Access IT Training

How objects and metadata from digital repositories can be reused?

Agenda

- **Introduction**
- Metadata reuse scenarios
  - OAI-PMH
- Object content reuse scenarios
  - OAI-ORE
- Persistent identifiers
- Conclusions

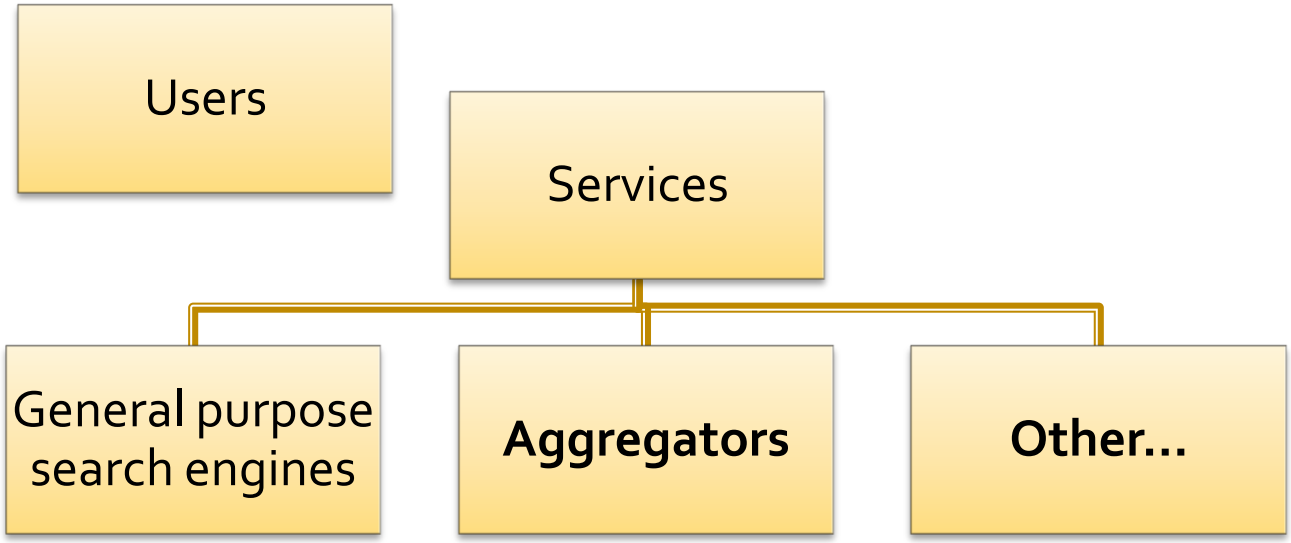
Metadata and object reuse

- *„It is highly probable that digital libraries are created for users"* ☺
- We assume that someone will:
  - read books
  - analyze manuscripts
  - watch old documentaries
  - …

Goals of this presentation

- Go beyond „walls" (pages) of our digital library
  - Discuss how to attract users to our digital library
  - Show why it is a good thing to encourage others (users/services) to reuse digital library objects
- Show why OAI-PMH is such a big thing
- Investigate how digital libraries can be used in education
- Talk a bit about persistent identifiers

Who will reuse DL content?



What can be reused?

- **Metadata records**
  - Various protocols and formats
- Object content
  - Text, images, video etc.

Agenda

- Introduction
- **Metadata reuse scenarios**
  - OAI-PMH
- Object content reuse scenarios
  - OAI-ORE
- Persistent identifiers
- Conclusions

Metadata Aggregators

- Metadata can be reused through aggregation
- Definition:
  - "*An **Aggregator** is an organization that collects metadata from its group of content providers and transmits them to Europeana, helps content providers with guidance on conformance with Europeana norms and converts metadata if necessary. The aggregator also supports the content providers with administration, operations and training.*"

Europeana Content Strategy

Metadata Aggregators

- Aggregator gathers metadata from a number of repositories/digital libraries
- On top of those data new advanced network services can be built
  - Metadata unification and cleaning
  - Forwarding metadata to other services
  - Unified access point to all resources

Metadata Aggregators

*„The model of aggregation of content is of **crucial importance** and will enable Europeana to reach its objectives. **Aggregators**, on a national, regional or vertical level, **play a key role** not only in aggregating content, but also in the organizational structure, standardization of content, services to end-users and **future sustainability of Europeana and related projects** and aggregators"*

Europeana Content Strategy

Metadata Aggregators

- Two types of aggregation
  - Horizontal aggregation
    - General purpose aggregation
    - Gathers metadata of various resources from different institutions
  - Vertical aggregation
    - Thematic aggregator
    - Gathers information about specific types of objects
      - e.g. European Film Gateway

Metadata aggregation and reuse

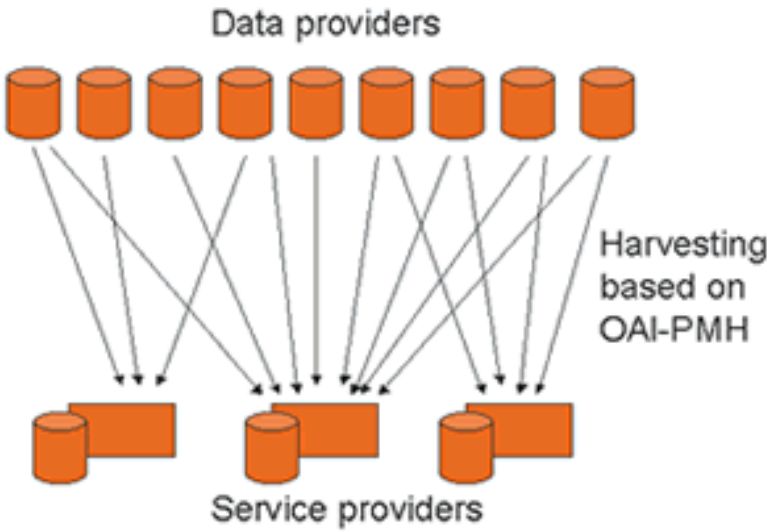
- Metadata aggregation can be realized using different means one of them is OAI-PMH

Metadata exchange using OAI-PMH

- OAI-PMH – Open Archives Initiative Protocol for Metadata Harvesting
  - Defines two actors
    - data providers (repositories)
    - service providers (harvesters)

Metadata exchange using OAI-PMH

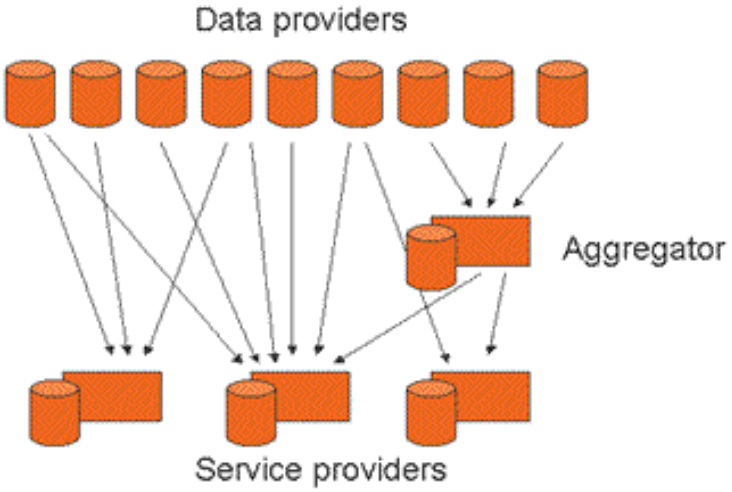
- Service providers provide services based on the metadata harvested from data providers

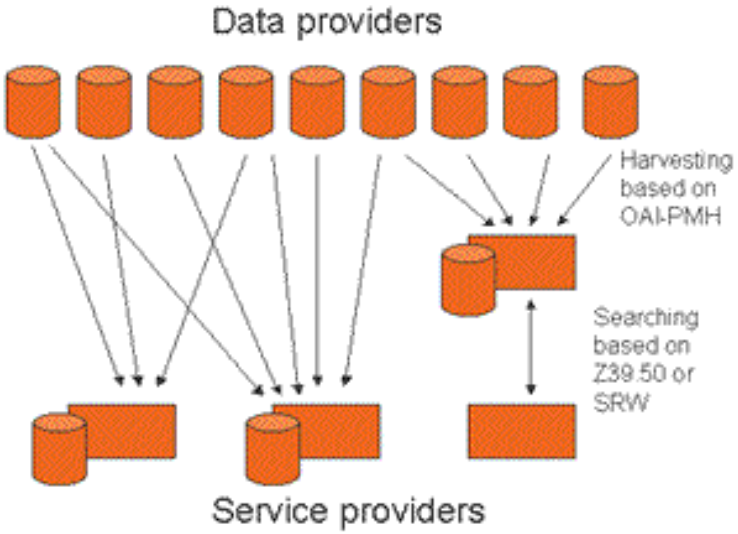


OAI for Beginners - the Open Archives Forum online tutorial
(http://www.oaforum.org/tutorial/english/intro.htm)

Metadata exchange using OAI-PMH

- Service providers provide services based on the metadata harvested from data providers





OAI for Beginners - the Open Archives Forum online tutorial
(http://www.oaforum.org/tutorial/english/intro.htm)

Metadata exchange using OAI-PMH

- OAI-PMH – Open Archives Initiative Protocol for Metadata Harvesting
  - XML based
  - Built on top of HTTP protocol
  - Widely used
    - Over 2 000 repositories worldwide containing several millions of records
  - More info: http://www.openarchives.org/

Metadata exchange using OAI-PMH

- OAI-PMH Repository data structure
  - Repository contains items
  - Item may be described in multiple metadata schemas
  - Item must be described with Dublin Core schema (15 general attributes – title, author etc.)
  - Metadata is exchanged via records
    - entire description of an item in the particular schema
    - headers (basic description - id, modification date etc.)

