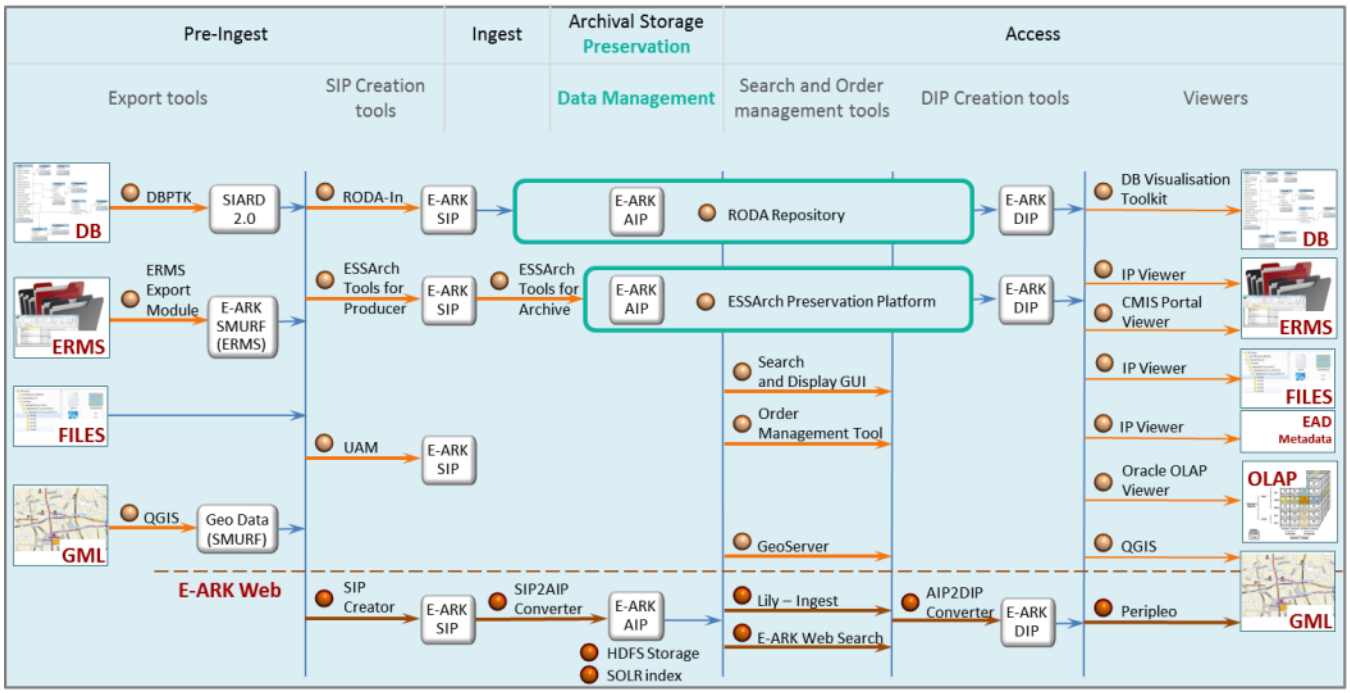
Although the tools and specifications proved to be usable, we are still planning to look for more possibilities to reduce the human factor and automate the workflow in the steps where it is possible in order to make the process even more scalable in the future.

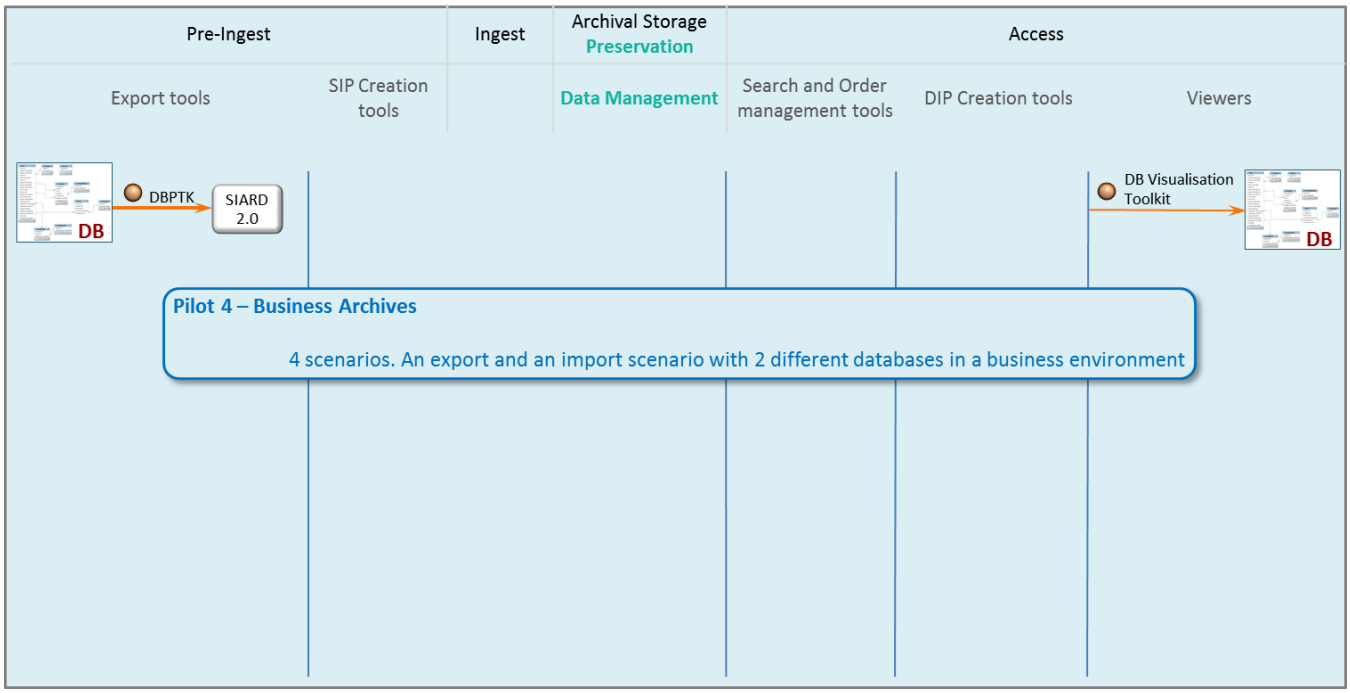
Recommended practices and further recommendations

The following table contains the recommended practices and further development suggestions collected during pilot execution and evaluation.

Category	Relates to	Recommended practices / Further developments
Recommended practices	UAM	Recommendations to data providers/agencies: - Allocate enough time for the first attempt of the transfer as there are plenty of useful functionalities in UAM which need time to get acquainted with; - The quality of ERMS exported data and metadata may not be sufficient for long time preservation and therefore it is necessary to consider whether the data may need to be rearranged and enriched with additional descriptive metadata before; - Subsequent archival transfers will require less time. Recommendations to archives: - Continue UAM training in agencies; - Look for possibilities to enhance the user-friendliness and intuitive usage of UAM.
Recommended practices	CMIS Portal Browser	- Very useful and necessary tool which provides access to transferred data directly to digital archive. It allows users to see the document in the latest archival format; - The tool is easy to configure. Link of the external interface of the digital archive will be given to the agency to configure the tool; - Easy to administer users. One administrator role will be given to the agency who can manage all others. - It is crucial to have a search feature but as far as this is not available there is need to explain data providers/agencies differences in EDHS and archival classification. - Security issues need to be solved for real production implementation (public network, first login)

Pilots 4 - Business Archives





Pilot 4	**Business Archives**																							
Task leader	National Archives of Estonia																							
Supported by	Estonian Business Archives																							
Scope	Pre-ingest preparation and transfer of business records to a digital archive solution in a business archive																							
Object	bespoke business system that contains database records																							
Short description	Estonian Business Archives, Llc. is a privately owned archiving services provider. The main client base of the company is comprised of private businesses in Estonia for archiving and preservation of both paper and digital records. The business archives pilot in the E-ARK project will focus on transfer of database records from a private company to the digital archive solution of the Estonian Business Archives.																							
Contacts	**Name (Title)**											**E-mail**										Skype		
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OAIS Relevance	**Pre-Ingest**						**Ingest - Storage**						**Storage – Access**											
E-ARK Formats	E-ARK SIP						E-ARK AIP						E-ARK DIP											
	SIARD 2.0					**X**	SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	**Database Preservation Toolkit**	**ERMS Export Module**	**RODA-In**	**ESSArch Tool for Producer (ETP)**	**Universal Archiving Module**	**SIP creator (E-ARK Web)**	**ESSArch Tools for Archive (ETA)**	**SIP2AIP (E-ARK Web)**	**RODA Repository**	**ESSArch Preservation Platform**	**HDFS-Storage**	**SOLR Index**	**Search and Display GUI**	**Order Management Tool**	**Lily - Ingest**	**Geoserver**	**QGIS**	**E-ARK Web Search**	**AIP2DIP (E-ARK Web)**	**Database Visualization Toolkit**	**IP Viewer**	**Peripleo**	**Oracle (OLAP Viewer)**	**CMIS portal/viewer**
	X																			**X**				
Scenario 1	Migration and Ingest of business records from bespoke business system (Data set 1)																							
Scenario 2	Extracting records from database (Data set 1)																							
Scenario 3	Migration and Ingest of business records from bespoke business system (Data set 2)																							
Scenario 4	Extracting records from database (Data set 2)																							

Scenarios

Scenario 1	**Migration and Ingest of business records from bespoke business system**
Description	Export business records from bespoke business system. Ingest to local archival system of EBA.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Extract and Ingest relational database based on SIARD 2.0
E-ARK specifications	E-ARK SIP, SIARD 2.0
E-ARK Tools	Database Preservation Toolkit
Data	Records from bespoke business system
Description	Business system with 14 tables. The database contains approximately 12 000 records.
Data type	MS-SQL as mdf
Metadata format	none
Quantity	more than 12 000 rows

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP						E-ARK DIP											
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
	X																							

Scenario 2	**Extracting records from database**
Description	Extracting records from database containing no documents.
OIAS relevance	Access (not DIPs involved only restoring data from SIARD packages)
Use-case	Access databases via DBVTK (SQL)
E-ARK specifications	SIARD 2.0
E-ARK Tools	Database Preservation Toolkit
Data	Records from bespoke business system
Description	Business system with 14 tables. The database contains approximately 12 000 records.
Data type	MS-SQL as mdf
Metadata format	none
Quantity	more than 12 000 rows

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage - Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP						E-ARK DIP											
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
																				X				

Scenario 3	**Migration and Ingest of business records from bespoke business system**
Description	Export business records from bespoke business system. Ingest to local archival system of EBA.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Extract and Ingest relational database based on SIARD 2.0
E-ARK specifications	E-ARK SIP, SIARD 2.0
E-ARK Tools	Database Preservation Toolkit
Data	Records from bespoke business system
Description	Business system with 63 tables (+several history and support tables that are not needed for a complete structure of the working database). The database contains approximately 200 000 records.
Data type	MS-SQL as mdf
Metadata format	none
Quantity	more than 200 000 rows

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage – Access	
E-ARK Format specifications	E-ARK SIP		E-ARK AIP		E-ARK DIP	
	SIARD 2.0	X	SMURF ERMS		SMURF SFSB		Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
	X																							

Scenario 4	**Extracting records from database**
Description	Extracting records from database containing no documents.
OIAS relevance	Access (not DIPs involved only restoring data from SIARD packages)
Use-case	Access databases via DBVTK (SQL)
E-ARK specifications	SIARD 2.0
E-ARK Tools	Database Preservation Toolkit
Data	Records from bespoke business system
Description	Business system with 63 tables (+several history and support tables that are not needed for a complete structure of the working database). The database contains approximately 200 000 records.
Data type	MS-SQL as mdf
Metadata format	none
Quantity	more than 200 000 rows

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage – Access	
E-ARK Format specifications	E-ARK SIP		E-ARK AIP		E-ARK DIP	X
	SIARD 2.0		SMURF ERMS	X	SMURF SFSB		Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
																				X				

Please note that more details with screenshots on scenario execution are provided in the deliverable D2.4 Pilot Documentation.

Execution report

The Estonian Business Archives (EBA) wanted to perform only one pre-ingest scenario in a test environment according to plans in D2.3 Detailed Pilot Requirements but as they worked with the tool, wished to substantially extend their work. EBA had good experience with the Database Preservation Toolkit SIARD 2.0 and also wanted to try the Database Visualization Toolkit. Finally EBA have performed 4 scenarios in "business-as-usual" manner, ingesting the SIARD files into their local preservation repository and accessing them through DBVTK.

Scenario	Started	Completed	Summary
1. Migration and Ingest of business records from bespoke business system (Data set 1)	April 2016	September 2016	Scenario performed successfully. Tools worked as required.
2. Extracting records from database (Data set 1)	August 2016	September 2016	Scenario performed successfully. Tools worked as required.
3. Migration and Ingest of business records from bespoke business system (Data set 2)	September 2016	October 2016	Scenario performed successfully. Tools worked as required.
4. Extracting records from database (Data set 2)	September 2016	October 2016	Scenario performed successfully. Tools worked as required.

Changes to the original plans

There were no changes. The scenarios have been performed according to plans in DoW and D2.3 Detailed Pilot Requirements.

Feedback report

The following table summarizes the feedback communication between the pilot staff and tool developers or format specification providers.

E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
Database Preservation Toolkit (version2.0.0-beta4.2)	For the complete issue history, please refer to the GitHub page: https://github.com/keeps/db-preservation-toolkit
Used in tasks	Data extraction – in scenario 1 and 3
Data (input / output)	Input: Business system with 14 tables. The database contains approximately 12 000 records + Business system with 63 tables with approximately 200 000 records Output: SIARD2.0 packages.
Performance	Very good
Issues	There have been several issues with DBPTK related SIARD 2.0 output. KEEP Systems has corrected all the bugs and the response time was excellent. After the completion of the scenarios no known issues remained.
Wishes	None
Comments	None
Experiences and recommended practices	After correcting the early bugs the tool functioned properly.

