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EuropeanaLocal

D4.1 Report on Technical Workshops

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***eContentplus***

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¹ OJ L 79, 24.3.2005, p. 1.

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1 Introduction

This report gives an overview of the planning, preparation, execution, evaluation and after-work from the first set of technical workshops of the EuropeanaLocal project. The document serves as evidence of partial delivery towards item D4.1 from the Description of Work document.

The support structure of the Project consists of two technical partners responsible for a set of content provider partners each. In order to facilitate attendance for most partners while minimizing the need for travel the workshops were arranged at different locations.

Workshops were arranged at project partner's venues as the project did not earmark any funds specifically for technical and practical arrangements related to workshops.

Two workshops, targeted at the partners in the "eastern" zone, were arranged in Bratislava (Slovakia) at the venue of technical partner EEA. One workshop, targeted at northern European partners was arranged in Hasselt (Belgium) at the venue of Province Limburg. The final workshop was arranged in London (England) in rooms provided through Collections Trust.

All workshops had attendance from technical partners, a representative of the project management, a minimum of one experienced content provider and a representative of Europea.



Figure 1: Components of work package 4

2 Methodology

In order to establish the knowledge and support requirements among the content provider partners it was necessary to collect data on their current skills levels with respect to the standards, technologies and tasks relevant to the physical implementation of Europeana-compliant infrastructure.

Next, the data had to be analysed in order to identify which issues needed to be emphasized in the training workshops and which were already ok. Based on these two first steps technical partners proceeded to develop the workshop programme, schedule the events and arrange the technical workshops.

Following the workshops, an evaluation was conducted and input gathered for the execution of the second round of workshops in the spring of 2010.

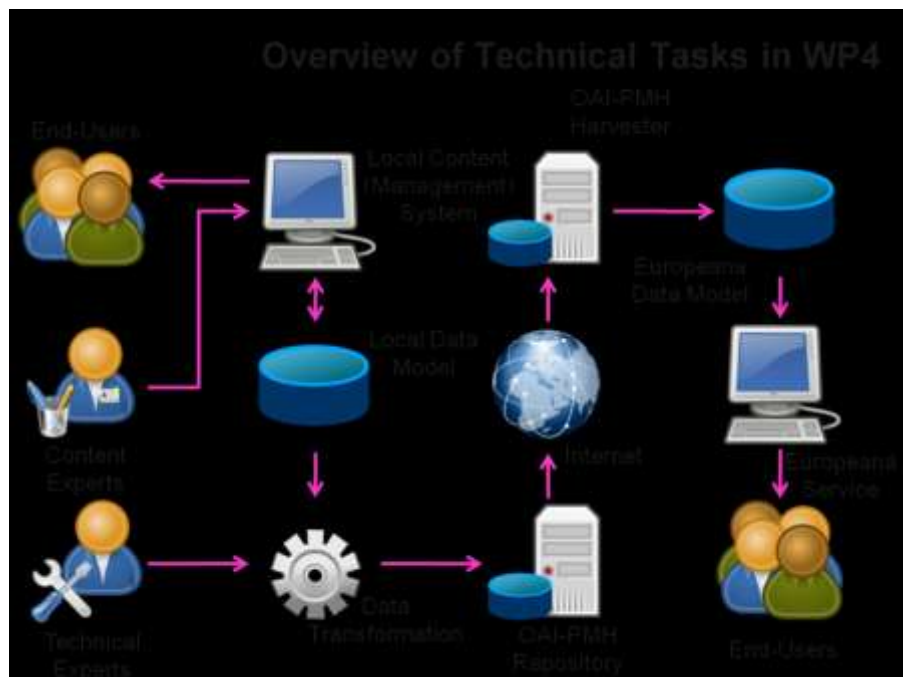


Figure 3: The technical implementation steps for each content provider

2.1 Technical questionnaire

The technical questionnaire (see: Appendix 1:) was developed with sections to cover issues such as:

- Identify technical and thematic contact persons for the collections
- Identify technical skills in terms of general ICT knowledge
- Identify programming skills (which languages, platforms)
- Whether those who do not have ICT skills themselves have access to external technical support locally
- What level of support partners envisage that they need in order to complete the required tasks
- The availability of partners' collections on the Internet
- The various types of database being used
- The operating systems/platforms being used
- Whether partners are already using any OAI-PMH repository software
- What bandwidth is available (for Internet access)

- Whether partners are aware of other initiatives to harvest metadata in their country

From the collected data we could analyse that about 85% of the responses stated that they had skills in installation and configuration of standard software. About 70% reported skills in running and maintenance of databases and finally about 30% reported that they had skills in system development and programming.

Of the popular programming languages, PHP, PERL, JSP and various flavours of the Microsoft languages ASP/VB/.NET were reported to have the most used with PHP on top (near 40%) and the others following with about 20%. A wide range of custom systems also applies Ruby, Delphi, C, Python etc. 50% of the responses indicated that the partner was not familiar with any of the listed development languages.

When it came to types of support needed, 40% suggested that a web based help desk and FAQ would be sufficient while 50% would additionally like to see one-on-one e-mail support. 12% would like phone support and about 20% (10 responses) indicated need for on-site support.

The greater part of the content providers had their content available through regular web browsers (about 85%). 10% indicated that their content was only available through internal systems and 1 response stated that content was not yet available to the public.

Regarding databases, PostgreSQL is the most widely used (40%) with Microsoft SQL and MySQL servers following at 28% and 27%. Oracle is also notable with about 15%. A wide range of legacy database systems and file based storage structures also exists and are in active use.

Operating system platforms were equally divided between Linux and Windows based systems.

No clear pattern emerged from questions about existing OAI-PMH infrastructure. Only DSpace (3 responses) and dLibra (19 responses) existed at more than one partner site. The latter constituted a pattern but is explained by the Polish partner filling in responses for all contributing repositories, 19 in all, which all utilize the same locally built repository software.

About 60% of the response indicated that their systems are OAI-PMH compliant, about 40% the opposite.

In running distributed service based infrastructure the availability of system nodes is of the essence. Bandwidth is one of the key bottlenecks in this respect and it is notable that 10 responses suggests less than 10Mbps bandwidth.

Table 1: Key findings from the technical questionnaire

Item	Response	Comment
Development and programming	◇ 30%	Relatively high percentage
Running of databases	◇ 70%	Relatively high percentage
Web and e-mail based support sufficient	◇ 80%	Feasibility of approach is realistic
Repository software in use	Dspace (3), Dlibra (19)	No trend to build upon except Poland
Have access to external local technical support	14 partners	Long term sustainability

2.2 Preparing and studying key issues

As a consequence of the findings of the technical questionnaire it was decided that the following elements would be central for the first round of technical workshops:

- Selection of repository technologies: since no clear pattern emerged from the questions on OAI-PMH compliant technologies in use it was necessary to establish a recommendation for minimal infrastructure to be implemented in the local institutions.
- Implementation of OAI-PMH protocol: a great number of the local systems being custom built, it was necessary to shed light on the practical implementation of the OAI-PMH protocol, its associated web services, arguments and request/response formats.
- Methods for metadata normalization and enrichment: while metadata standards such as Dublin Core describes in great detail the container elements for diverse metadata properties they do not qualify the content. As a result, a date or a quantity can be expressed in any number of ways. Local content means many local interpretations – and subsequently normalization was identified as a key issue.
- Methods for mapping and cross-walks between (known) formats: many local systems were able to output one or more standard formats. Formats like Marc, Dublin Core and similar may be mapped to ESE (the European Semantic Elements) automatically or semi-automatically, whereby simplifying the process.

