Access IT Training

What's next?

Yesterday

- 2003
  - Google indexed 3,3 billion of pages
    - http://searchenginewatch.com/3071371
- 2005
  - Google's index contains 8,1 billion of websites
    - http://blog.searchenginewatch.com/050517-075657
  - Estimated size of whole searchable internet - 11,5 billion of pages
- 2010
  - No one counts this anymore

Yesterday

- 2001
  - First Open Archives Initiative workshop at CERN
    - http://indico.cern.ch/conferenceDisplay.py?confId=a01193
  - The first version of OAI-PMH specification
- 2002
  - OAI-PMH 2.0 specification was released
  - The dawn of OAIster.org
    - 66 repositories with 235 116 records
- 2005
  - OAIster.org has more than 5mln of records (400 repositories)

Yesterday

- May 2008
  - OAIster.org goes beyond 1000 of repositories with 1.5 million of search hit monthly
- October 2008
  - OAI-ORE spec. was released
- November 2008
  - Europeana prototype was launched (and crashed)
  - Initially it contained 2mln of objects.
- December 2009
  - Europeana reaches 5mln of objects
    - Polish resources are now available in Europeana!

Agenda

- Semantic web
  - Where is the benefit?
  - Knowledge organization systems in SW
  - Web of data
- Transparent science
  - Workflows, datasets, articles
  - OAI-ORE

Agenda

- Who will do all those things?
  - Crowdsourcing
  - Community collection building
- Conclusions

Better tools

- Do you remember a world before YouTube, Flickr, Google Maps, Gmail, Wikipedia?
- "The Network is the computer" is a fact
- Better tools allows to create more content
- New media brings new challenges
  - Preservation of information stored in social portals like FaceBook, LinkedIn
  - What will happen to Second Life in 10/20 years?

Semantic web

- Semantic web is supposed to extend capabilities of WWW
- How it will be done?
- What the semantic web is about?

Semantic web

- **What the semantic web is about?**
  - At the moment websites are designed for humans
  - SW is a vision of information that is understandable by computers
  - Thanks to this machines would be capable to perform more complicated tasks

Semantic web

- The concept of SW comprises a set of design principles and a variety of enabling technologies
- Technological foundation of SW relies on **Resource Description Framework** (RDF)
- RDF is a data model
- It is based upon the idea of **making statements about resources** in the form of subject-predicate-object expressions

Semantic web

- These expressions are known as *triples* in RDF terminology
- Subject denotes the resource
- Predicate denotes traits or aspects of the resource
- It expresses a relationship between the subject and the object

Semantic web

- RDF can be expressed in various serialization formats (including XML)

Semantic web

- "The sky is blue"
  - Subject: the sky
  - Predicate: "has the color"
  - Object: blue
- Subject of an RDF statement is URI or a blank node e.g.
  - http://dl.psnc.pl/biblioteka/dlibra/rdf.xml?type=e&id=207

OWL

- Another element of SW technical side is Web Ontology Language (OWL) and RDF Schema
- OWL deals with a formal description of **concepts**, **terms** and **relationships** within a given **knowledge domain**
- OWL is a family of knowledge representation languages for authoring ontologies
- OWL ontologies are usually written as RDF/XML files

OWL

- e.g., an ontology describes families
  - It include predicates like "hasMother", "hasParent"
  - Individuals of class "HasType**O**Blood" are never related via "hasParent" to members of the "HasTypeABBlood" class
  - Thanks to those information some things can be derived from data

OWL

- Imagine an individual named Adam who is related via “hasMother” to individual Jolanta
- Adam is also a member of class HasTypeOBlood
- Thanks to these information it can **inferred** that Jolanta **is not** a member of HasTypeABBlood

RDF Schema

- RDF Schema is also an extensible knowledge representation language
- It is less expressive than OWL

SKOS

- Simple Knowledge Organization Systems is a family of formal languages designed for representation of :
  - Thesauri
  - Classification schemes
  - Taxonomies
  - Subject-heading systems
  - Any other type of structured vocabulary
- SKOS is built upon RDF and RDF Schema

SKOS

- Its main objective is to enable easy publication of controlled structured vocabularies for Semantic Web
- Some important vocabularies are already available in SKOS format, e.g.
  - Library of Congress Subject Heading (LCSH)

SKOS

- OWL is intended to express complex conceptual structures, which can be used to generate rich metadata and support inference tools
- SKOS is a simpler format, it can be extended to OWL