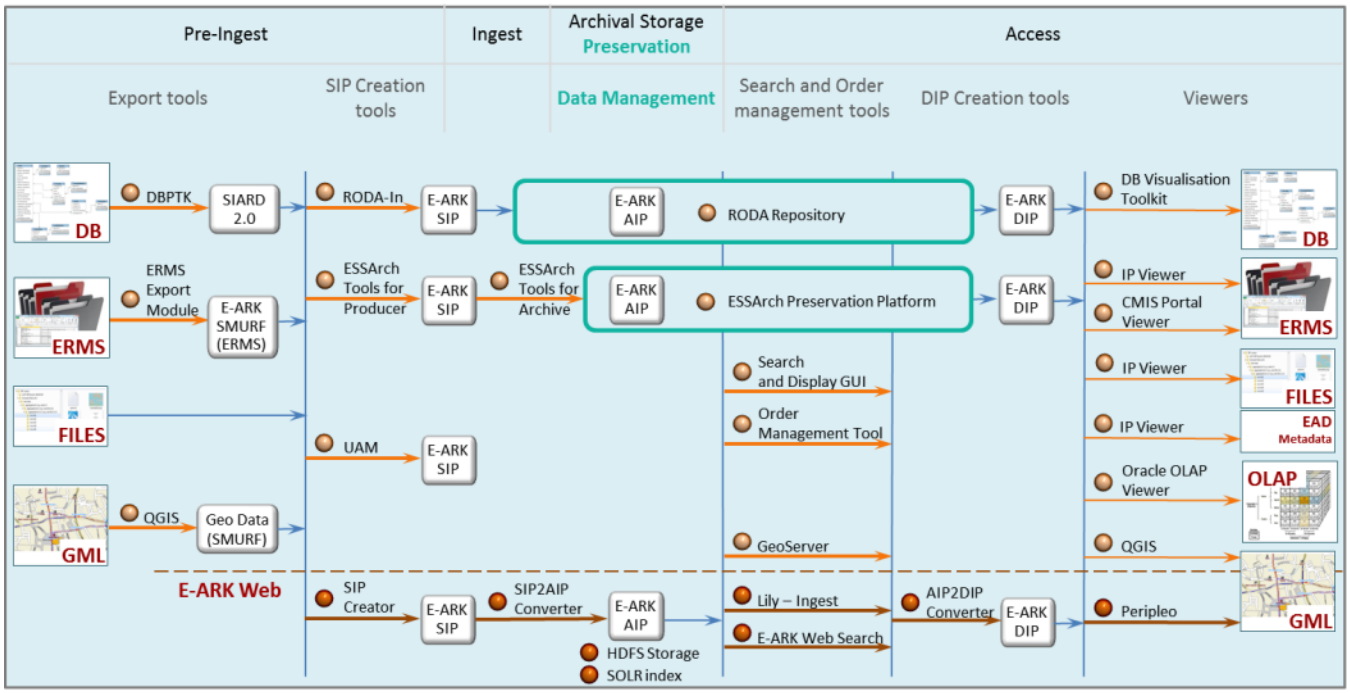
E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
Database Visualization Toolkit	
Used in task	Access – in scenario 2 and 4
Data (input / output)	Input: SIARD 2.0 packages Output: Restored DB tables
Performance	Good
Issues	No issues found
Wishes	None
Comments	None
Experiences and recommended practices	None

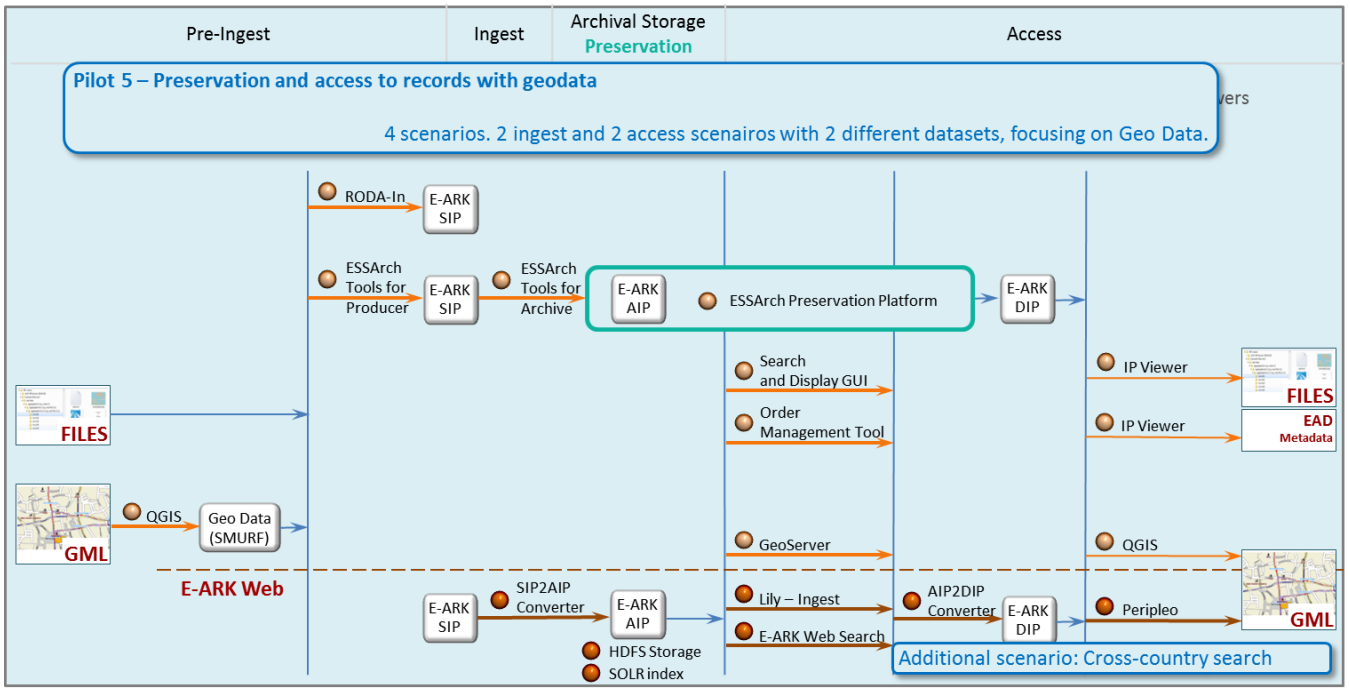
Recommended practices and further recommendations

The following table contains the recommended practices and further development suggestions collected during pilot execution and evaluation.

Category	Relates to	Recommended practices / Further developments
Recommended practices	SIARD 2.0	Manual validation requires a lot of time without SIARD 2.0 validation tools.

Pilots 5 - Preservation and access to records with geodata





Pilot 5	**Preservation and access to records with geodata**
Task leader	National Archives of Slovenia
Supported by	Danish National Archives
Scope	Pilot will prove that the SIP and DIP implementations fulfill specific requirements for the records containing GIS data, test the instructions (for the producer and for the archive) regarding all phases of ingest, to prove that the archival use of GIS data is possible (via open data method, direct access in the archives and use GIS data as search criteria in the DIP contents).
Object	Pilot report with recommendations about urgent improvements and possible future improvements support for WP6 & WP7 setting up the work environment of selected E-ARK archival tools provide real life examples how the project deliverables can be used
Short description	During the e-ARK project the standardized method for ingesting geo data will be developed. This will allow the archives to offer geodata as a selection and display criteria of records by means of integration of current state of the art tools.

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OAIS Relevance	**Pre-Ingest**						**Ingest - Storage**						**Storage – Access**											
E-ARK Formats	E-ARK SIP					**X**	E-ARK AIP					**X**	E-ARK DIP											**X**
	SIARD 2.0						SMURF ERMS						SMURF SFSB					**X**	Geodata					**X**
E-ARK Tools	**Database Preservation Toolkit**	**ERMS Export Module**	**RODA-In**	**ESSArch Tool for Producer (ETP)**	**Universal Archiving Module**	**SIP creator (E-ARK Web)**	**ESSArch Tools for Archive (ETA)**	**SIP2AIP (E-ARK Web)**	**RODA Repository**	**ESSArch Preservation Platform**	**HDFS-Storage**	**SOLR Index**	**Search and Display GUI**	**Order Management Tool**	**Lily - Ingest**	**Geoserver**	**QGIS**	**E-ARK Web Search**	**AIP2DIP (E-ARK Web)**	**Database Visualization Toolkit**	**IP Viewer**	**Peripleo**	**Oracle (OLAP Viewer)**	**CMIS portal/viewer**
			X	**X**			**X**	**X**				**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**		**X**	**X**		
Scenario 1	SIP Creation and Ingest of records with Geodata (Data set 1-2)																							
Scenario 2	Search and Access information using Geodata (Data set 1-2)																							
Scenario 3	SIP Creation and Ingest of records with Geodata (Data set 3)																							
Scenario 4	Search and Access information using Geodata (Data set 3)																							
Additional scenario	Cross-country search with E-ARK Web (joint scenario with NAH)																							

Scenarios

Scenario 1	**SIP Creation and Ingest of records with Geodata**
Description	Create SIP from records and metadata exported from GURS (The Surveying and Mapping Authority of the Republic of Slovenia). SIP creation and ingest of at least one small vector geodata set with less than 100 records and one with more than 1000 records. Archivist creates a Submission agreement for SIP creation, according to E-ARK guidelines for geodata SIP creation. Producer creates a SIP containing geodata, according to Submission agreement, based on EARK SIP specifications for geodata. Archivist technically validates the submitted SIP package, according to E-ARK guidelines for geodata SIP creation. Archivist confirms, that content validation of the submitted SIP package was performed. An AIP is generated from the SIP and gets ingested into the archival repository.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Other (SIP Creation and Ingest of records with Geodata)
E-ARK specifications	E-ARK SIP, E-ARK AIP (with GeoData)
E-ARK Tools	RODA-In, ESSArch Tools Archive (ETA), SIP2AIP (E-ARK Web), ESSArch Preservation Platform, EAD Editor, QGIS
Data	Two sets from the Surveying and Mapping Authority of the Republic of Slovenia: 1.) Records and metadata of municipalities as valid until 1994, exported from GURS, database 2.) Records and metadata of administrative units until 1994, exported from GURS
Description	Records and metadata of maps with Geodata
Data type	GML document with metadata in XML format, ESRI Shapefile, csv
Metadata format	ISO 19115 (INSPIRE)
Quantity	62 records (cca. 3MB) + 1204 records (cca. 12,4 MB)

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP					X	E-ARK AIP					X	E-ARK DIP											X
	SIARD 2.0						SMURF ERMS						SMURF SFSB					X	Geodata					X
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
			X				X	X		X		X					X							

Scenario 2	**Search and Access information using Geodata**
Description	Create DIP from AIP containing record with Geodata. Present Geodata information with QGIS along with content and metadata from DIP. A data object containing geodata can be identified by using search criteria as specified by E-ARK Tool requirement specification after search index was updated from an AIP. Selected data objects are selected and order is issued. DIP is prepared according to order specification and end user credentials. DIP file structure with file descriptions (mime type, short description) is presented to the end user. Geodata from the order can be accessed in the designated viewer (QGIS). The user checks authenticity of the DIP by accessing PREMIS documentation. Access to DIP is documented and captured metadata can be exported.
OIAS relevance	Access
Use-case	Other (Access of records with Geodata)
E-ARK specifications	E-ARK AIP, E-ARK DIP (with GeoData)
E-ARK Tools	Search and Display GUI, Order Management Tool, Lily – Ingest, ESSArch Preservation Platform, E-ARK Web (Search), AIP2DIP (E-ARK Web), IP Viewer, QGIS, Geoserver, Peripleo
Data	Two sets from the Surveying and Mapping Authority of the Republic of Slovenia:

	1.) Records and metadata of municipalities as valid until 1994, exported from GURS, database 2.) Records and metadata of administrative units until 1994, exported from GURS
Description	Records and metadata of maps with Geodata
Data type	GML document with metadata in XML format, ESRI Shapefile, csv
Metadata format	ISO 19115 (INSPIRE)
Quantity	62 records (cca. 3MB) + 1204 records (cca. 12,4 MB)

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage - Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP					X	E-ARK DIP											X
	SIARD 2.0						SMURF ERMS						SMURF SFSB					X	Geodata					X
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
												X	X	X	X	X	X	X	X		X	X		

Scenario 3	**SIP Creation and Ingest of records with Geodata**
Description	Create SIP from records and metadata exported from ARSO (Environmental Agency of Republic of Slovenia). SIP creation and ingest of at least one vector geodata with at least 250 records. Data is exported directly from their own system into GML format. And their system also exports INSPIRE metadata. Archivist creates a Submission agreement for SIP creation, according to E-ARK guidelines for geodata SIP creation. Producer creates a SIP containing geodata, according to Submission agreement, based on EARK SIP specifications for geodata. Archivist technically validates the submitted SIP package, according to E-ARK guidelines for geodata SIP creation. Archivist confirms, that content validation of the submitted SIP package was performed. An AIP is generated from the SIP and gets ingested into the archival repository.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Other (SIP Creation and Ingest of records with Geodata)
E-ARK specifications	E-ARK SIP, E-ARK AIP (with GeoData)
E-ARK Tools	ESSArch Tools Producer (ETP), ESSArch Tools Archive (ETA), ESSArch Preservation Platform, EAD Editor, QGIS
Data	Records and metadata of Natura 2000 areas created in 2004, exported from ARSO database
Description	Records and metadata of maps with Geodata
Data type	GML document with metadata in XML format, ESRI Shapefile
Metadata format	INSPIRE
Quantity	286 records (cca. 9,6 MB)

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP						E-ARK DIP											
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
				X			X	X		X		X												

Scenario 4	**Search and Access information using Geadota**
Description	Create DIP from AIP containing record with Geodata. Present Geodata information with QGIS along with content and metadata from DIP. A data object containing geodata can be identified by using search criteria as specified by E-ARK Tool requirement specification after search index was updated from an AIP. Selected data objects are selected and order is issued. DIP is prepared according to order specification and end user credentials. DIP file structure with file descriptions (mime type, short description) is presented to the end user. Geodata from the order can be accessed in the designated viewer (QGIS). The user checks authenticity of the DIP by accessing PREMIS documentation. Access to DIP is documented and captured metadata can be exported.
OIAS relevance	Access
Use-case	Other (Access of records with Geodata)
E-ARK specifications	E-ARK AIP, E-ARK DIP (with GeoData)
E-ARK Tools	Search and Display GUI, Order Management Tool, Lily – Ingest, ESSArch Preservation Platform, E-ARK Web (Search), AIP2DIP (E-ARK Web), IP Viewer, QGIS, Geoserver, Peripleo
Data	Records and metadata of Natura 2000 areas created in 2004, exported from ARSO database
Description	Records and metadata of maps with Geodata
Data type	GML document with metadata in XML format, ESRI Shapefile
Metadata format	INSPIRE
Quantity	286 records (cca. 9,6 MB)

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP					X	E-ARK DIP											X
	SIARD 2.0						SMURF ERMS						SMURF SFSB					X	Geodata					X

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
												X	X	X	X	X	X	X	X		X	X		

Additional scenario	**Cross-country search with E-ARK Web (joint scenario with NAH)**
Description	The SOLR index and E-ARK Web infrastructure theoretically makes it possible to perform a federated search over more than one archive. When the SOLR index of the other archival institution can be “seen” by the search engine (e.g. one institution has access rights to the others SOLR) then it can make a common list of the result. The National Archives of Slovenia and the National Archives of Hungary both have an E-ARK implementation at their pilot sites. This scenario is a simple feasibility study of cross-country search.
OIAS relevance	Access
Use-case	Search and Display
E-ARK specifications	
E-ARK Tools	E-ARK Web
Data	Test data in the SOLR index
Description	The SOLR index of the two archives will be theoretically connected in this sceanrio
Data type	Not relevant
Metadata format	Not relevant
Quantity	small

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage - Access	
E-ARK Format	E-ARK SIP		E-ARK AIP		E-ARK DIP	

specifications	SIARD 2.0						SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
												X						X						

Please note that more details with screenshots on scenario execution are provided in the deliverable D2.4 Pilot Documentation.

Execution report

Two pilots (5, 7) decided to use many tools also testing their compatibility beside their core functionality. The pilot of the Slovenian National Archives (NAS) was focusing on Geodata. NAS has tested the ESSArch tools and E-ARK Web tools with SMURF Geodata specification checking their compatibility with the E-ARK Geodata standard and with each other from SIP creation to accessing graphical Geodata information. E-ARK Web has two deployment options: full deployment and virtual environment. The virtual environment is a compact solution for electronic archiving therefore could be very useful for smaller archives. NAS used the virtual E-ARK Web deployment solution.

