



Everyone is a Curator: Human-Assisted Preservation for ORE Aggregations

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DigCCurr 2009

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April 3, 2009

OAI-ORE work is supported by the Andrew W. Mellon Foundation, Microsoft Corporation, and the National Science Foundation (IIS-0430906).

2 Michigan St.

4 Louisville

3 Villanova

4 Pittsburgh

2 Memphis

1 North Carolina

Champion
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1 North Carolir

1 Connecticut

2 Memphis

1 North Carolina

Outline

- Aggregations on the Web
- Object Reuse and Exchange (ORE)
- Web Infrastructure (WI)
- Prototype system: ReMember
- Future work

Aggregations



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March/April 2009

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José H. Canós Cerdá and Manuel Llavador Campos, *Technical University of Valencia, Spain*; and Eduardo Mena Nieto, *University of Zaragoza, Spain*
doi:10.1045/march2009-canos

...

ARTICLES

Going Grey? Comparing the OCR Accuracy Levels of Bitonal and Greyscale Images

Tracy Powell and Gordon Paynter, *National Library of New Zealand*
doi:10.1045/march2009-powell

How Good Can It Get? Analysing and Improving OCR Accuracy in Large Scale Historic Newspaper Digitisation Programs

by Rose Holley, *National Library of Australia*
doi:10.1045/march2009-holley

Also This Month

Digital Collections

FEATURED COLLECTION

The Washington College of Law Historical Collection



The Washington College of Law Historical Collection from the Pence Law Library contains class schedules, correspondence, newspapers, programs, scrapbooks, and yearbooks documenting its history from 1851-1969.

Aggregation spans multiple pages

How to Prevent the Next ...

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How to Prevent the Next Pandemic

An international network for monitoring the flow of viruses from animals to head off global epidemics

By Nathan Wolfe

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Forecasting the Next Pandemic

Had we been watching hunters 30 years ago, we might have been able to catch pandemic state. But that moment has passed. The question now is, How can we my colleagues and I had determined that we could study remote populations and our work more broadly to listen in on viral "chatter" the pattern of transfer of animal surveillance, we realized, we might be able to sound the alarm about an emerging boils over.

Fortunately, through partnership with Google.org and the Skoll Foundation we v Forecasting Initiative (GVFI), a program in which epidemiologists, public health biologists the world over collaborate to identify infectious agents at their point of organisms as they bubble up from animals into humans and flow outward from on just viruses or a particular disease du jour, the GVFI works to document the parasites that are crossing over from animals into humans.

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How to Prevent the Next Pandemic

An international network for monitoring the flow of viruses from animals to humans might help scientists head off global epidemics

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For our part, we would ultimately like to expand our surveillance network to more countries around the world, including such nations as Brazil and Indonesia, which have a tremendous diversity of animal species that could transmit pathogens to humans. Fuller development of the GVFI will be expensive: building out our network so that we have adequate staff and lab facilities for testing the sentinel populations every six months and testing the animals with which these people are in contact will cost around \$30 million, and keeping it running will cost another \$10 million a year. But if it succeeds in averting even a single pandemic within the next 50 years, it will more than pay for itself. Even just mitigating such an event would justify the cost.

Humans work to forecast a variety of very complex natural threats. We rarely question the logic behind trying to predict hurricanes, tsunamis, earthquakes and volcanoes. Yet we really have no reason to believe that predicting pandemics is inherently harder than predicting tsunamis. Given the enormous sums of money required to stop pandemics once they have already been established, it only makes sense to spend a portion of those public health dollars on stopping them in the first place. The ounce of prevention principle has never been more apt

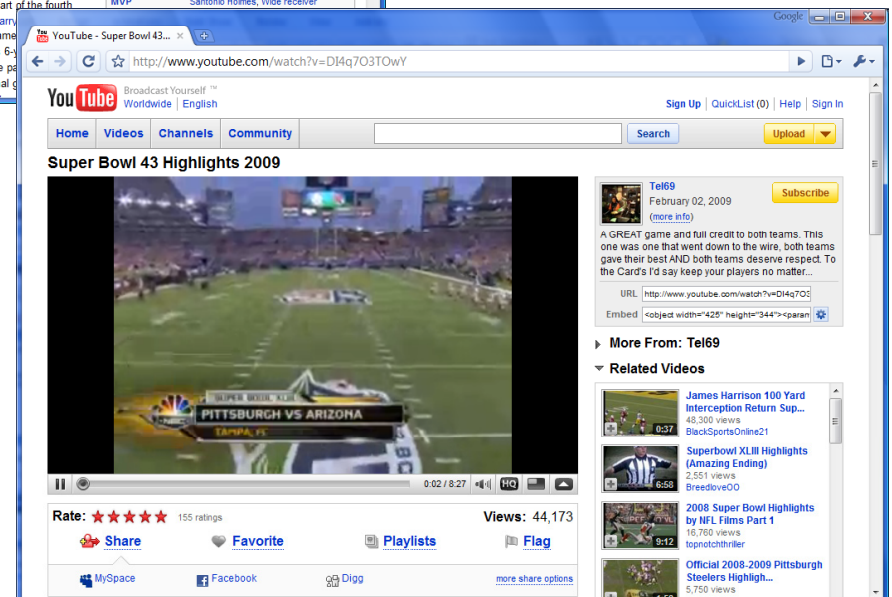
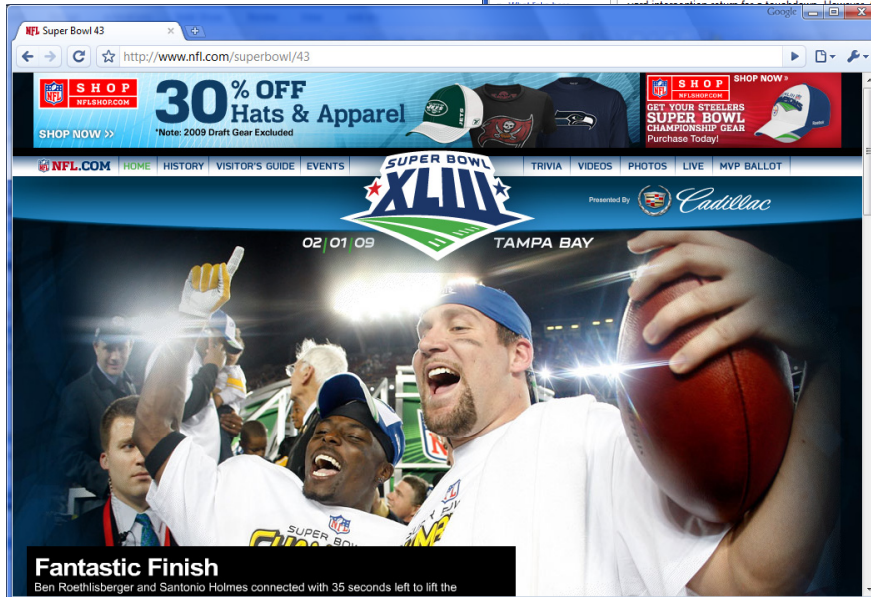
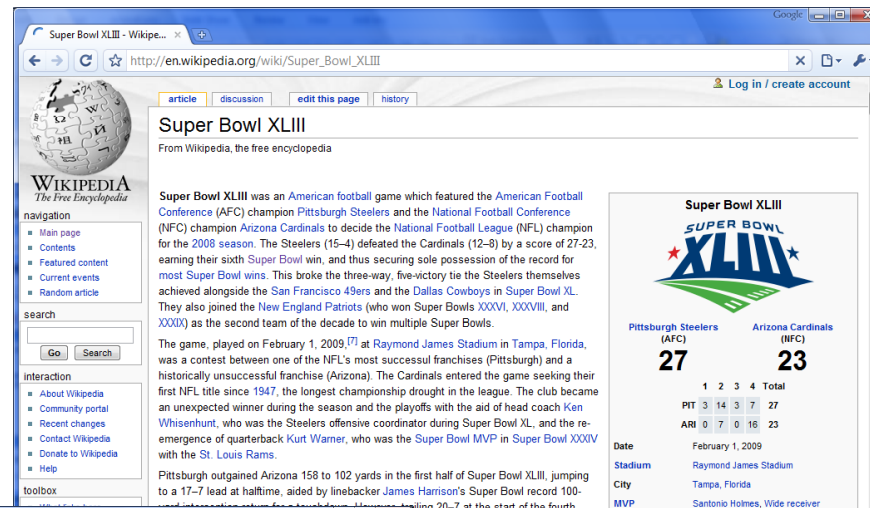
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is "Prevent the Next Pandemic"

