# DIGITAL TOOLS FOR HUMANISTS SUMMER SCHOOL 2022, University of Pisa

Meaning-making and storytelling in the age of databases, websites, and social media
Thursday, 16 June 2022

PART 2: Afternoon Session – Web Archives



Dr Seamus Ross,
Professor, Faculty of Information, University of Toronto

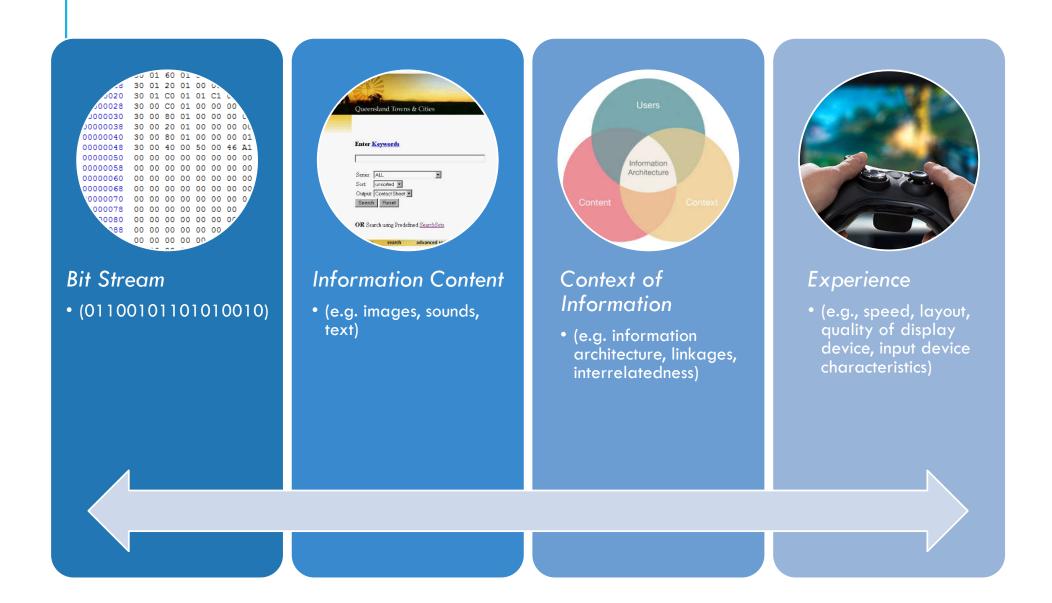
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- ➤ Welcome and Introduction
- ➤ Who am I
- ➤ Overview of the day
  - Lectures in Morning
  - Interactive Activities & Experimentation in Afternoon

### Timetable & What we will cover

- 09:00 10:30 Lecture on Open Data & Databases
- 10:30 11:00 Break
- 11:00 12:30 Story-telling with a Database (Group Activity)
- 12:30 14:00 Lunch
- 14:00 15:30 Lecture on Web Archiving and Web Archives
- 15:30 16:00 Break
- 16:00 17:00 Story-telling with Web Archives
- 17:00 17:30 Discussion

## HIGH-LEVEL PRESERVATION VIEW



## KEEP IN MIND....PERFORMANCE

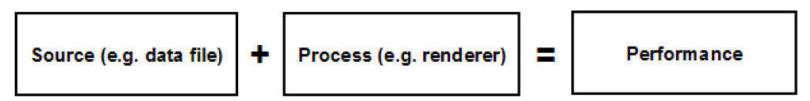


Figure 2.1: National Archives of Australia's Performance Model

Multi-layered performance and semantic intelligibility any many different layers

A relationship between the user of an object and the object itself which is "brokered by software and hardware" (NAA, 2002)

- Example
  - Data represented as magnetic charges on media
  - Interpreted as 1's and 0's and presented as a sequence which to the Operating System appears as a file.
  - File presented to application which performs it.
- Performance is nuanced and dependent upon a variety of successful performances



Figure 5 Application of the Performance Model to emails

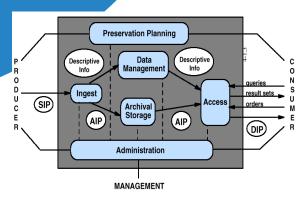
G. Knight, and L. Montague, 2009, "InSPECT: Final

Report", <a href="http://www.significantproperties.org.uk/inspect-finalreport.pdf">http://www.significantproperties.org.uk/inspect-finalreport.pdf</a>, p.27

© Seamus Ross, FI at UofT, Lecture Notes: Meaning-Making (16 Jun 22)

DICITAL FUTITIFC HAVE **Semantics** Syntax **Pragmatics**  Abstraction and modelling provides a mechanism to improve understanding and communication about long term preservation and curation of digital assets.