Scenario	Started	Completed	Summary
1. Migration and Ingest of business records from bespoke business system (Data set 1)	April 2016	September 2016	After a longer the incompatibility errors were corrected the scenario performed successfully. Tools basically worked as required.
2. Extracting records from database (Data set 1)	July 2016	October 2016	Scenario could not be completed before the Search tool was ready but after completion the scenario performed successfully. Tools worked as required.
3. Migration and Ingest of business records from bespoke business system (Data set 2)	April 2016	October 2016	After a longer the incompatibility errors were corrected the scenario performed successfully. Tools basically worked as required.
4. Extracting records from database (Data set 2)	July 2016	October 2016	Scenario could not be completed before the Search tool was ready but after completion the scenario performed successfully. Tools worked as required.

Additional scenarios	Started	Completed	Summary
Cross-country search with E-ARK Web (joint scenario with NAH)	December 2016	January 2017	The scenario execution was stopped because of security considerations by the archives. The cross-country search is technically feasible but from security point of view it is risky. In the future if the archives build the infrastructure to implement a publicly accessible E-ARK Web solution

			outside their firewall then it can be reached from the search engine of another archive with E-ARK Web.

Changes to the original plans

There were no major changes. The scenarios have been performed according to plans in DoW and D2.3 Detailed Pilot Requirements.

Feedback report

The following table summarizes the feedback communication between the pilot staff and tool developers or format specification providers.

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
ESS Arch tools	For the complete issue history, please refer to the GitHub page: https://github.com/ESSolutions/ESSArch_Tools_Producer https://github.com/ESSolutions/ESSArch_Tools_Archive https://github.com/ESSolutions/ESSArch_EPP
Used in tasks	In all scenario
Data (input / output)	SIP creation and ingest with 3 different datasets
Performance	Good
Issues	There have been several issues at the beginning, mostly incompatibility problems between tools and between tools and the SIP specification. After the completion of the scenarios no known issues remained.
Wishes	None
Comments	None
Experiences and recommended practices	After correcting the early bugs the tool functioned properly.

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
RODA-In (2.0.0 Alpha 7.4)	For the complete issue history, please refer to the GitHub page: https://github.com/keeps/roda-in
Used in tasks	Create SIP - Create an E-ARK Sip Package
Data (input / output)	Input: Unstructured data Output: EARK SIP in a *.zip file
Performance	OK
Issues	No issues left at the end of the pilot
Wishes	None
Comments	The tool is being translated to Slovenian language.
Experiences and best practices	None

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
E-ARK Web (Virtual deployment)	For the complete issue history, please refer to the GitHub page: https://github.com/eark-project/earkweb
Used in tasks	SIP to AIP conversion, Lilly ingest, SOLR search, AIP to DIP conversion
Data (input / output)	Input: 3 different data set

	Output: depending on component
Performance	OK
Issues	No issues left at the end of the pilot
Wishes	None
Comments	None
Experiences and best practices	None

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
Search & Display GUI Order Management Tool	
Used in tasks	Access
Data (input / output)	Input: E-ARK AIP Output: order
Performance	OK
Issues	No issues left at the end of the pilot
Wishes	None
Comments	None
Experiences and best practices	None

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
IP Viewer	
Used in tasks	View DIP
Data (input / output)	Input: DIP
Performance	Good
Issues	None
Wishes	None
Comments	None
Experiences and best practices	None

Recommended practices and further recommendations

Lessons learned

We addressed a real need with our users.

When we started talking to our producers, who were cooperating as pilot sites, they welcomed our propositions. There is a real need for them to know how to archive all the spatial data, that has been accumulating for some years. The guidelines from this project gave them a way to finally structure geodata in a way it is suitable for the archives, as well as an input on how to adjust their current and future systems in order to automate this process.

Bridging the gap of limited network accesses

Since we used two different tools for packaging data it was shown, that a stand-alone tool, like Roda-In is more usable than a web based one (ESS ETP). We are working with different organisations with different types of network security policies, that often disable us from accessing the web based tool from within organisations network. It is also more practical to physically move large quantities of data on a portable disk drive as oposed to streaming it via network.

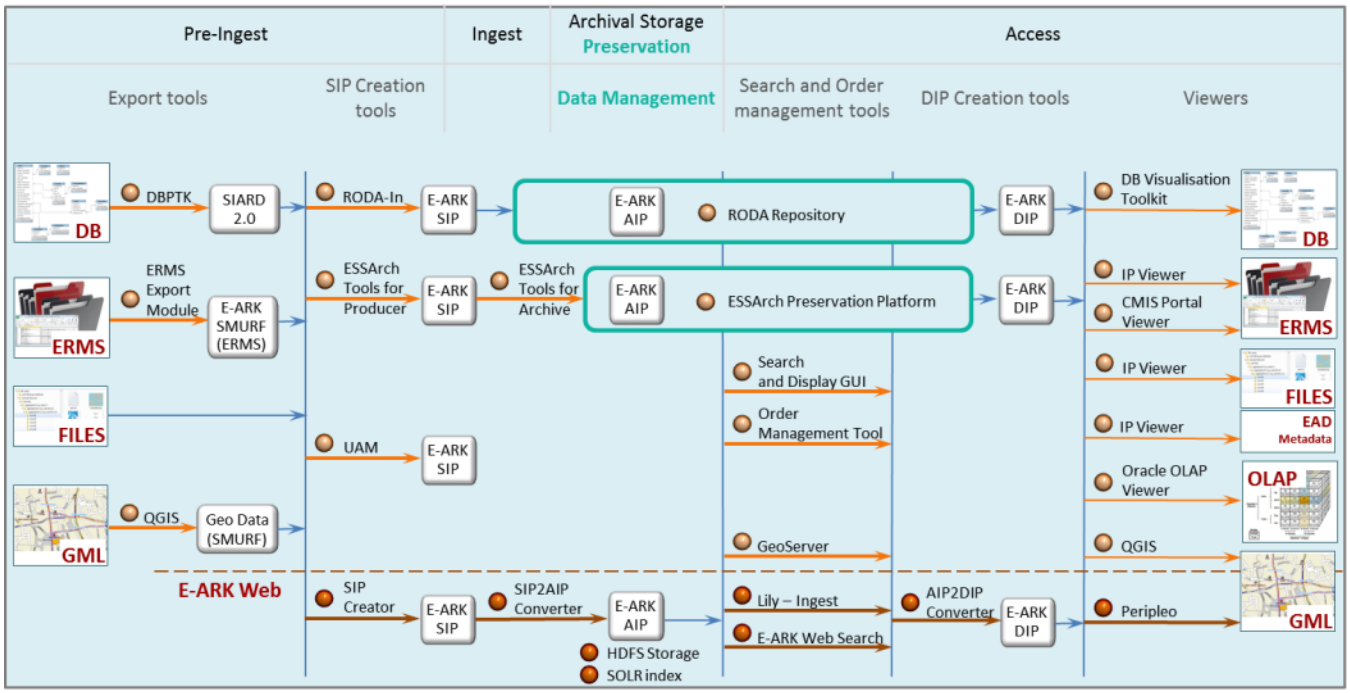
Full text search brings the archival experience closer to our users

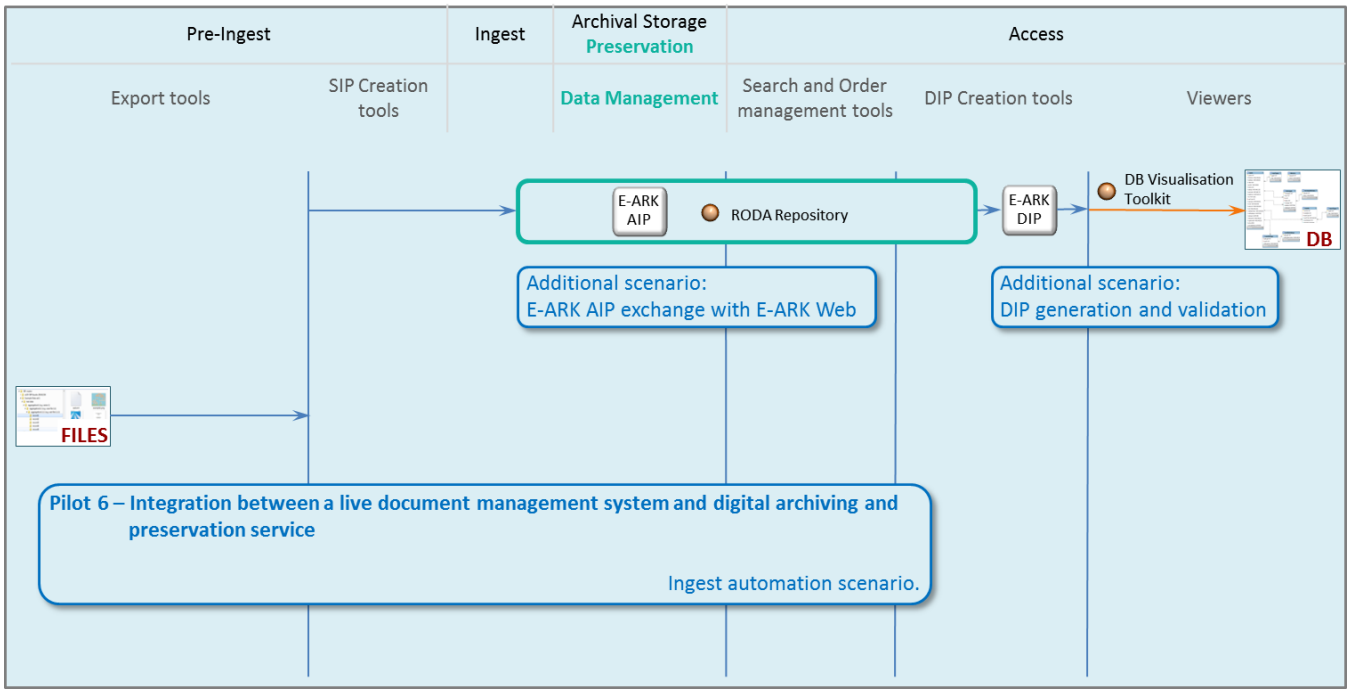
E-ARK Web based SOLR index with the Magenta Search interface brought us a new experience - full text search. Previously the only search option was using the catalogue. This brings our users an experience similar to the way of searching that they are used to already using (Google, Bing…). This provides better search results and less work for our archivists, but only if the data is well described. Therefore we need to assure, that we have good metadata descriptions.

Interoperability between systems – better communication between archives

Our experience using the general E-ARK IP structure through different applications has proven that using a common standard is a good way to ensure interoperability between different archives. This is important when using records that are the same across different archives within a country or even between countries across Europe (like the Natura 2000 record).

Pilots 6 - Integration between a live document management system and digital archiving and preservation service





Pilot 6	**Integration between a live document management system and digital archiving and preservation service**
Task leader	KEEP SOLUTIONS (KEEPS)
Supported by	Instituto Superior Técnico (IST)
Scope	The goal of this pilot is two-fold. On one hand, KEEP SOLUTIONS will demonstrate that the pan-European SIP structure designed in the WP3 is adequate to support the media types found in today's Electronic Records Management Systems (e.g. text documents, video, audio, images, etc) and, on the other hand, that the most adequate and scalable form of ingest is to automate the SIP creation and delivery process to the preservation service.
Object	In order to achieve the goals of this pilot we will tap into two live Electronic Records Management Systems (ERMS) and, based on the appraisal and selection strategies installed, extract, transform, aggregate and create Submission Information Packages (SIP) that conform to the A1:R21-European SIP format defined in WP3. The pilot will also demonstrate the capabilities of the preservation services that follow the transfer of data to repository, namely, ingest and access by providing means to access Dissemination Information Packages from the producers Electronic Records Management Systems served by the preservation service.
Short description	The aim of pilot 6 is to assess the efficacy of the E-ARK Information Package Specifications which defines how metadata and data should be packaged in order to move records between the three stages of records keeping - active, semi-active and inactive. On a typical setting, a record that needs to be archived usually falls into one these three “ages”: - Active - when the metadata and data are “live” being used and modified regularly. - Semi-active - when the metadata and data are archived for a short period – say up to 5 years. - Inactive - when the metadata and data are moved to a long-term repository for permanent conservation. The pilot aims to do ensure the seamless transference of information between the semi-active and the inactive stages in a way that no relevant data or metadata is lost in the process. To accomplish this goal, a special integration tool has been developed that implements the package specifications and orchestrates the entire transfer process. The pilot worked with data from a public institution whose “active” records have been initially produced and managed in an electronic records management system and then transferred to the archival service of that same institution for temporary conservation - semi-active stage. The archival service is, however, not prepared to face the challenges of long-term digital preservation, so the records that have been selected for permanent conservation need to be transferred to a long-term digital repository (the third “age”). This is where this pilot comes in. The whole goal of the pilot is to ensure that the information package specifications developed in E-ARK and the integration procedures developed are appropriate to support the transference of records between a active or semi-active archival system and a long-term preservation repository.

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OAIS Relevance	**Pre-Ingest**		**Ingest - Storage**		**Storage – Access**			
E-ARK Formats	E-ARK SIP	**X**	E-ARK AIP	**X**			E-ARK DIP	**X**
	SIARD 2.0		SMURF ERMS		SMURF SFSB	**X**	Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
									X																
Scenario 1	Automatic ingest of records from a semi-active archival management system																								
Additional scenario	Integration with OMT via E-ARK DIP																								
Additional scenario	Repository succession via E-ARK AIP (E-ARK AIP exchange experiments)																								

Scenarios

Scenario 1	**Automatic ingest of records from a semi-active archival management system**					
Description	This scenario aims to demonstrate the ability to seamlessly transfer data from a semi-active records management system to a long-term preservation repository with little or no human intervention. The scenario is based on real-world operations already in place at a public organization since mid-2015. The scenario enhances the established practice by adding an additional component to its architecture that will be responsible for the long-term preservation of historical records once they reach their inactive age. The long-term preservation repository runs as a back-end service of the Archival Management System and aims to support its data curation activities.					
OIAS relevance	Ingest					
Use-case	Other (Ingest of Archival Management Records using the SMURF profile.)					
E-ARK specifications	E-ARK SIP, E-ARK AIP					
E-ARK Tools	Repository Integration Pipeline (RIP), RODA Repository					
Data	Historical records					
Description	Data used in this pilot scenario was comprised of a collection of digitised books related to the Peninsular War dating from 1778 to 1834. The collection is composed of 964 records stored in a relational database following the semantic elements of EAD. The dataset also contains a total of 34.600 pages of documentation in uncompressed TIFF files at 300 dpi. The total amount of data is around 1.2 TB. This collection can be inspected at its original location at http://arquivo.cm-mafra.pt/details?id=173037.					
Data type	300 dpi uncompressed TIFF files					
Metadata format	EAD					
Quantity	964 records described in EAD containing a total of 34.600 pages of 300 dpi uncompressed TIFF files. The total amount of data is around 1.19 TB.					
OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage – Access	
E-ARK Format specifications	E-ARK SIP	X	E-ARK AIP	X	E-ARK DIP	
	SIARD 2.0		SMURF ERMS		SMURF SFSB	X
					Geodata	X

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
									X															

Additional scenario	**Integration with OMT via E-ARK DIP**
Description	An Archive uses a combination of the Order Management Tool (OMT) and E-ARK IP Viewer to provide access to existing digital objects to its users. In order to articulate the RODA repository system with these tools, a new process has been developed for RODA that enables an archivist to create E-ARK compliant DIPs. These files can then be downloaded and added to the OMT workflows in order to be served to the end-user. The workflow works by selecting an AIP and running a process that generates an E-ARK DIP. The resulting DIP can be downloaded on the RODA user interface and then uploaded to the OMT to be delivered to the end-user. The DIP can also be consulted using the RODA's REST API, for example, to support a more advanced systems integration approach.
OIAS relevance	Access
Use-case	
E-ARK specifications	E-ARK DIP
E-ARK Tools	RODA Repository, Order Management Tool
Data	Test data
Description	Different kinds of letters and documents
Data type	Not relevant
Metadata format	Not relevant
Quantity	small

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage - Access												
E-ARK Format specifications	E-ARK SIP						E-ARK AIP						E-ARK DIP												X
	SIARD 2.0						SMURF ERMS						SMURF SFSB						Geodata						

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
									X					X										

Additional scenario	**Repository succession via E-ARK AIP (E-ARK AIP exchange experiments)**
Description	A repository system has reached the end of its expected lifetime. The head of the Archive has decided to move to a next-generation long-term digital repository system. This will unavoidably imply the migration of metadata records, millions of files, and terabytes of data from the legacy repository system to the newly adopted one. Because of the large scale of this operation, this procedure should entail careful planning, validation and support. However, to simplify the migration of data between the two systems, the head of the Archive opted for a repository system that is compliant with the E-ARK AIP specification. By doing so, the migration of data

	was greatly simplified. Data and metadata does not need to be transformed, restructured or reshaped in any way. AIPs just need to be copied to the storage area of the new repository (or linked to) and the new repository needs to re-index the entire set of AIPs. In order to implement the scenario, a selection of AIPs will be transferred from the RODA repository system to the E-ARK Web reference implementation. Previous to the transference, a process needs to be run over the selected AIPs that will generate a manifest file in the root of the AIP folder (mets.xml). After receiving the AIPs, E-ARK Web will re-index them thus merging them with the rest of its managed data.
OIAS relevance	Archival Storage
Use-case	
E-ARK specifications	E-ARK AIP
E-ARK Tools	RODA Repository, E-ARK Web
Data	Test data
Description	Different kinds of letters and documents
Data type	Not relevant
Metadata format	Not relevant
Quantity	small

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage - Access												
E-ARK Format specifications	E-ARK SIP						E-ARK AIP					X	E-ARK DIP												
	SIARD 2.0						SMURF ERMS						SMURF SFSB						Geodata						
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
									X		X	X												

Please note that more details with screenshots on scenario execution are provided in the deliverable D2.4 Pilot Documentation.