Semantic web criticism

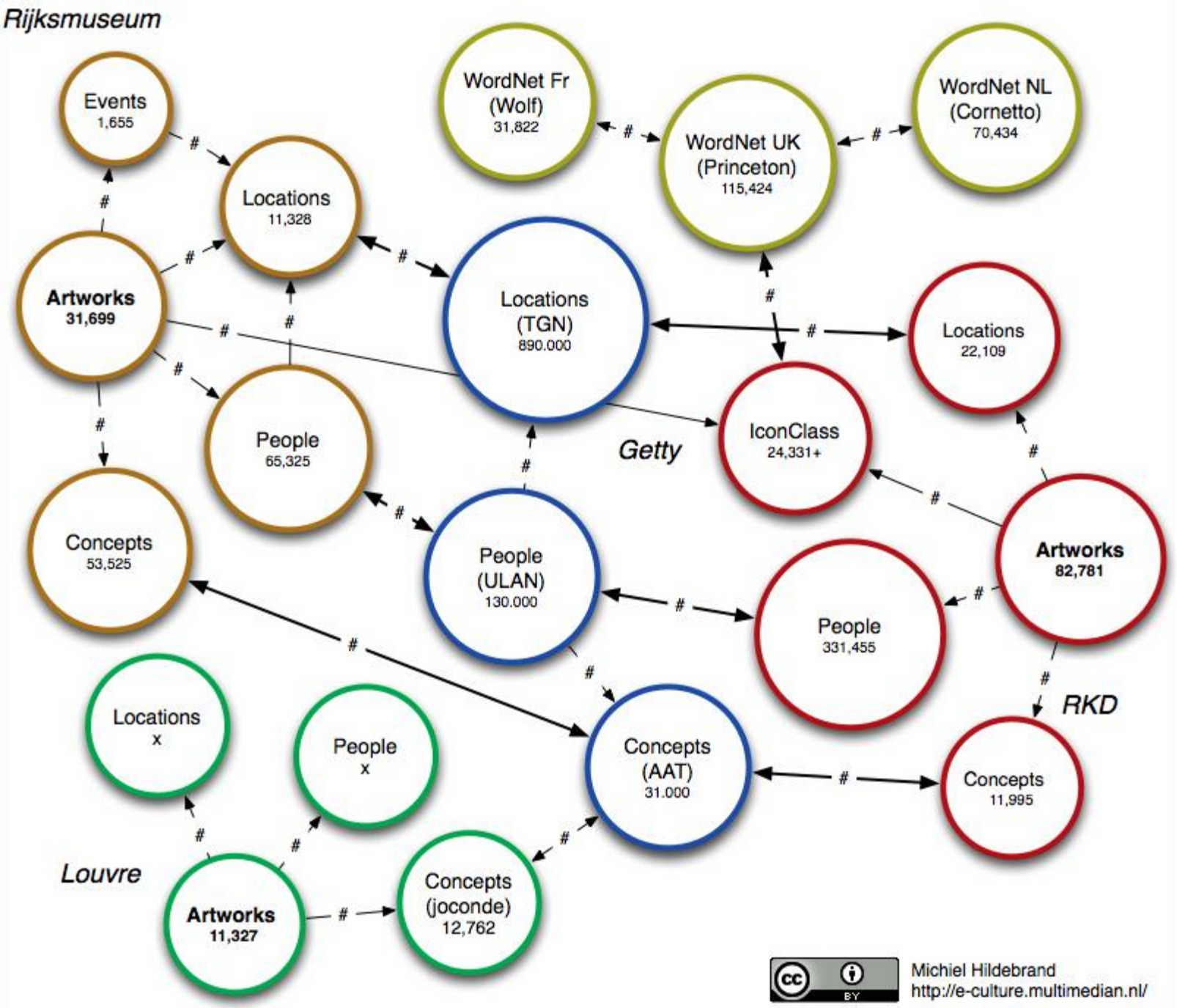
- Critics question the basic feasibility of a complete or even partial fulfillment of the semantic web
- Large scale utilization raises a lot of issues
  - Which ontology is the right one?
  - Who will create all those ontologies?
  - Who will prepare descriptions for web resources?

Semantic web criticism

- There are also to few tools which supports creation of semantic web resources
  - Some people are saying that there is no killer-app which will convince people to semantic web

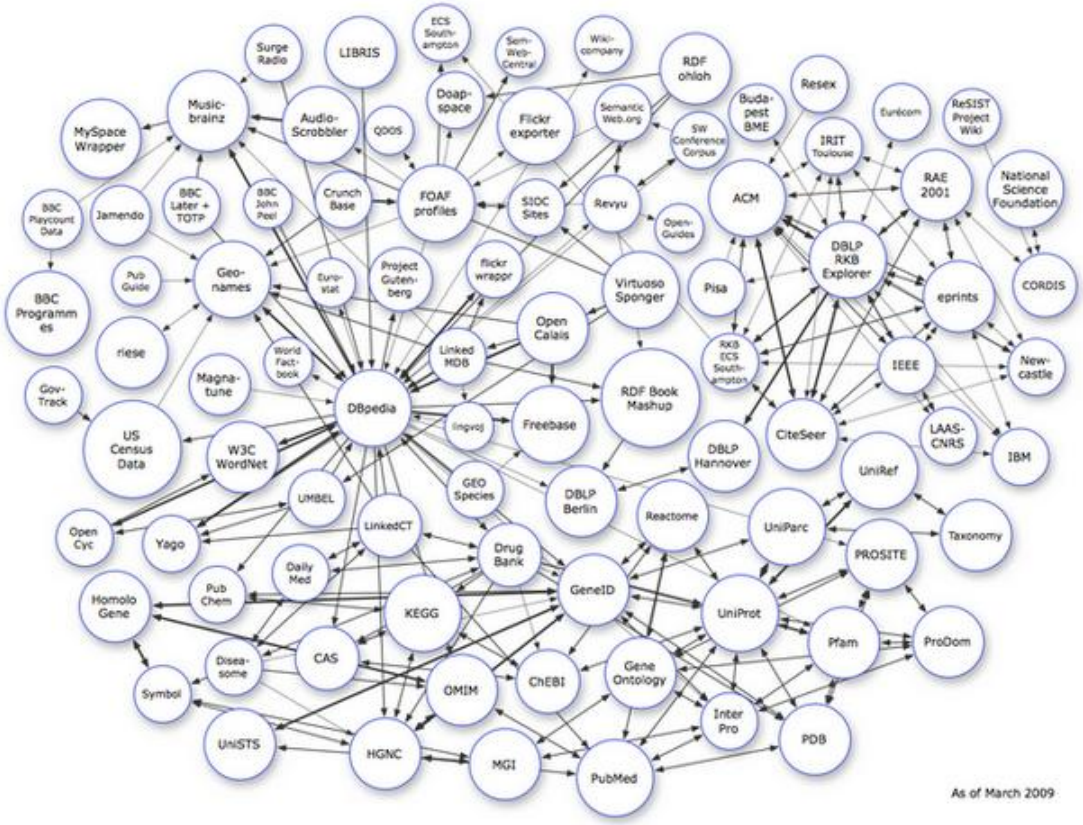
Practical SW

- SW offers a set of techniques which can be practically adopted in particular domains
- We are not looking for universal solution for all problems of the world, e.g.
  - multiliguality in the domain of cultural heritage
  - Europeana Thought Lab : http://www.europeana.eu/portal/thought-lab.html