- OAIS Digital Preservation Model
- DCC UK: Digital Curation Lifecycle Model



## OAIS Model & Example

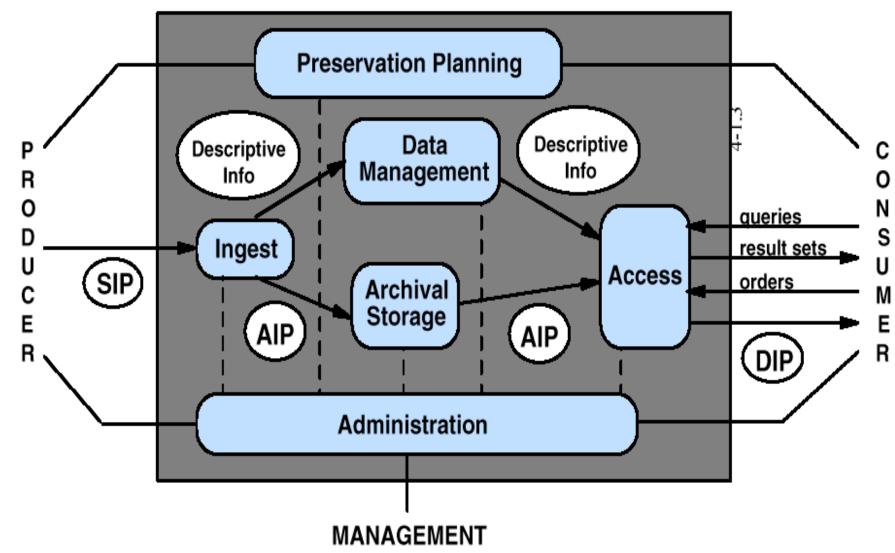
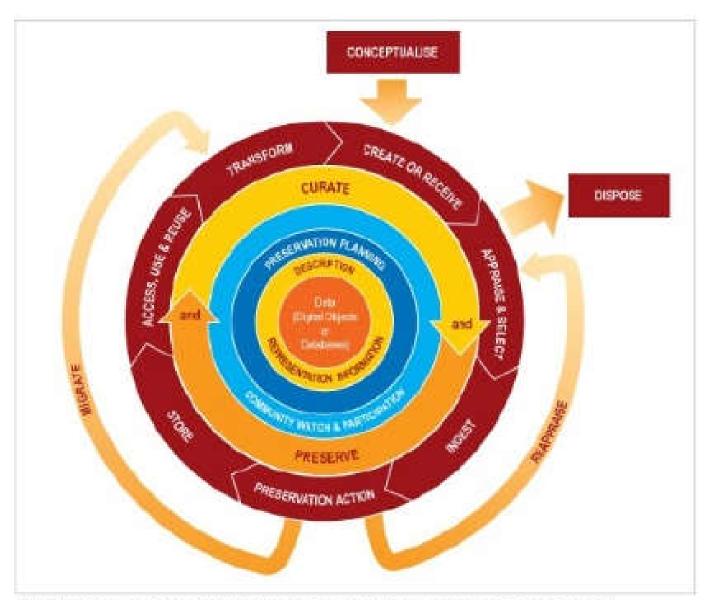


Image from -- Reference Model for an Open Archival Information System (OAIS) – CCSDS,2002,

http://www.ccsds.org/documents/650x0b1.pdf



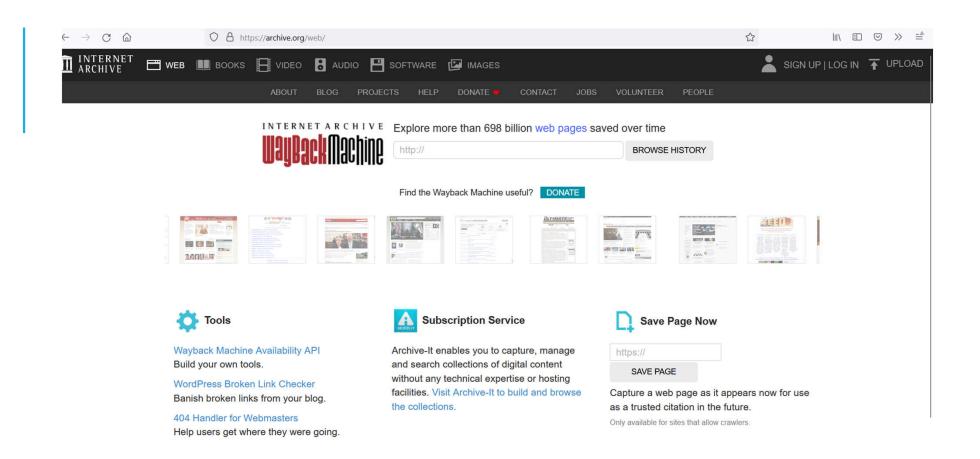
Digital Curation Centre: http://www.dcc.ac.uk/resources/curation-lifecycle-model

What is WEB Archiving, IIPC (International Internet Preservation Consortium) defines web archiving as:

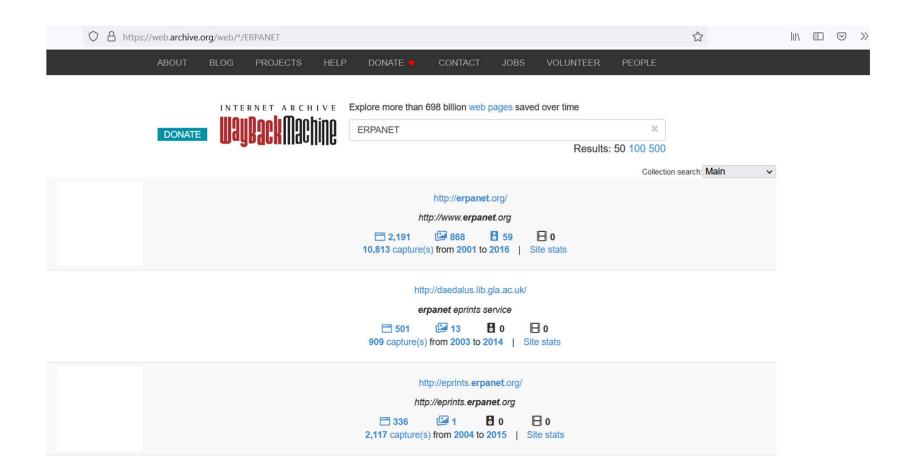
Web archiving is the process of collecting portions of the World Wide Web, preserving the collections in an archival format, and then serving the archives for access and use.