Execution report

The aim of pilot 6 was to assess the efficacy of the E-ARK Information Package Specifications which defines how metadata and data should be packaged in order to move records between the three stages of records keeping - active, semi-active and inactive.

On a typical setting, a record that needs to be archived usually falls into one these three “ages”:

1. Active - when the metadata and data are “live” being used and modified regularly.
2. Semi-active - when the metadata and data are archived for a short period – say up to 5 years.
3. Inactive - when the metadata and data are moved to a long-term repository for permanent conservation.

The pilot aims to do ensure the seamless transfer of information between the semi-active and the inactive stages in a way that ensures that no relevant data or metadata is lost in the process. To accomplish this goal, a special

integration tool was developed that implemented the package specifications and orchestrated the entire transfer process.

The pilot worked with data from a public institution whose “active” records have been initially produced and managed in an electronic records management system and then transferred to the archival service of that same institution for temporary conservation - semi-active stage.The archival service is, however, not prepared to face the challenges of long-term digital preservation, so the records that have been selected for permanent conservation need to be transferred to a long-term digital repository (the third “age”). This is where this pilot comes in.

The whole goal of the pilot was to ensure that the information package specifications developed in E-ARK and the integration procedures developed are appropriate to support the transference of records between an active or semi-active archival system and a long-term preservation repository.

Scenario	Started	Completed	Summary
1. Migration and Ingest of business records from bespoke business system (Data set 1)	May 2016	July 2016	Our initial claim was that a systems integration approach was one of the most effective ways to support demanding archival workflows. In our view, this claim has largely been proven. In a short amount of time, an automatic routine has been developed and implemented that is capable of moving millions of digital objects between the semi-active and inactive stages of an archival workflow with little or no human intervention.

Additional scenarios	Started	Completed	Summary
Integration with OMT via E-ARK DIP Repository succession via E-ARK AIP (E-ARK AIP exchange experiments)	December 2016	January 2017	Until the very end of the project we didn’t know whether we would have time and resources to run these scenarios. The E-ARK DIP has been generated and the E-ARK AIP exported but the evaluation of the integration could not be finished. We are planning to finish the scenarios in the next couple of weeks.

Changes to the original plans

At the pilot planning phase the Porto Municipality also showed great interest in participating in an automatic ingest scenario. So a second, additional, scenario was planned with the same E-ARK component and infrastructure. Later they had some resource planning problems with their local developer who was needed to implement the producer-side infrastructure. The discussions and preparations continued until August 2016, when the Porto Municipality finally decided to delay the project. It is still possible that in the near future this additional scenario can be executed, but definitely not within the time frame of the current project.

Feedback report

The following table summarizes the feedback communication between the pilot staff and tool developers or format specification providers.

E-ARK Tool – Version	**Issues (bugs, wishes, comments)** **Experiences / Recommended practices**
RODA Repository	For the complete issue history, please refer to the GitHub page: https://github.com/keeps/roda
Used in tasks	Ingest of records
Data (input / output)	Historical records, 300 dpi uncompressed TIFF files, 1,2 TB
Performance	Good
Issues	None
Wishes	None
Comments	None
Experiences and recommended practices	Real world usage brought new requirements to the ingest process of the repository but these have been solved by the RODA development team.

Recommended practices and further recommendations

This pilot allowed us to learn a few lessons. These are summarised next:

Requirements emerged from the real-world

Working with a real-world data and workflows enabled us to understand that additional requirements had to be accommodated by the repository system. For example, the ingest workflow had to be revised to support the capability of updating existing AIPs with information included in SIPs (called Update SIPs). Also, the full support for Update SIPs had to be added to the specification and software libraries. Moreover, in an unattended systems integration, resilience is an important characteristic. Retry mechanisms had been added to the RIP application to cope with network failures and temporary service unavailability.

Well-established patterns proved to be a successful formula

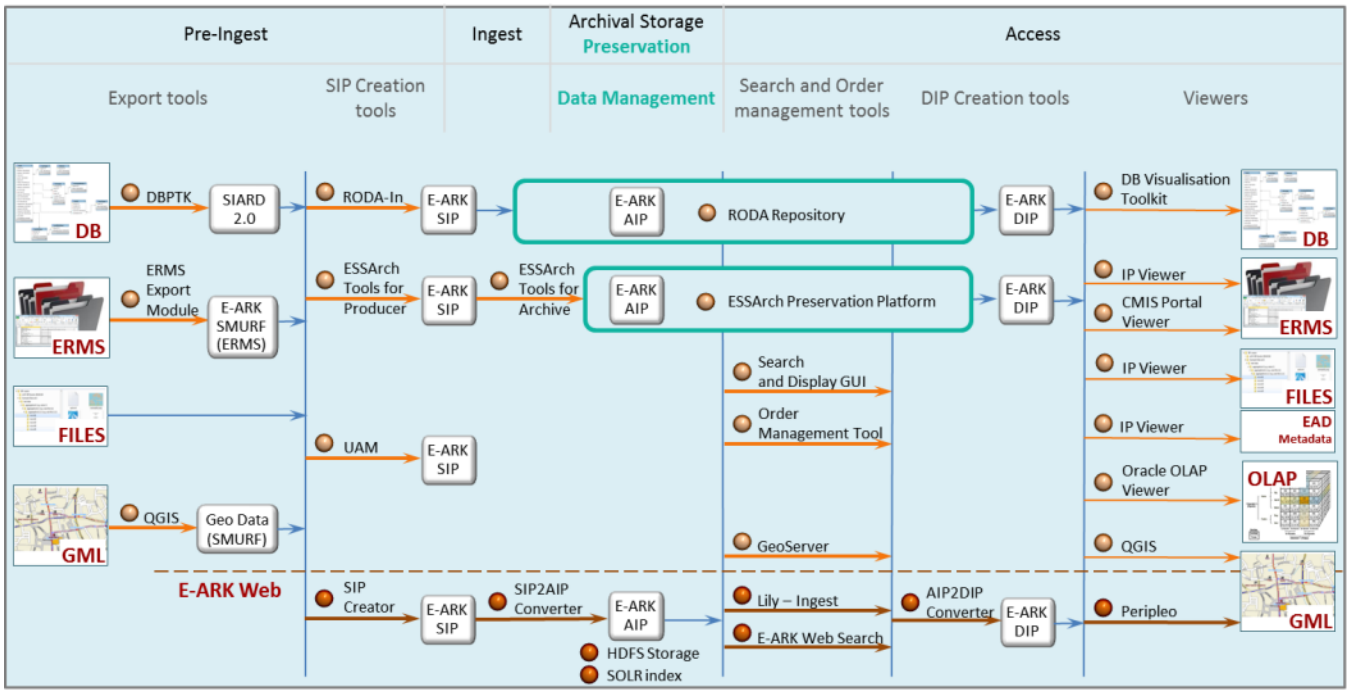
The RIP application follows a well-established software design pattern called “Pipes and Filters”. This pattern makes use of a sequence of tasks (called “filters”) that handle part of the entire processing workflow. Each filter is programmed to be simple and stateless. Streaming of data is used whenever possible, enabling the following filters to start processing data even before the entire set of data is completely processed by the previous filter. The most interest aspect of this pattern is the fact that it is possible to change filters in the chain of processing without breaking the processing workflow. This means that the same workflow can be used to process data from different data sources, thus enabling the reuse of the application in many different scenarios. For example, other scenarios have been experimented hat take as input a well-structured folder system and by merely changing the data source filter we were able to ingest data with very little effort.

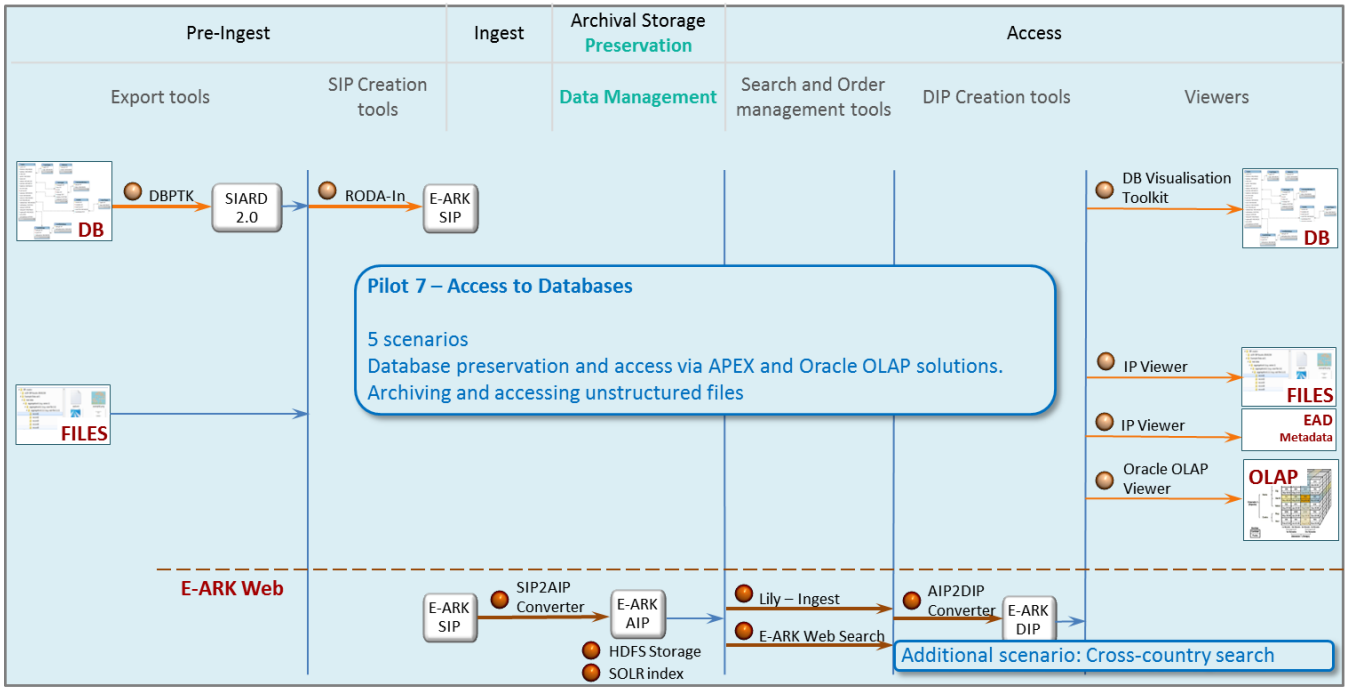
Systems integration is the way forward

Our initial claim was that a systems integration approach was one of the most effective ways to support demanding archival workflows. In our view, this claim has largely been proven. In a short amount of time, an automatic routine has been developed and implemented that is capable of moving millions of digital objects between the semi-active

and inactive stages of an archival workflow with little or no human intervention. There are always questions of accountability and quality assurance of the entire process, however, the repository side already supports a human validation step at the end of its ingest workflow. This helps to mitigate the previously outlined issues as in the end there is a human expert that attests the quality of the entire process.