Rijksmuseum
Events
1,655
Locations
11,328
Artworks
31,699
People
65,325
Concepts
53,525
WordNet Fr
(Wolf)
31,822
WordNet UK
(Princeton)
115,424
WordNet NL
(Cornetto)
70,434
Locations
(TGN)
890.000
Getty
IconClass
24,331+
Locations
22,109
People
(ULAN)
130.000
People
331,455
Artworks
82,781
RKD
Concepts
(AAT)
31.000
Concepts
11,995
Locations
x
People
x
Louvre
Artworks
11,327
Concepts
(joconde)
12,762
Michiel Hildebrand
http://e-culture.multimedian.nl/

Practical SW

- Linking Open Data (LOD) a W3 Consortium project



Practical SW

- Linking Open Data (LOD) a W3 Consortium project
- It attempts to connect various freely available data sets
- Data sets are set up to re-use existing ontologies such as WordNet, FOAF and SKOS to interconnect them
- LOD currently counts more than 2 billion of RDF triples

Practical SW

- Participating data sets:
  - http://esw.w3.org/topic/TaskForces/CommunityProjects/LinkingOpenData/DataSets
- Example:
  - http://dbpedia.org/page/Veria

References

- Wikipedia :
  - Semantic Web, OWL, SKOS, RDF, RDF Schema
- W3C Semantic Web Activity
  - http://www.w3.org/2001/sw/

Transparent Science

- What is a results of scientific studies?
  - Paper in a journal
  - PDF at author's website
- Does it provide enough information to repeat given experiment and verify result on your own?
- What about dataset? What about workflow?

Transparent Science

- Paper should be followed by additional resources
  - Workflow documentation
    - My experiment - is a collaborative environment where scientists can safely publish their workflows and experiment plans, share them with groups and find those of others
      - http://www.myexperiment.org/
  - Dataset used during the experiment
- How to associate those item ?

OAI-ORE

- This is why OAI-ORE was initially developed
- Version 1.0 of the specification was released on 17 October 2008
  - http://www.openarchives.org/ore/1.0/
- The goal of OAI-ORE is to
  - expose the rich content in aggregations
- to applications supporting
  - authoring, deposit, exchange, visualization, reuse, and preservation

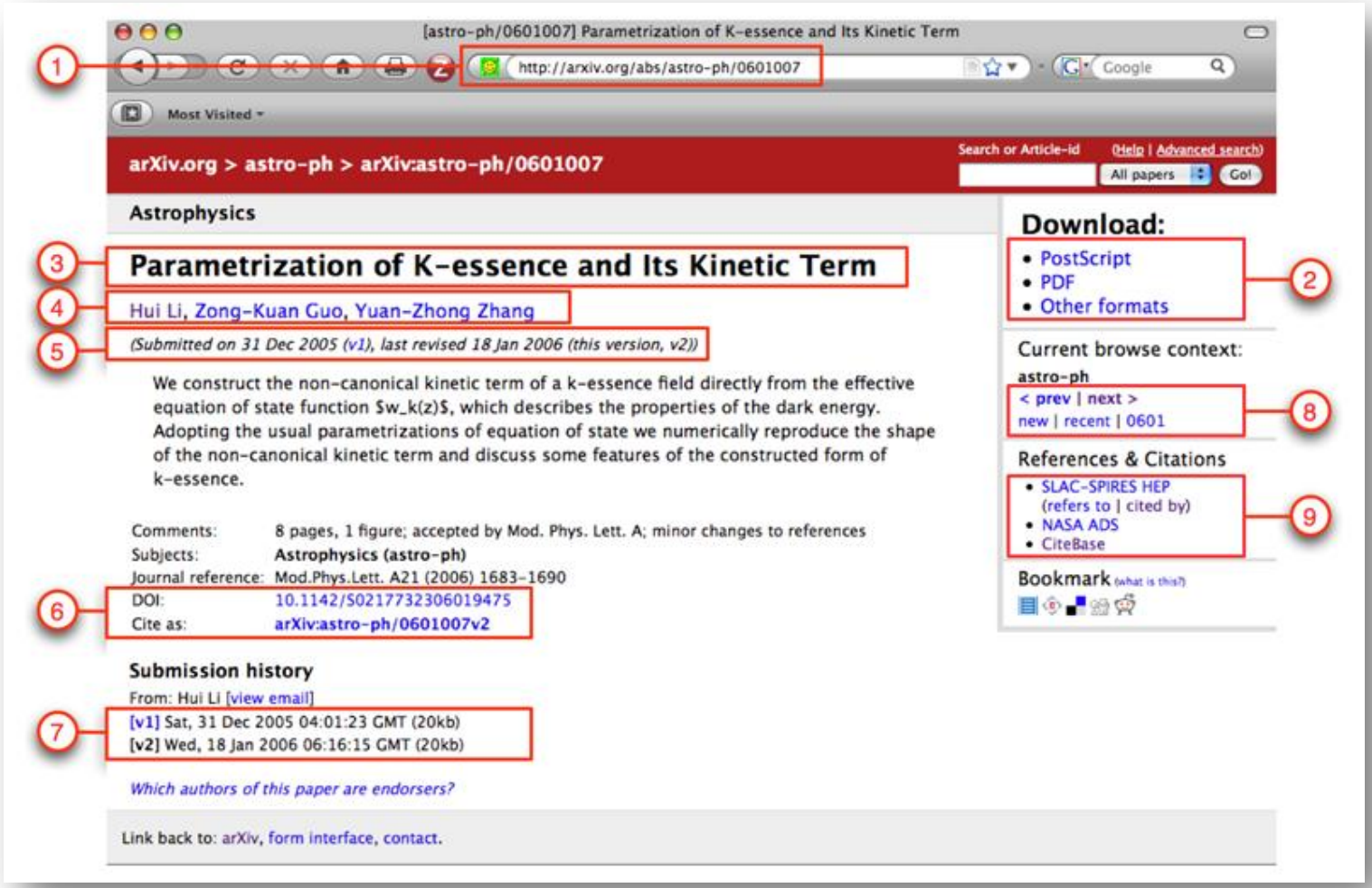
OAI-ORE

- Specification is created around the Object Reuse and Exchange Model which introduces the Resource Map (ReM)
- ReM associates an identity with aggregations of resources
- Aggregations (compound information objects) may combine distributed resources with multiple media types