Why A	Archive the Web
	Compliance and Juridical Evidence
	Research Potential – design studies, history,
	art history, language change and evolution
	Innovation

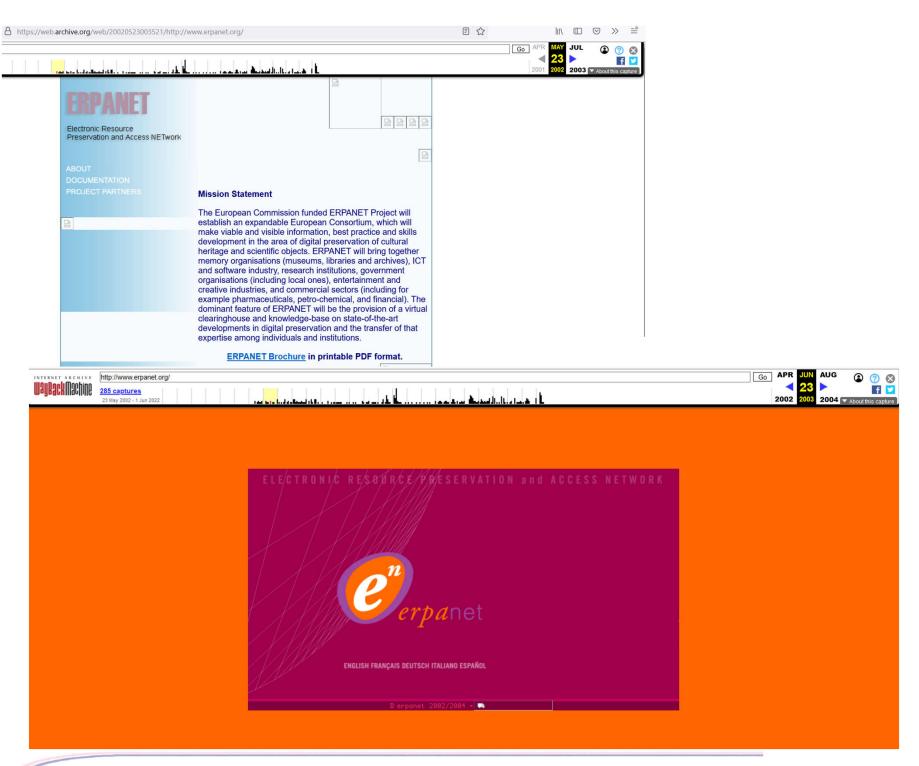
https://netpreserve.org/web-archiving/

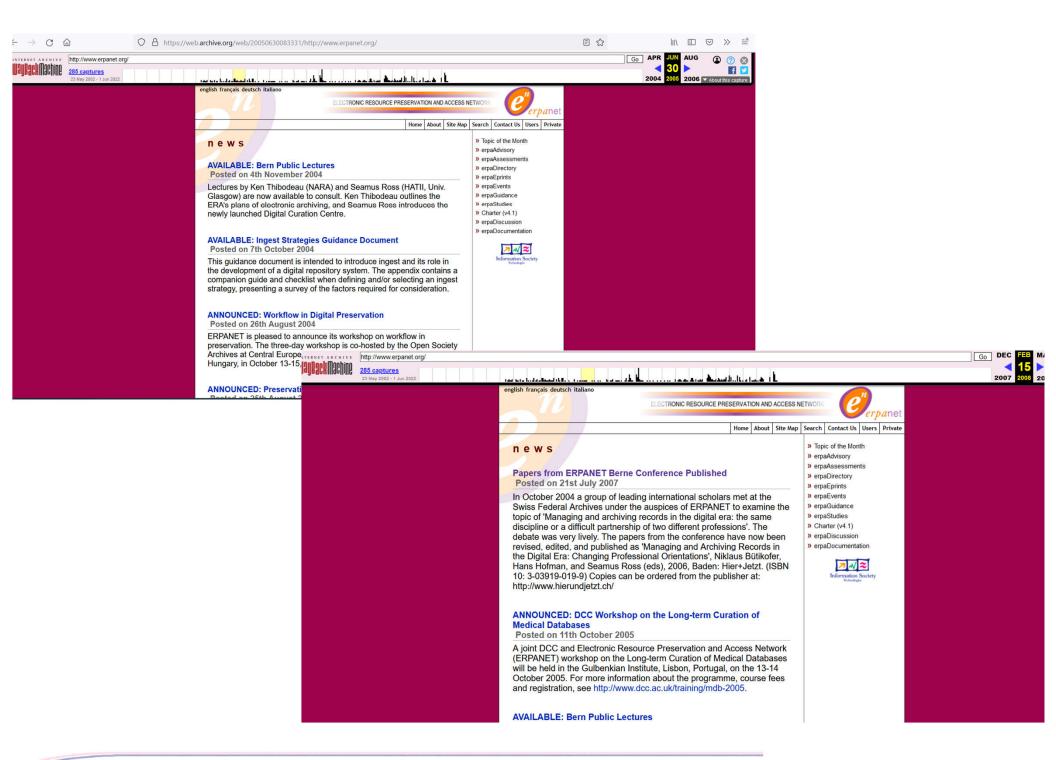


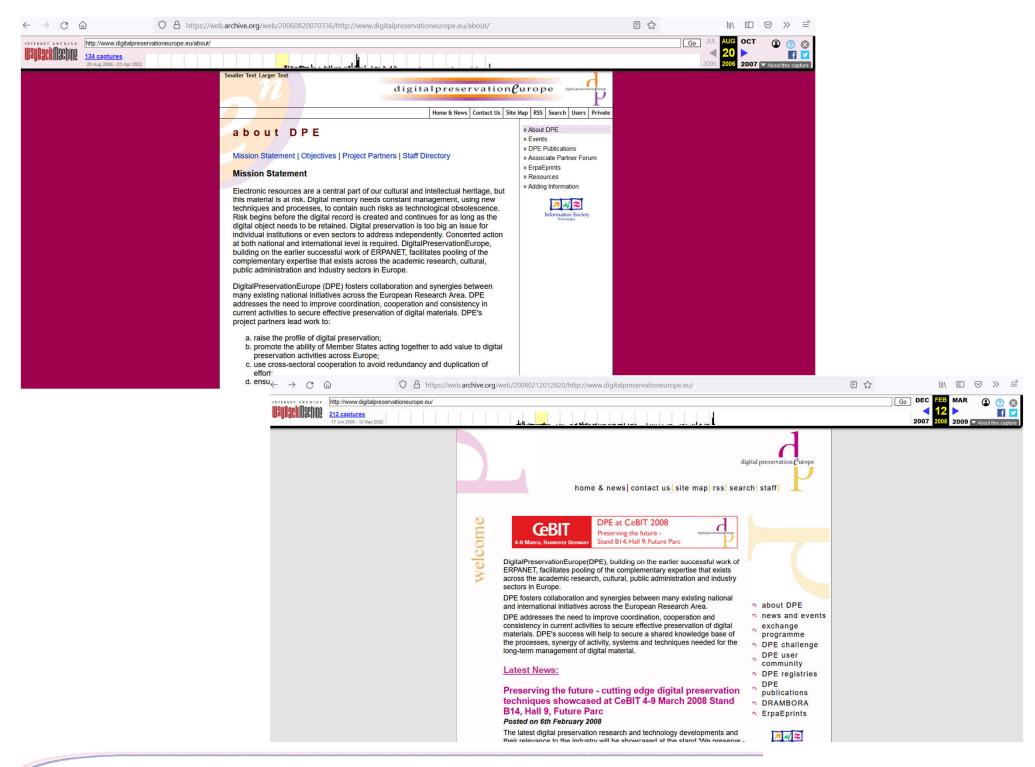
https://archive.org/web/



https://web.archive.org/web/\*/ERPANET

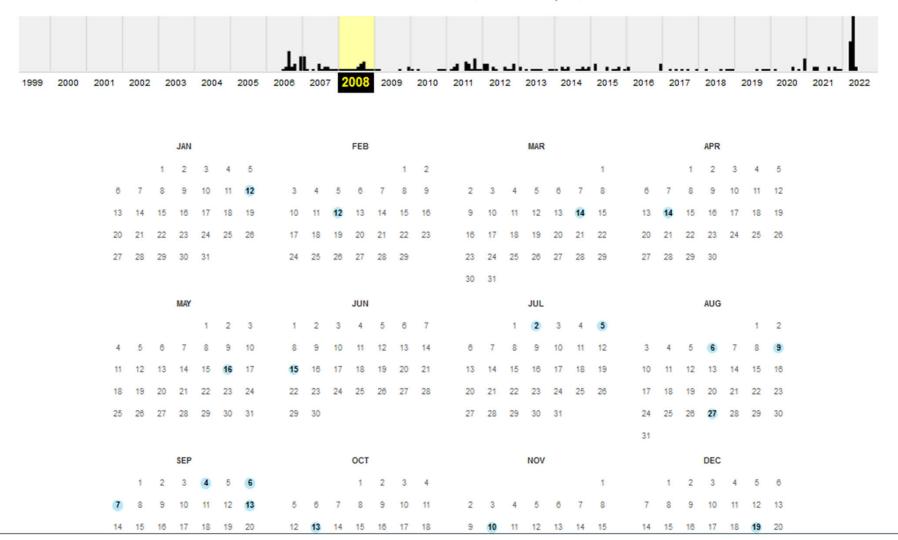






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DigitalPreservationEurope(DPE), building on the earlier successful work of ERPANET, facilitates pooling of the complementary expertise that exists across the academic research, cultural, public administration and industry sectors in Europe.

DPE fosters collaboration and synergies between many existing national and international initiatives across the European Research Area.

DPE addresses the need to improve coordination, cooperation and consistency in current activities to secure effective preservation of digital materials. DPE's success will help to secure a shared knowledge base of the processes, synergy of activity, systems and techniques needed for the long-term management of digital material.

#### Latest News:

#### New translation of the DPE Briefing papers.

#### Posted on 24th February 2009

Cristina Faria provided Portuguese translation of the paper on Automating semantic metadata extraction by Di Yunhyong Kim from HATII University in Glasgow.