Pilots 7 – Access to Databases





Pilot 7	**Access to Databases**		
Task leader	National Archives of Hungary		
Supported by	Danish National Archives		
Scope	Representation of not less than 2 databases of different sizes and complexities with restricted and open content.		
Object	Extract data from the EDRMS and the databases, create SIPs for structured and unstructured records using the ESSArch Tools, ingest the SIPs to the repository using the ESSArch Preservation Platform, for further evaluation		
Short description	NAH will extract structured content from an Oracle database with the tools developed by WP3. The pilot will examine the applicability of data-warehouse concepts in an archival environment in order to maintain both the original structure and intellectual interpretability of ingested data. The working prototype for access will be a user-friendly web-based application based on the DIP specification of WP5		
Contacts	**Name (Title)**	**E-mail**	Skype
Contact Person	Zoltan Lux	lux.zoltan@mnl.gov.hu	lux.zoltan1
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OAIS Relevance	**Pre-Ingest**						**Ingest - Storage**						**Storage – Access**											
E-ARK Formats	E-ARK SIP					X	E-ARK AIP					X	E-ARK DIP											X
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB					X	Geodata					X
E-ARK Tools	**Database Preservation Toolkit**	**ERMS Export Module**	**RODA-In**	**ESSArch Tool for Producer (ETP)**	**Universal Archiving Module**	**SIP creator (E-ARK Web)**	**ESSArch Tools for Archive (ETA)**	**SIP2AIP (E-ARK Web)**	**RODA Repository**	**ESSArch Preservation Platform**	**HDFS-Storage**	**SOLR Index**	**Search and Display GUI**	**Order Management Tool**	**Lily - Ingest**	**Geoserver**	**QGIS**	**E-ARK Web Search**	**AIP2DIP (E-ARK Web)**	**Database Visualization Toolkit**	**IP Viewer**	**Peripleo**	**Oracle (OLAP Viewer)**	**CMIS portal/viewer**
	X		X			X		X			X	X			X			X	X		X		X	
Scenario 1	SIP Creation and Ingest of old (not normalized) database in SIARD 2.0 format																							
Scenario 2	SIP Creation and Ingest of unstructured files																							
Scenario 3	"Extract SIARD Package from Preservica/E-ARK AIP																							
Scenario 4	(APEX/Oracle BI access)"																							
Scenario 5	"Search and present SIARD based information with E-ARK access tools																							
Additional scenario	Cross-country search with E-ARK Web (joint scenario with NAH)																							

Scenarios

Scenario 1	**SIP Creation and Ingest of old (not normalized) database in SIARD 2.0 format**
Description	Create SIP from old (not normalized) database B25. The data is in CSV exports of DBASE files. Create both E-ARK and local SIPs and ingest them into E-ARK Web HDFS storage and Preservica archival repository. Both E-ARK and local AIPs are generated during the ingest.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Relational database based on SIARD 2.0
E-ARK specifications	E-ARK SIP, E-ARK AIP

E-ARK Tools	DBPTK, RODA-In, SIP2AIP (E-ARK Web), HDFS-Storage
Data	Hungarian Prosecution Office database
Description	Old (not normalized) database in CSV exports of DBASE files.
Data type	CSV files
Metadata format	none
Quantity	more then 300.000 cases and 500.000 name. (1,6 GB)

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP					X	E-ARK AIP					X	E-ARK DIP											
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
	X		X			X		X			X													

Scenario 2	**SIP Creation and Ingest of unstructured files**
Description	Create SIP from scanned documents of the Meeting minutes of the Central Coimmettee of the Hungarian Socialist Party. The image files are in PDF format with EAD metadata. Create both E-ARK and local SIPs and ingest them into B27and Preservica archival repository. Both E-ARK and local AIPs are generated during the ingest.
OIAS relevance	Pre-Ingest, Ingest
Use-case	Other (Extract and Ingest computer files from simple file-system)
E-ARK specifications	E-ARK SIP, E-ARK AIP
E-ARK Tools	RODA-In, SIP2AIP (E-ARK Web), HDFS-Storage
Data	Scanned meeting minutes of the Central Committee of the Hungarian Socialist Party
Description	Scanned documents in file systems in PDF file and corresponding metadata (EAD)
Data type	PDF/JPG files (representations)
Metadata format	EAD
Quantity	123.225 files. (101 GB)

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP					X	E-ARK AIP					X	E-ARK DIP											
	SIARD 2.0						SMURF ERMS						SMURF SFSB					X	Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
			X			X		X			X													

Scenario 3	**Extract SIARD Package from Preservica/E-ARK AIP**
Description	Access database information of the Hungarian Prosecution Office in SIARD format using APEX and OWB access. Both E-ARK and local DIPs are generated during access.

OIAS relevance	Access
Use-case	Other (Access database via APEX and Oracle BI)
E-ARK specifications	E-ARK AIP, E-ARK DIP
E-ARK Tools	HDFS-Storage , Lily – Ingest, E-ARK Web (Search), AIP2DIP (E-ARK Web) , DBVTK
Data	Hungarian Prosecution Office database
Description	Old (not normalized) database in CSV exports of DBASE files.
Data type	CSV files
Metadata format	none
Quantity	more then 300.000 cases and 500.000 name. (1,6 GB)

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP					X	E-ARK DIP											X
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
											X	X			X			X	X		X			

Scenario 4	**Search and present SIARD based information with E-ARK access tools**
Description	Access database information of the Hungarian Prosecution Office in SIARD format using HADOOP based search and access with HIVE Lily Presentation in local environment.
OIAS relevance	Access
Use-case	Access data with OLAP via oracle
E-ARK specifications	E-ARK AIP, E-ARK DIP
E-ARK Tools	HDFS-Storage , Lily – Ingest, E-ARK Web (Search), AIP2DIP (E-ARK Web) , DBVTK
Data	Hungarian Prosecution Office database
Description	Old (not normalized) database in CSV exports of DBASE files.
Data type	CSV files
Metadata format	none
Quantity	more then 300.000 cases and 500.000 name. (1,6 GB)

OAIS Relevance	Pre-Ingest						Ingest - Storage						Storage – Access											
E-ARK Format specifications	E-ARK SIP						E-ARK AIP					X	E-ARK DIP											X
	SIARD 2.0					X	SMURF ERMS						SMURF SFSB						Geodata					
E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
											X	X			X			X	X				X	

Scenario 5	**Access information from unstructured files**
Description	Create DIP from scanned documents of the Meeting minutes of the Central Coimmettee of the Hungarian

	Socialist Party. The image files are in PDF format with EAD metadata in E-ARK Web HDFS storage and Preservica. Create both E-ARK and local DIPs.
OIAS relevance	Access
Use-case	Access databases via SOLR (no-sql) Access data from E-ARK web / HDFS storage and from locals system. SOLR is used for search the full text index generated of the documents.
E-ARK specifications	E-ARK AIP, E-ARK DIP
E-ARK Tools	HDFS-Storage, AIP2DIP (E-ARK Web), , Lily – Ingest, E-ARK Web (Search), Single file Viewr
Data	Scanned meeting minutes of the Central Committee of the Hungarian Socialist Party
Description	Scanned documents in file systems in PDF file and corresponding metadata (EAD)
Data type	PDF/JPG files (representations)
Metadata format	EAD
Quantity	123.225 files. (101 GB)

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage – Access	
E-ARK Format specifications	E-ARK SIP		E-ARK AIP	X	E-ARK DIP	X
	SIARD 2.0		SMURF ERMS		SMURF SFSB	X
					Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
											X	X			X			X	X		X			

Additional scenario	**Cross-country search with E-ARK Web (joint scenario with NAS)**
Description	The SOLR index and E-ARK Web infrastructure theoretically makes it possible to perform a federated search over more than one archive. When the SOLR index of the other archival institution can be “seen” by the search engine (e.g. one institution has access rights to the others SOLR) then it can make a common list of the result. The National Archives of Slovenia and the National Archives of Hungary both have an E-ARK implementation at their pilot sites. This scenario is a simple feasibility study of cross-country search.
OIAS relevance	Access
Use-case	Search and Display
E-ARK specifications	
E-ARK Tools	E-ARK Web
Data	Test data in the SOLR index
Description	The SOLR index of the two archives will be theoretically connected in this sceanrio
Data type	Not relevant
Metadata format	Not relevant
Quantity	small

OAIS Relevance	Pre-Ingest		Ingest - Storage		Storage - Access	
E-ARK Format specifications	E-ARK SIP		E-ARK AIP		E-ARK DIP	
	SIARD 2.0		SMURF ERMS		SMURF SFSB	
					Geodata	

E-ARK Tools	Database Preservation Toolkit	ERMS Export Module	RODA-In	ESSArch Tool for Producer (ETP)	Universal Archiving Module	SIP creator (E-ARK Web)	ESSArch Tools for Archive (ETA)	SIP2AIP (E-ARK Web)	RODA Repository	ESSArch Preservation Platform	HDFS-Storage	SOLR Index	Search and Display GUI	Order Management Tool	Lily - Ingest	Geoserver	QGIS	E-ARK Web Search	AIP2DIP (E-ARK Web)	Database Visualization Toolkit	IP Viewer	Peripleo	Oracle (OLAP Viewer)	CMIS portal/viewer
												x						x						

Execution report

Two pilots (5, 7) decided to test tools' compatibility beyond their core functionality. The core of the Hungarian pilot infrastructure was the E-ARK Web. E-ARK Web has two deployment options, Hungary used the full deployment. In the beginning it was necessary to create a common understanding between AIT (as developer) and NAH (as user) of a very complex system. It was necessary to ensure that everyone understood how it works, and what the idea behind some of the features is. The AIT developers were eager to create a very usable set of components and helped in every way. At the end we think that E-ARK Web is very useful solution and it can be well combined with other E-ARK tools.

Scenario	Started	Completed	Summary
1. SIP Creation and Ingest of old (not normalized) database in SIARD 2.0 format	April 2016	September 2016	283 SIARD 2.0 packages have been created and ingested to Preservica.
2. SIP Creation and Ingest of unstructured files	May 2016	October 2016	3703 SIPs have been created and ingested to Preservica.
3. "Extract SIARD Package from Preservica/E-ARK AIP	June 2016	October 2016	Data Explorer (Oracle APEX) was used in this scenario for accessing the databases archived in SIARD 2.0 packages. Scenario has been successfully performed.
4. (APEX/Oracle BI access)"	October 2016	November 2016	Access to database information archived in SIARD 2.0 format was provided using HADOOP based search and access with Lily Presentation in local environment. By OWB the original model can be converted into a Data Warehouse model.
5. "Search and present SIARD based information with E-ARK access tools	September 2016	October 2016	DIP was successfully created for the archived scanned documents.

Additional scenarios	Started	Completed	Summary
Cross-country search with E-ARK Web (joint scenario with NAS)	December 2016	January 2017	The scenario execution was suspended because of security considerations by the archives. The cross-country search is technically feasible but from security point of view it is risky. In the future if the archives build the infrastructure to implement a publicly accessible E-ARK Web solution outside their firewall then it can be reached from the search engine of another archive with E-ARK Web.

Changes to the original plans

There were no major changes. The scenarios have been performed according to plans in DoW and D2.3 Detailed Pilot Requirements.

Feedback report

E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
E-ARK Web (Virtual deployment)	For the complete issue history, please refer to the GitHub page: https://github.com/eark-project/earkweb
Used in tasks	SIP to AIP conversion, Lilly ingest, SOLR search, AIP to DIP conversion
Data (input / output)	Input: 2 different data set Output: depending on component
Performance	OK
Issues	At the beginning there were some issues, mostly with compatibility. No issues left at the end of the pilot
Wishes	None
Comments	None
Experiences and best practices	None

E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
Database Preservation Toolkit (version2.0.0-beta4.2)	For the complete issue history, please refer to the GitHub page: https://github.com/keeps/db-preservation-toolkit
Used in tasks	Data extraction – scenario 1
Data (input / output)	Input: Hungarian prosecution office data Output: SIARD2.0 package
Performance	Excellent
Issues	There have been several issues with DBPTK related SIARD 2.0 output. KEEP Systems has corrected all the bugs and the response time was excellent. After the completion of the scenarios no known issues remained.
Wishes	A tool or function for automatic validation of SIARD 2.0 would be nice to have.
Comments	None
Experiences and recommended practices	None

E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
RODA-In (2.0.0 Alpha 7.4)	For the complete issue history, please refer to the GitHub page: https://github.com/keeps/roda-in
Used in tasks	Create SIP - Create an E-ARK SIP Package
Data (input / output)	Input: Unstructured data Output: EARK SIP in a *.zip file
Performance	OK
Issues	No issues left at the end of the pilot
Wishes	None
Comments	None
Experiences and best practices	None

E-ARK Tool – Version	Issues (bugs, wishes, comments) Experiences / Recommended practices
IP Viewer	
Used in tasks	View DIP

Data (input / output)	Input: DIP
Performance	Good
Issues	None
Wishes	None
Comments	None
Experiences and best practices	None

Recommended practices and further recommendations

AIT – E-ARK WEB

EARK WEB's SIP creator is a very simple application for real-life scenarios. We have therefore been using the more complex RODA-In instead.

Even if only ingesting one SIP we recommend to use the Batch SIP ingest, because it goes through almost every ingest task automatically, so you don't have to click and run every tasks manually! But in order to understand the workflow one should use it manually once or twice.

Please note that using Batch SIP Ingest AIPs won't get uploaded into Lily automatically. In a later step one can load the AIPs into Lily.

RODA-In

RODA-in offers a lot of features that makes SIP creation very easy and fast. Take your time and examine all the possibilities.

If you select a folder tree and drop it in the centre, and want to fill out the metadata cells with similar data: you can just hold CTRL and select every SIP in the centre field, and fill out the metadata cells on the right, and hit OK. Now you have the similar metadata for the selected SIPs. Some metadata cells cannot be the same.

We had many folders in a root folder, and every single folder had two subfolders. We had dropped them into the centre field and used the second option, that means every single folder will be an SIP. On the right side we created a second representation and we separated those two folders into rep1 and rep2. The type of the files were jpg in the first and pdf/a in the second folder.

DBPTK/DBVTK

If you would like to use DBVTK and DBPTK, make sure the version of DBPTK is compatible with DBVTK version that you would like to use or later you might have to recreate every single SIARD file.

When you make an export from an Oracle DB with DBPTK, and you want to import it into your own database: you might have to recreate the same environment to import the SIARD into, because there could be a problem with the tablespace names.

Oracle Warehouse Builder and OLAP Viewer

This is a very nice and informative way of presenting data. It should be noted, however, that the whole procedure of creating this result requires a lot of effort. This not an automatic procedure of DIP creation.

External evaluations

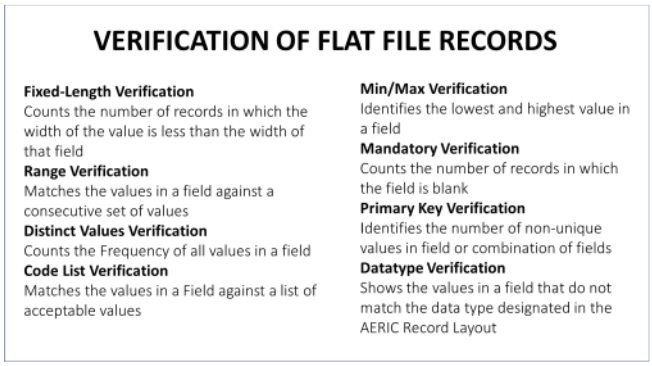
We have been encountering a growing interest about the E-ARK project and its results in the archival community. At DLM Forum meetings and at the E-ARK Final Conference we have talked to people who have not only showed general interest about E-ARK tools and format specifications but have plans to try them in the near future and asked for support in specific problems.

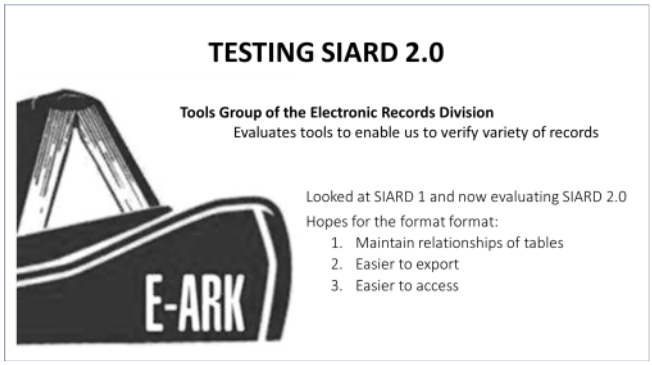
Promoting and supporting external evaluation of our products has been primary task at WP2. An external evaluation or validation, according to the Description of Work, is an evaluation or implementation of E-ARK products by members of DLM Forum and DPC or third parties outside the project with limited involvement from consortium members.