Metadata exchange using OAI-PMH

- OAI-PMH Repository data structure
  - Repository may define sets (groups of items) – possible usage:
    - Subject sets, MIME type sets, …
  - Set may contain subsets
  - Each item may belong to zero or more sets
  - Sets are used for selective harvesting – they allow to harvest only a part of a repository

Metadata exchange using OAI-PMH

- Communication between OAI-PMH data provider and service provider is based on predefined verbs, which includes:
  - Identify
    - Basic information about repository and its OAI-PMH interface
    - http://www.wbc.poznan.pl/dlibra/oai-pmh-repository.xml?verb=**Identify**
  - ListIdentifiers
    - Lists identifiers for a given set and metadata format
    - http://www.wbc.poznan.pl/dlibra/oai-pmh-repository.xml?verb=**ListIdentifiers**&set=**DigitalLibraryOfWielkopolska**&from=**1998-01-15**&metadataPrefix=**oai_dc**

Metadata exchange using OAI-PMH

- ListMetadataFormats
  - Lists supported metadata formats
  - http://www.wbc.poznan.pl/dlibra/oai-pmh-repository.xml?verb=**ListMetadataFormats**
- ListRecords
  - Lists records for a given set and metadata format
  - http://www.wbc.poznan.pl/dlibra/oai-pmh-repository.xml?verb=**ListRecords**&from=**1998-01-15**&set=**DigitalLibraryOfWielkopolska**&metadataPrefix=**oai_dc**

Metadata exchange using OAI-PMH

- GetRecord
  - Gets content of given record
  - http://www.wbc.poznan.pl/dlibra/oai-pmh-repository.xml?verb=**GetRecord**&metadataPrefix=**oai_dc**&identifier=**oai:www.wbc.poznan.pl:1490**
- ListSets
  - Lists available sets
  - http://www.wbc.poznan.pl/dlibra/oai-pmh-repository.xml?verb=**ListSets**

Metadata exchange using OAI-PMH

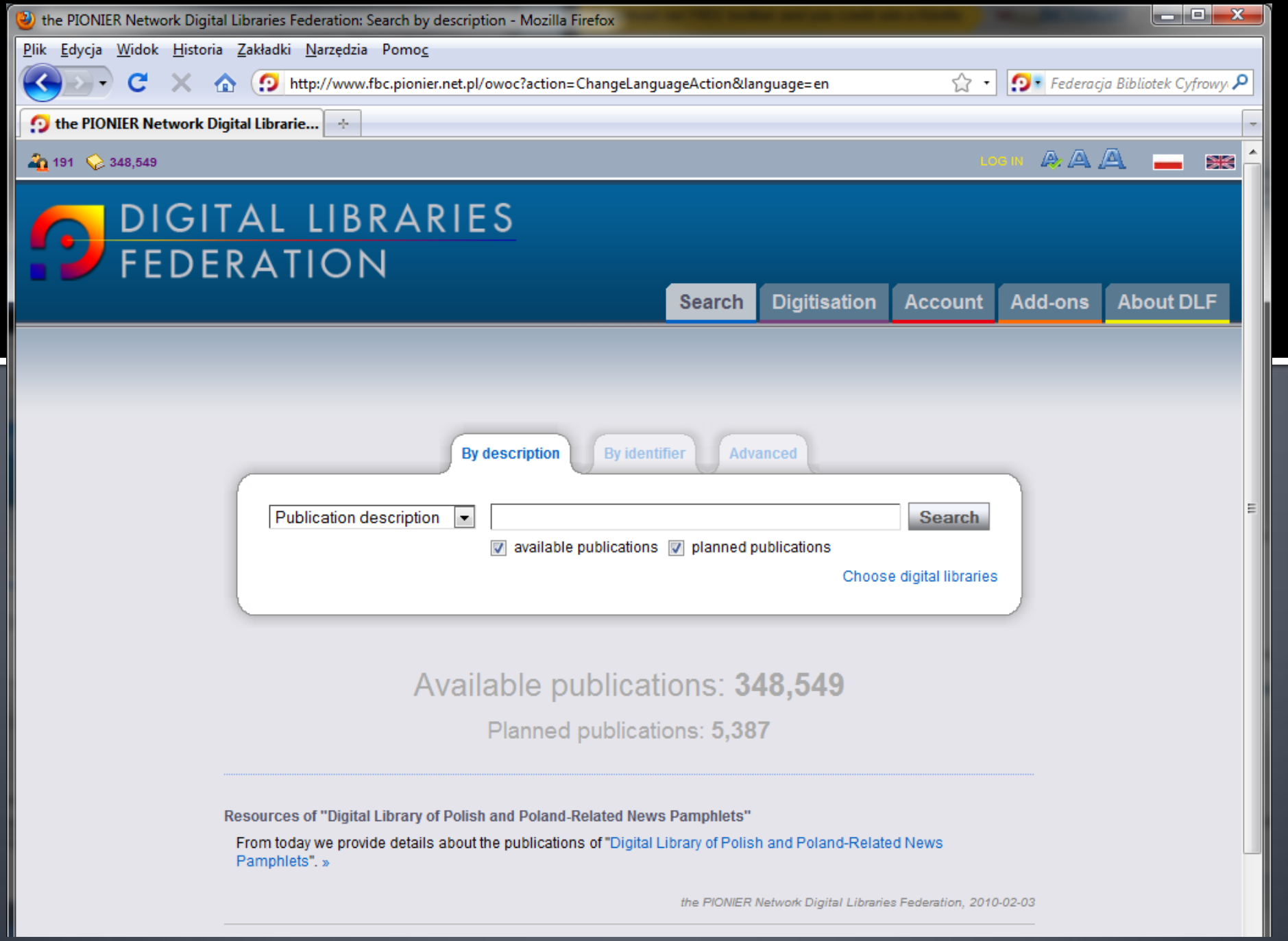
- More examples can be found in :"**The Open Archives Initiative Protocol for Metadata Harvesting**"
  - http://www.openarchives.org/OAI/openarchivesprotocol.html

Pionier Digital Libraries Federation

- **Pionier Digital Libraries Federation** is a Polish national aggregator
  - http://fbc.pionier.net.pl/
- It was **created to facilitate** the use of resources from Polish digital libraries
- To **increase the visibility** of these resources in the Internet
- To **create new, advanced network services** both for end-users and digital libraries creators on the base of these resources

Pionier Digital Libraries Federation

- Basic assumptions
  - **No need** nor requirement **to move** resources to the DLF
  - **No fees** for the use of the DLF and for being a part of it
  - **Open standards are the basis** for cooperation
    - Particular digital libraries can use different technological platforms


the PIONIER Network Digital Libraries Federation: Search by description - Mozilla Firefox
Plik Edycja Widok Historia Zakładki Narzędzia Pomoc
http://www.fbc.pionier.net.pl/owoc?action=ChangeLanguageAction&language=en
Federacja Bibliotek Cyfrowy
the PIONIER Network Digital Librarie...
191 348,549
LOG IN
DIGITAL LIBRARIES FEDERATION
Search Digitisation Account Add-ons About DLF
By description By identifier Advanced
Publication description
Search
available publications planned publications
Choose digital libraries
Available publications: 348,549
Planned publications: 5,387
Resources of "Digital Library of Polish and Poland-Related News Pamphlets"
From today we provide details about the publications of "Digital Library of Polish and Poland-Related News Pamphlets". »
the PIONIER Network Digital Libraries Federation, 2010-02-03