In preparation of the first set of workshops, a technical primer document covering all these topics on an abstract level was circulated to partners in order to establish a common baseline for what should be achieved within the scope of WP4.

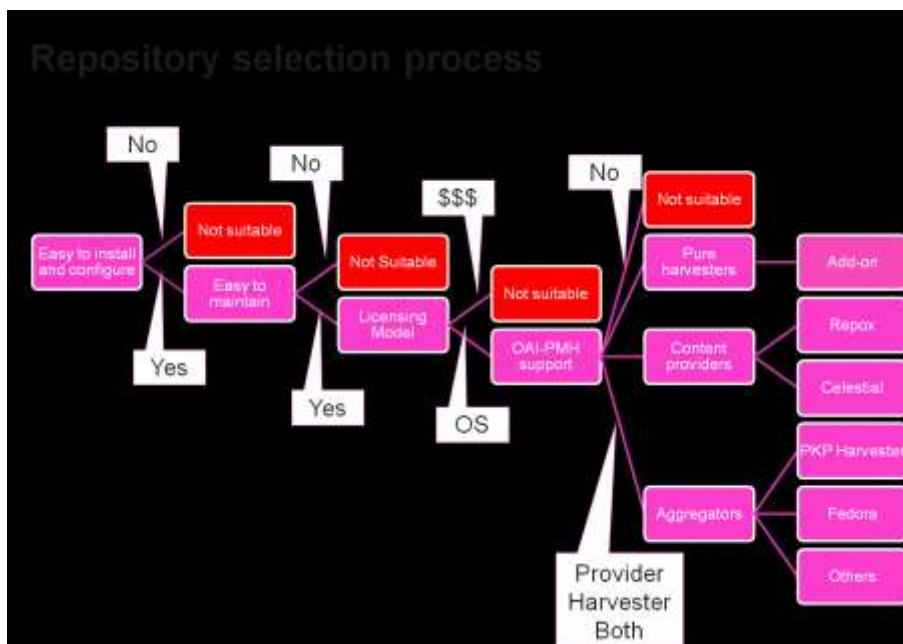


Figure 4: Repository selection process

2.3 Developing workshop agenda and scheduling

Technical partners developed a workshop agenda which was circulated among key project partners and refined while the project management organised the practicalities of the workshops such as scheduling, venues and infrastructure.

For more information on the workshop agenda, please refer to Appendix 3: Workshop agenda.

2.4 Workshop execution

The workshops were arranged over 1 ½ day each with half a day of introductions and 1 day of controlled practical exercises.

All partners were instructed to send their technical people – or in cases where such were unavailable – their local external technical support.

All partners were furthermore requested to bring along laptops with WLAN capabilities and administrator privileges for installation of server/client software, this for the purpose of connecting to the Internet to download samples and to network the computers between themselves during the technical workshop.

All installations occurred within virtual machines (Sun Virtual Box) and on a freely re-distributable operating system image (Ubuntu Linux).

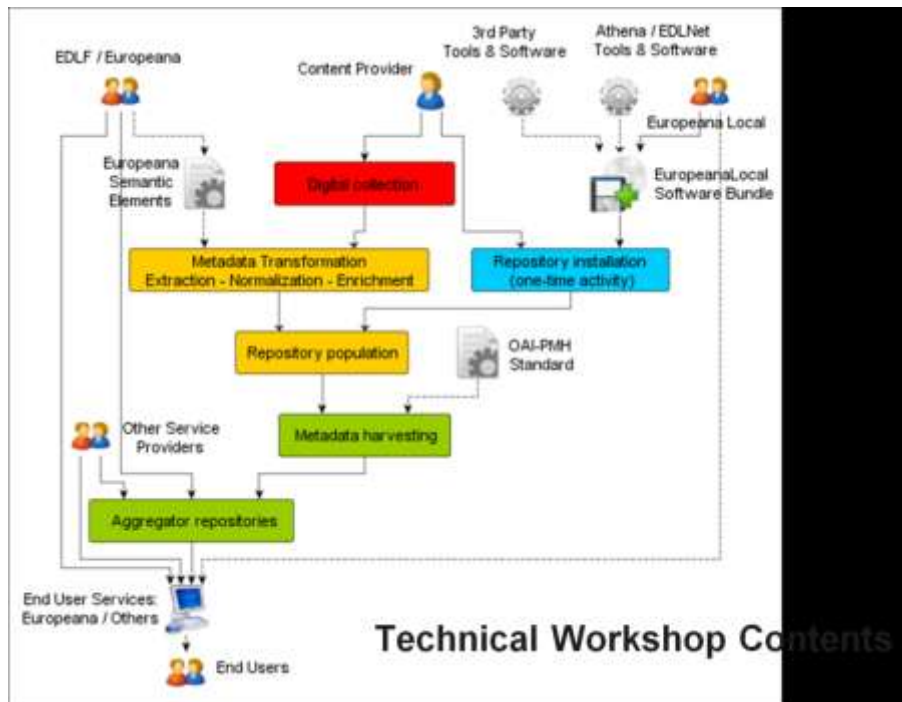


Figure 5: The contents of the technical workshops

2.5 Workshop evaluation and after-work

During the workshops, attendees were instructed to fill in evaluation forms. The results from the evaluation are attached in Appendix 2: Report of evaluation questionnaire. (The form was slightly altered between the first and the remaining three workshops, therefore the evaluation reports are also split in two.

The purpose of this evaluation was to provide input to the next round of workshops as well as to fine-tune the support options for the remainder of the project.

The following were key findings from the evaluation:

- Partners want more real-world examples
- Partners want more individual follow-up
- Technical sessions should be accompanied by “fool-proof” step-by-step instructions
- The workshops were misaligned with the completion of ESE specifications
- Technical infrastructure must be thoroughly tested prior to workshops

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Appendix 1: Report of technical questionnaire

Appendix 2: Report of evaluation questionnaire

2a – first workshop

2b – second through fourth workshop

Appendix 3: Workshop agenda

Appendix 4: Technical primer

Appendix 1: Report of technical questionnaire

Technical Questionnaire

EuropeanaLocal - eContentplus

Dear Partners,

This questionnaire is meant for all content providers in the EuropeanaLocal project.

The purpose of the survey is to create an overview of all content providers' infrastructure and systems, which technical platforms and what types of software are in use and what level of assistance/aid each content provider envisage to be needed.

Deadline for answering the survey is the 12th of January 2008

Best regards from the Technical Partners

Content provider contact details

1. Please select your country

Albania (0)

Andorra (0)

Armenia (0)

Austria 1.8% (1)

Azerbaijan (0)

Belarus (0)

Belgium 3.5% (2)

Bosnia and Herzegovina (0)

Bulgaria 1.8% (1)

Croatia (0)

Cyprus 1.8% (1)

Czech Republic (0)

Denmark 1.8% (1)

Estonia (0)

Finland 1.8% (1)

Macedonia (0)

France 3.5% (2)

Georgia (0)

Germany 1.8% (1)

Greece 1.8% (1)

Hungary (0)

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Iceland (0)

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Ireland 1.8% (1)

Italy 1.8% (1)

Kosovo (0)

Latvia 1.8% (1)

Liechtenstein (0)

Lithuania 3.5% (2)

Luxembourg (0)

Malta 1.8% (1)

Moldova (0)

Monaco (0)

Montenegro (0)

Netherlands 1.8% (1)

Norway 3.5% (2)

Poland 36.8% (21)

Portugal 22.8% (13)

Romania (0)

Russia (0)

San Marino (0)

Serbia (0)

Slovakia 1.8% (1)

Slovenia (0)

Spain (0)

Sweden 1.8% (1)

Switzerland (0)

Turkey (0)

Ukraine (0)

United Kingdom 1.8% (1)