Maria Teresa De Gregori translated the paper on Database Preservation into Italian. See list of all briefing paper translations.

## DRAMBORA Auditor's Training Course in Rome (March 23rd 2009 - 25th 2009)

#### Posted on 17th February 2009

Based on practical research and developed jointly by the Digital Curation Centre (DCC) and DigitalPreservationEurope (DPE), the Digital Repository Audit Method Based on Risk Assessment (DRAMBORA) provides a methodology for self-assessment of digital preservation repositories. The toolkit (http://www.repositoryaudit.eu), has been evaluated and applied across a diverse range of organisations, such as national libraries, scientific data centres and archives. DPE is organising a successful series of training courses to train new DRAMBORA auditors. The third of these will be held at the Ministry for Cultural Heritage, Rome, Italy, in March 2009. More Info

### New Briefing Paper about 'UMID – Unique Material Identifier' is available

#### Posted on 13th February 2009

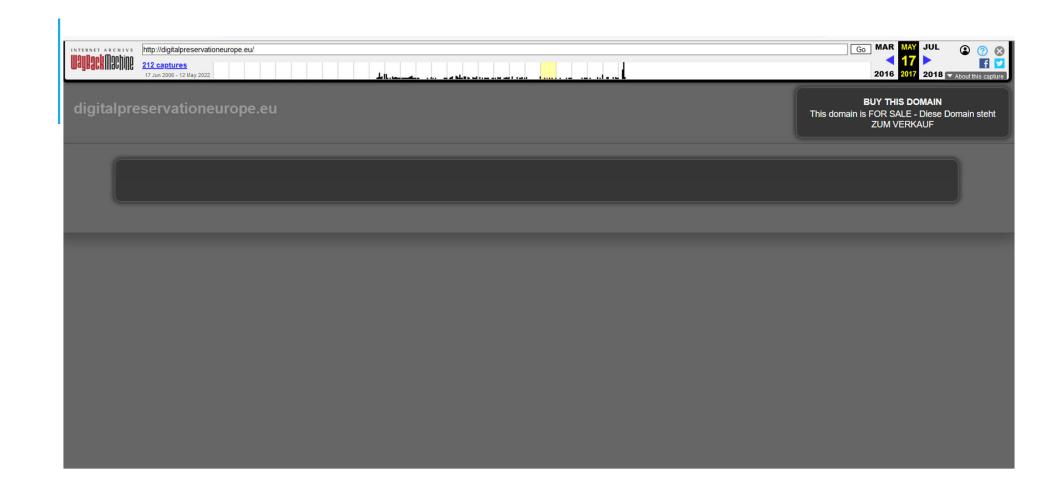
A Unique Material Identifier (UMID) is a special code that is used to identify audiovisual (AV) materials. Text by Nadja Wallaszkovits, Christian Liebl, Phonogrammarchiy - Austrian Academy of Sciences, Read it here.