OAI-ORE

- Aggregations (compound information objects) may combine distributed resources with multiple media types
- Aggregation can be a part of other aggregations

OAI: Object Reuse and Exchange



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

OAI-ORE

- Resource Maps may be written in several different formats
  - Atom feed, RDF/XML, RDFa and others
- Example ReM – Atom feed:
  - http://en.wikipedia.org/wiki/Open_Archives_Initiative_Object_Reuse_and_Exchange#Resource_Maps

OAI-ORE

- OAI-ORE will co-exist within the OAI-PMH
- ORE is intended to complement the narrower metadata focus of OAI-PMH
- ORE is now studied by different communities its application goes beyond scholarly communication
  - ORE gives a chance to easily migrate whole repositories

OAI-ORE - Tools

- ORE Atom Resource Map Validator
  - http://african.lanl.gov/ovalnet/validate.jsp
- Full list of available tools :
  - http://www.openarchives.org/ore/1.0/tools.html

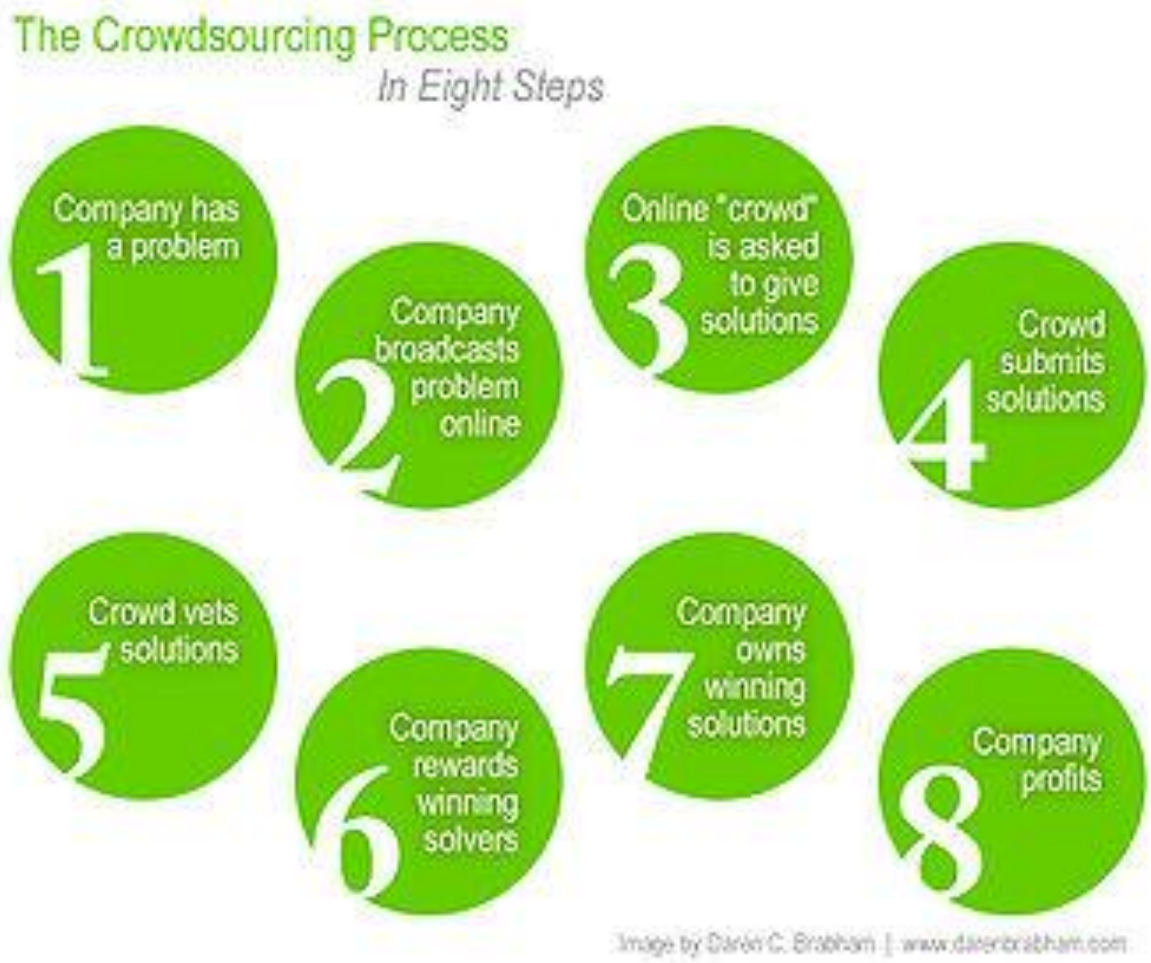
Crowdsourcing

- Community is very important thing nowadays
- Community management is becoming a separate aspect of any project management
- Digital libraries should also attract community
  - User generated content can enrich resources
  - People can correct mistakes

Crowdsourcing

- Term "Crowdsourcing" is neologistic compound of Crowd and Outsourcing
- It is the act of taking tasks traditionally performed by an employee or contractor