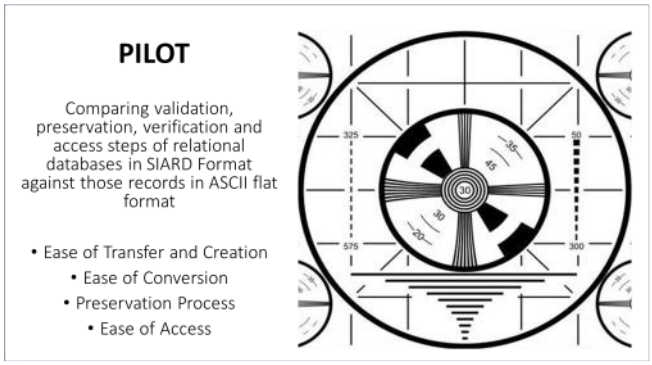
The following organisations have performed (or performing) external evaluation activities during the project:

Organization	Title	Scenario Description	Data set
National Archives and Records Administration (NARA, USA)	Testing SIARD 2.0	NARA has performed 1 pre-ingest, 1 pre-ingest/ingest and 1 access scenarios archiving 2 different databases as SIARD 2.0 files with Database Preservation Toolkit. NARA has generated SIARD 2.0 files from databases, created SIPs in local format and ingested them to their local preservation system.	Status: Completed
Ministerio de Hacienda y Función Pública (MinHAP)	Archiving complete databases	MinHAP plans to test DBPTK for archiving databases. They are generating SIARD 2.0 files from MySQL and later from Oracle databases. Also testing E-ARK SIP creation tools for creating E-ARK SIP format information packages in the future but today MinHAP uses the Spanish SIP standard.	Status: In progress
Swiss Federal Archive (SFA)	SIARD 2.0 validation	Testing DBPTK and validate DBTK's SIARD 2.0 output. The new version of SIARD has been developed in cooperation by the E-ARK project and the Swiss Federal Archive. SFA plans to test DBTK and validate the created SIARD 2.0 files.	Status: Under preparation
Agenda Open Systems	Testing the possible use of ERMS Export Module	Agenda Open Systems is an Alfresco service provider in Slovenia. They are interested in the product. The latest version with source code has been sent to AOS lately.	Status: Under preparation
National Archives of Chile (NACh)	Piloting E-ARK toolset for electronic archiving	The NACh has no electronic archival solution so far. They had been planning to launch one when they heard about the E-ARK project. We've been having several conversations over the possibilities of trying a subset of E-ARK tool portfolio with their consultant Daniel Cáceres in the subject. They are really interested but organizational and IT arrangements go very slowly. At the time of this report there is no official decision about the project.	Status: Preliminary arrangements are in progress at the archive in order to test and launch their first electronic archival solution.

The following slides are from the presentation by Brett Abrams of NARA at the E-ARK Final Conference, at Budapest.







Please note that at moment of finishing this document some of the above external evaluation scenarios are still in progress. Since they are outside of the project E-ARK had no influence on resource planning or scheduling these activities.

We have found it very encouraging that major external organisations are already starting to work with our project tools in preparation to deploy them operationally.

E-ARK project members are committed to promote and support above and later external evaluations after the official ending of the project.

Pilot evaluation

This chapter provides an evaluation of the pilots against their goal given as detailed success criteria by the document D2.3 Detailed Pilot Requirements.

Work Package 2 Objectives (according to the Description of Work):

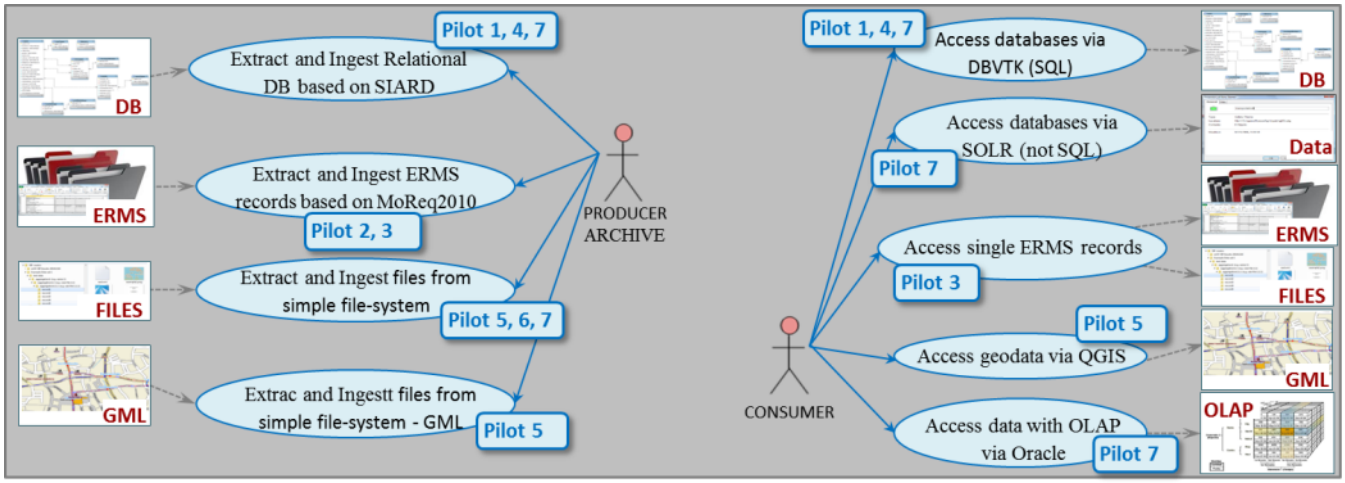
> The overall objective of this work package is to ensure that the scenarios implemented at 7 identified pilot sites are both realistic and relevant. That is, that they bring together a meaningful subset at each site of the use cases that define establish a general model of the E-ARK service.

Project level pilot success evaluation

Pilot level success criteria as defined in D2.3 Detailed Pilot Requirements

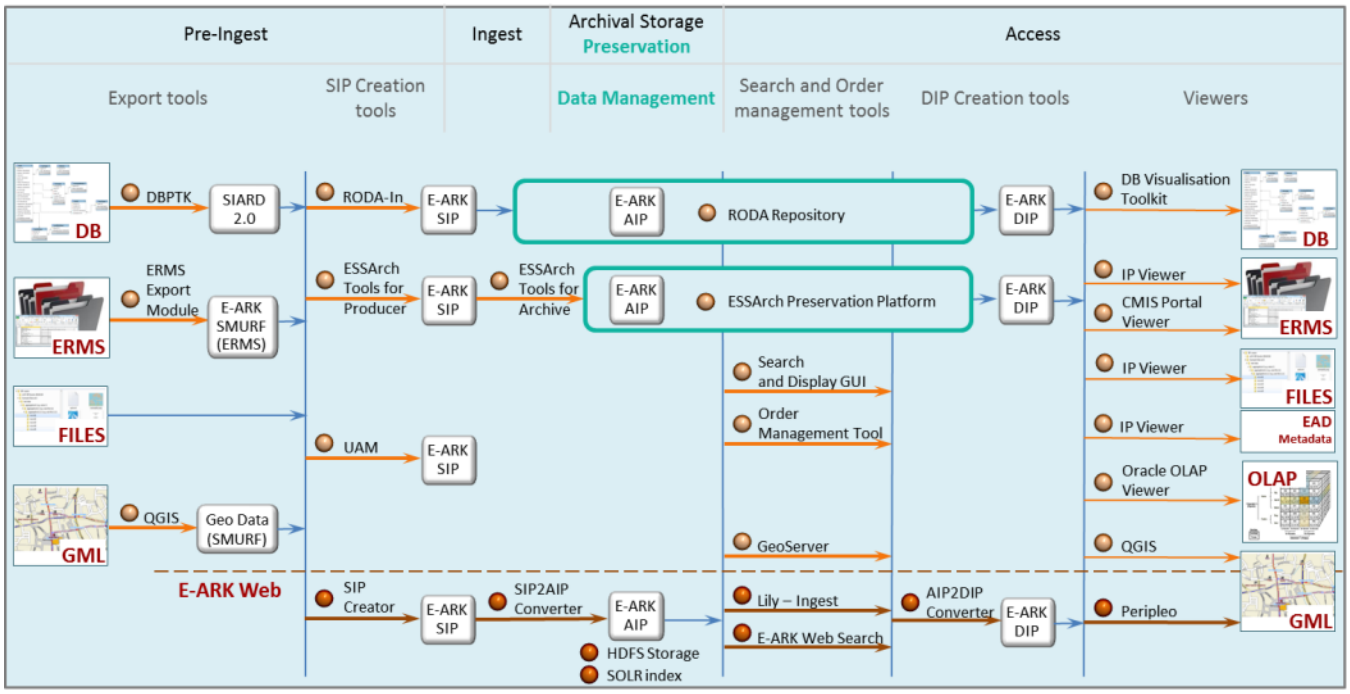
No #	Requirement	MoSCoW	Comment
7.2	The whole E-ARK full-scale pilot is successful if all the high-level E-ARK use cases are piloted in at least one of the pilots	M	
7.3	The whole E-ARK full-scale pilot is successful if all of the core E-ARK tools are piloted in at least one of the pilots	M	
7.4	The whole E-ARK full-scale pilot is successful if most of the E-ARK web (Integrated Prototype) tools are piloted in at least one of the pilots	M	

E-ARK uses-cases



	Use Case	Pilot	Scenario	Succesfull?
Pre-Ingest	Extract and Ingest relational database based on SIARD 2.0	Pilot 1 Pilot 4 Pilot 7 External evaluation	Scenario 1-4 Scenario 1-4 Scenario 1 NARA, MinHAP, SFA	✓
	Extract and Ingest ERMS records based on MoReq2010	Pilot 2 Pilot 3 Pilot 1,3	Scenario 1-3 Scenario 1,3 Additional sc.	✓
	Extract and Ingest computer files from simple file-system – GML	Pilot 5	Scenario 1,3	✓
	Extract and Ingest computer files from simple file-system - Other (please specify)	Pilot 5 Pilot 6 Pilot 7	Scenario 1,3 Scenario 1 Sceanrio 2	✓
Ingest	Ingest E-ARK SIP (Generate E-ARK AIP)	Pilot 2 Pilot 5 Pilot 6 Pilot 7	Scenario 1-3 Scenario 1,3 Scenario 1 Scenario 1-2	✓
Access	Access databases via DBVTK (sql)	Pilot 4 Pilot 1	Scenario 1-4 Additional sc.	✓
	Access databases via SOLR (no-sql)	Pilot 5 Pilot 7	Scenario 3 Scenario 3-5	✓
	Access single ERMS records	Pilot 3 Pilot 2	Scenario 2,4 Additional sc.	✓
	Access geodata via qgis	Pilot 5	Scenario 2,4	✓
	Access data with OLAP via oracle	Pilot 7	Sceanrio 4	✓

E-ARK tools and format specifications



	Tools	Pilot	Scenario	Succesfull?
Pre-Ingest	Database Preservation Toolkit	Pilot 1 Pilot 4 Pilot 7 External evaluation	Scenario 1-4 Scenario 1,2 Scenario 1 NARA, MinHAP, SFA	✓
	ERMS Export Module	Pilot 1 Pilot 3	Additional sc. Additional sc.	✓
	RODA-In	Pilot 5 Pilot 7	Scenario 1 Scenario 1,2	✓
	ESSArch Tool Producer (ETP) - Redesigned UI, E-ARK compatible version	Pilot 2 Pilot 2 Pilot 5	Scenario 1-3 Additional sc. Scenario 3	✓
	Universal Archiving Module	Pilot 3	Scenario 1,3	✓
	SIP creator (E-ARK Web)	Pilot 7	Scenario 2	✓
Ingest	ESSArch Tools Archive (ETA)	Pilot 3 Pilot 5	Scenario 1,3 Scenario 2	✓
	SIP2AIP (E-ARK Web)	Pilot 5 Pilot 7	Scenario 1,2 Scenario 1,2	✓
	RODA Repository	Pilot 6	Scenario 1	✓
	ESSArch Preservation Platform	Pilot 3	Scenario 1,3	✓
	HDFS-Storage	Pilot 7	Scenario 1-5	✓

	Tools	Pilot	Scenario	Succesfull?
Access	SOLR Index	Pilot 5 Pilot 7	Scenario 1-4 Scenario 1-5	✓
	Search and Display GUI	Pilot 5	Scenario 2,4	✓
	Order Management Tool	Pilot 5	Scenario 2,4	✓
	Lily – Ingest	Pilot 5 Pilot 7	Scenario 2,4 Scenario 3-5	✓
	Geoserver	Pilot 5	Scenario 2,4	✓
	QGIS	Pilot 5	Scenario 1-4	✓
	E-ARK Web Search	Pilot 7	Scenario 3-5	✓
	AIP2DIP (E-ARK Web)	Pilot 5 Pilot 7	Scenario 2,4 Scenario 3-5	✓
	Database Visualization Toolkit	Pilot 4 Pilot 1	Scenario 2,4 Additional sc.	✓
	IP Viewer	Pilot 5 Pilot 7	Scenario 2,4 Scenario 5	✓
	Peripleo	Pilot 5	Scenario 2,4	✓
	Oracle (OLAP Viewer)	Pilot 7	Scenario 4	✓
	CMIS portal/viewer	Pilot 3	Scenario 2,4	✓

	Use Case	Pilot	Scenario	Successful?
Information Package format specification	E-ARK SIP (Supplier Information Package)	Pilot 2 Pilot 3 Pilot 5 Pilot 6 Pilot 7	Scenario 1-3 Scenario 1,2 Scenario 1,2 Scenario 1 Scenario 1,2	✓
	E-ARK AIP (Archival Information Package)	Pilot 2 Pilot 5 Pilot 6 Pilot 7	Scenario 1-3 Scenario 1,2 Scenario 1 Scenario 1,2	✓
	E-ARK DIP (Dissemination Information Package)	Pilot 3 Pilot 5 Pilot 7	Scenario 2,4 Scenario 2,4 Scenario 3-5	✓
Content type specification	SIARD 2.0	Pilot 1 Pilot 4 Pilot 7 External evaluation	Scenario 1-4 Scenario 1-4 Scenario 1 NARA, MinHAP, SFA	✓

	E-ARK SMURF ERMS	Pilot 2 Pilot 3 Pilot 1,3	Scenario 1-3 Scenario 1-4 Additional sc.	✓
	E-ARK SMURF SFSB	Pilot 5 Pilot 6 Pilot 7	Scenario 1-4 Scenario 1 Scenario 2,5+D14	✓
	E-ARK SMURF Geodata	Pilot 5	Scenario 1-4	✓

Pilot and scenario level success evaluation

The full-scale pilots have pilot level and scenario level success criteria defined in D2.3 Detailed Pilot Requirements. The following table provides the evaluation details at both levels.