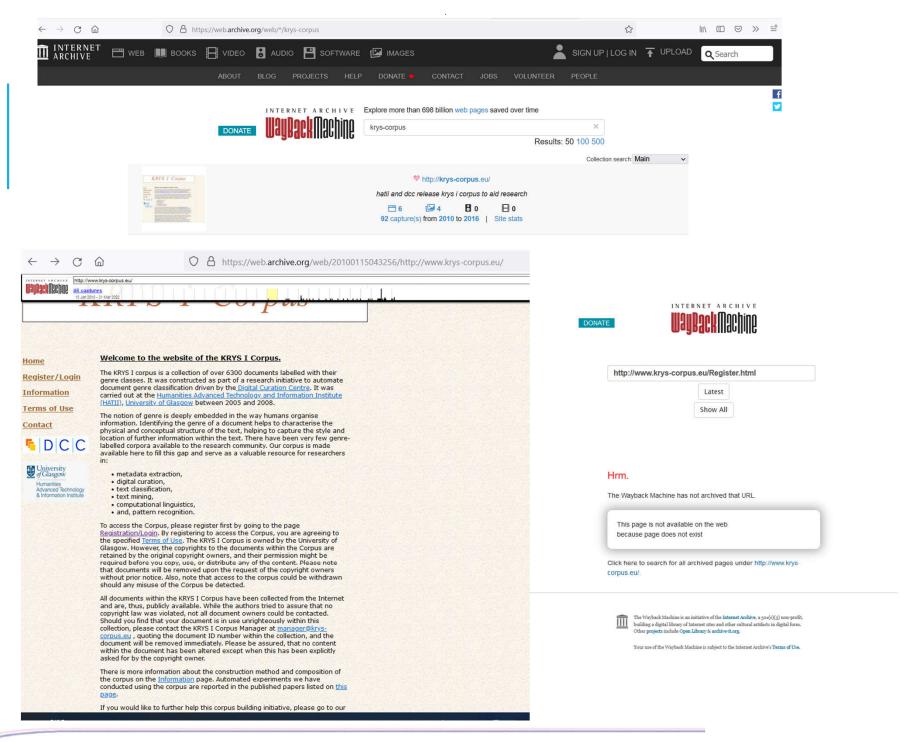
- about DPF
- what is digital preservation
- news and
- exchange
- programme

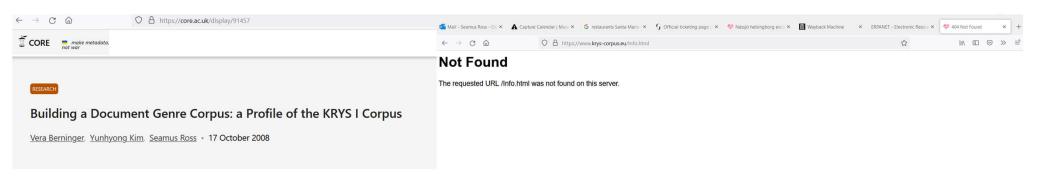
  DPE challenge
- DPE user community
- DPE registries
- DPE
- publications
  DRAMBORA
- PLATTER
- ErpaEprints unique identifier
- Service DPE video training











#### **Abstract**

This paper describes the KRYS I corpus (http://www.krys-corpus.eu/info.html), consisting of documents classified into 70 genre classes. It has been constructed as part of an effort to automate document genre classification as distinct from topic detection. Previously there has been very little work on building corpora of texts which have been classified using a non-topical genre palette. The reason for this is partly due to the fact that genre as a concept, is rooted in philosophy, rhetoric and literature, and highly complex and domain dependent in its interpretation ([11]). The usefulness of genre in everyday information search is only now starting to be recognised and there is no genre classification schema that has been consolidated to have applicable value in this direction. By presenting here our experiences in constructing the KRYS I corpus, we hope to shed light on the information gathering and seeking behaviour and the role of genre in these activities, as well as a way forward for creating a better corpus for testing automated genre classification tasks and the application of these tasks to other domains



https://www.krys-corpus.eu/ now points to a Swedish Site of dubious nature



#### The evolution of web archiving

Miguel Costa1 - Daniel Gomes2 - Mário J. Silva3

Received: 1 May 2015 / Revised: 12 April 2016 / Accepted: 12 April 2016 / Published online: 9 May 2016 © Springer-Verlag Berlin Heidelberg 2016

Abstract Web archives preserve information published on the web or digitized from printed publications. Much of this information is unique and historically valuable. However, the lack of knowledge about the global status of web archiving initiatives hamper their improvement and collaboration. To overcome this problem, we conducted two surveys, in 2010 and 2014, which provide a comprehensive characterization on web archiving initiatives and their evolution. We identified several patterns and trends that highlight challenges and opportunities. We discuss these patterns and trends that enable to define strategies, estimate resources and provide guidelines for research and development of better technology. Our results show that during the last years there was a significant growth in initiatives and countries hosting these initiatives, volume of data and number of contents preserved. While this indicates that the web archiving community is dedicating a growing effort on preserving digital information, other results presented throughout the paper raise concerns such as the small amount of archived data in comparison with the amount of data that is being published online,