Vatican City State (0)

TOTAL

100.0%

57 (57)

2. Name of organisation

Response

1 AcrossLimits

1 AIT Angewandte Informationstechnik Forschungsgesellschaft mbH

1 Alentejo Digital Library (Alentejo Terra Mãe Foundation)

1 An Chomhairle Leabharlanna / the Library Council

1 Archives départementales de la Gironde (Conseil général de la Gironde)

1 Arquivo Distrital do Porto

1 Asplan Viak Internet as

1 Biblioteca Geral da Universidade de Coimbra

1 Biržai "Sėla" museum

1 Câmara Municipal de Chaves

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1 Câmara Municipal de Lisboa

1 Câmara Municipal de Lisboa - Arquivo Municipal

1 Collections Trust

1 CREF-CyI-STARC

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1 District and City Public Library in Wejherowo
1 Divisão de Património Cultural/Departamento de Património Cultural/Direcção Municipal da Cultura/Câmara Municipal de Lisboa
1 Elbląg Library
1 Erfgoed Brabant
1 Fundação Museu Nacional Ferroviário - National Museum Railway Foundation
1 Fylkesarkivet i Sogn og Fjordane
1 Helsinki City Library
1 Jelenia Góra Center for Regional Information and Education – Karkonoska Library
1 Library of Rzeszów University and Voivodeship and City Public Library in Rzeszów
1 Library of the University of Łódź;
1 Lithuanian theatre, music and cinema museum
1 Länsmuseet Västernorrland
1 Main Library and Scientific Information Centre of the Wrocław University of Technology
1 Main Library of AGH University of Science and Technology
1 Main Library of Cracow University of Technology
1 Main Library of Silesian University of Technology
1 Marche Region
1 Municipal Library of Aveiro - Consortium BibRia
1 Municipality of Bourg-en-Bresse (Rhône-Alpes) ; E. & R Vailland Library
1 Município de Vila Nova de Famalicão
1 Museu da Guarda
1 Museu Nacional do Teatro
1 National Library of Latvia
1 Nowohucka Public Library in Kraków
1 PCCE - Provincie Limburg
1 Pedagogical University of Cracow Main Library
1 Poznań Foundation of Scientific Libraries
1 Provincie Oost-Vlaanderen
1 Public Library - Varna
1 Roskilde Libraries
1 Silesian Library
1 Slovak National Museum
1 Technical University of Łódź Library
1 Transports and Communication Museum
1 University Library in Białystok
1 University Library in Toruń;
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1 University Library in Zielona Góra
1 veria central public library
1 Voivodeship Public Library in Kielce
1 Voivodeship Public Library in Kraków
1 Warsaw University Library
1 Wrocław University Library
1 Zentral- und Landesbibliothek Berlin
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1 Bogusława Macheta
1 Bruno Noiret Silveira da Cunha
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1 Elin 3~stevik
1 Erik Krissak
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1 Ginta Zalcmanc
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1 Hans Michelsen
1 Jadwiga Jarczyk
1 Jan Andrzej Nikisch
1 Jef Malliet
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1 Joanna Broniarczyk
2 Juozas Markauskas
1 Krzysztof Zioło
1 Louis Berg3s
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1 Madalena Pinheiro
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1 Mieke Van Doorselaer
1 Paola Marchegiani/Laura Carletti
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1 Piotr Łomiński
1 Pirjo Lipasti
1 Radka Kalcheva
1 Regina Rohleder
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1 +0351 21 380 71 00 / +0351 21 841 11 70
1 +31 73 6156266
1 +32 11 238 384
1 +32 9 267 72 85
1 +33 556521466
1 +351223395170
1 +356 21224900
1 +358 9 310 71307
1 +35952659217
2 +37068464670
1 +371 67287221
1 +421911371000
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1 00351211025283

1 0039 071 28994235

1 0351 2763322535

1 252377110

1 351271223221

1 357 22208625

Technical contact details

Contact information of technical person responsible for delivering your content to EuropeanaLocal. May be someone in your own organisation or someone from a content aggregator.

7. Name of technical contact person

Response

1 Ana Luísa Silva

1 Ana Rita Costa

1 Annalise Duca

1 António Sousa

1 António Vieira

1 Arthur Hanselman (from Cit, the company who built and maintains our content

aggregator: www.thuisinbrabant.nl)

1 Artur Rodrigues (Eng.º)

1 Ã~ystein Ã...snes

1 Christian Bajomi

1 Ciaran Clissmann (external consultant, works for Pintail Ltd)

1 Denis Pitzalis

1 Edgars Jekabsons

1 Fátima Barbosa

1 Hugo Agostinho

1 Ing. Alexander Herzog

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1 Jan Jurkovic

1 Jef Malliet

1 Jorge Manuel Pinheiro Leite

2 Juozas Markauskas

1 Lilian Burato

1 Marc Cornelis

21 Marcin Werla

1 Maria Ana Silva Dias

1 Martin Campostrini

1 Michael Götze

1 Nelson Pereira

1 Pascal Romain

1 Radka Kalcheva

1 Rob Tice

1 Rui Luciano

1 Sofia Patrão

1 Stein Runar Bergheim

1 Teresa Cardoso

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1 to be defined
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1 vbanos@gmail.com
9. Phone number (including country code)
Response
1 (+351) 239 859 800
1 ++49.30.90226-456 (correct one will follow)
1 +0351 21 3807100
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1 +32 9 267 7742
1 +33 556521466
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1 351271223221

1 357 22208625

1 to be defined

Skills and competence related questions.

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11. How would you describe the areas of expertise within ICT in your organisation?

Select one or more of the options below.

Skills within archive/library/museum disciplines
only (no technical competence)

75.4%

(43)

Skills within installation and configuration of
standard software

84.2%

(48)

Skills within system development and
programming

28.1% (16)

Skills within administration, running and
maintenance of database systems

71.9%

(41)

Other: Head manager 1.8% (1)

Other: HTML & related technologies 1.8% (1)

Other: Skills with content creation/digitisation 1.8% (1)

12. Which of the following development/scripting languages can you develop in?

Select one or more of the options below.

Java/JSP 21.1% (12)

PHP 38.6% (22)

PERL 21.1% (12)

ASP.NET 12.3% (7)
 C++ 8.8% (5)
 Visual Basic 8.8% (5)
 Delphi 5.3% (3)
 None 50.9% (29)
 Other: A que nos for aconselhada 1.8% (1)
 Other: APPEX 1.8% (1)
 Other: C, ruby, python, bash 1.8% (1)
 Other: ColdFusion 1.8% (1)
 Other: html 1.8% (1)
 Other: Python 1.8% (1)
 Other: See Q13 1.8% (1)
 Other: XML-related languages (XSLT, XQuery, etc.) 1.8% (1)

13. If you DO NOT have inhouse ICT competence, do you have access to external ICT support locally?

Please state the name of the entity and give a short description of what kind of services they provide for you.

Response

1 .

1 1.Evangelos Banos, Information & Communications Systems Engineer, Msc In Information Systems. Expert in digital libraries and web harvesting. Extensive experience in developing web applications, digital libraries, search engine technologies, open source software. 2.Tero Consulting Αntoni Tritsi 21, Building Β, PO box 60211, 57001 Thessaloniki Evangelos Banos will be responsible for the deployment, installation and customization of the DSpace digital repository. We will subcontract the work to the company and then Mr Banos will be phpESP, v(2.1.2) <http://www.avinet.no/phresp2/admin/manage.php?where=results&sid=17>
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responsible for the details of the work in cooperation with the staff of the library

1 Amplexor (<http://www.amplexor.be/>) Small company specialized in content management systems and XML development. They developed with us the assemblage of our system.