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Aggregation spans multiple web sites



Aggregation composed of multiple representations

The screenshot shows a web browser window displaying an arXiv paper. The browser's address bar shows the URL <http://arxiv.org/abs/astro-ph/0601007>. The page header includes the arXiv logo and the text "arXiv.org > astro-ph > arXiv:astro-ph/0601007". The main content area is titled "Astrophysics" and "Parametrization of K-essence and Its Kinetic Term" by Hui Li, Zong-Kuan Guo, and Yuan-Zhong Zhang. The abstract states: "We construct the non-canonical kinetic term of a k-essence field directly from the effective equation of state function $\omega_k(z)$, which describes the properties of the dark energy. Adopting the usual parametrizations of equation of state we numerically reproduce the shape of the non-canonical kinetic term and discuss some features of the constructed form of k-essence." The right sidebar contains a "Download:" section with links for "PostScript", "PDF", and "Other formats", where "PostScript" is circled in red. Below this are sections for "Current browse context:", "References & Citations", and "Bookmark".

arXiv.org > astro-ph > arXiv:astro-ph/0601007

Astrophysics

Parametrization of K-essence and Its Kinetic Term

Hui Li, Zong-Kuan Guo, Yuan-Zhong Zhang

(Submitted on 31 Dec 2005 (v1), last revised 18 Jan 2006 (this version, v2))

We construct the non-canonical kinetic term of a k-essence field directly from the effective equation of state function $\omega_k(z)$, which describes the properties of the dark energy. Adopting the usual parametrizations of equation of state we numerically reproduce the shape of the non-canonical kinetic term and discuss some features of the constructed form of k-essence.

Comments: 8 pages, 1 figure; accepted by Mod. Phys. Lett. A; minor changes to references
Subjects: **Astrophysics (astro-ph)**
Journal reference: Mod.Phys.Lett. A21 (2006) 1683-1690
DOI: [10.1142/S0217732306019475](https://doi.org/10.1142/S0217732306019475)
Cite as: [arXiv:astro-ph/0601007v2](https://arxiv.org/abs/astro-ph/0601007v2)

Submission history

From: Hui Li [[view email](#)]
[v1] Sat, 31 Dec 2005 04:01:23 GMT (20kb)
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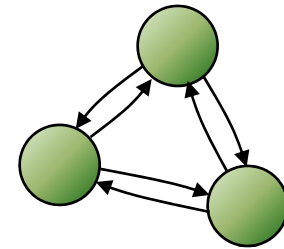
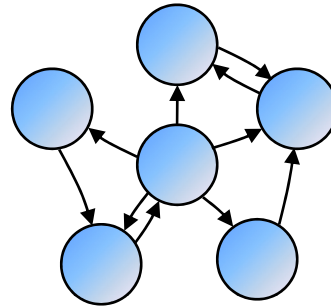
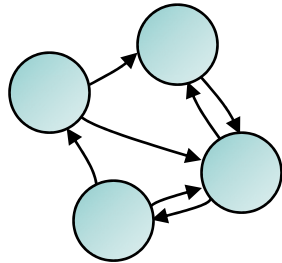
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Robot's view of web aggregations

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OAI-ORE solution



- OAI-ORE provides standards to
 - Describe an aggregation of web resources
 - Provide boundaries for an aggregation
 - State the relationships between aggregated resources
- OAI-ORE uses existing web standards and technologies
- Example application: improve web search