Keywords Web archiving - Digital preservation - Survey

#### 1 Introduction

The world wide web has a democratic nature, where everyone can publish all kinds of information using different types of media. News, blogs, wikis, encyclopedias, photos, interviews and public opinions are just a few examples of this vast list. Part of this information is unique and historically valuable. For instance, the speech of a president after winning an election or the announcement of an imminent invasion of a foreign country, might become as valuable in the future as ancient manuscripts are today. However, since the web is so dynamic, a large amount of information is lost everyday. Several studies quantify this loss: 80 % of web pages are not available in their original form after 1 year [1]; 13 % of web references in scholarly articles disappear after 27 months [2]; 11 % of social media resources, such as the ones posted on Twitter, are lost after 1 year [3]. All this information will likely vanish in a few years, creating a knowledge gap about the present for future generations. We are already experiencing unsatisfied information needs due to missing pages or old formats of documents that are not readable by the latest software version.1 Pioneers of the Internet, such as Vint Cerf, recently warned about the danger of future generations who will have little or no record of the twenty-first century.2 International organizations are also concerned with the web ephemerality problem. The UNESCO recognized the importance of digital preservation in 2003, by stating that the disappearance of digital information constitutes an impoverishment of the heritage of all nations [4]. In 2010, the UNESCO endorsed the Universal Declaration on Archives, which states that archives play an essential role in the development of societies by safeguard-

http://www.bbc.com/news/science-environment-31450389.



Miguel Costa, Daniel Gomes, & Ma'rio J Silva, 2017, "The evolution of web archiving," *International Journal of Digital Libraries* 18, pp., 191–205. https://doi.org/10.1007/s00799-016-0171-9

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Foundation for National Scientific Computing, Lisbon, Portugal

<sup>&</sup>lt;sup>3</sup> INESC-ID, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal

<sup>1</sup> http://en.wikipedia.org/wiki/Digital\_obsolescence.

#### **Observing Web Archives**

The Case for an Ethnographic Study of Web Archiving

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#### ABSTRACT

This paper makes the case for studying the work of web archivists, in an effort to explore the ways in which practitioners shape the preservation and maintenance of the archived Web in its various forms. An ethnographic approach is taken through the use of observation, interviews and documentary sources over the course of several weeks in collaboration with web archivists, engineers and managers at the Internet Archive - a private, non-profit digital library that has been archiving the Web since 1996. The concept of web archival labour is proposed to encompass and highlight the ways in which web archivists (as both networked human and nonhuman agents) shape and maintain the preserved Web through work that is often embedded in and obscured by the complex technical arrangements of collection and access. As a result, this engagement positions web archives as places of knowledge and cultural production in their own right, revealing new insights into the performative nature of web archiving that have implications for how these data are used and understood.

#### KEYWORDS

web archiving, knowledge production, STS, materiality, information labour

ACM Reference format

Jessica Ogden, Susan Halford, and Leslie Cart. 2017. Observing Web Archives. In Proceedings of WebSci '17, Troy, NY, USA., June 25-28, 2017, 10 pages. https://doi.org/10.1145/3091478.3091506

#### 1 INTRODUCTION

The World Wide Web has emerged as the preeminent mechanism for global communication, political, economic and cultural exchange and more. Yet, at the same time, the Web is ephemeral. For a medium that has become pre-eminent, its dynamism and transience has become increasingly worrisome. These concerns have been illustrated in various longitudinal studies of link rot [53] and investigations which found that during a period between 2009 and 2012, on average 11% of online resources shared on social media failed to resolve one year later [60]. In this context, it is increasingly claimed that

<sup>1</sup>This paper is based on data collected and fieldwork undertaken by the first author as part of their PhD research.



This work is licensed under a Creative Commons Attribution International 4.0 License.

WebSer '17, June 25-28, 2017, Tray, NY, USA. © 2017 Copyright held by the owner/author(s). ACM ISBN 978-1-0503-4896-4/17/06. https://doi.org/10.1145/3091478.3091506 the ephemerality of the Web demands intervention to preserve web content - in web archives - that reconstruct sites and the 'web experience' for posterity [2]. However, there has been rather less attention to the nature of this intervention: how it is done and why this matters. This paper explores the critical decisions being made now that will shape future generations' ability to understand the history of the Web.

#### 1.1 Web Archiving

Web archiving has roots in a wider digital preservation movement which emerged in the 1980s-1990s, led by memory institutions to develop strategies for addressing the rise of personal computing and the impact of digital artefacts on their abilities to capture and preserve 'records of social phenomena' [61]. This was particularly fuelled by fears over the so-called 'digital dark ages,' a term first used by Kuny [41] to describe a scenario where the development pace of technologies (used to produce digital objects) outweighs that of the investment in technologies, infrastructures and policies to preserve them long-term. As the world's information and communication platforms are increasingly born-digital and online, a diverse community of practitioners have positioned web archives as key to capturing and preserving digital cultural heritage, ensuring stability and access to pre-existing web resources and facilitating new knowledge via scholarly research. Web archives in their various forms - including social media archives - have thus become a sort of 'prosthesis' for the Web and a necessary pre-condition for any research into the Web(s) of the past and near-present.2

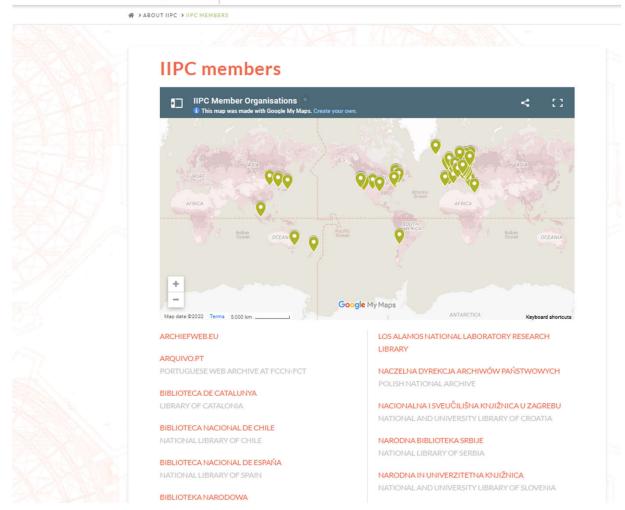
The history of web archiving has been documented to varying degrees in existing overviews [9, 13, 77] which chart the emergence of a field of practice around web archiving. Each have used a series of factors to characterise the domain over time, including the tools and technologies used, the frequency and scale of selection/collection methods (e.g. broad versus targeted) and the various motivations behind the creation of web archives. These motivations may reinforce and represent, at least in part, a continuation of classical interpretations and analogue conceptions of the value and role of libraries and archives as institutions that provide access to cultural heritage, information and knowledge resources; facilitate evidence-based accountability and promote community memory and identity, amongst others [18, 26].