1 Asplan Viak Internet...

9 Besides of our own ICT competence we have technical support for the digital library software from Poznań Supercomputing and Networking Center.

4 Besides of our own ICT competence we have technical support for the digital library software from Poznań Supercomputing and Networking Center.

2 Besides of our own ICT competence we have technical support for the digital library software from Poznań Supercomputing and Networking Center.

6 Besides of our own ICT competence we have technical support for the digital library software from Poznań Supercomputing and Networking Center.

1 Besides our inhouse ICT competence, we have a public partner institution that supports us with its IT-knowledge and computer infrastructure. The KOBV ('Kooperative Bibliotheksverbund Berlin-Brandenburg' – Cooperative Network of Libraries in Berlin-Brandenburg) is a regional library service center in Berlin and Brandenburg. It is part of the Zuse Institute Berlin, a research institute for applied mathematics and computer science, which provides specialized consulting services for the users of its high-performance computers. The KOBV runs OPUS, a document server providing access to digital publications. Currently, we get technical support from KOBV for ingesting multiple documents into the OPUS system. We plan to cooperate with the KOBV and use its services for hosting and providing access to our

digital collections in the framework of EuropeanaLocal. (links: <http://www.zib.de/index.en.html>, <http://www.kobv.de>)

1 Decalog (<http://www.decalog.net>) (Open source software development in charge of development, programming and maintenance of our Greenstone digital library and OAI-PMH repository)

1 Edico.sk, development in ICT sector.

1 IMC - Instituto dos Museus e da Conservação on which this Museum depends

On-line support for day-to-day PC and network problems

1 JMSL - Redes Locais e Remotas Unipessoal, Lda Rua Vilar de Cima, 354 4475-270

Nogueira da Maia Telephone: 220104291 Fax:220104291 Telemovel: 967469779

www.jmsl.pt jorgelamelas@jmsl.pt suporte@jmsl.pt Acquisition and installations

(hardware, software) Data Server management (data bases, users profile, etc.)

1 No

1 No.

1 The UK intends to deliver content to Europeana through the Peoples Network

Discover Service and the information in this survey form relates to the Service:

<http://www.peoplesnetwork.gov.uk/discover/> The technical support for the Service is

provided by Knowledge Integration Ltd. Full details for them can be found on their

website: <http://k-int.com> So the competence and support refers to them.

1 We (Erfgoed Brabant) have some ICT competence inhouse, but we work closely together with the company Cit in The Hague (www.go2cit.nl) who built and maintains our content aggregator.

1 We are selecting an external ICT support, the tender will close on the 16th January and contract will be finalised by the end of January.

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1 We have an existing technical partnership with development/consultancy company Pintail Ltd. They act as technical support and advisors in several of our projects.

Their skills are primarily in PHP, SQL, Javascript, HTML and related technologies.

1 We have external ICT support provided by the portuguese ICT company iStrategy

1 Yes, if there is no additional expenses

14. In 2009, EuropeanaLocal will arrange technical workshops for content providers.

Will you bring your external ICT support along with you to the workshop?

Content providers who do not have inhouse ICT personnel should bring along technical personnel.

Yes 28.1% (16)

No 71.9% (41)

TOTAL

100.0%

57 (57)

15. Do you think that you need technical assistance in addition to participation at the technical workshops to be held throughout the project?

Select one or more of the options below.

Web based help desk and FAQ sufficient 38.6% (22)

E-mail/web support needed 50.9% (29)

Phone support needed 12.3% (7)

On-site support needed 17.5% (10)

Other: Dependence das exigências técnicas 1.8% (1)

Other: Depends on the technical demands 1.8% (1)

Other: on-line support, discussion forums, etc 1.8% (1)

Other: PSNC support should be enough 3.5% (2)

Other: PSNC support should be enough. 33.3% (19)

Software, hardware and infrastructure related questions.

16. How can the public access the content of your collections?

Select one or more of the options below.

Only through internal CMS interface (non-Internet enabled system)

10.5% (6)

Through regular web browser application (e.g. using Internet Explorer, Mozilla Firefox etc.)

86.0%

(49)

Through special web application and/or browser plugin (e.g. using Flash)

43.9% (25)

Other: Not yet available to public. Ongoing processing. Only using MS Excel where information and images are inserted

1.8% (1)

Other: OAI 1.8% (1)

Other: software application data / Local Network 1.8% (1)

Other: webservices can be implemented 1.8% (1)

17. Which database systems are in use when running your digital collections software?

Select one or more of the options below.

Oracle 15.8% (9)

MySQL 26.3% (15)

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PostgreSQL

36.8%

(21)

Microsoft Access 5.3% (3)

DB2 (0)

Microsoft SQL Server 28.1% (16)

Apache Derby (0)

CSQL (0)

DataEase (0)

Mckoi SQL Database (0)

Sybase (0)

Saved as directories/files 12.3% (7)

Other: Berkeley DBXML (Oracle) 1.8% (1)

Other: C-ISAM (Innovative) 1.8% (1)

Other: DBase 1.8% (1)

Other: Interbase, MG (Greenstone) 1.8% (1)

Other: Roxen CMS 4.5 1.8% (1)

Other: software (CollectionConnection) is platform independent

1.8% (1)

Other: SQL lite 1.8% (1)

Other: Zebra, eXist 1.8% (1)

18. Which operating systems are in use when running your digital collections software?

Select one or more of the options below.

D4.1



Unix 3.5% (2)

Linux

54.4%

(31)

Microsoft Windows

57.9%

(33)

OpenSolaris 1.8% (1)

Mac OS X 1.8% (1)

Other: Linux backend. Browser frontend 1.8% (1)

Other: software (CollectionConnection) is platform independent

1.8% (1)

19. According to the previous question, which "flavour" of operating systems?

UNIX: AIX BSD Caldera FreeBSD HP-UNIX etc.

LINUX: Debian Slackware Fedora Mandriva Suse Ubuntu Knoppix Gentoo

Mepis Xandros Red-hat etc.

WINDOWS: Windows NT Windows 2000 Windows 2003 Windows2008 etc.

Response

1 - Linux: Debian 3.1 - Solaris 10

1 ?

1 CentOS Linux (this is a RedHat Enterprise Linux Free Alternative) or Debian Linux

1 LINUX

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1 Linux CentOS 5.

1 LINUX debian Windows XP

1 Linux: Ubuntu 8.04 Windows: WIN2000 Server

1 LINUX: Debian

1 Microsoft Windows 2003 Server, Ubuntu

1 Redhat Application server Windows 2003 server

1 UNIX: FreeBSD

1 We use RHEL ES and Windows Server 2003

1 Windows - Windows2008 Linux - Fedora, Ubuntu and Red-Hat

5 Windows 2003

1 Windows 2003 SBS

1 windows 2003 server

1 Windows 2003 Server R2

1 Windows 2003, Linux Debian

1 Windows NT, Windows 2000, Windows XP

1 Windows Server 2000

1 Windows Server 2003

1 Windows Server 2003 Enterprise Edition

2 Windows XP

1 windows xp | Vista

1 Windows XP, Windows 2003

1 WINDOWS: Windows 2003

1 Windows: Windows 2003 Windows 2000 Windows XP

1 WINDOWS: Windows NT Windows 2000 Windows 2003 Windows2008 etc.

20. Which systems are used to host your digital collections on the Internet?

Select one or more of the options below.