Overall number of digital objects

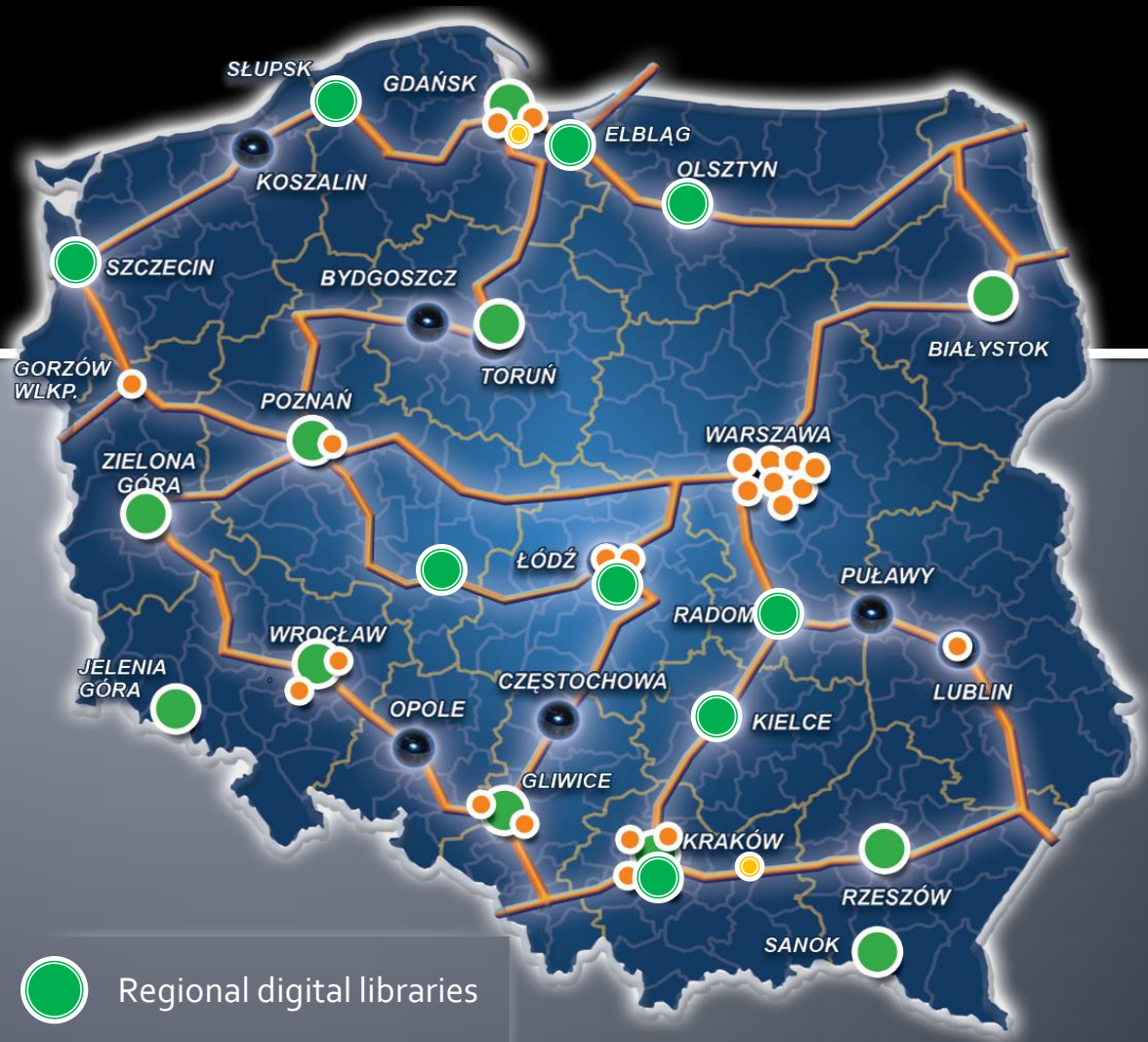
- ✓ 340 thousands

Number of active digital libraries:

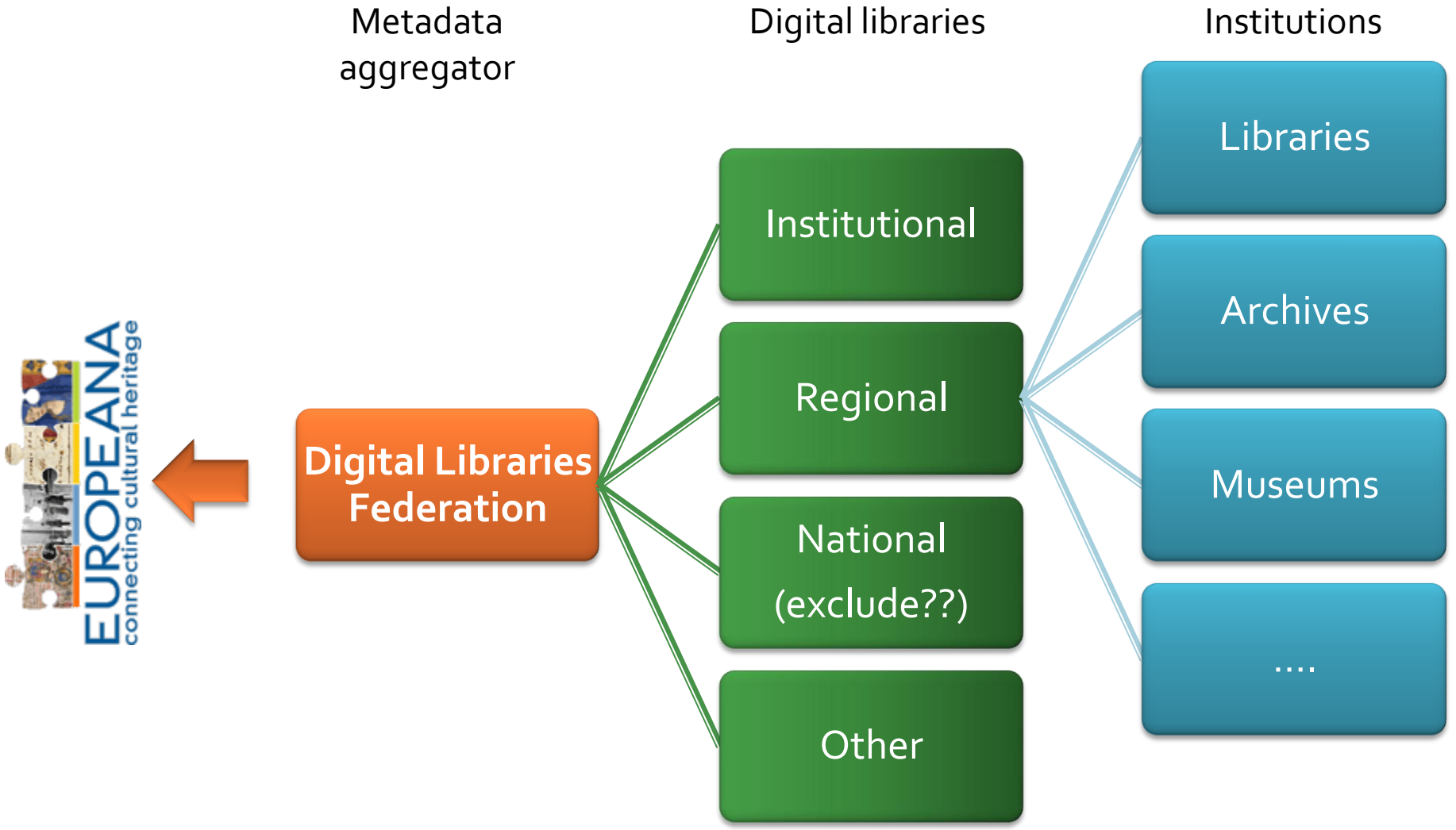
- ✓ 21 regional
- ✓ 28 institutional

Number of cooperating institutions:

- ✓ over 200 libraries, museums and archives



Digital Libraries Federation as a metadata aggregator for Europeana



Digital Libraries Federation

- Basic functions
  - Search in the available publications
    - Simple
    - Advanced
  - Digitization plans
    - Searchable
    - Report
    - API for the prevention of duplicated digitization
  - Location of digital objects on the basis of their OAI Identifiers
  - Database of Polish digital libraries
  - Statistics and reports
- Information in the DLF is updated on the daily (nightly) basis