Web archiving projects have spanned from the large-scale collection of web resources by organisations such as the Internet Archive

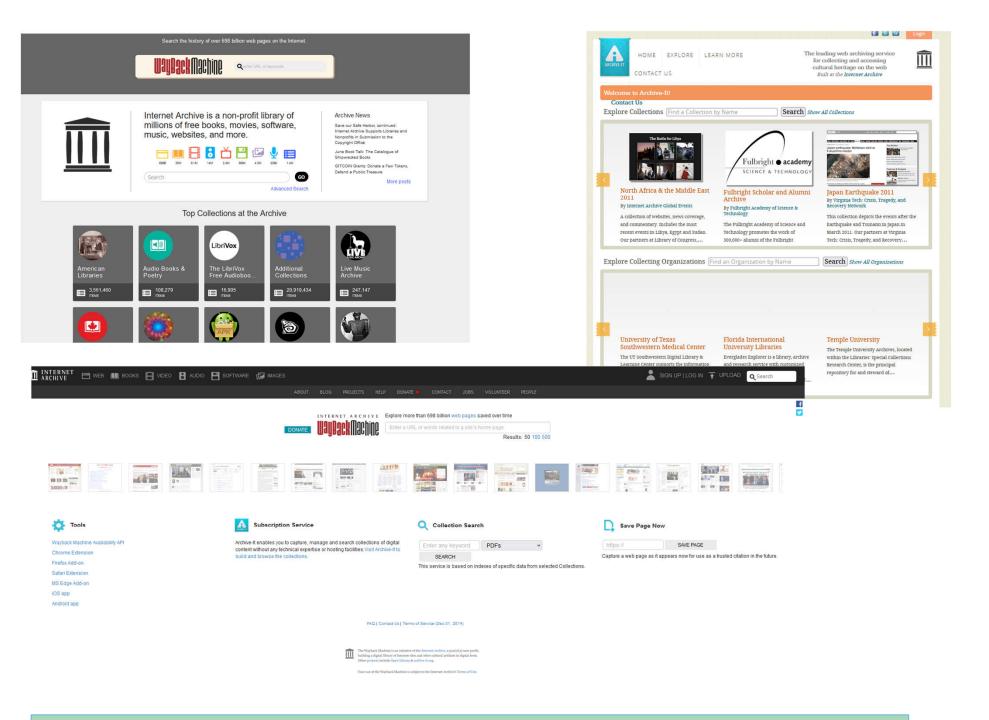
Jessica Ogden, Susan Halford, Susan and Leslie Carr, 2017, Observing web archives: The case for an ethnographic study of web archiving, In *Proceedings of WebSci'17*, Troy, NY, USA., June 25–28, 2017. ACM. 10 pp.

Inspiration for this analogy is taken from Derrida's [20] treatment of 'technological devices for archiving' as proofhous for memory formation and storage.





https://netpreserve.org/about-us/members/



https://archive.org/; https://web.archive.org/; https://archive-it.org/



HOME EXPLORE LEARN MORE

The leading web archiving service for collecting and accessing cultural heritage on the web Built at the Internet Archive



## Page Not Found - 404

Sorry, the page you requested was not found. You may want to try:

- · Checking the address for a typo.
- · Starting with the navigation links on this page.
- Returning to the previous page.



Archive-It **Built at the Internet Archive** 

2014 Archive-It

The leading web archiving service for collecting and accessing cultural heritage on the web

Home

Learn More

About Archive-It News/Press

Meet the Team **Publications** 

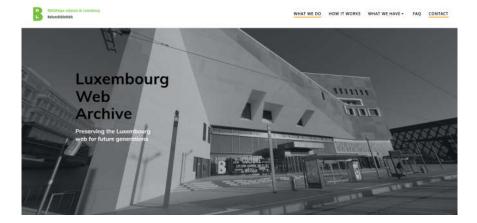




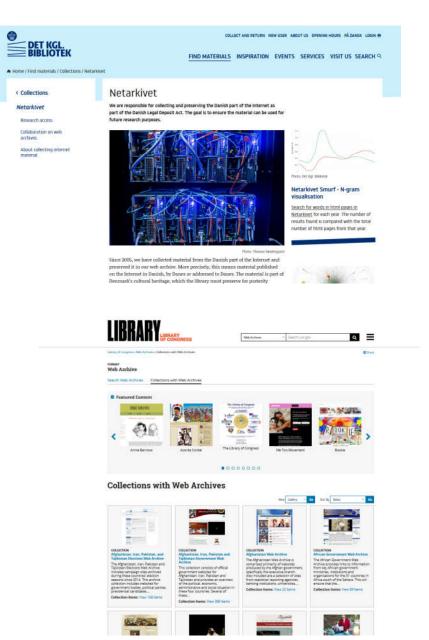
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- https://www.webarchive.lu/
- https://www.kb.dk/en/find-materials/collections/netarkivet
- https://www.bl.uk/collection-guides/uk-web-archive
- https://www.loc.gov/web-archives/collections/?st=gallery



Identification and Selection

Capture (QC & QA)