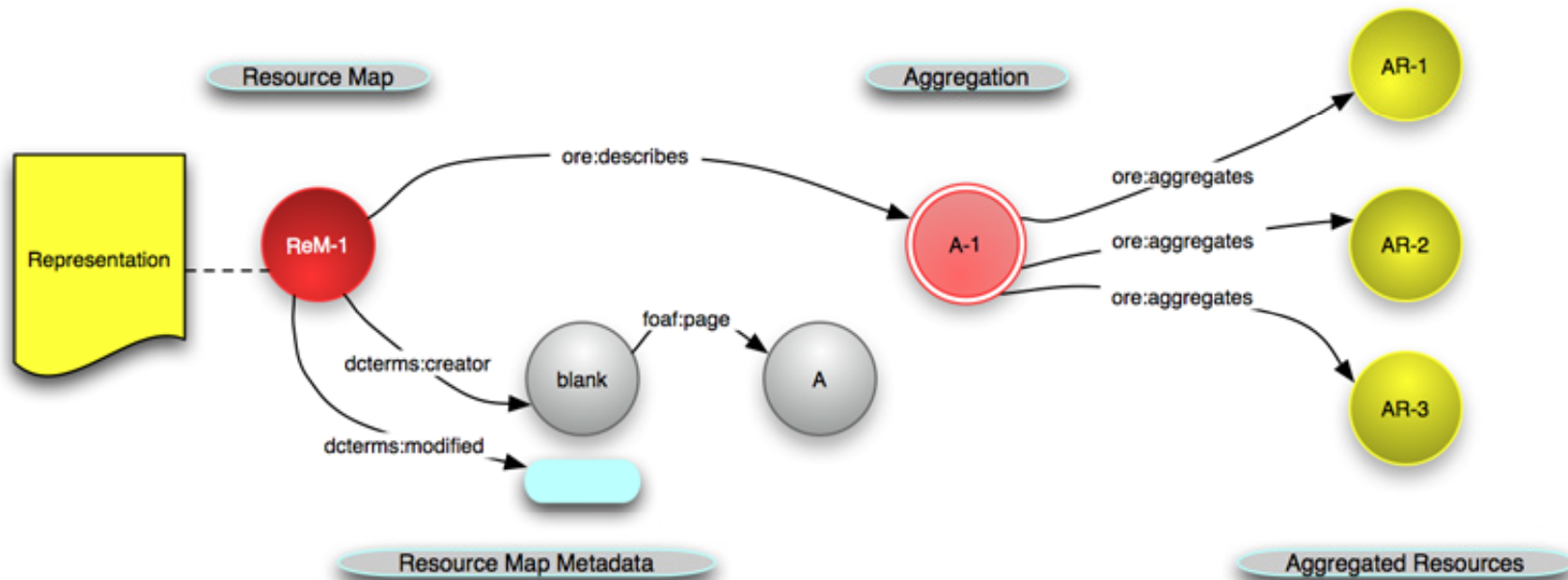


OAI-ORE solution



- Resource Map (ReM) describes the aggregation
 - Has a URI (new resource)
 - May express relationships and properties pertaining to all aggregated resources
 - Contains metadata about the ReM (e.g., who created it, when it was last modified, etc.)
 - Machine readable (serialized as Atom XML, RDF/XML, RDFa, n3, turtle, and other RDF serialization formats)

Example ReM



Atom XML ReM Serialization Example

```
<?xml version="1.0" encoding="UTF-8"?>
<atom:entry
  xmlns:dcterms="http://purl.org/dc/terms/"
  xmlns:atom="http://www.w3.org/2005/Atom"
  xmlns:ore="http://www.openarchives.org/ore/terms/"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  <atom:id>tag:arxiv.org,2008:astro-ph:0601007</atom:id>

  <!-- About the Aggregation for the ArXiv document -->

  <!-- This Atom entry describes a specific ORE Aggregation -->
  <atom:link href="http://arxiv.org/aggregation/astro-ph/0601007"
    rel="http://www.openarchives.org/ore/terms/describes"/>
  <atom:category term="http://www.openarchives.org/ore/terms/Aggregation"
    scheme="http://www.openarchives.org/ore/terms/" label="Aggregation"/>
  <!-- The Aggregation aggregates ... -->
  <atom:link href="http://arxiv.org/abs/astro-ph/0601007"
    rel="http://www.openarchives.org/ore/terms/aggregates"
    title="[astro-ph/0601007] Parametrization of K-essence and Its Kinetic Term"
    type="text/html" />
  <atom:link href="http://arxiv.org/ps/astro-ph/0601007"
    rel="http://www.openarchives.org/ore/terms/aggregates"
    title="Parametrization of K-essence and Its Kinetic Term" type="application/postscript"
    hreflang="en"/>
  <atom:link href="http://arxiv.org/pdf/astro-ph/0601007"
    rel="http://www.openarchives.org/ore/terms/aggregates"
    title="Parametrization of K-essence and Its Kinetic Term" type="application/pdf"
    hreflang="en"/>
  <!-- Metadata about the Aggregation: title and authors -->
  <atom:title>Parametrization of K-essence and Its Kinetic Term</atom:title>
  <atom:author>
    <atom:name>Hui Li</atom:name>
    <atom:email>lihui@somewhere.cn</atom:email>
  </atom:author>
```



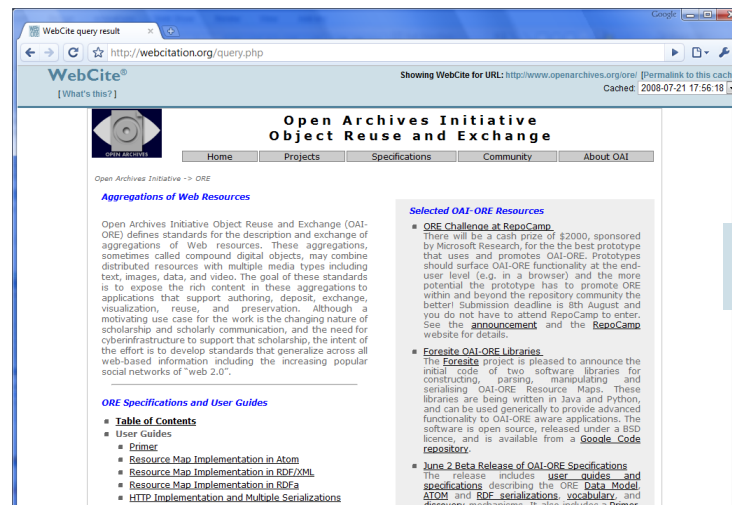
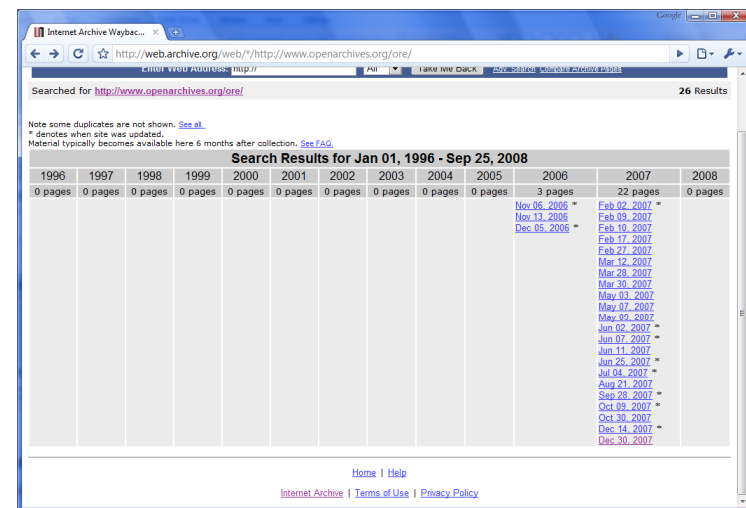
Black hat: <http://img.webpronews.com/securitypronews/110705blackhat.jpg>
Virus image: http://polarboing.com/images/topics/misc/story.computer.virus_1137794805.jpg
Hard drive: <http://www.datarecoveryspecialist.com/images/head-crash-2.jpg>