Promotion of Polish Digital Resources

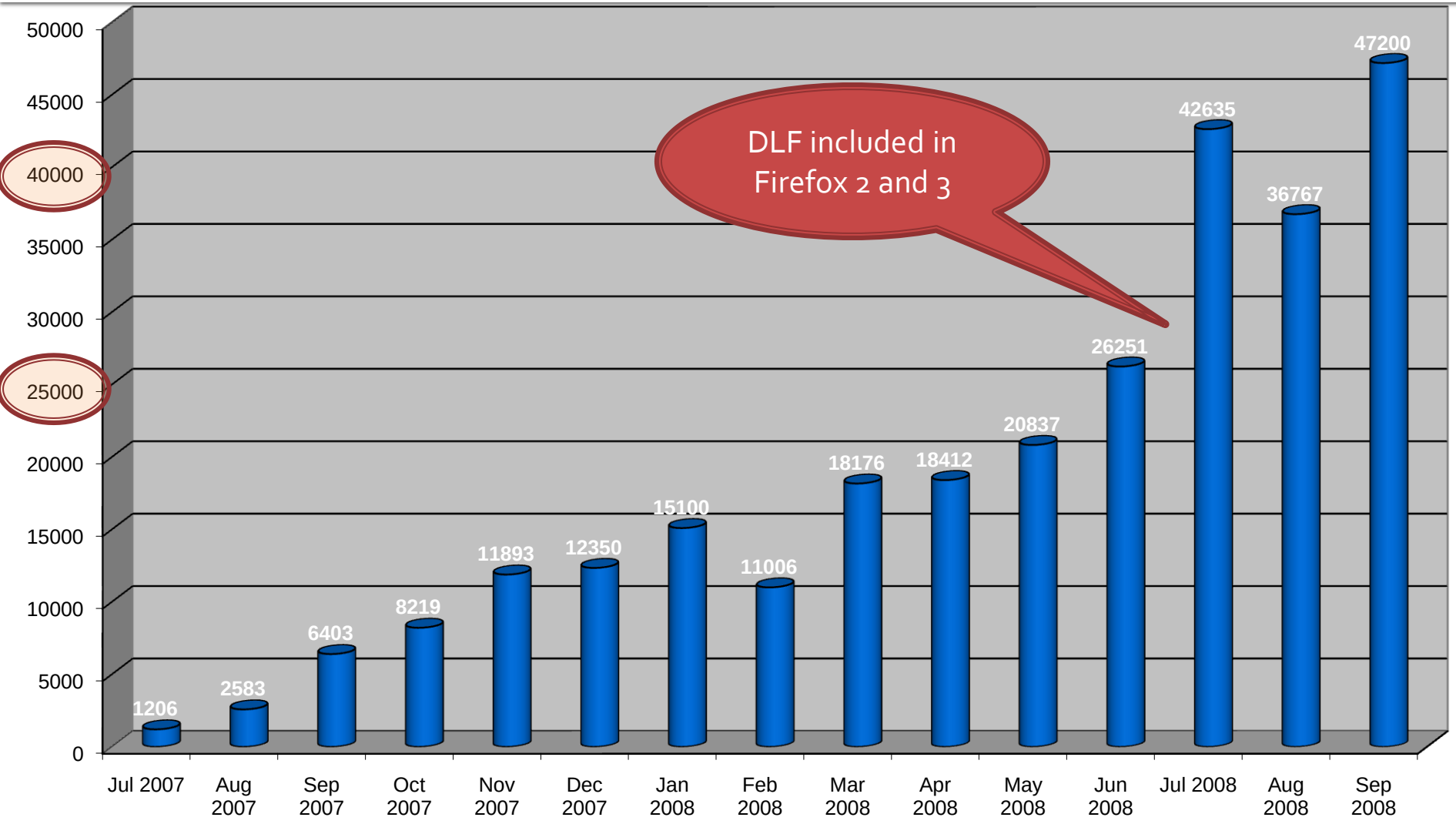
- OpenSearch plug-in for web browsers available since the beginning of the DLF
  - Must be installed manually by the user
  - The user must know that there are digital libraries and the Federation
- Several months of activities towards the inclusion of DLF plug-in into official Polish Firefox releases
  - Negotiations with Polish Mozilla team, and finally with Mozilla Foundation
  - Technical changes related to high performance requirements
    - Autosuggest service response time less than 300 ms

Digital Libraries Federation search plugin

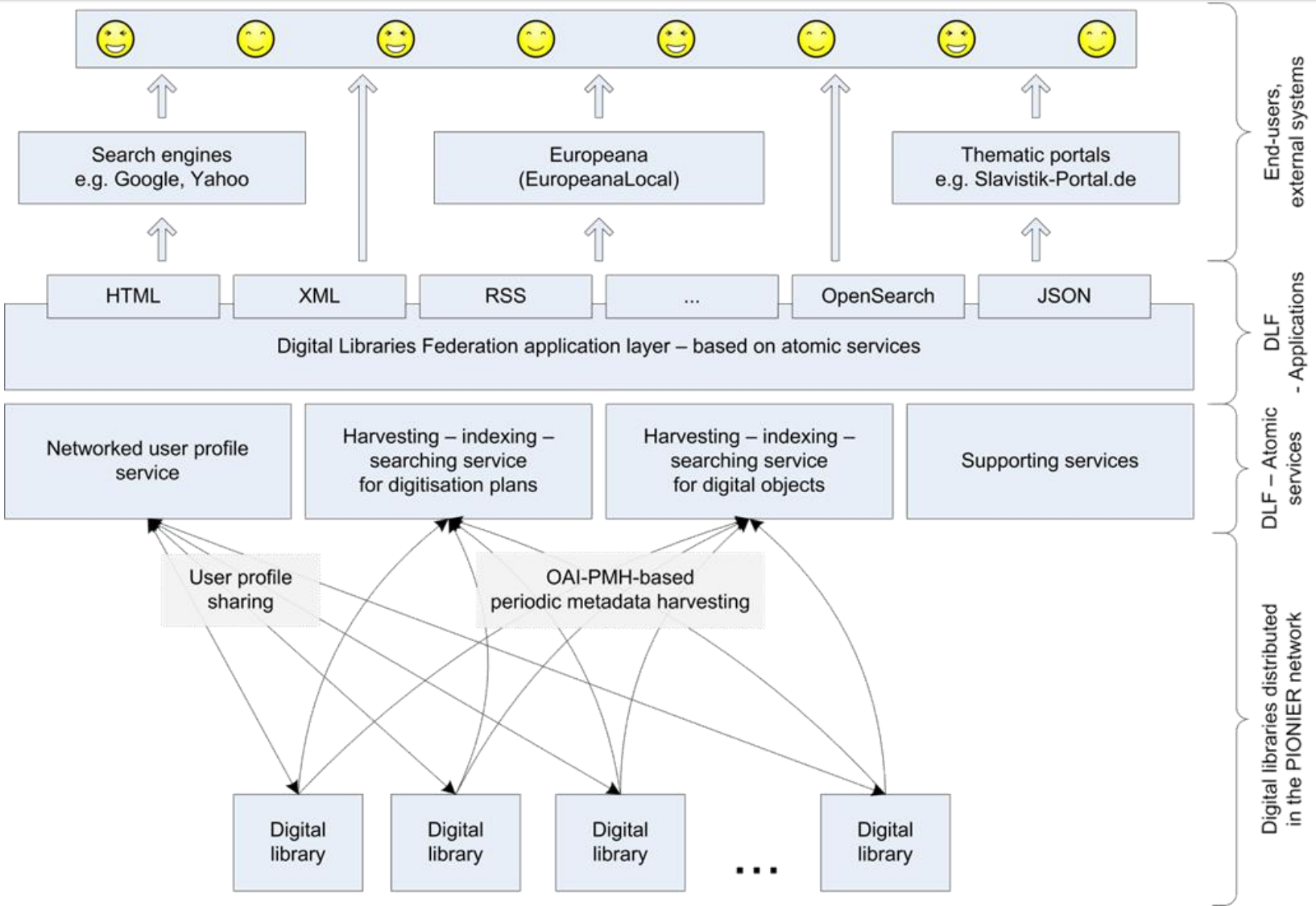
Promotion of Polish digital resources

- June 17th, 2008 – Firefox 3.0 released with DLF plug-in included in the Polish version
- July 3rd, 2008 – Firefox 2.0.15 released with DLF plug-in included in the Polish version
- Resources of Polish digital libraries available for Polish internet users together with Google, Wikipedia etc.
  - Currently Firefox 2 and 3 have together 41% of web browsers market in Poland
- Measurable result?

Promotion of Polish digital resources
- Total number of visits in the DLF each month



The Digital Libraries Federation architecture



Digital Libraries Federation

- Pionier DLF has its own OAI-PMH 2.0 compliant interface
  - All gathered data are available through this interface
  - It offers the support for deleted records and incremental harvesting
  - It also allows to create dynamic OAI sets on a search query basis
- Pionier DLF exposes unified metadata from Polish Digital Libraries in ESE format
- Since **11th December 2009** that interface is harvested by Europeana

Other examples of aggregators

- OAIster
  - http://oaister.worldcat.org/
  - 23 million of records from 1100 institutions
  - Resources also visible through WorlCat.org
- ScientificCommons.org
  - http://scientificcommons.org
  - *„The major aim of the project is to develop the world's largest communication medium for scientific knowledge products which is freely accessible to the public."*
  - 13 million of scientific publications

What about vertical services?