D4.1



DSpace 5.3% (3)
Fedora Commons 1.8% (1)
EPrints (0)
Greenstone 1.8% (1)
UMProvider (0)
OAIA (0)
ZMARCO (0)
Other: AIP Safe 1.8% (1)
Other: AROP - Enterprise Resource Plannig 1.8% (1)
Other: Collection not available in the internet yet 1.8% (1)
Other: CollectionConnection 1.8% (1)
Other: Custom 1.8% (1)
Other: Custom built 1.8% (1)
Other: custom software'' 1.8% (1)
Other: custom system 1.8% (1)
Other: DigitArq 1.8% (1)
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Other: dLibra
33.3%
(19)
Other: Indexing system based on ASP and mysql. Navigation within each document is based on HTML pages created from a tool developed by Biblioteca Nacional de Portugal (ContentE) which is widely used in portuguese libraries that joined a national digitalization project. DSpace is used mainly for preservation purposes.
1.8% (1)
Other: inhouse developed 1.8% (1)
Other: iNode 1.8% (1)
Other: Internet information server 1.8% (1)
Other: Lucene/Solr 1.8% (1)
Other: multihost Drupal, Greenstone 1.8% (1)
Other: Não possuímos 1.8% (1)
Other: None 3.5% (2)
Other: none 1.8% (1)
Other: Not Applicable 1.8% (1)
Other: Not available on www 1.8% (1)
Other: not available on www 1.8% (1)
Other: OPUS 1.8% (1)
Other: Organization Server 1.8% (1)
Other: own 1.8% (1)
Other: Roxen CMS 4.5 1.8% (1)
Other: Selfmade asp/asp.net application 1.8% (1)
Other: Siderean Seamark, Alfresco 1.8% (1)
Other: SIRPAC 2 DB Server 1.8% (1)
Other: tomcat application 1.8% (1)
Other: VTLs/Virtua 1.8% (1)
Other: we don't have ours collections available on the internet yet. 1.8% (1)
21. Is the system OAI-PMH compliant?
Yes 61.4% (35)
No 38.6% (22)

TOTAL

100.0%

57 (57)

22. If your system is not in the above list, please state its name, whether it is widely used and give a brief description how it works.

Response

1 ?

1 CollectionConnection is an infrastructure which harvests and publishes information, and can be harvested itself by others

1 Digitalq is a package of applications for archival description, management of digital objects and a search engine for the web. The archival description is encoded with the EAD (Encoded Archival Description). More information: http://www.adporto.pt/ficheiros_a_descarregar/1-5_digitalq_project.doc A new version, produced with requirements established by the Directorate General of Archives (DGARQ, phpESP, v(2.1.2) <http://www.avinet.no/phpesp2/admin/manage.php?where=results&sid=17> 17 of 20 25.01.2010 09:47

Portugal), will be installed soon and available for other archives.

1 Local configuration

1 Navigation within each document is based on HTML pages created from a tool developed by Biblioteca Nacional de Portugal (ContentE) which is widely used in portuguese libraries that joined a national digitalization project. DSpace is used mainly for preservation purposes.

1 OPUS is a system for managing and publishing electronic documents, typically at research institutions. It is used in more than 40 universities in Germany and four regional library service centers. "Publishing with OPUS means: converting the electronic document to PDF (portable document format) and writing some metadata about it, which will be stored in Dublin Core format using a SQL-database. Retrieval will therefore have the typical functionality of other well-known online databases - different search-fields, truncation-options, Boolean operators etc." (<http://elib.unistuttgart.de/opus/doku/about.php?la=en>) We plan to replace OPUS and use another repository system and internet portal for our digital collections, since OPUS functionality is limited with respect to our application scenario.

1 Our content is served by Roxen CMS 4.5. Roxen CMS is a commercial content management system. It is widely used, particularly in Scandinavia, the US and the Netherlands, in the publishing and university sectors. Roxen runs its own web server, stores content primarily as XML files on the filesystem (but also has an embedded MySQL instance), and is implemented primarily in the proprietary language Pike.

1 Our system is partly in use by Hordaland and MÅre og Romsdal municipality

1 Professional CMS. <http://www.aipsafe.cz/en>

1 See: <http://k-int.com/product.php?id=4>

1 Siderean Seamark: system for management and navigation of RDF repositories (the RDF statements are stored by Seamark in a MySQL database). Seamark can also provide access to the data via webservices (<http://www.siderean.com/>) Alfresco is used to store and manage the images.

1 Solr is an open source enterprise search server based on the Lucene Java search library. See <http://lucene.apache.org/solr/> Basically our metadata is stored in an xml format in a Lucene index. On the website the search form uses SOLR to extract the required data. The xml metadata is updated every night based upon exported data from the original proprietary databases (from Adlib Information Systems).

1 System has been built on the base of ICCD standards (Italian Central Institute of Cataloguing and Documentation), based on OAI-PMH.

6 The dLibra software is widely used in Poland. You can find more details here:
<http://dlibra.psnc.pl/>

4 The dLibra software is widely used in Poland. You can find more details here:
<http://dlibra.psnc.pl/>

8 The dLibra software is widely used in Poland. You can find more details here:
<http://dlibra.psnc.pl/>

1 The system is called Kerquery. It is java based and run on Tomcat 5.5.27. It works with PostgreSQL and uses OCLC's OAICat Repository Framework to disseminate oai compliant records

1 The system is custom built for NLL, codenamed DOM from digital object management. It has a secure Storage capacity, Ingest and Access parts as well.

Objects are ingested in various xml based custom formats, which can be exported as phpESP, v(2.1.2) <http://www.avinet.no/phresp2/admin/manage.php?where=results&sid=1718> of 20 25.01.2010 09:47

DC and other schemas via OAI-PMH

1 We have developed a system to host and manage our digital collection. It is similar to Greenstone.

1 We run exclusively custom-made systems

1 Zebra Server, www.indexdata.dk

23. Which Internet bandwidth is available from your server infrastructure?

Select one or more of the options below.

Internet out < 1MB/s 5.3% (3)

Internet out 1-2 MB/s 12.3% (7)

Internet out 2-4 MB/s 17.5% (10)

Internet out 4-10 MB/s 12.3% (7)

Internet out > 10 MB/s 56.1% (32)

Information related to repositories and harvesting infrastructure.

24. Do you know of any other metadata and/or content aggregation initiatives in your country? If yes, please describe them and state whether you contribute metadata to any of them and by what method (harvesting, FTP, SRU, Z39.50, storage media etc).

Response

1 'De Vlaamse kunstcollectie' collects data from 3 museums of fine arts. One of these museums is also partner in our project. This museum contributes the same data using an export out of their database. We're not involved in that.

1 ABM-U are harvesting content via non-standard protocols.

1 BnF AD Gironde (EDLocal french partner)

1 CulturaItalia - <http://www.culturaitalia.it> - is a cooperative network of public and private cultural institutions.

1 Danske Billeder: Z39.50

1 Direcção-Geral de Arquivos, Lisboa, Portugal (www.dgarq.gov.pt)

1 DISMARC, www.dismarc.org (audio provider to Europeana)

1 <http://openarchives.gr> is a Greek Digital Libraries Search Engine. Openarchives.gr uses metadata harvesting to gather information from digital libraries.

Openarchives.gr utilises the OAI-PMH protocol

2 No

1 No, I don't know

1 No.

1 Other metadata and/or content aggregation initiatives in Germany include: - partners of Europeana, e.g. Bayerische Staatsbibliothek, Deutsche Nationalbibliothek, Staats- und Universitätsbibliothek Göttingen, Die Sächsische Landesbibliothek - Staats- und Universitätsbibliothek Dresden (SLUB) etc. - Central

Index of Digitized Imprints (Zentrales Verzeichnis Digitaler Drucke, <http://www.zvdd.de/english.html>) - regional library service centers, such as the BVB (Bavaria), KOBV (Berlin-Brandenburg), etc. The German Digital Library (“Deutsche Digitale Bibliothek“) is about to be developed and will include metadata/content aggregation activities. A first prototype is planned to be available in 2010. Currently, we contribute our metadata and content only to our regional library service center ‘KOBV’. Single documents and their metadata are uploaded manually, while multiple documents are imported with basic import scripts. phpESP, v(2.1.2) <http://www.avinet.no/phpesp2/admin/manage.php?where=results&sid=17>
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1 Our National Library is building a National Digital Library at the moment, see Composite News Bulletin, June 2008 of our Ministry of Education http://www.minedu.fi/OPM/Tiedotteet/composite_news_bulletins/2008/june.html?lang=en We do not contribute any metadata yet.