Web Infrastructure

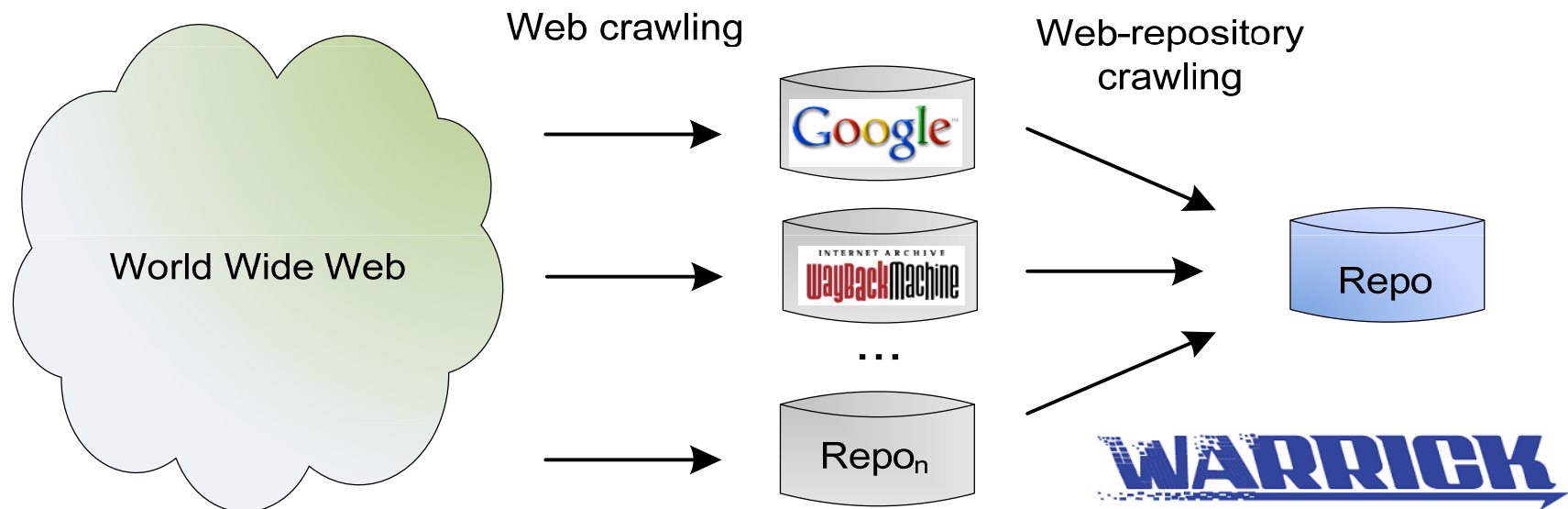


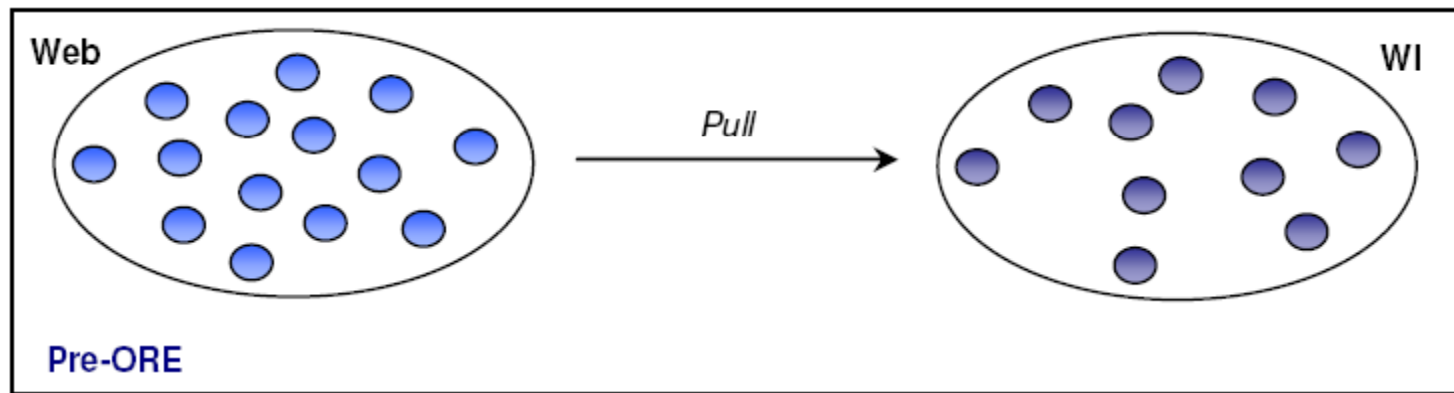
WI capture of web page

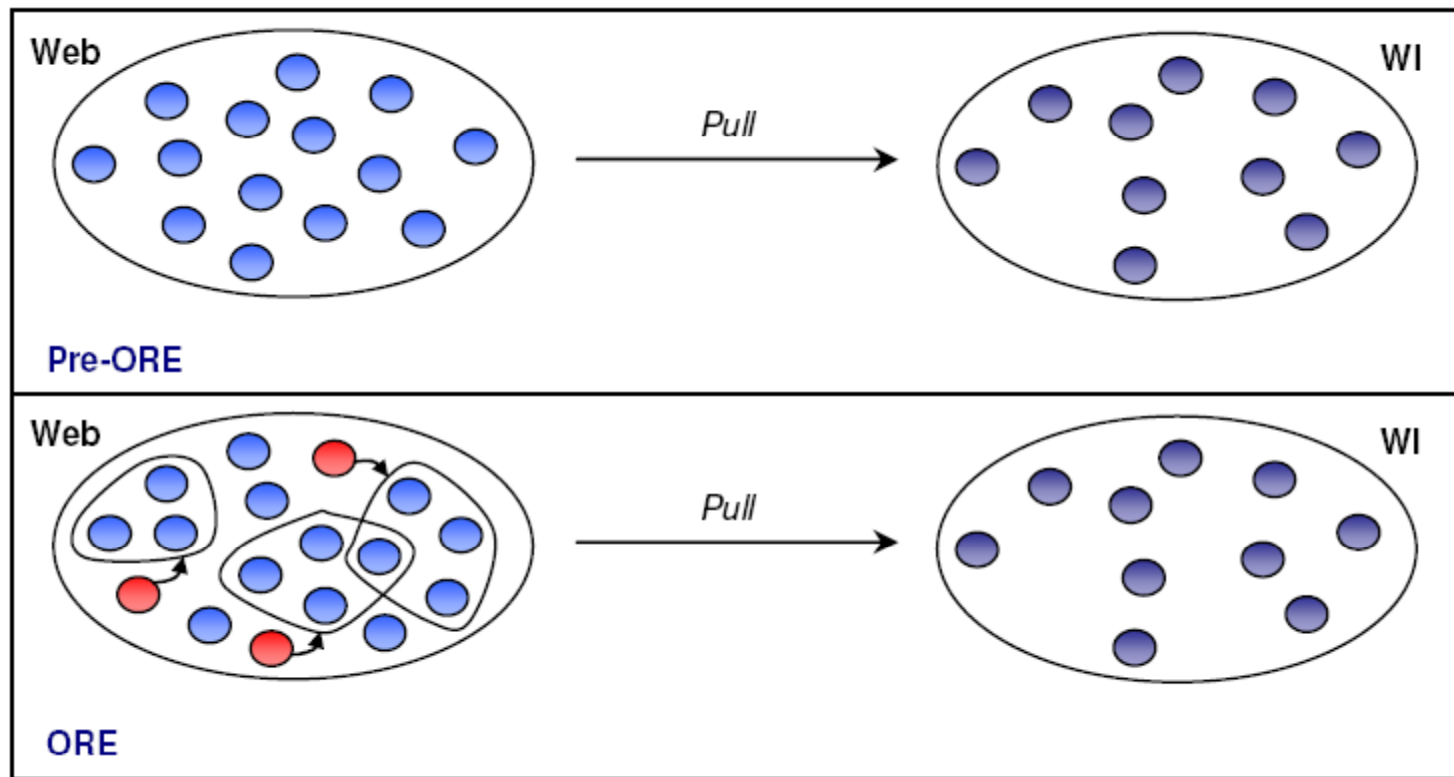