Crowdsourcing



Source: http://en.wikipedia.org/wiki/Crowdsourcing

Crowdsourcing

- How crowdsourcing can be utilized in digital libraries?
  - Flickr : The Commons
    - http://www.flickr.com/commons
  - Australian Newspapers Digitization Program
    - http://www.nla.gov.au/ndp/
  - Oxford's Great War Poetry Archive
    - http://www.thegreatwatarchive.org/

Australian Newspapers

- Project coordinated by National Library of Australia
- It is intended to give access to Australian newspapers published between 1803 and 1954
- Goal is to give a free access to 40 million of articles
- User will be able to perform a full-text search for all articles

Australian Newspapers

- They employed different means to cooperate with users, including :
  - comments
  - tags
  - OCR correction
- During the first 12 weeks 1200 people registered in portal and performed some OCR corrections
- This resulted in 700 000 lines corrected in 50 000 articles

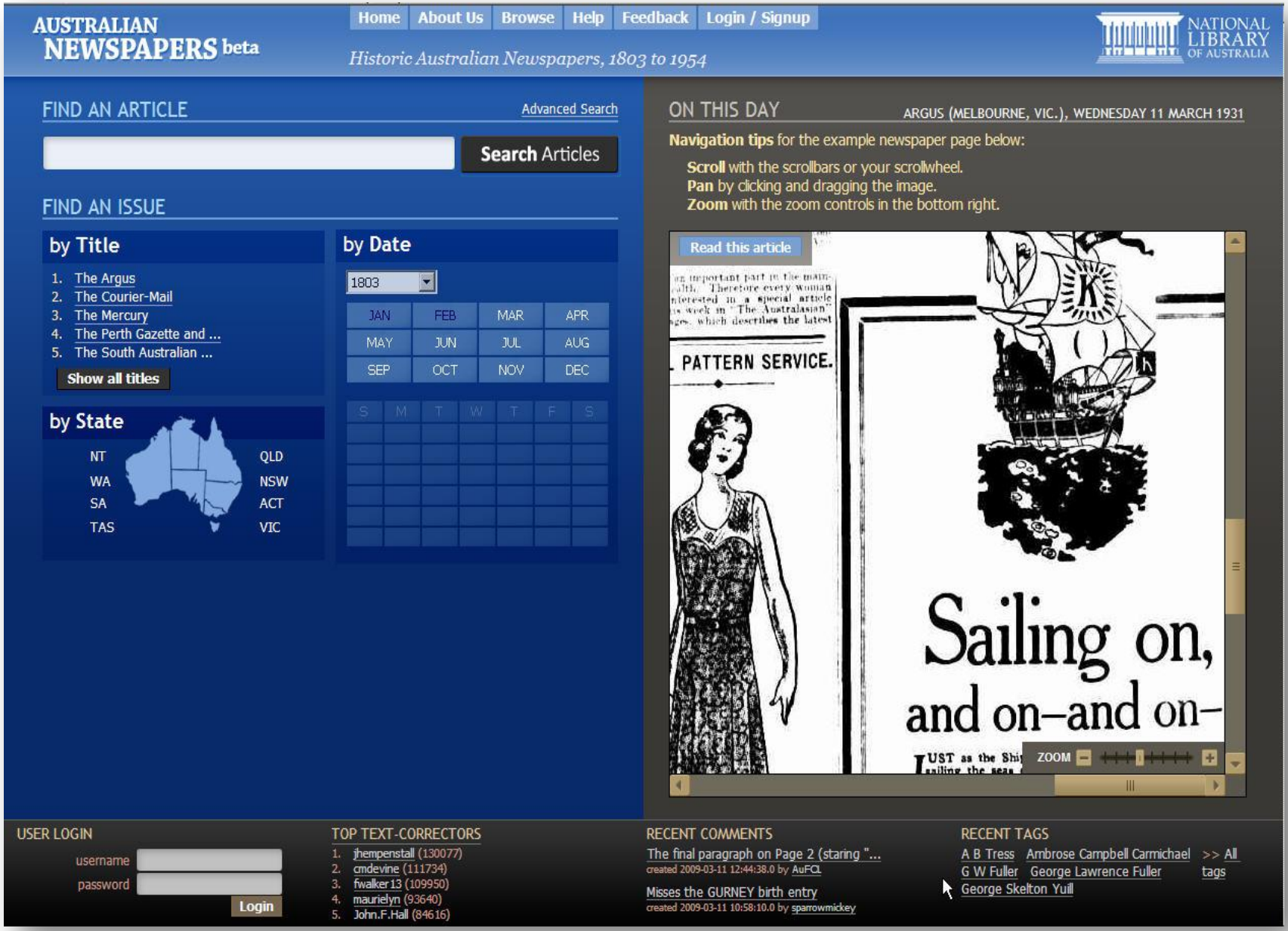
Australian Newspapers

- Users are also submitting different information like:
  - Additional remarks about people/places/situations mentioned in the article
  - Their remarks about scan quality
  - Problems associated with using a portal
  - Information about errors made by other users