1 Provincie Oost-Vlaanderen = co-partner in Belgium. Their MovE project provides for museums on-line facility to maintain their inventory with Adlib Museum software. Currently there is no connection with the system of Limburg.

1 SRU

13 We are a part of the PIONIER Network Digital Libraries Federation (<http://fbc.pionier.net.pl/>). It uses the OAI-PMH harvesting to get our metadata.

8 We are a part of the PIONIER Network Digital Libraries Federation (<http://fbc.pionier.net.pl/>). It uses the OAI-PMH harvesting to get our metadata.

1 We are going to aggregate from Malta from various providers. Including private museums, audio visual libraries, local collections and libraries.

1 We have a regional portal that harvest us using OAI-PMH. It develop an adaptation of the DC schema available at <http://bnsa.patrimoines.aquitaine.fr/portail/schemas/aquipat.xsd>. The portal is available here <http://bnsa.patrimoines.aquitaine.fr/apd/web/>

1 www.geheugenvannederland.nl www.collectiewijzer.nl www.collectiegelderland.nl www.mijngelderland.nl www.geschiedeniszeeland.nl www.brabantwijzer.nl We will contribute metadata to www.brabantwijzer.nl shortly (they will harvest www.thuisinbrabant.nl).

[Go back to Management Interface](#)

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Appendix 2: Report of evaluation questionnaire

2a – first workshop

phpESP

[Help](#)

EuropeanaLocal Implementation Planning

Phasing of individual partners' content ingestion

As the final stage of the first set of technical workshops, the content provider participants will be requested to fill in this questionnaire in order to plan individual partners' content ingestion schedule. Only one survey should be filled in per partner.

1. Please state the name of your organisation?

D4.1



Response

- 1 ABM (Stiftelsen Asta)
- 1 ABM-utvikling
- 1 Erfgoed Brabant
- 1 Fylkesarkivet i Sogn og Fjordane
- 1 Provincie Limburg
- 1 Provincie Oost-Vlaanderen
- 2. Please state the name of your country?

Response

- 2 Belgium
- 1 Norge
- 2 Norway
- 1 The Netherlands
- 3. What would be the best time for your content ingestion?

Response

- 1 Between November 2009 and February 2010
- 1 During the second half of 2009.
- 1 Early 2010
- 1 End of 2009
- 1 Juni 2009.
- 1 May 2010
- 4. What geographical/administrative "level" does your organisation represent?

Trans-national (0)
National 33.3% (2)
Regional (e.g. county, province, region) 66.7% (4)
Local (e.g. municipality) (0)
TOTAL
100.0%

6 (6)
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- 5. Will you be running a "content provider repository" or "aggregator repository" service?

Provider (own content only) 50.0% (3)
Aggregator (content from "underlying" providers only)
33.3% (2)

Both (own content and content from "underlying" providers)
16.7% (1)

TOTAL
100.0%

6 (6)

- 6. Will your content be contributed to Europeana through an aggregator? If yes, please specify the name of the aggregator entity and service.

Our repository will be harvested directly
by Europeana
66.7% (4)

Name of aggregator entity and service
ABM-Utvikling
16.7% (1)

D4.1



Name of aggregator entity and service

ABM-utvikling

16.7% (1)

TOTAL

100.0%

6 (6)

7. Approximately how many items do you think you will be able to contribute to EuropeanaLocal throughout the project period? (A rough guess is perfectly ok - this information will never be held against you :-) Please give one number only.

Response

1 1000000

1 300000

1 390000

1 50000

1 75000

8. Are there any issues/comments/questions you would like to share with us which you think may be relevant in order to facilitate trouble-free implementation of your OAI-PMH repository?

Response

1 How will the final mapping be and how to cope with extra information outside the basic mapping? How to cope with stream-video?

1 Specifications should be complete en complemented by clear guidelines. Feedback and quality control are essential.

1 We need help/advise to determine the proper repository technology for our case.

1 We still need to make some decisions regarding how to add OAI-PMH functionality to our system. We can do this probably ourselves with the help of our own technical partners, but may require additional information. Guidelines for interpretation of ESE for correct transformation ESE are essential.

1 We will have to map eventual additional extension that can be suitable for describing archival data and the internal linking found in archives. We need a comprehensive manual.

phpESP, v(2.1.2) <http://www.avinet.no/phpesp2/admin/manage.php?where=results&sid=21>

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9. Evaluation I: Was the workshop helpful in order for you to improve your understanding of the tasks at hand? Please indicate 1 if the item needs improvement, 2 if ok and 3 if good. Please state N/A if you were not present at the specific item.

Average rank

1 2 3

Introduction to workshop (2.8)

Introduction to Europeana (1.5)

Presentation from content expert (3.0)

Repository installation training (1.7)

Metadata harvesting training (2.3)

Data transformation training (1.7)

Overall impression of technical workshop (2.5)

10. Evaluation II: Do you have any comments or suggestions on how we can improve the technical workshops? What would you like to see from the next set of workshops?

Response

1 Distribution of some documentation in advance would be helpful.

1 I'd suggest a practical solution to distributing files used in the workshop (e.g. ftp) preferably prior to the workshop.

1 It would be good to have, in advance, good documentation about the instructions during the training.

1 Litt meir utfyllande/strukturert informasjon om kva som vil skje i etterkant av at workshopen er ferdig (kva bør vi gjere, korleis vil vi bli fulgt opp av Avinet etc).

1 Technical setup could be easier. A set of written instructions for reference during the exercises would be helpful.

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Appendix 2: Report of evaluation questionnaire

2b – second through fourth workshop

phpESP

[Help](#)

EuropeanaLocal Technical Workshop EvaluationPlanning

Phasing of individual partners' content ingestion

As the final stage of the first set of technical workshops, the content provider participants will be requested to fill in this questionnaire in order to plan individual partners' content ingestion schedule. Only one survey should be filled in per partner.

1. Please state the name of your organisation?

Response

1 ABM-utvikling / Kulturit

1 AcrossLimits

1 AIT

1 archives départementales de la Gironde

1 Békés County Knowledge Centre and Library

1 City of Helsinki

1 Cluj County Library

1 Cross Czech a.s.

1 DIZI, UAB

1 Estonian National Museum

1 FMNF

1 Ministry of Culture

1 Murberget, Länsmuseum Västernorrland

1 National Library of Latvia

1 NUK - National and university library of Slovenia

1 Public Library Varna

1 Roskilde Bibliotekerne

1 the cyprus institute

1 Veria Central Public Library

2. Please state the name of your country?

Response

1 Austria

1 Bulgaria

1 cyprus

1 Czech Republic

D4.1



1 Denmark

1 Estonia

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1 Finland

1 France

1 Greece

1 Hungary

1 Latvia

1 Lithuania

1 Malta

1 Norway

1 Portugal

1 Romania

1 SLOVENIA

1 Spain

1 Sweden

3. Which workshop did you attend?

Limburg (0)

London 52.6% (10)

Bratislava 1 21.1% (4)

Bratislava 2 26.3% (5)

TOTAL

100.0%

19 (19)

4. What would be the best time for your content ingestion?

Response

1 2010 beginning

1 already available 3 repositories exposing data in simple DC possible to make those ESE compliant before July Deployment of the generic solution by early 2010

1 As soon as possible.

1 as soon as possible via OAI from <http://www.europeana-local.at/mdm/oai/>

1 ASAP!!

1 December 2009

1 DIZI, UAB is coordinator for two museums, content providers. Their content will be described by the end of 2009. We hope to normalize metadata for harvesting until March or April 2010.