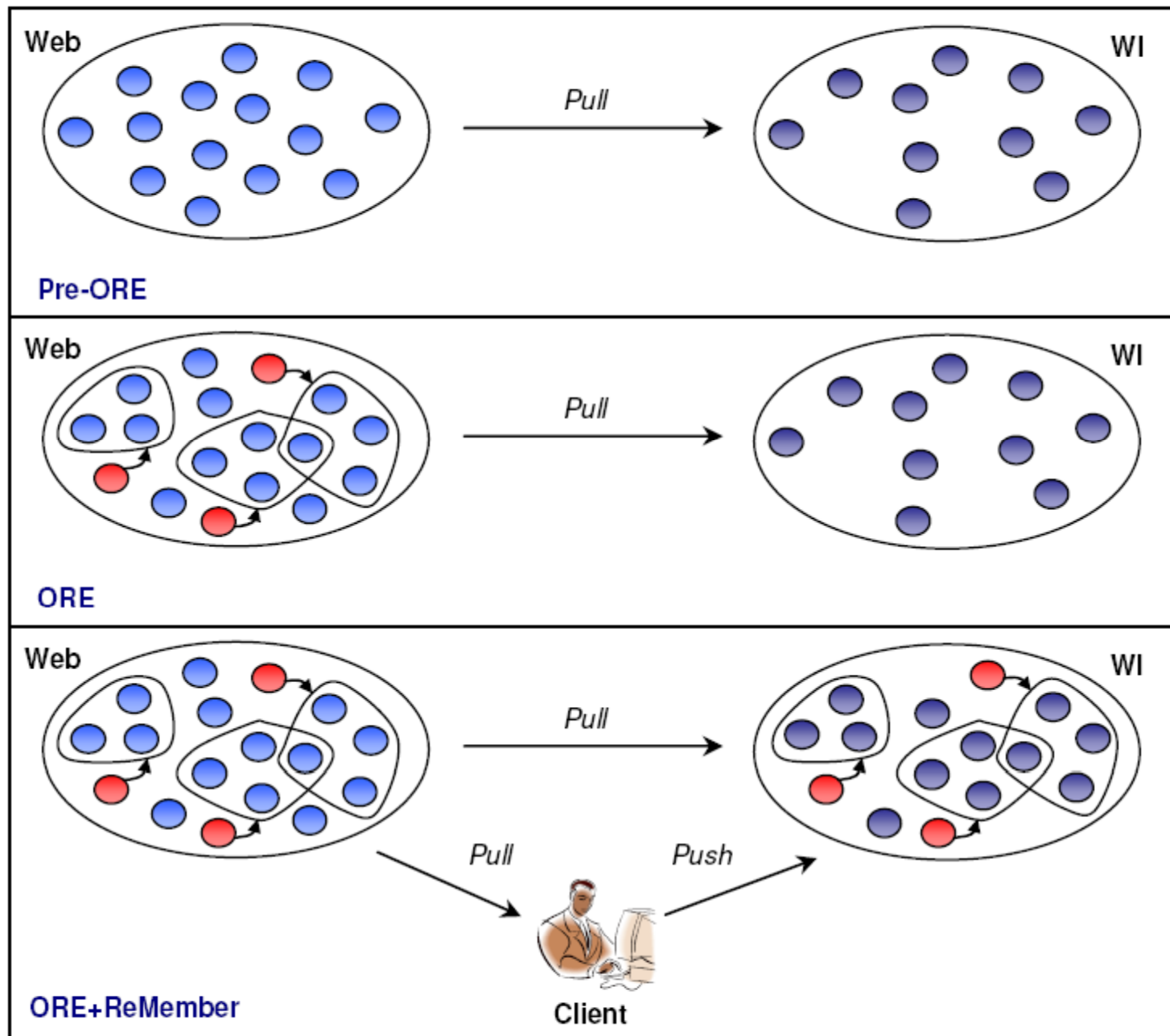
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Warrick: Crawling the crawlers to reconstruct entire web sites