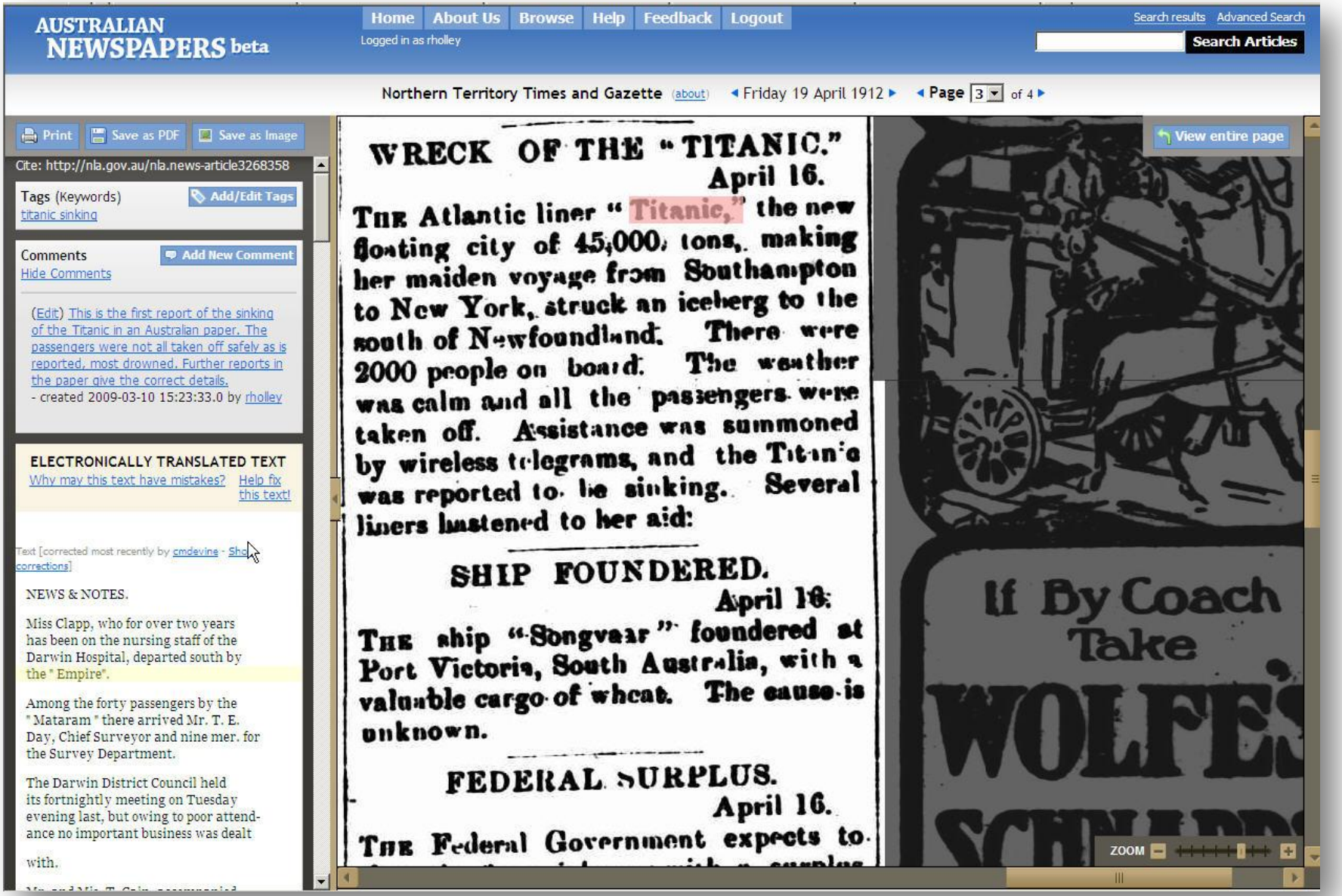
Australian Newspapers

- Why people are investing their time in such a project?
  - "We are sick of doing housework!"
  - "I enjoy typing, want to do something useful and find the content fascinating"
- Is it addictive?
  - Most of participants say – yes, it is
- More user statements at:
  - http://www.nla.gov.au/ndp/news_and_events/documents/NDP_IMPACT_MANYHANDS_April2009.ppt

http://ndpbeta.nla.gov.au



http://ndpbeta.nla.gov.au



http://ndpbeta.nla.gov.au

Text corrections

General Orders.

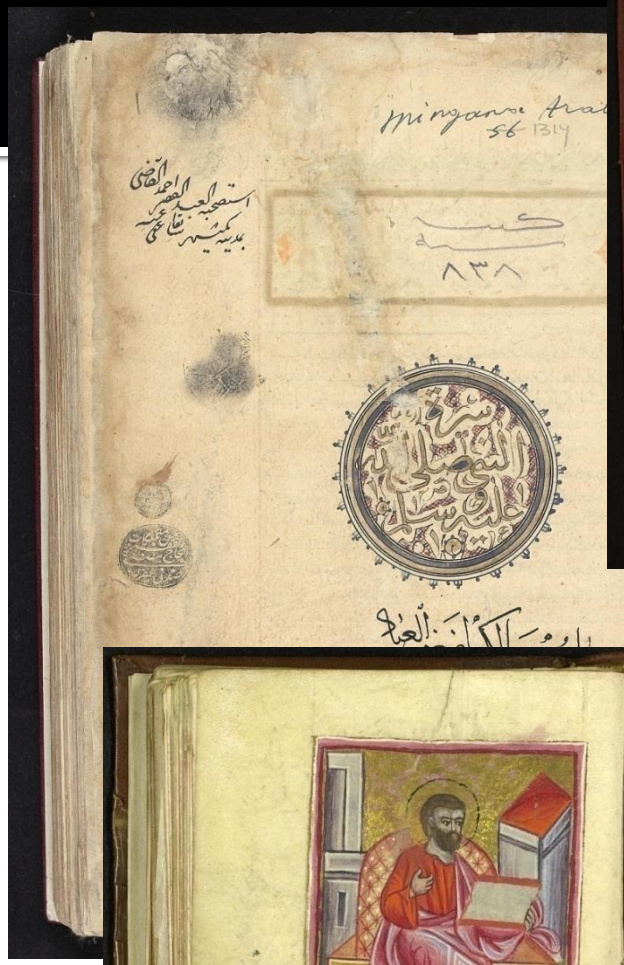
The Sydney Gazette and New South Wales Advertiser Saturday 5 March 1803, page 1