1 It's already available

1 January 2010

1 next year

1 Probably before June 2010. Have not discussed dates yet, depends of ABM-plans.

1 Ready to install repositories September 2009.

1 repository installing, metadata fiddling and repository population autumn 2009

1 September 2009 - August 2010

1 Spring - summer 2010 - we need to organize some more workshops to elaborate and smooth process (with our sub- associated organisations).

1 Starting April 2010

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1 Starting March, 2010.

1 We are now collecting .xml from providers to manual feed a repository. This could be use, or not, to feed Europeana. After this tests and mappings and corrections. we

D4.1



11 install repository in all providers.

1 With our dc-based metadata format from know. (Our repository is live). With ESE-mapped metadata in 1-2 months.

5. What geographical/administrative "level" does your organisation represent?

Trans-national (0)

National 52.6% (10)

Regional (e.g. county, province, region) 42.1% (8)

Local (e.g. municipality) 5.3% (1)

TOTAL

100.0%

19 (19)

6. Will you be running a "content provider repository" or "aggregator repository" service?

Provider (own content only) 26.3% (5)

Aggregator (content from "underlying" providers only)

15.8% (3)

Both (own content and content from "underlying" providers)

57.9% (11)

TOTAL

100.0%

19 (19)

7. Will your content be contributed to Europeana through an aggregator? If yes, please specify the name of the aggregator entity and service.

Our repository will be harvested directly by Europeana

84.2%

(16)

Name of aggregator entity and service

ABM-utvikling

5.3% (1)

Name of aggregator entity and service

Acrosslimits

5.3% (1)

Name of aggregator entity and service

CIMEC Romania

5.3% (1)

TOTAL

100.0%

19 (19)

8. Approximately how many items do you think you will be able to contribute to EuropeanaLocal throughout the project period? (A rough guess is perfectly ok - this information will never be held against you :-). Please give one number only.

Response

1 1000

1 10000

1 100000

1 17500

1 20000

1 200000

1 2000000

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1 201003

1 22000

1 224000

1 25000

1 30600

2 4000

1 500

1 5000

1 500000

1 90000

9. Are there any issues/comments/questions you would like to share with us which you think may be relevant in order to facilitate trouble-free implementation of your OAI-PMH repository?

Response

1 Handling of inexact dates is important for us because most of our digital objects are part of the bibliographic heritage and so they have not certain dates, and they are provided at the century or decade level

1 i think installation is going to be okay, just the transformation processes are going to be a bit problematic but that's to be expected.

1 Metadata transformation guidelines and examples should help as most.

1 Need to agree on guidelines on how to implement dates

1 OAI-PMH repository need to support no "sets" (harvest all records)?

1 There are issues with the depositories of the cooperating organisations,

1 This question is to early.

1 We are changing to a different library system and another technical platform. We might like som individual consulting on how to decide for the best solutions.

1 We don't currently have any issues on this.

1 We need a propper XSD to create a XML which can be ingested without any semantic problems. We would like to be frequently informed on technical issues via an email

1 We will test at home the solution and we ask you the questions if we have the problems.

1 What is the best way to harvest EAD files without having to import them first to a database ? So far Repox does not seem to be able to map EAD type files and other solutions all seem to rely on extracting data from a database. Also, what is the relation between OAI records and semantic development that are part of the project (SKOS, RDF, etc...)

10. Evaluation I: Was the workshop helpful in order for you to improve your understanding of the tasks at hand? Please indicate 1 if the item needs improvement, 2 if ok and 3 if good. Please state N/A if you were not present at the specific item.

Average rank

1 2 3

Introduction to workshop (2.6)

Introduction to Europeana (2.7)

Presentation from content expert (2.4)

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Repository installation training (2.2)

Metadata harvesting training (1.9)

Data transformation training (1.8)

Overall impression of technical workshop (2.2)

11. Evaluation II: Do you have any comments or suggestions on how we can improve the technical workshops? What would you like to see from the next set of workshops?

Response

1 Better english speaking. More individual training and sparring on the situations in the different countries. Examples on how to do, how has other institutions done, how will other partners do. More written material and better presentations.

1 Better internet access.. (-8 Real test of our live repository.

1 Bigger meetingroom.

1 I guess that installation of a simple repository with Repox might need a further explanation on several issues (mainly about the population of digital objects files, I mean, not just metadata)

1 I think that working on concrete partner situations would have been helpful. By asking partners to bring some of their dataset and trying to transform them into proper OAI records would have been appreciated. Also so far all the tool or example seem to address the library context and there was not much about archives. What about the Europeana environment also ?

1 i would like to see some sort of a chart which visualizes the EuropeanaLocal's dependencies on other projects, f.ex. regarding metadata specifications, guidelines, different versions of the Europeana software etc. i look forward to the technical implementation manual.

1 Institutions represented by DIZI do not have their own servers, they are buying hosting services. Possibilities to configure servers or install tools presented at workshop are limited. Anyway, now we are working with PHP based OAI-PMH service.

1 More practice to Europeana's sand box

1 More specific technical solutions, regard for metadata crosswalks , eg.

ISAD(G)/EAD to DC, ... there in the EuropeanaLocal documens were stated that it will be support for metadata mapping through some kind of tools, which will ease the work especially for data provider. The Repox from TEL+ project does not provide such support.

1 Something to take home. Perhaps some guidelines or other documents. The installation of the tools could be done at the local sites because it is quite easy. Technical personell is able to install it anyway and people who are not familiar with install routines might be best served with an image of a virtual machine (virtualbox, vmware) available via the europeana local web site. Some more test cases might be helpful as well. Instructions to transform data into FOXML. A FAQ of known problems that could occur (java version) should be placed online. The list sould be extended during the workshops. Long introductions to Europeana Local are not needed because we know about it.

1 Step - by - step manuals.

1 Technical partners can explain technical issues on a technical level. Microsoft approach "click next" is not appropriate for IT people.

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1 The partner will come with their solution and we discussion the solutions presentation and the problems.

1 The training was confusing because we did not know the technical content of what we installed. Maybe it would have been easier if you have started with the normalization and database extraction.

1 Using of a complete example, with ESE, since client until europeana. Mapping resolutions to some standarts to ESE. separate Archives, museum and library (3 examples "study cases").

1 Well done :) Wifi in the conference room however would be better next time.

[Go back to Management Interface](#)

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Appendix 4: Technical primer

EUROPEANALOCAL

Technical Primer

Overview of Europeana Local

Implementation Steps

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Revised version 16.12.2008

This document gives a brief overview of the tasks to be executed by Europeana Local Content Contributors with aid from Technical Partners and supporting material supplied by the European Digital Library Foundation and other Europeana related projects and initiatives.

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Introduction

This document gives a brief overview of the tasks to be conducted by content provider who wishes to contribute his or her organization's content to Europeana Local throughout the project. The topics covered in this document may change with the development in technologies and the evolution of the Europeana service.