- Europeana wants to aggregate all publicly available digital content relevant to the term "*European cultural and scientific heritage*"
- What about vertical services based on a large scale aggregation?
  - There is a need to enable precise selective harvesting of aggregated metadata

Example scenario: Thematic portal built on top of distributed OAI-PMH repositories

- How to obtain the metadata?
  - Solution 1: Harvest all records from repositories, decide what records are useful
    - A lot of useless data is harvested and processed
  - Solution 2: Harvest only specific sets of items matching the theme of the portal
    - Each harvested repository must define a set / sets matching the theme of the portal – practically impossible
  - Solution 3: DIY variant of scenario 2 – define a set containing items matching the theme of the portal and harvest it
    - Not supported in the OAI-PMH protocol

Proposed OAI-PMH extension: dynamic sets

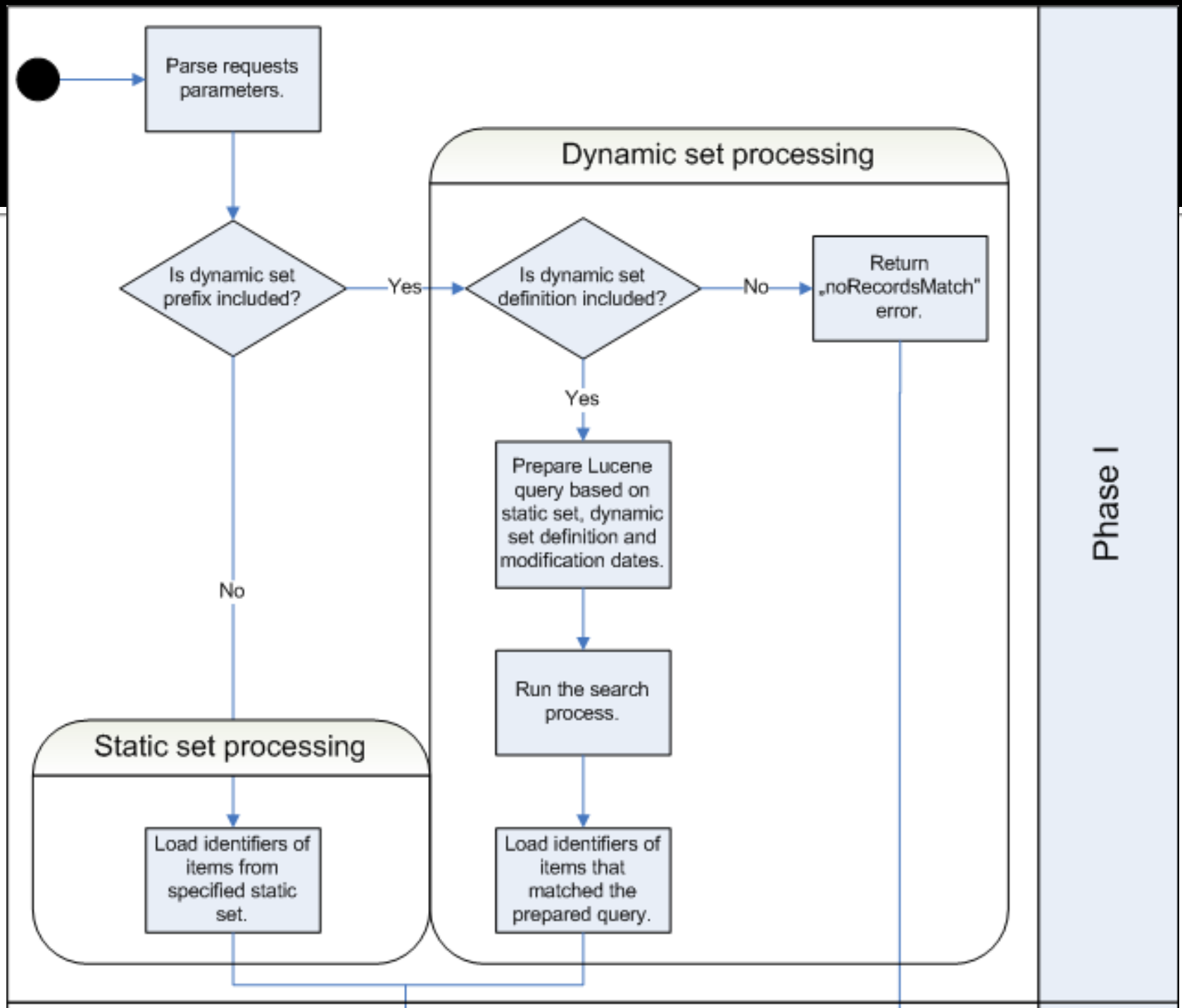
- Dynamic sets – OAI-PMH protocol compatibility
  - Harvester side
    - If a harvester does not supports dynamic sets, it will be still able to harvest the repository supporting such sets
  - Repository side
    - If a repository does not supports dynamic sets, it still may be harvested by a harvester supporting such sets
    - The repository extended with dynamic sets should be compatible with OAI-PMH validators

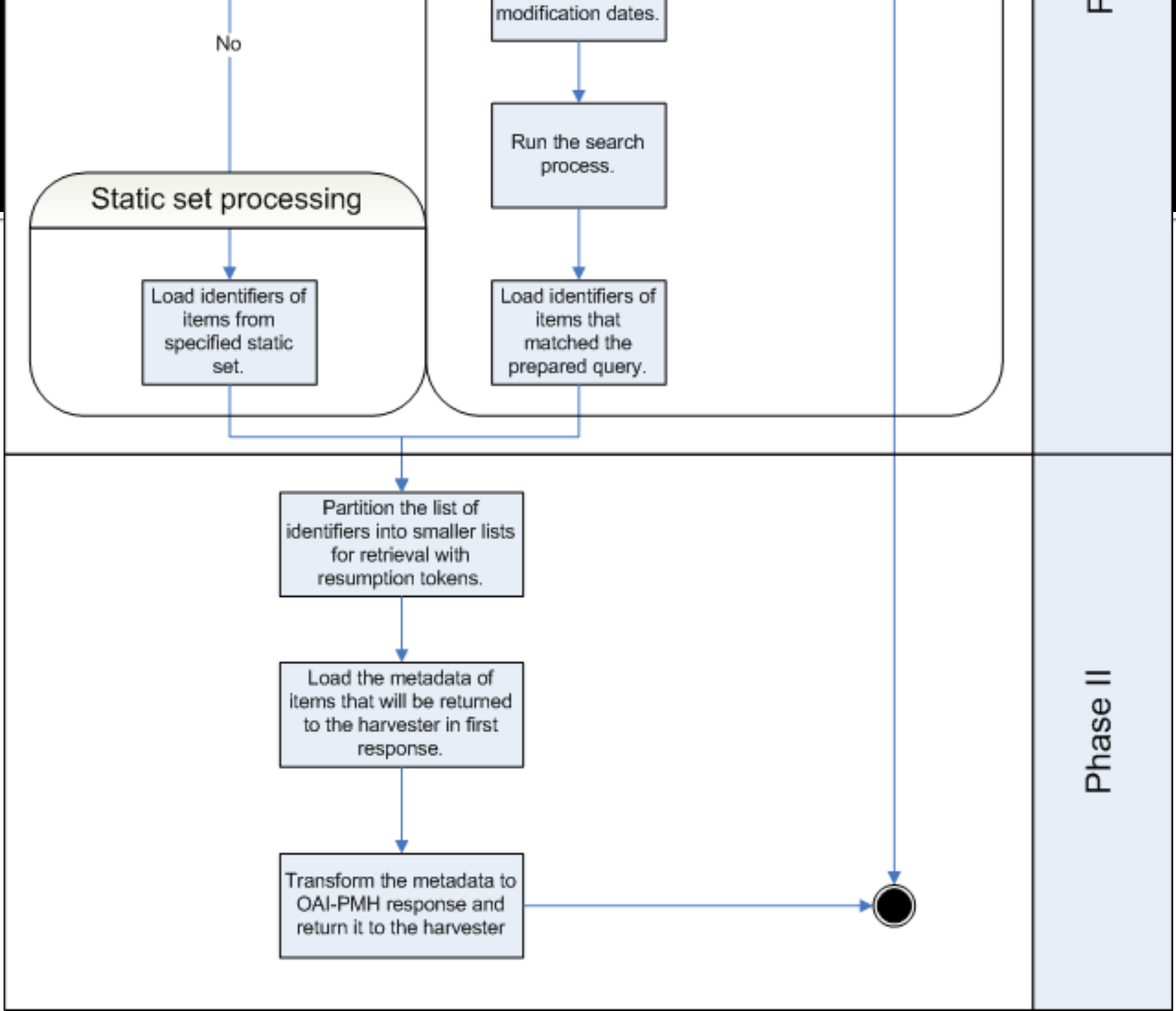
Proposed OAI-PMH extension: dynamic sets