Pilot / Scenario	Success criteria	Successful?
Pilot 1	The following E-ARK tools will be tested in a pilot environment: Database Preservation Toolkit	✓
Scenario 1	Extract records from MS SQL Server database containing 50-60 tables and about 90.000 records. (95% success rate)	✓
Scenario 2	Extract records from MySQL database about 5 million records.(95% success rate)	✓
Scenario 3	Extract records from MS SQL Server database containing documents. (95% success rate)	✓
Scenario 4	Extract records from MS SQL Server database containing documents. (95% success rate)	✓
Pilot 2	The following E-ARK tools will be tested in a pilot environment: ESSArch Tools Producer (ETP), ESSArch Tools Archive (ETA), ESSArch Preservation Platform (EPP). This pilot will be considered a success if we are able to use and evaluate these tools in all three scenarios, producing an output that can be stored in depot. The National Archives of Norway have been using an earlier version of EPP in production for a couple of years, the ETP and ETA are newly developed software from which user experience will be gathered and disseminated during piloting. The new version of ETP was tested in an additional scenario because of the incompatibilities at the producer IT infrastructure. The ETP tool has also been tested in Pilot 5.	✓ ✓
Scenario 1	Ingest around 20 GBs of EDRMS data from public producer converted into Noark 4 output	✓
Scenario 2	Ingest around 5 GBs of EDRMS data from public producer converted into Noark 4 output	✓
Scenario 3	Ingest around 335.000 registered persons (105 MB) from the national registry of licenced hunters.	✓
Pilot 3	The following E-ARK tools will be tested in a pilot environment: ~~ERMS Export Module~~ (see Aditional Scenario), UAM (Universal Archival Module), E-ARK CMIS Browser (Yes/No) The ERMS Export Module was tested in 2 additional scenarios because of the late deployment of the appropriate version corresponding to local producer's requirements.	✓ ✓

Scenario 1	Extract records from EDRM, create and ingest SIP of different documents of Ministry of Justice with different retention period (95% success rate)	✓
Scenario 2	Provide access to archived records of Ministry of Justice (95% success rate)	✓
Scenario 3	Extract records from EDRM, create and ingest SIP of different documents of Ministry of Justice with different retention period (95% success rate)	✓
Scenario 4	Provide access to archived records of Ministry of Justice (95% success rate)	✓
Pilot 4	The following E-ARK tools were tested in a pilot environment: Database Preservation Toolkit (Done), ~~RODA-In~~ (see note below) RODA-In wasn't used in this pilot because the native SIP creation tool was required to ingest into the preservation system of the Business Archives. RODA-In, on the other hand, was tested in Pilot 5 and 7.	✓
Scenario 1	Exporting records from database for more than 12 000 business records from bespoke business system	✓
Scenario 2	Importing records to database for more than 12 000 business records from bespoke business system	✓
Scenario 3	Exporting records from database with files for more than 200 000 business records from bespoke business system (success rate 85% due complicated database architecture)	✓
Scenario 4	Importing records to database with files for more than 200 000 business records from bespoke business system (success rate 85% due complicated database architecture)	✓
Pilot 5	The following E-ARK tools will be tested in a pilot environment: ESSArch Tools Producer (ETP), ESSArch Tools Archive (ETA), ESSArch Preservation Platform (EPP), Search and Display GUI, Order Management Tool , IP Viewer, along with components of the Integrated Prototype (E-ARK Web): ~~Order Submission Service~~(see note below), Lily-Ingest, Geoserver, Peripleo, with the integration of QGIS (Yes/No) In the final order management solution of WP5 Order Submission Service is not a separate software component any more. The planned functionality has been implemented in the Order Management Tool.	✓
Scenario 1	SIP creation, verification and ingest of more than 1000 records with a vector geodata layer. (90% success rate)	✓
Scenario 2	Finding, accessing, modifying and exporting a DIP containing a vector geodata layer of more than 1000 records. (90% success rate)	✓
Scenario 3	SIP creation, verification and ingest of more than 200 records with a vector geodata layer. (90% success rate)	✓
Scenario 4	Finding, accessing, modifying and exporting a DIP containing a vector geodata layer of more than 200 records. (90% success rate)	✓
Pilot 6	Test the E-ARK compatible RODA Repository in a pilot environment. (Yes/No)	✓
Scenario 1	Ingest of no less that 900 historical records in E-ARK SIP format automatically generated by a specially developed integration tool (90% success rate)	✓
Scenario 2	At the pilot planning phase the Porto Municipality also showed great interest in participating in an automatic ingest scenario. So a second scenario was planned with the same E-ARK component and infrastructure. Later they had some resource	**Postponed (Outside scope of**

	planning problems with their local developer who was needed to implement the producer-side infrastructure. The discussions and preparations continued until August 2016, when the Porto Municipality finally decided to delay the project. It is still possible that in the near future this scenario can be executed, but definitely not within the time frame of the current project, so we had to cancel this scenario and at that time it was too late to start another.	**DoW)**
Pilot 7	The following E-ARK tools will be tested in a pilot environment: DBPTK, RODA-in and DB viewer (Sofia) using Oracle OLAP Viewer, along with components of the Integrated Prototype (E-ARK Web): SIP2AIP, HDFS-Storage, Lily-Igest, Search, AIP2DIP (Yes/No)	✓
Scenario 1	Create SIP and Ingest more than 300.000 cases of old (not normalized) database of the Hungarian Prosecution Office. (90% success rate)	✓
Scenario 2	Create SIP and Ingest more than 30.000 pages of scanned pdf images of meeting minutes of the former Hungarian Socialist Party. (95% success rate)	✓
Scenario 3	Provide access for more than 300.000 cases of old (not normalized) database of the Hungarian Prosecution Office. (90% success rate)	✓
Scenario 4	Provide access for more than 300.000 cases of old (not normalized) database of the Hungarian Prosecution Office. (90% success rate)	✓
Scenario 5	Provide access for more than 30.000 pages of scanned pdf images of meeting minutes of the former Hungarian Socialist Party. (95% success rate)	✓

Referenced Documents

In this document the following external document references have been used:

D2.1 General Model 1.0
http://eark-project.com/resources/project-deliverables/5-d21-e-ark-general-pilot-model-and-use-case-definition

D2.3 Detailed Pilot Requirements
http://eark-project.com/resources/project-deliverables/60-23pilotsspec

D2.4 Pilot Documentation
Part 1: http://eark-project.com/resources/project-deliverables/87-d24docs-p1-1

Part 2: http://eark-project.com/resources/project-deliverables/88-d24docs-p2-1

The latest version of the General Model can be found in the E-ARK Knowledge Base and also accessible from the E-ARK project web site: http://eark-project.com/resources/general-model

Appendix 1 – Extract from E-ARK DoW

E-ARK will pilot an end-to-end OAIS-compliant e-archival service covering ingest and reuse of structured and unstructured data addressing the needs of data subjects, data owners and data users. It will integrate tools currently in use in partner organisations, and provide a framework for providers of these, and similar tools, to ensure compatibility and interoperability. The project has three phases resulting in a set of tool instantiations, a validated pilot platform and a set of recommended practices based on evaluation of the pilot. This approach supports the planned three-tier piloting strategy (full-scale pilot, shorter 'stretch' pilots and external validation).

The work has been organised into six work packages, as shown in the diagram below. Specialist skills are associated with each WP and this grouping of activities also reduces inter-dependences between work packages and localises risk. The detailed definition of the work required in each work package includes a diagrammatic 'product flow' diagram. These express the flows and dependences within and between work packages.

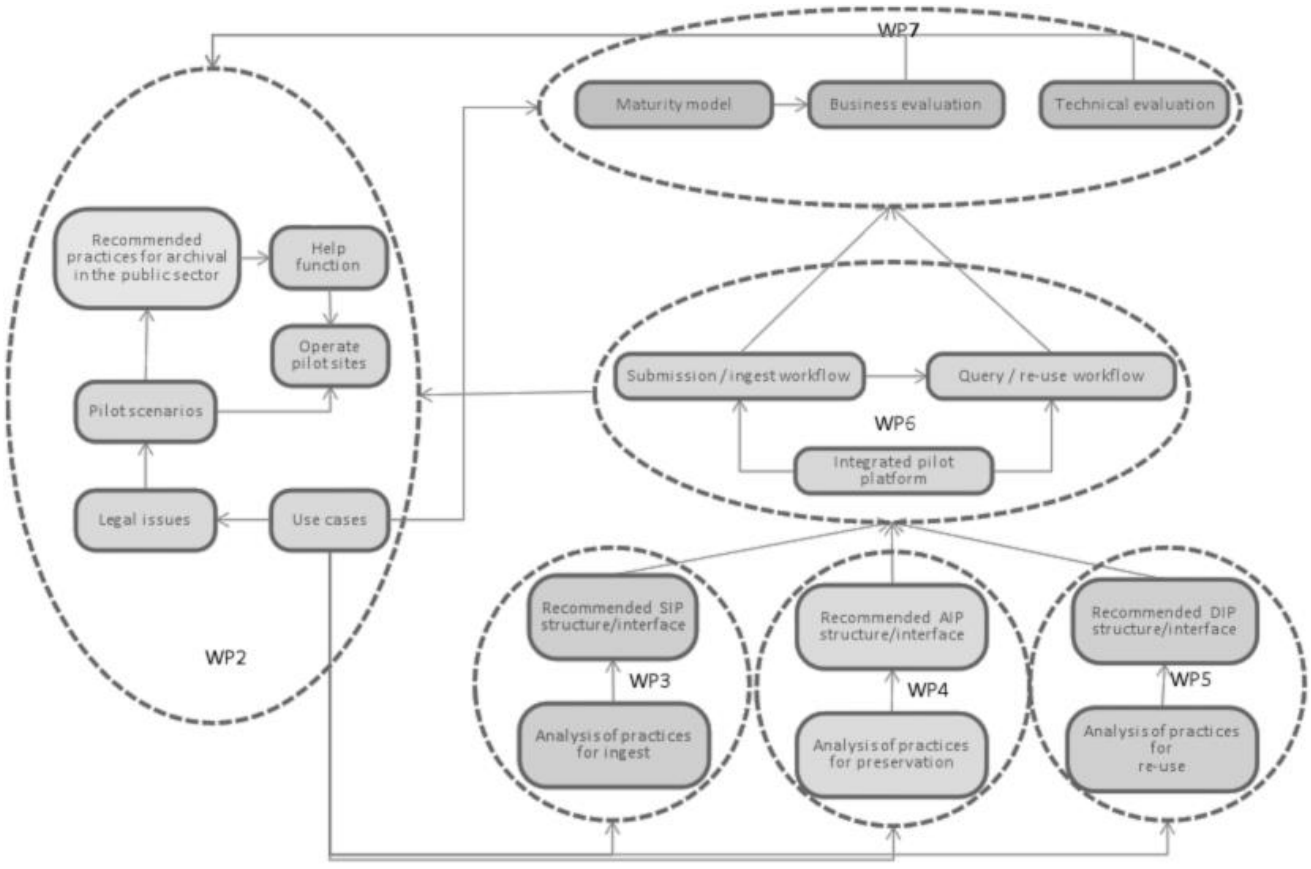


Figure 1: E-ARK – Overall Approach

WP2 is concerned with ensuring that the needs of each pilot site are addressed in the work packages that actually deploy the tools, and that the pilot scenarios are achievable and reflect any legal and logistical constraints. It also supervises the acquisition of appropriate data from the data-owners working with each pilot site and, finally, documents the knowledge gained from the pilot in the form of recommended practices.

WP3, WP4 and WP5 are responsible for the information packages that encapsulate the content and related metadata that is being archived, respectively during the workflows for **submission** (SIP - the data structures used by the data owner to enable ingestion of the content), **archival** (AIP - the data structures used by the repository operator to enable preservation functions) and **dissemination** (DIP – the data structures used for extraction and re-use of content). The mapping of SIP to AIP and AIP to DIP provide the mechanism for integration of tools/services in the pilot and compliance with these three data-structures provides the mechanism for interoperability between tools/services.

WP6 provides access to ingest and re-use tools/services to be deployed in the pilot, based on the implementation of a repository supporting the open source AIP schema from WP4. Pilot sites can either use this open-source solution or work with their platform-providers to implement SIP/AIP and AIP/DIP mappings of their own, supported through their community of interest within the project.

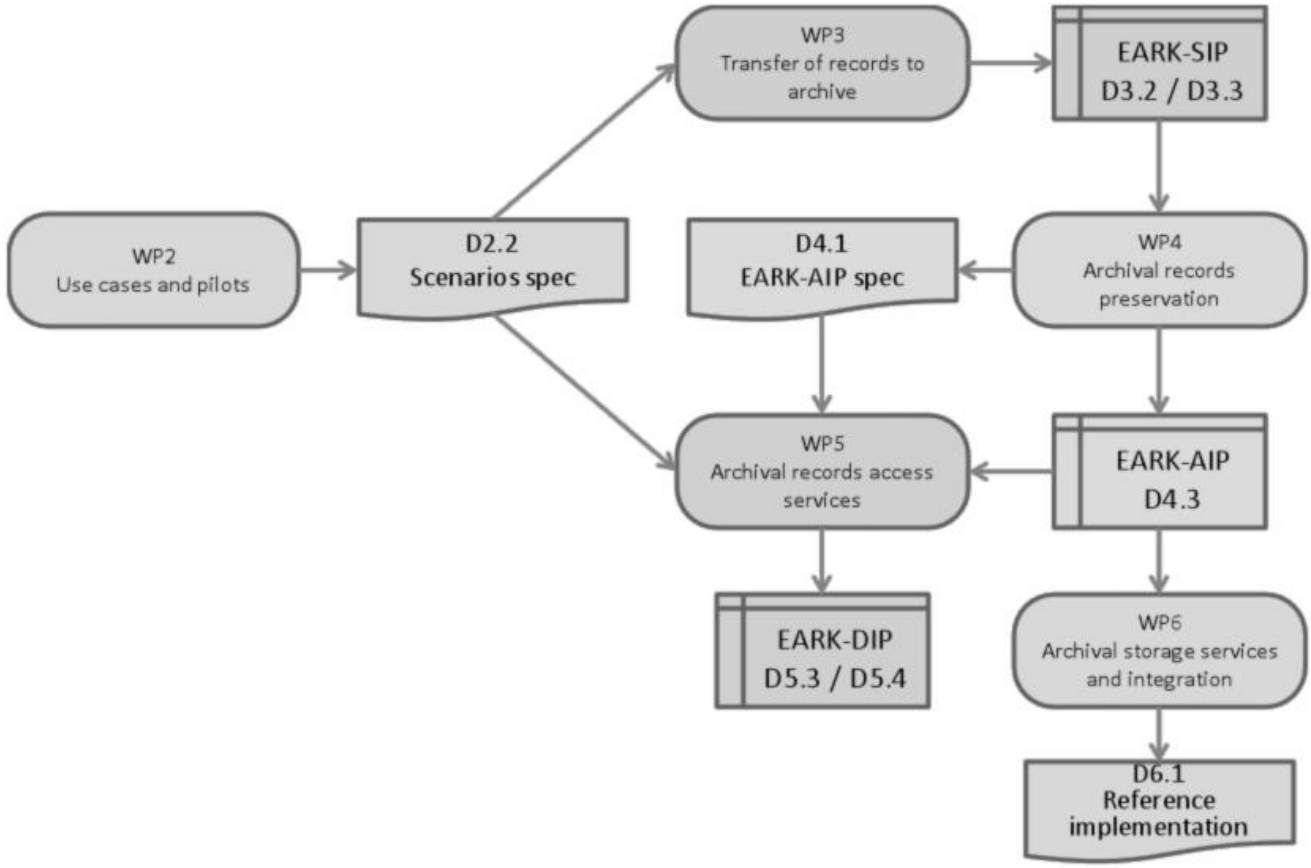


Figure 2: E-ARK Technical Integration

WP7 is responsible for evaluating the pilot service from technical and commercial perspectives based on criteria established for each scenario by WP2 and will utilise a maturity model developed in the TIMBUS project. Following the pilot deployments, both technical and business evaluations will be carried out and stored in a knowledge base, based on the indicators created for each pilot component. For example, a formal specification of the pilot ingest workflow will include information about how it has been developed and tested.