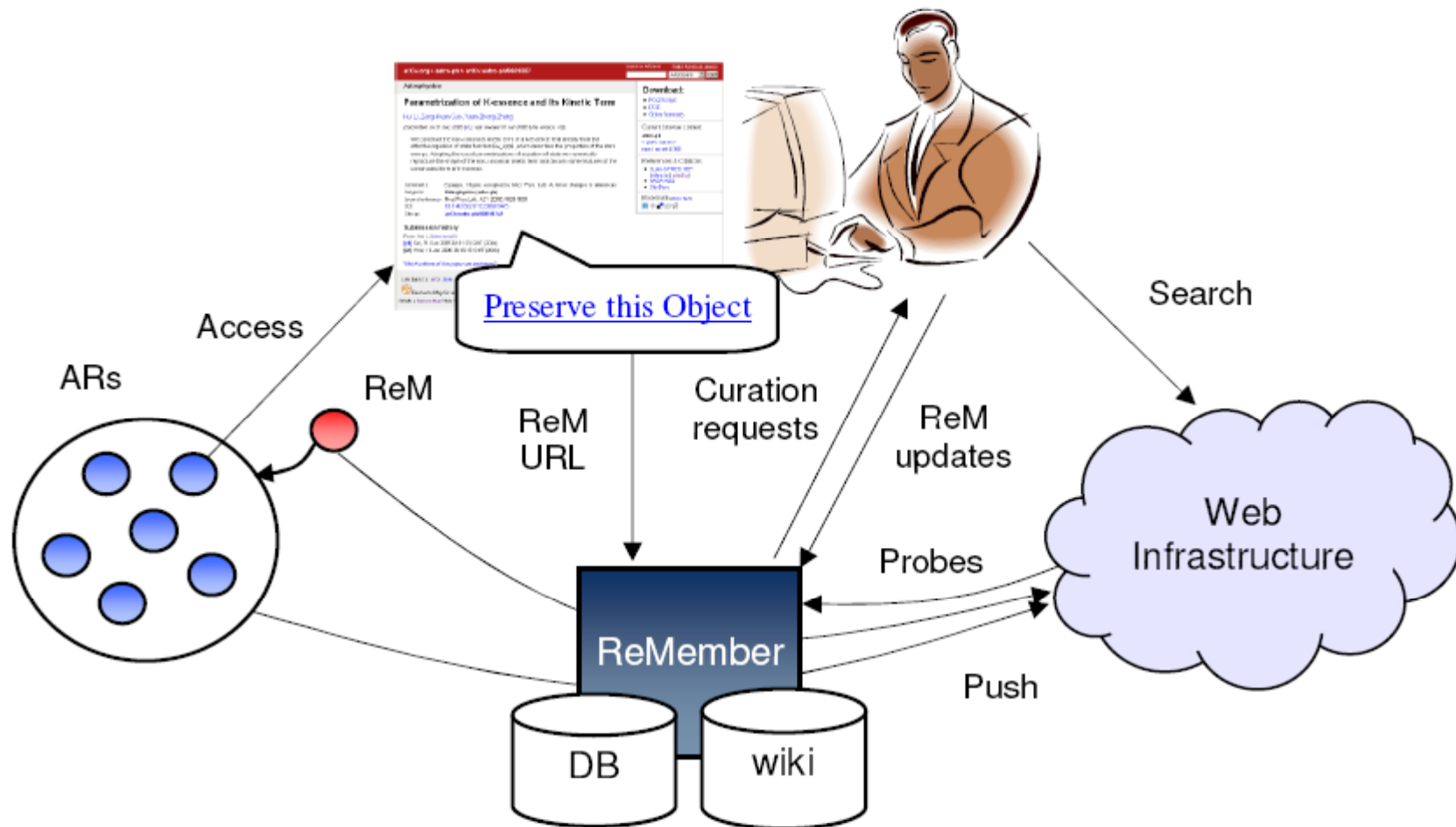


Can we harness the web community to curate ReMs?

- Anyone can create a ReM
- ReM's aggregated resources may change
- Aggregated resources may go 404
- Aggregated resources may move location
- Humans are better at resolving these problems than computers

Many people
doing a little work
=
curation on a grand scale

ReMember Framework



Original URL is 404:
[http://www.icsti.org/2000
workshop/gatenby.html](http://www.icsti.org/2000workshop/gatenby.html)

ReMember Prototype - Mozilla Firefox

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http://african.lanl.gov/ReMember

ReMember Prototype

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Thank you for helping us preserve this object. The resources below make up this [Resource Map](#) (ReM).

Please click on any resources that indicate they **need attention**.


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ReM Archive

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[Splash Page for "Digital Preservation Bibliography"](#)
11 Jun 2006, 20:00:00
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**Resource
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14 Jul 2008, 06:52:00
author: Gatenby, Pam
Needs attention



[Cedars Guide to Digital Collection Management](#)
22 Apr 2002, 06:00:00 -0600
author: Cedars Project
OK
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[The State of the Art and Practice in Digital Preservation](#)
23 Mar 2002, 05:00:00
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author: Gatenby, Pam

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National Library Of Australia | Digital Preservation Policy
... the Library's Preservation Policy and other policy documents and guidelines relevant to the ... Of particular relevance are the Library's Collection Development Policy, ... repositories as defined by international standards and best practices. ... The Director of the National Library's Web Archiving and Digital ...
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Distribute and gain support for best practice guidelines on archiving ... Participation in the development of digital reference service in and beyond Australia. ... with the National Library of Australia Digitisation Policy 2000-2004. ...
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File Format: PDF/Adobe Acrobat - [View as HTML](#)
The reasons behind the positioning of policy development for digital A Digital Preservation Policy for the National Library of Australia ... responsibilities for digital archiving and preservation in the United Kingdom. Featuring amongst the assigned tasks are the assembly of best practice guidelines, ...
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results are a
proper
replacement.

Internet Archive Wayback Machine - Mozilla Firefox

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http://web.archive.org/web/*/http://www.icsti.org/2000workshop/gatenby.html

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1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
0 pages	0 pages	0 pages	0 pages	0 pages	0 pages	4 pages	5 pages	6 pages	6 pages	5 pages	3 pages	1 pages
						Feb 08, 2002 * Jun 21, 2002 Aug 04, 2002 Oct 16, 2002	Feb 10, 2003 * Apr 01, 2003 Aug 04, 2003 Oct 20, 2003 Dec 24, 2003	Mar 01, 2004 Apr 06, 2004 Jun 21, 2004 Aug 19, 2004 * Oct 15, 2004 Dec 23, 2004	Feb 11, 2005 Feb 19, 2005 Apr 25, 2005 Oct 15, 2005 Dec 11, 2005 Dec 16, 2005	Feb 09, 2006 May 04, 2006 Jun 30, 2006 Oct 03, 2006 * Oct 19, 2006 *	Jan 06, 2007 Aug 31, 2007 Nov 18, 2007	Jan 18, 2008

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ReMember Prototype ICSTI, Digital Archiving, P.Gatenb...

Digital Archiving — Developing Policy And Best Practice Guidelines At The National Library Of Australia

By Pam Gatenby, National Library of Australia

1. Introduction

The main focus of my presentation is the business model the National Library of Australia has put in place to archive digital on-line publications. I'll explain the strategic framework and rationale for the approach we are currently taking; the processes we follow and then outline areas we are addressing to ensure cost-effective and workable solutions to providing long-term access to digital publications.

Like most national libraries, the National Library of Australia has responsibility for collecting, preserving and making available the published national output. It accepts that this responsibility extends to digital publications in all forms.

We have been archiving Internet Australian publications since 1996 when the [PANDORA](#) project was established. PANDORA stands for Preserving and Accessing Networked Documentary Resources of Australia. Through this project we have been working at two levels to develop our strategy for providing long-term access to Australian on-line publications — at the conceptual level to establish the standards, technical, and business requirements for a durable, robust archive; and at the practical level to actually start building an archive of titles. This now numbers 450 titles which includes some very complex ones which have provided us with significant technical challenges, and many which are gathered on an on-going basis.

At the Library we attach great importance and value to the "hands-on" approach and to collaborative effort. After an initial period of intensive discussion and grappling with issues back in 1995, we decided that the only way to make progress was to actually start doing something in order to learn through experience and to develop our ideas further. The progress that the PANDORA project has made since that time is a tribute to the intelligence, perseverance and dedication of a small team of staff who have worked closely together on many difficult issues. PANDORA was launched based on a set of basic software tools developed in-house, and a modest level of staffing funded from recurrent budget. This approach has had some inherent operational frustrations but has allowed us to test and refine our theoretical principles.

2. Strategic framework for digital archiving implementation

The Library's overall approach to managing the archiving and preservation of digital publications and to providing access to them, takes place within a

Done

ReM's URL updated to point to archived version.

What if Resource is found on “live” Web?