- Dynamic sets – implementation
  - Harvester side
    - Prepare the support for OAI-PMH set harvesting
    - Analyze the nature of metadata in particular repository and prepare proper dynamic set definition to use during harvesting
  - Repository side
    - Modify the harvesting requests processing to support the definition of dynamic sets
    - This may be based on the search mechanism already implemented in the majority of repositories – in such case the support for CQL queries must be assured

Proposed OAI-PMH extension: dynamic sets

- Dynamic sets – specification
  - Sets defined by repository users
  - Contain items that matched dynamic set definition sent by the user
  - The definition is in fact a CQL query encoded into a set name
    - CQL – Contextual Query Language
      - Part of SRU protocol specification – used in integrated library systems as a replacement for the z39.50 protocol to obtain bibliographic descriptions
      - Allows to define simple and complex queries
      - Compatible with any metadata schema
      - Example: dc.creator = "Albert Einstein"


Parse requests parameters.
Is dynamic set prefix included?
Yes
No
Dynamic set processing
Is dynamic set definition included?
No
Return „noRecordsMatch" error.
Yes
Prepare Lucene query based on static set, dynamic set definition and modification dates.
Run the search process.
Load identifiers of items that matched the prepared query.
Static set processing
Load identifiers of items from specified static set.
Phase I


No
modification dates.
Run the search process.
Static set processing
Load identifiers of items from specified static set.
Load identifiers of items that matched the prepared query.
Partition the list of identifiers into smaller lists for retrieval with resumption tokens.
Load the metadata of items that will be returned to the harvester in first response.
Transform the metadata to OAI-PMH response and return it to the harvester
Phase II

Tests results

Query	Harvested number of		Harvested % of overall number of	
	repositories	records	repositories	records
none (all records)	*16*	*93681*	*100,00%*	*100,00%*
dc.language *eng*	13	626	81,25%	0,67%
dc.language *ger*	12	10357	75,00%	11,06%
dc.type *podręcznik* (handbook)	4	104	25,00%	0,11%
dc.type *rozprawa* (thesis)	5	199	31,25%	0,21%
dc.type *czasopismo* (magazine)	16	28163	100,00%	30,06%
dc.type *gazeta* (newspaper)	4	33793	25,00%	36,07%
dc.subject *pedagogika* (pedagogy)	8	130	50,00%	0,14%
dc.subject *chemia* (chemistry)	8	715	50,00%	0,76%
dc.subject	8	2759	50,00%	2,95%

Current usage - Manuscriptorium

- eContentPlus ENRICH Project
  - Started in December 2007
  - The aim is to built a virtual European repository of manuscripts
  - The metadata about the manuscripts is harvested from multiple European repositories
  - Harvests metadata of manuscripts from several Polish digital libraries

Current usage - Manuscriptorium

- Criteria used to get objects for Manuscriptorium
  - dc.date>=1000
  - dc.date<=1850
  - not dc.type=czasop*
  - not dc.type=prog*
  - dc.format=(app* or pd* or dj* or im*)
- Results: **883** objects (22.06.2009)

1 4 9 0.

Den Montag nach Palmarum ist gestorben
König Matthiaß dem Gott gnädig sey.

1 4 9 9.

Der selbige Nicklaß Blaßbritz hatte einem Priester
mit dem Nahmen Herrn Joanneß Kröscher, etliche
Summa Geldes, und etzliche Kleinod von Juwelen
zu halten gegeben in einem Lädlein, das hatte er
gefunden im Capittelhauß, wan die gemeine
sagte, Sondern er sprach es were sein Vatter Theil,
und seinem Bruder, sondern ich habe von einem
gehört, der das selbige Gold hat mit dem Lädlein zu
dem selbigen Nicklaß Blaßbritz getragen, wie
das er solte gefunden haben im Capittelhauß, der
der selbige Priester war der Thumherren Procurator
zu der selbigen Zeit, und das Geld ist gewest an
gesetzte 10000 gulden, das der vorgenante Mann
kaum hat mögen tragen, daß selbige Geld nahm der
Blaßbritz alles und entrahm als ein Schalk,

1490.

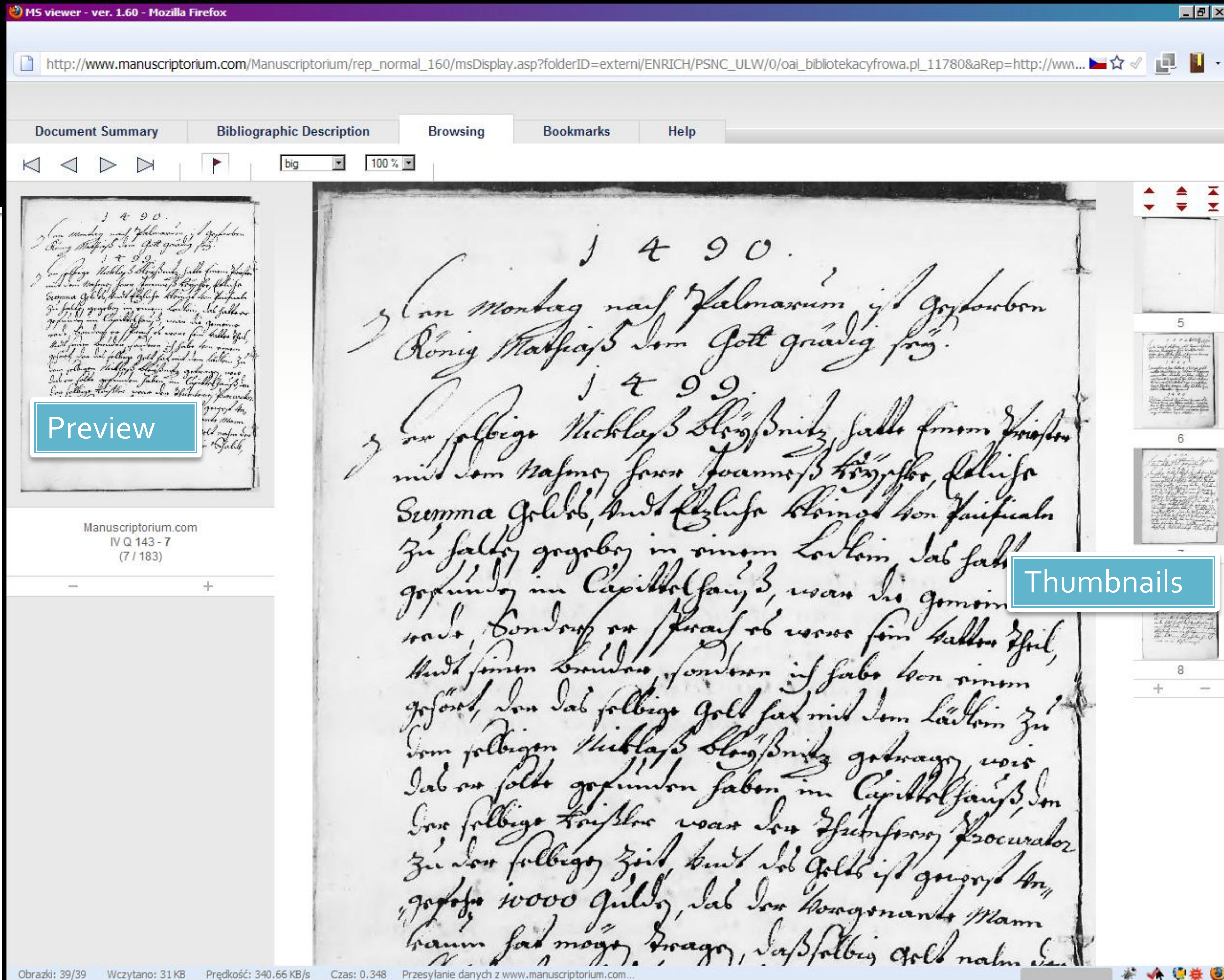
Den Montag nach Palmarum ist gestorben König Mathiaß dem Gott gnädig sey.