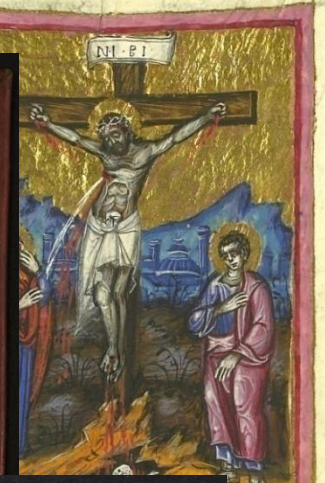
Changed By	Old Lines	New Lines
user:public:Bdamokos	detachments and labouiing people at Castle	detachments and labouring people at Castle-
user:public:Bdamokos	jrelieves him ; the said Orders are also to be	relieves him ; the said Orders are also to be
user:public:Bdamokos	-m%, ked off in the Extracts he is furnished	marked off in the Extracts he is furnished
user:wcathro	Settlers at Hawkeibury, fiom the vexatious	Settlers at Hawkesbury, from the vexatious
user:wcathro	General Order	General Orders
user:wcathro	rs«	General Order
anonymous	Boat receives more grain than the vessesl	Boat receives more grain than the vessel
user:lcho	m E PE AT ED Complaints hiving been made of the great loííes fuílained by the	REPEATED Complaints hiving been made of the great loííes fuílained by the

Other examples

- Virtual manuscript room
  - **http://vmr.bham.ac.uk**
- Such a online virtual laboratory is the only chance to :
  - analyze those manuscripts
  - prepare transcription

http://vmr.bham.ac.uk





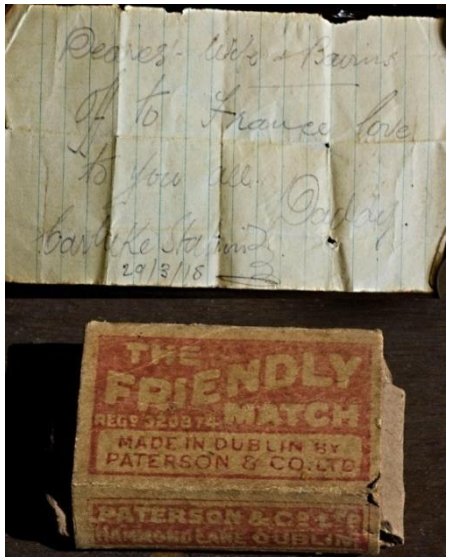
Oxford's Great War Poetry Archive

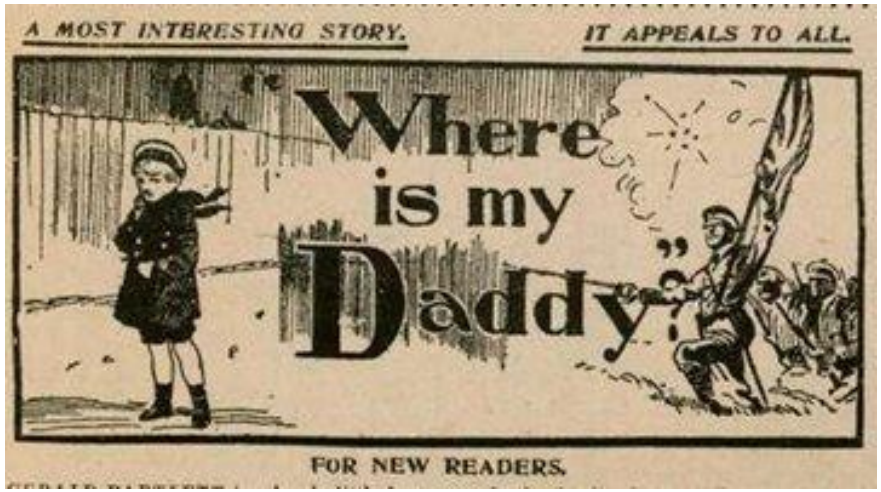
- Project coordinated by University of Oxford
  - http://www.thegreatwatarchive.org/
- Last only 3 months from 8.03.2008 till 11.11.2008.
- Goal:
  - Create valuable collection at low cost
  - Avoid institutionalized digitization

Oxford's Great War Poetry Archive

- Community Collection Building
- Everyone could propose resource which might be added to collection:
  - Not only poetry but also letters, old pictures and stories associated with them
- Project was aimed to facilitate creation of educational resources like
  - Podcasts, video, articles etc.
- It also gathered information about existing educational resources

Oxford's Great War Poetry Archive





Source: http://www.thegreatwatarchive.org/

Oxford's Great War Poetry Archive

- Volunteer digitization
  - They created a group at Flickr.com where people were able to add their content associated with a topic:
    - *"I have recently inherited my (german) grandfather's old photo album from WW1. I have posted some of these photos onto flickr already but not to any groups […] Are you interested?"*
      - http://www.flickr.com/groups/greatwararchive/discuss/72157605915465052/
- During 3 month they gathered 6 500 of objects
- This group is still open for submission (till now they gathered 2 000 additional pictures)