1. Update ReM to point to new location
2. Push live version to WebCite

Digital Archiving — Developing Policy And Best Library Of Australia

By Pam Gatenby, National Library of Australia

1. Introduction

The main focus of my presentation is the business model the National Library of Australia is developing. The strategic framework and rationale for the approach we are currently taking to ensure cost-effective and workable solutions to providing long-term access to digital publications.

Like most national libraries, the National Library of Australia has responsibility for the long-term preservation of its output. It accepts that this responsibility extends to digital publications in all forms.

We have been archiving Internet Australian publications since 1996 when the [PAN](#) (Project Archiving Networked Documents) was established. Through this project we are providing long-term access to Australian on-line publications — at the conceptual

WebCite

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The Problem

Authors increasingly cite webpages and other digital objects on the Internet, which can “disappear” overnight. In one study published in the journal *Science*, 13% of Internet references in scholarly articles were inactive after only 27 months. Another problem is that cited webpages may change, so that readers see something different than what the citing author saw. The problem of unstable web citations and the lack of routine digital preservation of cited digital objects has been referred to as an issue “calling for an immediate response” by publishers and authors [1].

An increasing number of editors and publishers ask that authors, when they cite a webpage, make a local copy of the cited webpage/webmaterial, and archive the cited URL in a system like WebCite®, to enable readers permanent access to the cited material.

What is WebCite®?

WebCite®, a member of the International Internet Preservation Consortium, is an on-demand archiving system for webreferences (cited webpages and websites, or other kinds of Internet-accessible digital objects), which can be used by authors, editors, and publishers of scholarly papers and books, to ensure that cited webmaterial will remain available to readers in the future. If cited webreferences in journal articles, books etc. are not archived, future readers may encounter a “404 File Not Found” error when clicking on a cited URL. [Try it! Archive a URL here. It's free and takes only 30 seconds.](#)

A WebCite®-enhanced reference is a reference which contains - in addition to the original live URL (which can and probably will disappear in the future, or its content may change) - a link to an archived copy of the material, exactly as the

Wiki for revision control

[page](#) [discussion](#) [edit](#) [history](#)

Revision history of "Http://african.lanl.gov/preserve/dp bibliography/rem.atom"

[View logs for this page](#)

(Latest | Earliest) View (newer 50) (older 50) ([20](#) | [50](#) | [100](#) | [250](#) | [500](#))

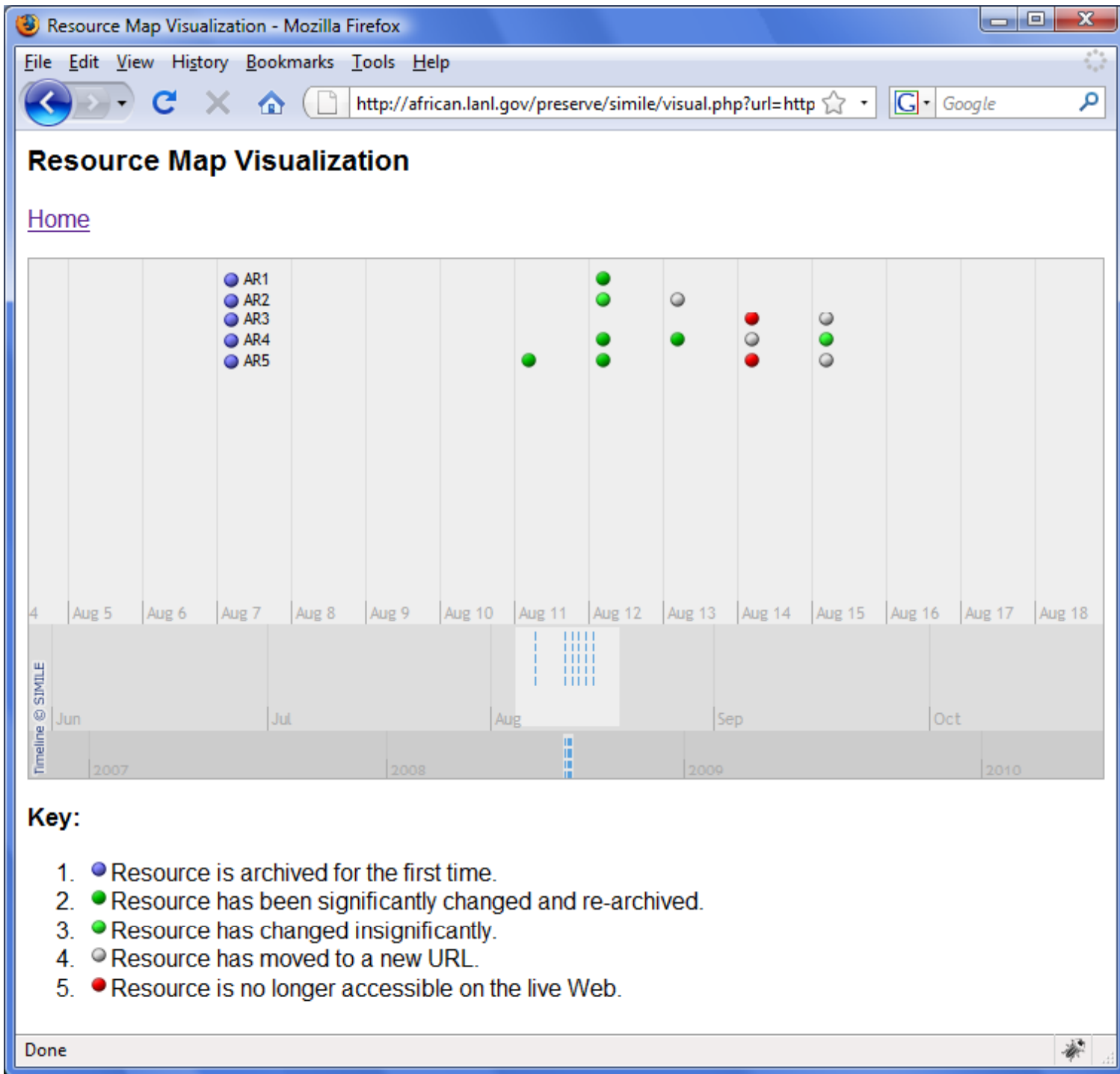
Diff selection: mark the radio boxes of the versions to compare and hit enter or the button at the bottom.
Legend: (cur) = difference with current version, (last) = difference with preceding version, M = minor edit.

Compare selected versions

■	(cur) (last)	<input checked="" type="radio"/>	16:09, 24 July 2008 128.165.10.83 (Talk) (3,905 bytes) (<i>Update entry</i>) (undo)
■	(cur) (last)	<input checked="" type="radio"/>	20:25, 22 July 2008 128.165.10.83 (Talk) (3,548 bytes) (<i>Update entry</i>) (undo)
■	(cur) (last)	<input type="radio"/>	19:36, 22 July 2008 128.165.10.83 (Talk) (3,518 bytes) (<i>Update entry</i>) (undo)
■	(cur) (last)	<input type="radio"/>	19:33, 22 July 2008 128.165.10.83 (Talk) (3,476 bytes) (<i>Initial ReM</i>)

Compare selected versions

(Latest | Earliest) View (newer 50) (older 50) ([20](#) | [50](#) | [100](#) | [250](#) | [500](#))



Future Work

- Waiting for ORE to catch on (Version 1.0 just released Oct 2008)
- Will user community adopt ReMember?
- How do we prevent or detect malicious alterations?
- Allow public to add and remove Resources from ReMs?