1499

Der selbige Micklaß Bloßbnitz hatte einem Priester mit dem Nahmen Herrn Joanneß Köpfler, etliche Summa Geldes, undt etzliche kleinod von Pontificalen zu halten gegeben in einem Lädtlein, das hatte er gefunden im Capittelhauß, wan die gemeine rede, sondern er sprach ob were sein halber theil, undt seinen brüdern, sondern ich habe von einem gehört, den das selbige gold hat mit dem Lädtlein zu dem selbigen Micklaß Bloßbnitz getragen, wie das er solte gefunden haben im Capittelhauß, den der selbige Priester war der Thumherren Procurator zu der selbigen Zeit, undt das Geldt ist gewesen an geschätzt 10000 Gulden, das der vorgenante Mann kaum hat mögen tragen, daß selbig Geld nahm der

Current usage - Manuscriptorium

- Automatic conversion from DjVu to JPG
- Publication structure exposed through OAI-PMH encoded using METS
  - Links to pages and files
  - Info about original DjVu files and results of conversion


MS viewer - ver. 1.60 - Mozilla Firefox
http://www.manuscriptorium.com/Manuscriptorium/rep_normal_160/msDisplay.asp?folderID=externi/ENRICH/PSNC_ULW/0/oai_bibliotekacyfrowa.pl_11780&aRep=http://ww...
Document Summary
Bibliographic Description
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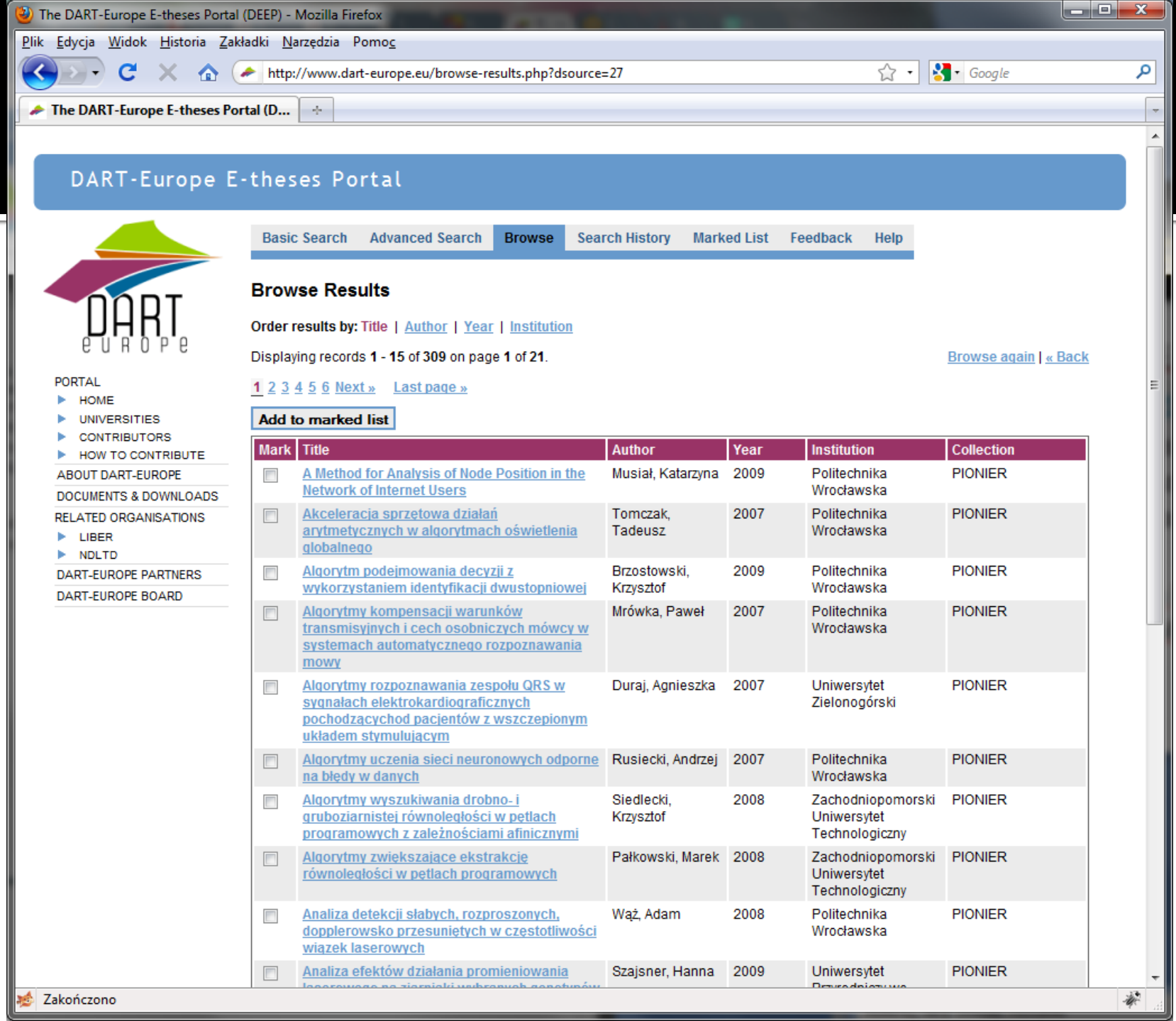
big
100 %
Preview
Manuscriptorium.com
IV Q 143 - 7
(7 / 183)
Thumbnails
5
6
8
Obrazki: 39/39
Wczytano: 31 KB
Prędkość: 340.66 KB/s
Czas: 0.348
Przesyłanie danych z www.manuscriptorium.com...

Current usage - DART

- DART-Europe E-theses Portal
  - http://www.dart-europe.eu
  - *„DART-Europe is a partnership of research libraries and library consortia who are working together to improve global access to European research theses."*
  - Resources from Polish digital libraries are exposed through OAI-PMH interface of Pionier DLF


The DART-Europe E-theses Portal (DEEP) - Mozilla Firefox
Plik Edycja Widok Historia Zakładki Narzędzia Pomoc
http://www.dart-europe.eu/browse-results.php?dsource=27
Google
The DART-Europe E-theses Portal (D...
DART-Europe E-theses Portal
Basic Search
Advanced Search
Browse
Search History
Marked List
Feedback
Help
PORTAL
HOME
UNIVERSITIES
CONTRIBUTORS
HOW TO CONTRIBUTE
ABOUT DART-EUROPE
DOCUMENTS & DOWNLOADS
RELATED ORGANISATIONS
LIBER
NDLTD
DART-EUROPE PARTNERS
DART-EUROPE BOARD
Browse Results
Order results by: Title | Author | Year | Institution
Displaying records 1 - 15 of 309 on page 1 of 21.
Browse again | « Back
1 2 3 4 5 6 Next » Last page »
Add to marked list
Mark
Title
Author
Year
Institution
Collection
A Method for Analysis of Node Position in the Network of Internet Users
Musiał, Katarzyna
2009
Politechnika Wrocławska
PIONIER
Akceleracja sprzętowa działań arytmetycznych w algorytmach oświetlenia globalnego
Tomczak, Tadeusz
2007
Politechnika Wrocławska
PIONIER
Algorytm podejmowania decyzji z wykorzystaniem identyfikacji dwustopniowej
Brzostowski, Krzysztof
2009
Politechnika Wrocławska
PIONIER
Algorytmy kompensacji warunków transmisyjnych i cech osobniczych mówcy w systemach automatycznego rozpoznawania mowy
Mrówka, Paweł
2007
Politechnika Wrocławska
PIONIER
Algorytmy rozpoznawania zespołu QRS w sygnałach elektrokardiograficznych pochodzącychod pacjentów z wszczepionym układem stymulującym
Duraj, Agnieszka
2007
Uniwersytet Zielonogórski
PIONIER
Algorytmy uczenia sieci neuronowych odporne na błędy w danych
Rusiecki, Andrzej
2007
Politechnika Wrocławska
PIONIER
Algorytmy wyszukiwania drobno- i gruboziarnistej równoległości w pętlach programowych z zależnościami afinicznymi
Siedlecki, Krzysztof
2008
Zachodniopomorski Uniwersytet Technologiczny
PIONIER
Algorytmy zwiększające ekstrakcję równoległości w pętlach programowych
Pałkowski, Marek
2008
Zachodniopomorski Uniwersytet Technologiczny
PIONIER
Analiza detekcji słabych, rozproszonych, dopplerowsko przesuniętych w częstotliwości wiązek laserowych
Wąż, Adam
2008
Politechnika Wrocławska
PIONIER
Analiza efektów działania promieniowania
Szajsner, Hanna
2009
Uniwersytet
PIONIER
Zakończono

Other means to reuse metadata records

- Social bookmarking
  - http://del.icio.us, http://digg.com
- Bibliography organizers
  - Zotero
    - Handles different metadata encodings :
      - MODS, RDF, MARC, BibTeX
    - http://www.zotero.org/
  - Bibsonomy (http://www.bibsonomy.org/)
  - …

Agenda

- Introduction
- Metadata reuse scenarios
  - OAI-PMH
- **Object content reuse scenarios**
  - OAI-ORE
- Persistent identifiers
- Conclusions

Object reuse

- Blogs
  - Good way to get external links to digital library website (good for SEO)
  - Readers know more about resources
- Accumulating user generated content
  - **Europeana**
  - **Flickr: The Commons**
  - **Panoramio**

http://www.flickr.com/photos/powerhouse_museum/2937577694

flickr from YAHOO!