The following elements are covered briefly:

- **Digital collections:** the characteristics of digital collections and what they are in the context of the Europeana Local project
- **Repository installation:** the steps involved in choosing and installing a suitable repository technology
- **Metadata Transformation:** an abstract term covering metadata extraction, metadata normalization and metadata enrichment.
 - **Metadata Extraction:** the process of "reading" metadata from local collection management systems, mapping them to a target metadata profile and writing them into a format readable by the chosen repository technology
 - **Metadata Normalization:** the process of transforming attribute values from one notation to another. E.g. standardized way of expressing dates, transformation of coordinates etc.
 - **Metadata Enrichment:** automatically or semi-automatically processing of metadata with the purpose of improving the quality of *what*, *who*, *where* and *when* metadata
- **Repository Population:** the process of loading data into the chosen repository software based on custom metadata extracts or export of known standard formats
- **Metadata Harvesting:** the process of connecting to a repository, issuing a request for data and downloading metadata content as XML
- **Aggregator Repositories:** an explanation of what an aggregator repository is compared to a

content contributor repository and what it can be used for

• **End-user Services:** a brief discussion on existing Europeana end-user services and potential future services utilizing Europeana and OAI-PMH infrastructure.

This document serves as an introduction to the Europeana Local Implementation Manual, a comprehensive document which forms the basis for technical workshops and which serves as a reference during implementation of OAI-PMH compliant repositories.

The Europeana Local Implementation Manual will explain in more detail the specifics of each of the above steps and thereby clarify any questions which may arise from this introduction. The document will be released prior to the technical workshops.

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Repository Implementation Workflow

Diagram 1: The above diagram shows the process of implementing OAI-PMH compliant repository solutions on top of digital collections held by local content providers – thereby contributing content to the overall Europeana infrastructure. The red boxes indicate existing collections, the blue boxes indicate one-time activities such as repository installation, orange boxes indicate tasks to be undertaken by content providers and green boxes indicate tasks to be executed by Europeana. Solid lines indicate direct participation, stippled lines indicate indirect contribution in the form of supporting documents, standards etc.

Digital collections

A digital collection is an abstract term used to reference the whole *or* part of a database. There is no universal definition of the term, but in Europeana Local it is used about the content listed in the original project application – as well as content from any new data sources associated with the project throughout the execution period.

One database with a uniform structure can hold more than one digital collection. However, from a technical perspective a digital collection is all data which can be extracted from the same set of tables in one database, carrying the same set of attributes – without heed to thematic divisions based on content types, themes etc.

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This distinction is useful in the implementation process as more than one collection may be added to a local OAI-PMH compliant repository through one and the same metadata extraction/repository population operation. The workload of each content contributor partner largely depends on the number of different systems data have to be retrieved from. If an institution holds 10 collections in one collection management system it is a limited task – if an institution holds 10 collections in 10 collection management systems the task multiplies tenfold.

Repository installation

The first step on the way to implanting a local collection into the Europeana infrastructure is to install a repository software locally – or to enable and configure repository software which already exists in the local collection management system.

This task involves a number of steps:

- Choosing a suitable repository software (Europeana Local will make and offer support for a recommendation solution) based on existing software, operating system and platforms.
- Installing the repository software on local hardware
- Configuring the repository to work in connection with existing or embedded web server functionality and ensuring that the OAI-PMH web service protocol responds in a standards compliant manner to any requests from external harvesting repositories

This process will be covered in great detail in the EuropeanaLocal Implementation Manual to be circulated to content contributors prior to Europeana Local technical workshops in the winter of 2009.

Metadata Transformation

Metadata transformation is the process of moving data from its source collection management

system, mapping to a target metadata profile, normalizing content attributes and enriching the metadata through various automatic and semi-automatic techniques.

Metadata extraction from local collection management system to local repositories

Once a local repository is installed and functioning, the process of extracting metadata to populate the repository can be initiated. This process can be simple or complex, potentially requiring a lot of manual customization work and entry-level programming – it all depends on whether the local collection management system used to maintain the digital collection offers any standard forms of export, e.g. MARC records, which can then be normalized and automatically be imported by the repository software.

If no export option exists, the alternative is most often to write simple SQL-scripts which connects to the data source (typically a SQL-compliant RDBMS) and reads metadata directly from the physical data structure. This requires extensive knowledge about the individual system and may require scripts to be modified as software gets upgraded. It is therefore preferable to use commercial repository add-on modules to existing collection management systems if such exists, to implementing custom ones.

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Metadata will be transformed into an element set defined by the European Digital Library Foundation called Europeana Semantic Elements. This is an application profile based on qualified Dublin Core with the addition of a few custom elements to support extended functionality in the Europeana end-user service.

Metadata normalization

Metadata normalization is the process of harmonizing attributes which express the same information with different formatting and or notations and to ensure the data required to support Europeana functionality is present in each record. This is necessary to allow interoperability between content which originates in heterogeneous sources. The current Europeana prototype uses temporal metadata – dates – to visualize items along a timeline. This would not be possible unless dates were expressed according to a strictly defined format by all content providers.

Example: One collection may express dates like this “January 12, 2008” (Month dd, yyyy) while another expresses them like this “12/24/2008” (mm/dd/yyyy). To enable them to be used in the timeline function they will have to go through a normalization process to provide a common date format e.g. “2008” (yyyy).

Details on mapping and normalization will be found in upcoming versions of Europeana Semantic Elements and associated guidelines documents and the example above is merely meant to illustrate the process.

Metadata enrichment

Not strictly a part of the process of contributing content to Europeana, Metadata Enrichment can't be neglected if the goal is to provide content for good services – not just content.

Metadata enrichment is the process of trying to improve the quality of metadata both in the local digital collection but also once the metadata is to be used out-of-context and together with metadata from other sources including issues such as multi-lingual content, spatial references, temporal references, mapping to common vocabularies and identification of authorities.

Relevant standards, tools, and technologies that will be looked into throughout the project include:

- Dictionary description notations such as SKOS
- Translation utilities such as Google Translate, Babelfish etc.
- Indexing and keyword extraction utilities
- Location extraction utilities
- Date extraction utilities

Most metadata enrichment techniques involve some manual effort on the part of the content contributor. Most automated techniques are faulty and can lead to errors – the only way of making sure metadata has the proper quality is to make sure proper quality procedures are in place at the

time of entry and maintenance through the collection management system.

Repository population

Once metadata has been extracted or exported from a source system, the next step is to setup automatic loading of the metadata into the repository. A schedule should be defined based on the

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update frequency of the local digital collection. Some collections are finite and won't grow or change. In such cases – the loading of data can be done once – and no more.

Metadata harvesting

From this stage and onwards, the content has entered the realm of Europeana which is responsible for harvesting content and providing end-user services.

With all the previous steps being completed, harvesting repositories can now connect to your local repository, issue queries and download content – subject to being authorized from you as a repository manager.

Typically, the harvesting will function along the same lines as a search engine spider. An external web service will connect to your local repository web service once in a while (every night/every week/every month) and download all metadata – or delta sets containing the changes (inserts/edits/deletions) since “last visit”.

Aggregator Repositories

Aggregator repositories can in many cases be the same technology as the source repositories installed in your organization and mentioned above. However, these repositories will contain a web service requester which will scan through a list of source repositories according to a preset schedule. This type of repository will get its content from harvesting source repositories rather than from local collection management systems. Such aggregator repositories include the underlying database of the Europeana Service and some national portals which base their services on harvesting via OAI-PMH but many more could – and most likely should – be added at regional/national level in order to justify the level of investments required to enable local content for the Europeana infrastructure.

End-user Services

The real benefit of enabling local content into the Europeana infrastructure comes through the exposure, cross-domain and cross-geography searches allowed by the Europeana end-user service. Here, your content will live alongside other content from numerous databases across Europe and may be rendered as result to any number of searches that you or anyone else never thought of performing.