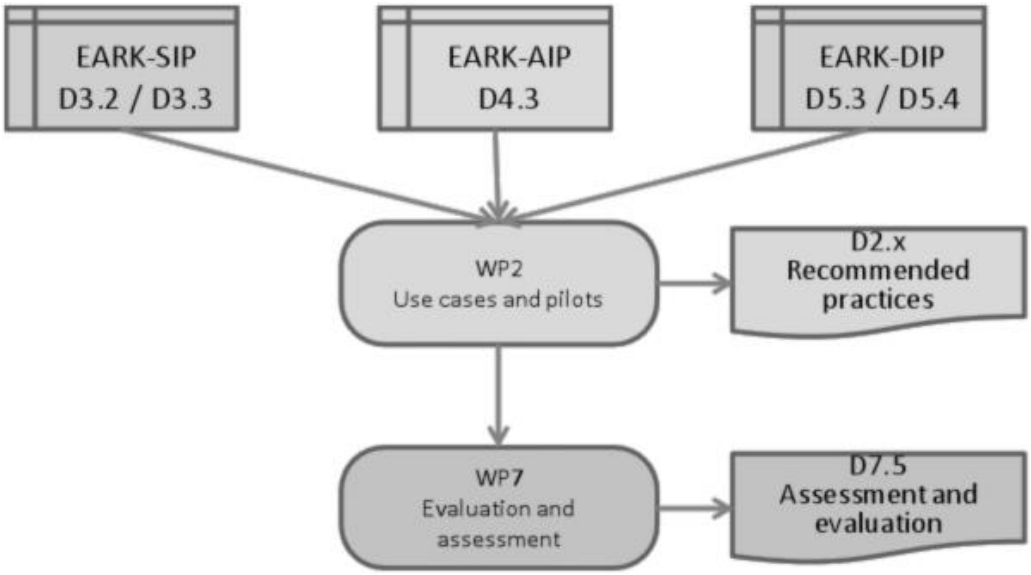


Figure 3: Pilot Workflows

More specifically, there are two distinct work-streams orchestrating the work required to integrate the pilot service and the work required to deploy, support and evaluate the pilot. This is summarised above, one leading to the WP6 deliverable for an "Integrated Platform Reference Implementation" (M24) and the other leading to the WP7 deliverable "Pilots Assessment – Final" (M36).

Piloting, which is the responsibility of WP2, consists of seven instances of parts of the E-ARK service.

The full scale pilots planned in the E-ARK Description of Work (DoW)

T2.5.1 Full scale pilot no. 1. – SIP creation of relational databases

Task leader: Danish National Archives.

Supported by: Magenta

Scope: Not less than 4 databases of different sizes and complexities (one contains several million records)

Object: Creating SIPs for relational databases using the tool created in WP3, T3.3: SIP Creation Tools, for further evaluation.

Participants: Danish National Archives (digital archive), Magenta, the data provider institution creating the archival records.

Resource plan: 8 person months for setting up the pilot (assisting the archivists and data provider in preparing the transfer), carrying out the pilot (transfer, quality checking, metadata amendments), testing the results and reporting.

Timeframe: M28-M33

Preconditions: M03.3 and M03.4

Position in the project: DNA will pilot SIP creation and ingest specified by WP3

Contribution to the project outcome: the pilot demonstrates the applicability of the project outcomes in creating SIPs from relational databases

T2.5.2 Full scale pilot no. 2. – SIP creation and ingest of records

Task leader: National Archives of Norway

The main part of the pilot includes the export of electronic records and their metadata from EDRM systems and databases of Norwegian public sector institutions, transfer and ingest them to the NAN digital repository.

Scope: Not less than 2 transfers of unstructured records with mixed restricted and unrestricted material, and not less than 1 transfer of structured records.

Object: Extract data from EDRMS and databases, create SIPs for structured and unstructured records using ESSArch Tools, ingest the SIPs to the repository using ESSArch Preservation Platform, for further evaluation.

Participants: National Archives of Norway (digital archive), data provider

Resource plan: 6 person months for setting up the pilot (assisting the archivists and data provider in preparing the transfer), carrying out the pilot (transfer, quality checking, metadata amendments), testing the results and reporting

Position in the project: NAN will pilot SIP creation and ingest specified by WP3

Timeframe: M28-M33

Preconditions: M03.3 and M03.4

Contribution to the project outcome: the pilot demonstrates the applicability of ESSArch Tools and the ingest functions of ESSArch Preservation Platform.

Data owners: to be defined at the time of the pilot.

Platform: ESSArch Tools will be used to create the SIPs, and ESSArch Preservation Platform will be used to create and manage the AIPs, both delivered by ES Solutions. NAN IT-department is responsible for the systems operation.

T2.5.3 Full scale pilot no. 3. – Ingest from government agencies

Task leader: National Archives of Estonia

The main part of the proposed pilot includes the export of electronic records and their metadata from EDRM systems of Estonian public sector institutions, transfer and ingest to the NAE digital repository.

In addition Estonian agencies have the responsibility to make public electronic records with no access restrictions available on their web sites, which means that the pilot will also enable this through standardised linking/access methods that are implemented in the agencies' digital infrastructure / web site.

Scope: export public records from an EDRM system of a governmental agency to the National Archives of Estonia and make these available through our own catalogue (i.e. Archival Information System, AIS) as well as provide an API for accessing the records from other systems (the original EDRMS at the agency); The whole set will include about 5000 records (but depends on the exact agency of course).

Objects: EDRMS at a governmental agency (Alfresco), records preparation tool (UAM), digital preservation and access systems (SDB, AIS);

Participants: National Archives of Estonia (digital archive), one governmental agency (data provider), general public (access to records);

Number of users: Archivists at NAE (dealing with the ingest and preservation, about 3 persons); archivists at the agency (about 2-3 persons preparing the export/transfer and providing means for continuous in-house usage), general public - we have around 1000 daily users at the archives virtual reading room / AIS but obviously we are not able to predict how many of these will actually access and use the information ingested through the pilot;

Resource plan: about 4 person months (includes updates to the EDRMS installation at the agency, to UAM and SDB/AIS, setting up and running the pilot).

Position in the project: NAE will implement and pilot the records export requirements, SIP format and transfer-ingest workflow specified by WP3 and the access services specified by WP5;

Timeframe: setting up pilot sites through M25 – M27, running the pilot for six months through M28 – M33, which means that the records are available for the general public for at least three months;

Preconditions: M03.3, M03.4, M04.2, M05.4, M05.6.Records are available at the agency in digital form and enriched with metadata; it is possible to export the records; records export, preparation, transfer, ingest and access functionalities have been updated according to project deliverables in Alfresco, UAM, SDB and AIS;

Contribution to the project outcome: the pilot demonstrates the applicability of the project outcomes inside the framework of Estonian public sector legislation and the tools applied at NAE.

Platform and data owners: a specific data provider has not been selected for NAE, NAE notified the Ministry of Economics and Communication (in charge for co-ordinating e-Gov and electronic records management in Estonia) and they have promised their full support when it comes to actually selecting the specific agency. We are aiming to use Alfresco as the commercial system which we ingest data FROM (there are about 10-20 agencies in Estonia who use it – so quite a few possibilities). SDB is the preservation platform which we employ to ingest data.

T2.5.4 Full scale pilot no. 4. – Business archives

Task leader: National Archives of Estonia

Supported by: Estonian Business Archives

Estonian Business Archives, Llc. is a privately owned archiving services provider. The main client base of the company is comprised of private businesses in Estonia for archiving and preservation of both paper and digital

records. The business archives pilot in the E-ARK project will focus on transfer of electronic records from private companies to the digital archive solution of the Estonian Business Archives and their subsequent description required for archiving and preservation.

Scope: Transfer of business records to a digital archive solution in a business archive, quality control, enhancement of description and AIP creation.

Object: bespoke business system that contains records (pilot will test an annual batch of ca 4,500 records); financial and CRM systems that contain records (pilot will test an annual batch of ca 15,000 records).

Participants: Estonian Business Archives, Llc (digital archive), two private companies (data providers).

Number of users: The archived business records are for the sole use of their owner-company only.

Resource plan: 4 person months for setting up the pilot (assisting the companies' archivists in preparing the transfer; setting up and configuring the IT infrastructure at EBA), carrying out the pilot (transfer, quality checking, metadata amendments, AIP creation), testing the results and reporting.

Position in the project: The pilot will report on the suitability of the ES Tools and ES Preservation Platform for processing electronic records from business systems.

Timeframe: M25-M27: setting up the pilot sites; M28-M31: running the pilots; M32-M33: testing and reporting.

Preconditions: M03.3, M03.4, M04.2, M05.4, M05.6.

Contribution to the project outcome: The business archives pilot will provide a view how the tools developed by the project can be implemented in the private sector setting. The pilot will assess to what extent these tools add value to the existing archiving services and workflows established in the corporate sector. The nature of objects used in the pilot – business information systems that contain or manage records – is slightly different from the public sector use cases that mostly rely on EDRM systems or databases of records.

Platform and data owners: The systems that records will be transferred from and the current digital archive solution at the EBA are all bespoke solutions.

T2.5.5 Full scale pilot no. 5. – Preservation and access to records with geodata

Task leader: National Archives of Slovenia.

Supported by: Danish National Archives

During the e-ARK project the standardised method for ingesting geo data will be developed. This will allow the archives to offer geodata as a selection and display criteria of records by means of integration of current state of the art tools.

Scope: Pilot will prove that the SIP and DIP implementations fulfil specific requirements for the records containing GIS data, test the instructions (for the producer and for the archive) regarding all phases of ingest, to prove that the archival use of GIS data is possible (via open data method, direct access in the archives and use GIS data as search criteria in the DIP contents).

Object: pilot report with recommendations about urgent improvements and possible future improvements support for WP6 & WP7 setting up the work environment of selected E-ARK archival tools provide real life examples how the project deliverables can be used

Position in the project: Pilot will prove usability of specification and tools for supporting ingest (WP3 D03.3) and access (WP5 D5.3, D5.4) of archival records with specific data. Uses specifications and tools for supporting ingest (WP3 D03.2, D03.3) and access (WP5 D5.2, D5.3, D5.4)

Participants: National Archives of Slovenia (digital archives), Danish National Archives (best practice exchange)

Resource plan: 7 person months (6 pm for National Archives of Slovenia 1 pm for DNA)

Preconditions: M03.3, M03.4, M04.2, M05.4, M05.6.

Timeframe: M25-M27: setting up the pilot sites; M28-M31: running the pilots; M32-M33: testing and reporting.

Platform: DBExport Tool

T2.5.6 Full scale pilot no. 6. – Seamless integration between a live document management system and a long-term digital archiving and preservation service

Task leader: KEEP SOLUTIONS

RODA (Repository of Authentic Digital Records) is a long-term digital repository system that implements an ingest workflow that not only validates SIPs, but also checks its contents for virus, does format identification, extracts technical metadata, and migrates file formats to more “preservable” surrogates. RODA also provides access to digital information in several forms such as search/navigate over available metadata as well as online visualisation and download of originals, preservation formats and dissemination derivatives. Administration interfaces allow back-office users to manage fonds/collections and define rules for preservation actions. All interactions between users (human and machines) and the repository are logged for security and accountability reasons. RODA ensures that ingested data is authentic by recording PREMIS metadata on all actions performed by the repository, records provenance in archival metadata standards such as ISAD(g), and ensured integrity and availability by frequently monitoring data and making sure that it has not been tampered with. More recently, RODA has been enhanced to support preservation plans developed in Plato, thus proving a full-cycle preservation environment for digital objects ensuring usability and readability of ingested data.

RODA currently supports the Digital Archiving and Preservation Service at the Portuguese National Archives. This service allows public bodies to submit digital content to the archiving service for long-term preservation. The Digital Archiving and Preservation Service takes care of the necessary procedures to keep data accessible for long periods of time (in the scale of decades). Producers have special privileges in the system, allowing them to manage their data and change the structure of their fonds/collections. Data is submitted via SIP files that need to be manually prepared by producers using an offline tool called RODA-in.

Scope and objectives: The goal of this pilot is two-fold. On one hand, Keep Solutions demonstrates that the pan-European SIP structure designed in the WP3 is adequate to support the media types currently supported by RODA (i.e. relational databases, text documents, video, audio and images) and, on the other hand, that the most adequate and scalable form of ingest is to automate the SIP creation process. In order to achieve this, we will tap into a running Document Management System and, based on appraisal and selection strategy installed, we will extract,

transform, aggregate and create Submission Information Packages that conform to the pan-European SIP format defined in WP3 that are ready to be ingested in RODA.

Participants: In this pilot we will make use of data produced by several bodies of the Portuguese public administration. One already confirmed is a project partner, the IST. The IST is a Portuguese public university that delivers top quality higher education and engages in research, development and innovation activities. In its activities, several forms of content with high administrative, legal, financial and informational value are produced every day. During the project lifetime the IST will engage in a parallel project to re-engineer a large part of the technology that supports its administrative services, which will include the acquisition and deployment of an integrated archival system. This makes this pilot an excellent example as information assets to be ingested from the actual production systems are expected to be highly unstructured and in desperate need of preservation. Besides the IST, the consortium will also take advantage of the role that AMA plays in the structure of the Portuguese Public Administration to complement this case with more data providers.

Resource plan: 7 person months. 6 PM for KEEPS for development, testing and integration and 1 PM for IST for consulting and liaison with the departments that will provide data to the pilot.

Position in the project: RODA already supports preservation actions and dissemination interfaces for 5 media types. This pilot will focus on enhancing the ingest process by connecting the long-term repository to the Document Management Systems active at the data producer's location this way demonstrating SIP suitability for packaging various content types and scalability by providing a seamless ingest process that requires little or no human intervention.

Timeframe: Between M25–M27 the pilot will be deployed. Between M28–M33 the ingest process will run in parallel with the SIP creation process.

Preconditions: pan-European SIP format defined (WP3). RODA must be enhanced to support the new SIP format (WP3). Automatic SIP creation tool/middleware must be developed to integrate the data provider DMS with the long-term repository.

Contribution to the project outcome: The pilot will demonstrate that the pan-European SIP structure designed in the WP3 is adequate to support the content types currently supported by RODA (i.e. relational databases, text documents, video, audio and images) and, on the other hand. The pilot will also demonstrate and provide a framework for automatic SIP creation and DMS-Repository interoperability showing the scalability of whole ingest process.

Platform and data owners: The owner of the data in this pilot will be the IST. Multiple systems are currently in place to support document management processes, e.g. an internally developed records management system called "DOT", a commercial workflow software called eDocLink, and an archival management system called ICA-Atom. In this pilot a prioritization of existing platforms will be made to choose the ones that will be included in the pilot.

T2.5.7 Full scale pilot no. 7. – Access to databases

Task leader: National Archives of Hungary.

Supported by: Danish National Archives

NAH will extract structured content from an Oracle database with the tools developed by WP3. The pilot will examine the applicability of data-warehouse concepts in an archival environment in order to maintain both the

original structure and intellectual interpretability of ingested data. The working prototype for access will be a user-friendly web-based application based on the DIP specification of WP5.

Scope: Representation of not less than 2 databases of different sizes and complexities with restricted and open content.

Objects: Extract data from the EDRMS and the databases, create SIPs for structured and unstructured records using the ESSArch Tools, ingest the SIPs to the repository using the ESSArch Preservation Platform, for further evaluation.

Participants: National Archives of Hungary (digital archives), data provider

Resource plan: 6 person months for setting up the pilot (assisting the archivists and the data provider in preparing the transfer; setting up and configuring the IT infrastructure at NAH), carrying out the pilot (transfer, quality checking, metadata amendments, AIP creation), testing the results and reporting.

Position in the project: NAH will primarily implement and pilot the applicability of specifications and tools related to access (WP5 D5.3, D5.4). The pilot will also prove usability of specifications and tools for supporting ingest (WP3 D03.3) of archival records.

Resource plan: 7 person months (6 pm for National Archives of Slovenia 1 pm for DNA)

Preconditions: M03.3, M03.4, M04.2, M05.4, M05.6.

Timeframe: M25-M27: setting up the pilot sites; M28-M31: running the pilot; M32-M33: testing and reporting.

Contribution to the project outcome

Data owner: Prosecution Service of Hungary

Platform: DBExport Tool, Oracle APEX, development in Java