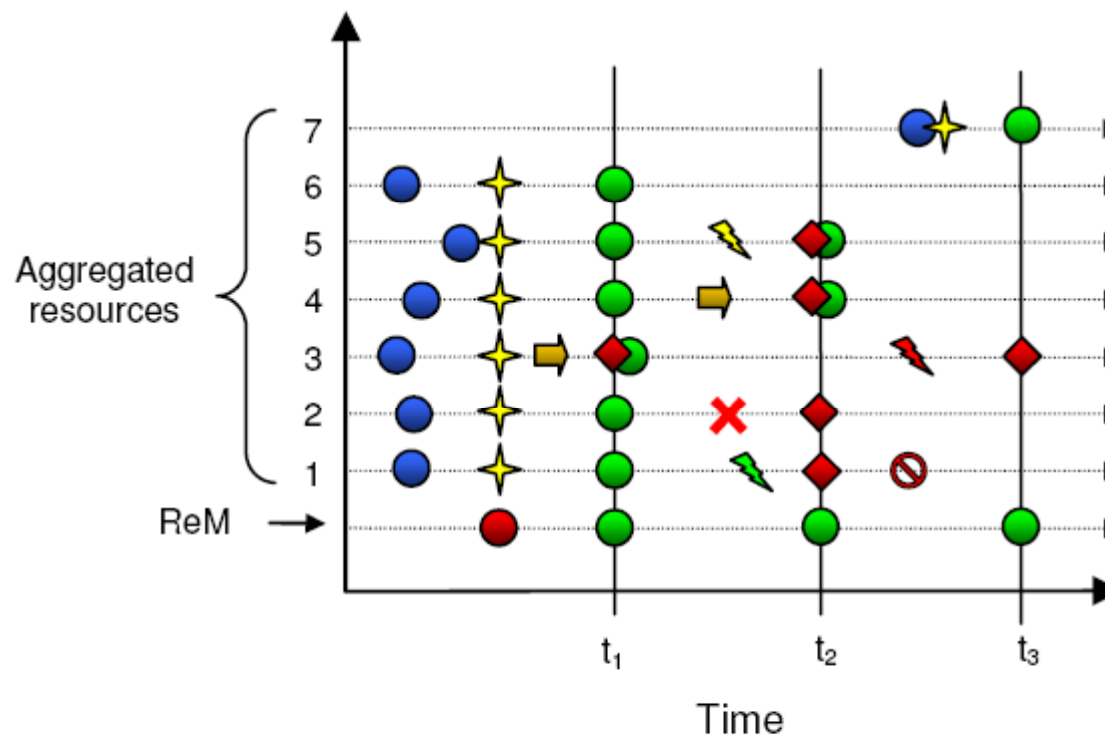
Thank You

Frank McCown

fmccown@harding.edu

<http://www.harding.edu/fmccown/>






Event Key	
	AR is created
	ReM is created
	Resource is archived in WI
	AR is removed from ReM
	AR is added to ReM
	AR needs human attention
	AR changes URI (previous URI is 404)
	AR is removed from the Web (404, no new URI)
	AR is changed in an insignificant way
	AR is changed in a significant way
	AR's URL is pointing to different content (no new URI)

Denver Broncos ReM

ReMember Prototype - Mozilla Firefox

File Edit View History Bookmarks Tools Help


http://african.lanl.gov/remember/?id=http%3A%2F%2Fafrikan.l → Google



Official Website of the Denver Broncos
author: Denver Broncos Marketing Department
Last curated: 2008-08-19

OK


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2008-08-19 Go



The Denver Post Broncos Page
A Denver Broncos fan site that has the latest news.
Last curated: 2008-08-19

Needs attention


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Denver Broncos Wikipedia Article
The Denver Broncos are a professional American football team based in Denver, Colorado.
author: Declan McCullagh
Last curated: 2008-08-14

Checking...


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Denver Broncos Team Page on NFL.com
Last curated: 2008-08-14

OK

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Denver Broncos video on YouTube
Promotional video
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Done

Microsoft- Yahoo Merger ReM


ReMember Prototype - Mozilla Firefox

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http://african.lanl.gov/remember/id=http%3A%2F%2Fafrikan.la → Google




Splash Page for "Microsoft's big bid for Yahoo"
author: Anne Dujmovic
author: Jon Skillings
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Video: Icahn's goes to the mat
The alpha investor is ready to replace all of Yahoo's board in its entirety. CNET News' Charlie Cooper and Dawn Kawamoto offer the lowdown.
author: Anne Dujmovic
author: Jon Skillings
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The backstory on Senate's Google-Yahoo hearing
Microsoft plans to assert the ad deal may be "illegal," which is what Google said about the planned Microhoo deal. If so, why don't these companies sue?
author: Declan McCullagh
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YouTube gadget soon scorned on Capitol Hill?
author: Charles Cooper
Last curated: 2008-08-19
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Image: Takeover attempts
How common is it for companies to try taking over other companies? And how often does it get hostile?
author: Anne Dujmovic
author: Jon Skillings
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Done

arXiv
ReM

ReRemember Prototype - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://african.lanl.gov/remember/?id=http%3A%2F%2Faffrican.l → Google




Splash Page for "Parametrization of K-essence and Its Kinetic Term"
author: Hui Li
author: Zong-Kuan Guo
author: Yuan-Zhong Zhang
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Thumbnail Unavailable


Dublin Core Metadata for "Parametrization of K-essence and Its Kinetic Term"
author: Hui Li
author: Zong-Kuan Guo
author: Yuan-Zhong Zhang
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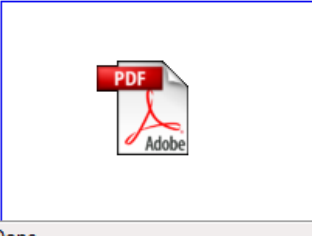
Citations to "Parametrization of K-essence and Its Kinetic Term"
author: Hui Li
author: Zong-Kuan Guo
author: Yuan-Zhong Zhang
Last curated: 2008-08-14
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PostScript Version of "Parametrization of K-essence and Its Kinetic Term"
author: Hui Li
author: Zong-Kuan Guo
author: Yuan-Zhong Zhang
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PDF Version of "Parametrization of K-essence and Its Kinetic Term"
author: Hui Li
author: Zong-Kuan Guo
author: Yuan-Zhong Zhang
Last curated: 2008-08-14
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