Oxford's Great War Poetry Archive

- This approach reduced the cost of digitization even 10 times

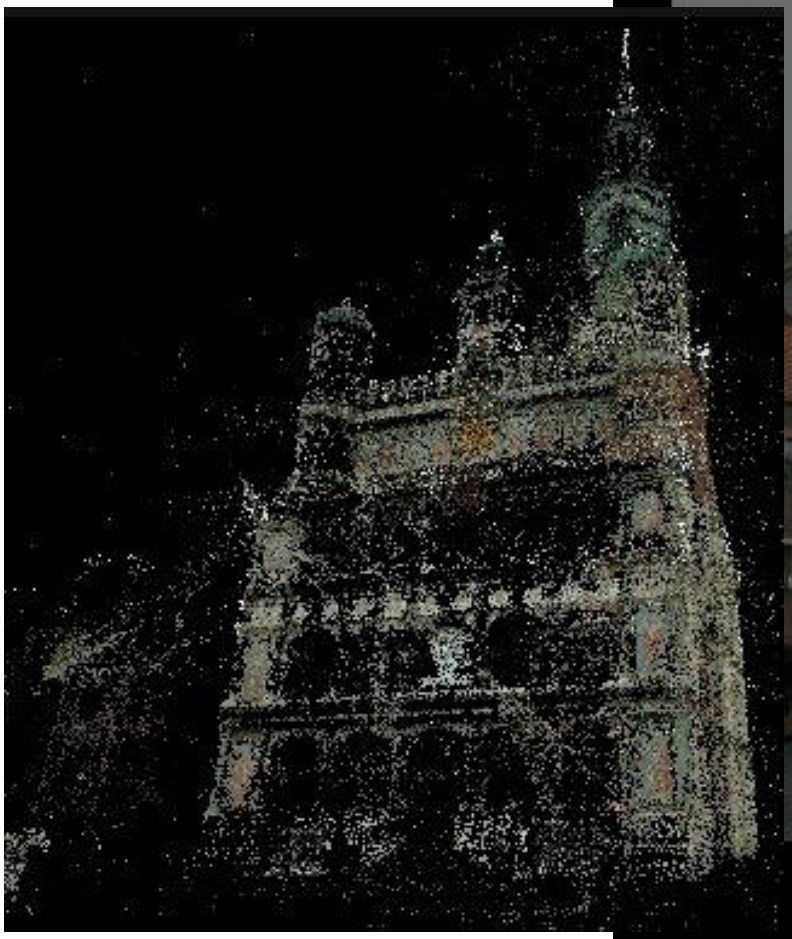
Conclusions

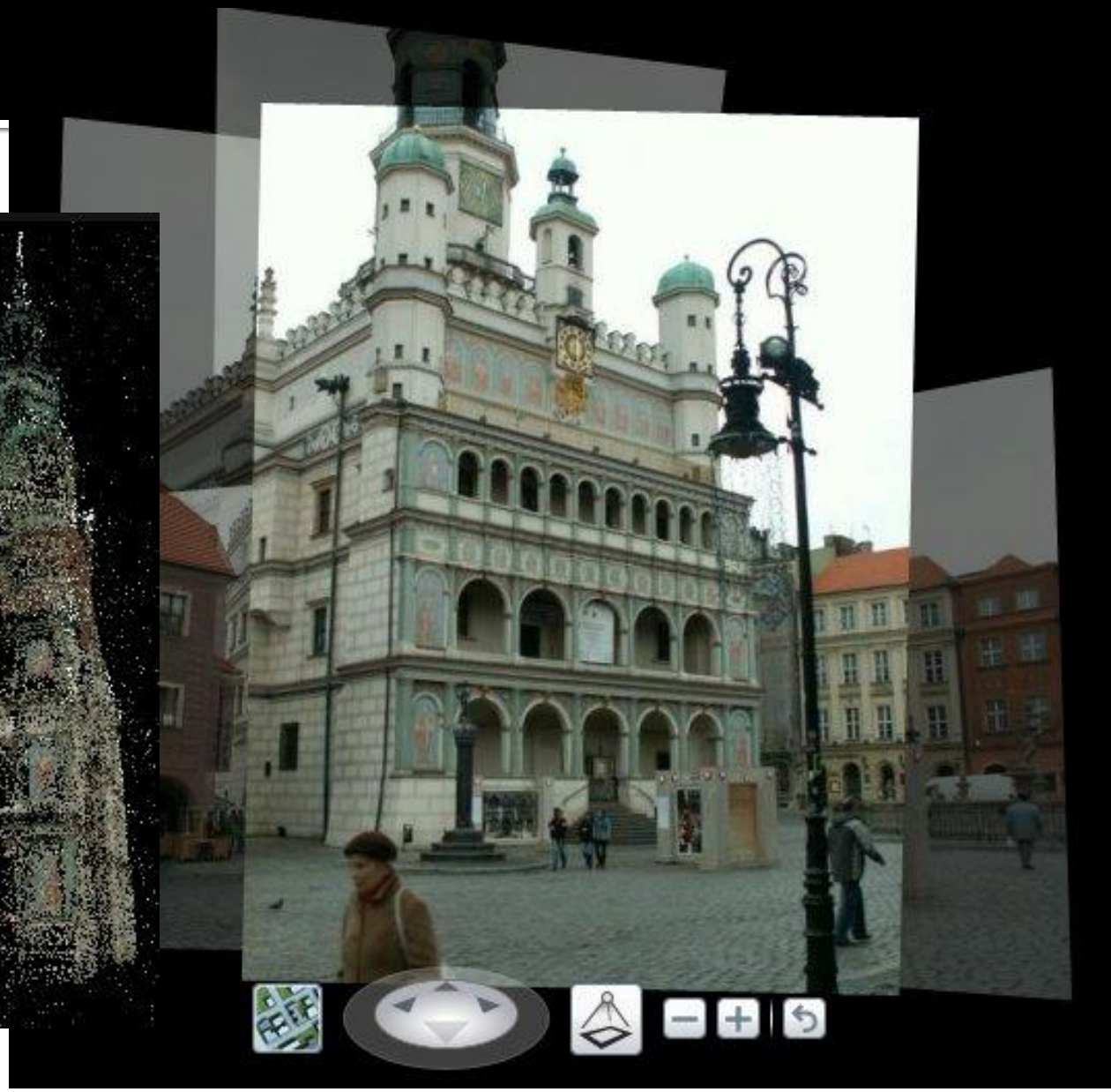
- Things are changing very quickly
- New technologies, media are appearing all the time
- Digital Librarians have a special role in this process
- New technologies creates new possibilities and challenges

Tartu. Estonian Historical Museum
collection: EAM N5635:52
Modern rephotography by Vahur Puik, 2009

Townhal in Poznañ

http://photosynth.net/view.aspx?cid=1c851c1b-f11b-44bd-9696-901a565c7fd5





Conclusions

- The question is which of them are the most important, which should be preserved
- Community participation is a great chance but engaging internet users is sometimes very hard task

Q&A