You aren't signed in Sign In Help

Home The Tour Sign Up Explore Search

Tunnel, Wombeyan Road

ALL SIZES

Uploaded on October 12, 2008 by Powerhouse Museum Collection

Powerhouse Museum Collection's photostream

1,398 uploads

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This photo also belongs to:

Tyrrell Collection (Set)

1,005 items

browse

5 people call this photo a favorite

Tags

- Powerhouse Museum
- B&W
- Tunnel
- Trees
- Car
- wombeyan
- mittagong

Format: Glass plate negative.

Rights Info: No known restrictions on publication.

Repository: Tyrrell Photographic Collection, Powerhouse Museum
www.powerhousemuseum.com/collection/database/collection=The_Tyrrell_Photographic

Part Of: Powerhouse Museum Collection

http://www.flickr.com/photos/powerhouse_museum/2937577694

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Acquisition credit line: Gift of Australian Consolidated Press under the Taxation Incentives for the Arts Scheme, 1985

Comments

iansand pro **says:**

Wombeyan Caves are limestone caves to the west of the highway between Goulburn and Mittagong. There are two ways in - from the Goulburn to Oberon road, which is on a relatively straightforward sealed road, or from Mittagong which is a narrow, twisting unsealed road. This tunnel is on the road from Mittagong.

The tunnel in March 2009

Posted 8 months ago. (permalink)

Powerhouse Museum Collection pro **says:**

Thanks! We have now mapped the location thanks to your geotagging on the contemporary photo!

Posted 5 months ago. (permalink)

- Kerry Photo
- Then and Now
- Then & Now
- Tunnels
- rock tunnel

Show machine tags (4)

Additional Information

No known copyright restrictions [?]

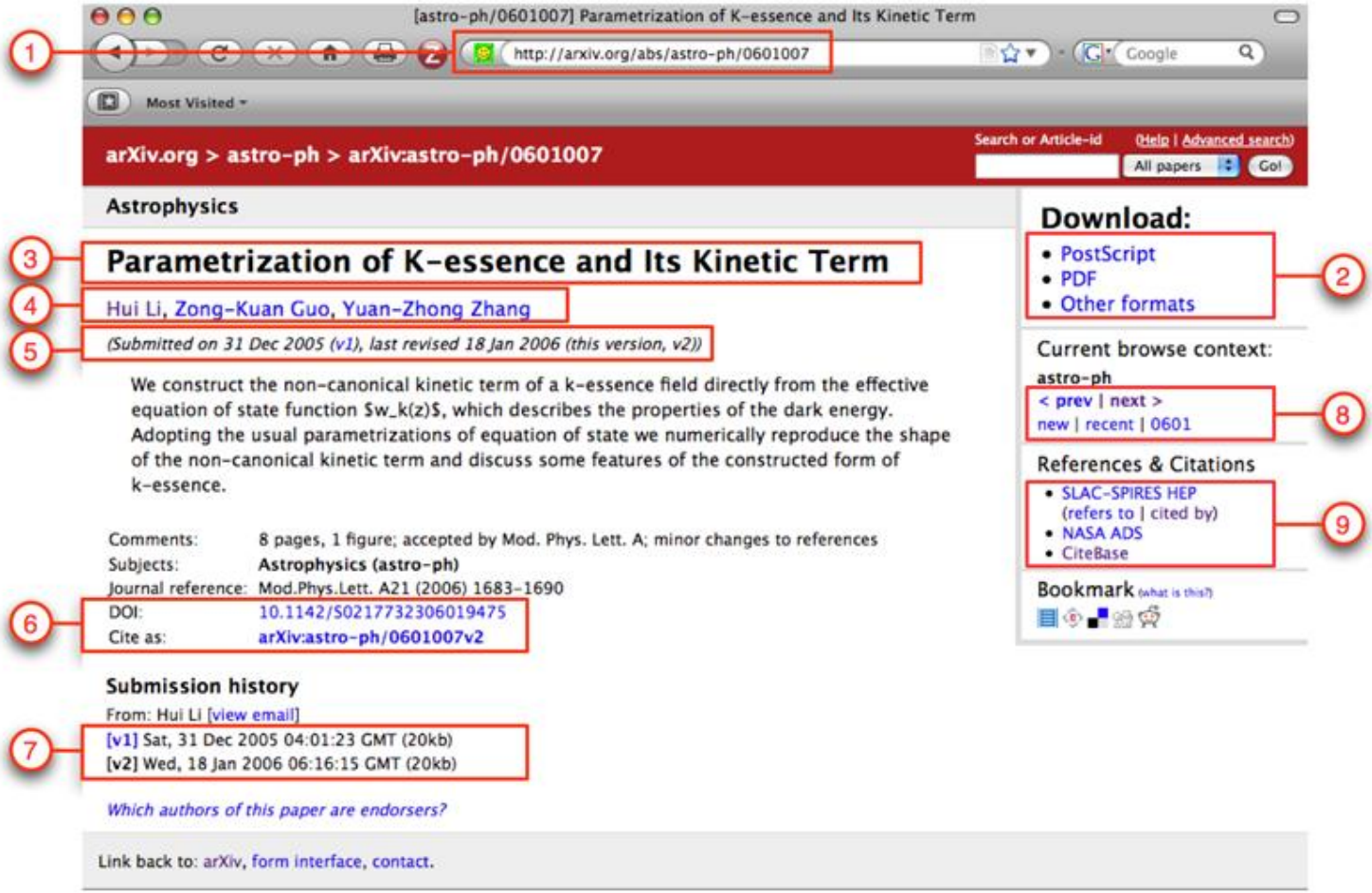
Anyone can see this photo

- Taken in **Bullio**, New South Wales (map)
- Taken circa 1900
- Viewed 492 times

OAI: Object Reuse and Exchange

- OAI-ORE defines standards for the description and exchange of aggregations of Web resources
  - http://www.openarchives.org/ore/
- The goal of these standards is to expose the rich content to applications that support :
  - authoring, deposit, exchange, visualization, reuse, and preservation..

OAI: Object Reuse and Exchange



Source: **ORE User Guide – Primer**
(http://www.openarchives.org/ore/1.0/primer.html)

OAI: Object Reuse and Exchange

- Some solution exists in this space already (METS)
  - OAI ORE is built on top of successful OAI-PMH
  - It's a very flexible spec, promissing low adoption curve
- ORE can be used to aggregate whole objects (+metadata)
- More about ORE in the last part of tutorial

Agenda

- Introduction
- Metadata reuse scenarios
  - OAI-PMH
- Object content reuse scenarios
  - OAI-ORE
- **Persistent identifiers**

Persistent identifiers

- Nowadays it is very easy to create new website, publish content on the web
- Overtime, more and more of these hyperlinks are „broken"
  - Organization's website was re-organized
- Persistent identifiers introduce a service which records how precise location of document changes over time

Persistent identifiers

- When end-user wishes to access a document, the identifier in his request is „resolved”
- The correct document is retrieved
  - User don’t need to know the exact location of the document
- Support for persistent identification some administrative effort

Persistent identifiers

- Various propositions:
  - Handles,
  - Digital Object Identifier (DOI)
  - Archival Resource Keys (ARK)
  - Persistent Uniform Resource Locators (PURL)
  - Uniform Resource Names (URN)
  - OAI Identifiers

Uniform Resource Names

- The syntax of URNs was fully specified in 1997 in another RFC, „URN Syntax”
- **Global uniqueness**: different resources cannot have the same URN
- **Persistence:** in the URN context, the name's lifespan is permanent, regardless of the lifespan of the named resource.
- **Scalability:** room to accommodate the number of names required in the next centuries.

Uniform Resource Names

- Syntax: **urn:<NID>:<NSS>**
- Every URN begins with the 'urn:' character string, followed by the Namespace Identifier (NID, e.g. ISBN)
- Namespace Specific String (NSS) syntax depends on the namespace identified by the NID
- Example: urn:isbn:3-938616-59-8

OAI Identifier

- Syntax: **oai:<NI>:<LI>**
- Persistent identifier for repositories with OAI-PMH interface
- Identifier points to resource which holds metadata record
- NI – namespace identifier – repository domain
- LI – local identifier – points to resource in repository

OAI Identifier

- It does not require central resolution service
- No fees for using this solution
- Example:
  - **oai:www.wbc.poznan.pl:8711**

Conclusions

- The more doors we have in our library there is a bigger chance that someone will come in
- Reuse is a key to enrichment
  - Chance for User Generated Content
  - Chance to attract new users
- Whole Web 2.0 is about reuse and exchange
  - Open protocols and public APIs

Conclusions

- Search Engine Optimization
  - Source of external links to our content
- Everything works fine as long as links are working - persistent identifiers might be useful

Q&A