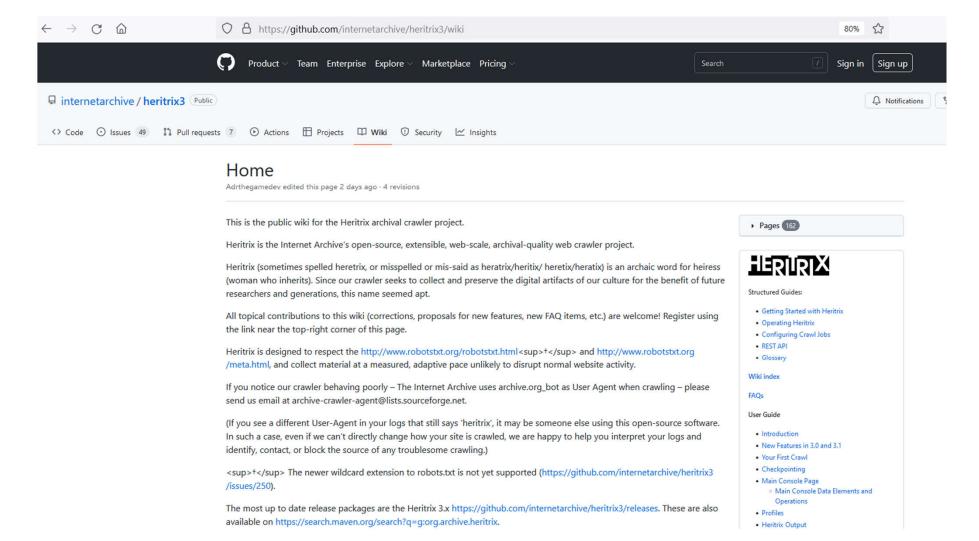
Preservation

Access

## What is the WCT?



Ben O'Brien and Hanna Koppelaar, 2018, Web Curator Tool (WCT) Tutorial, IIPC Web Archiving Conference 2018, Wellington NZ, http://netpreserve.org/ga2018/wp-content/uploads/2018/11/IIPC\_WAC2018-Ben\_O%E2%80%99Brien\_Hanna\_Koppelaar-Web\_Curator\_Tool\_Tutorial.pdf



https://github.com/internetarchive/heritrix3/wiki

## APPROACHES TO WEB TARGETTING

## **Broad Crawls**

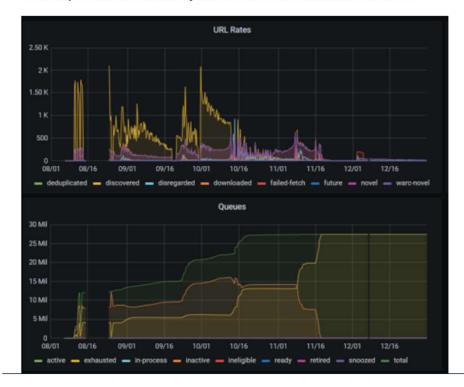
- National domain (top-level domain) crawls
- Websites and website classes that align with aspects of the larger frame

## Selective Crawls

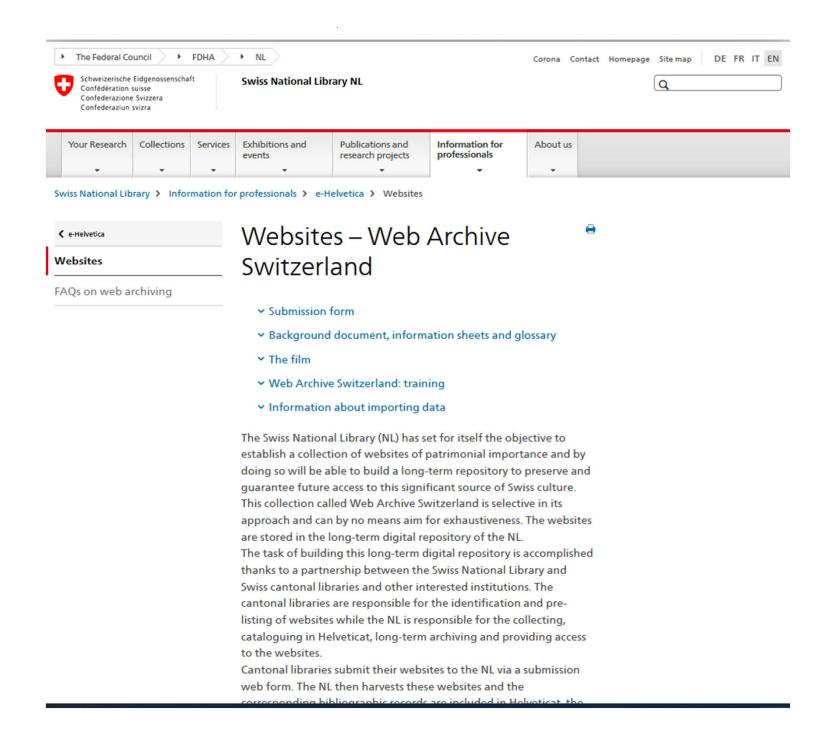
- Permission target-based crawls
- ☐ Thematic collection/crawls
- Events
- Special Interests
- Urgent and Emerging situations

#### 2021 Domain Crawl

As in 2020, the 2021 Domain Crawl was run on the Amazon Web Services cloud. This time, following improvements to Heritrix and building on prior experience, the crawl ran more smoothly and efficiently than in 2020, using less memory and disk space for the crawl frontier. The crawler was started up early in August for penetration testing, and then taken down while the security concerns were addressed. The actual crawl began on the 24th of August, starting with 10 million seed URLs, and the vast majority of the crawl had completed by mid-November. Most of the 27 million hosts we visited were crawled completely, but ~57,200 hosts did hit the 500MB size cap. However, some of these were content distribution networks (CDNs), i.e. services hosting resources for other sites, so some caps were lifted manually and the crawl was allowed to continue.



https://blogs.bl.uk/webarchive/2022/01/ukwa-2021-technical-update.html



TOP OF Pag

#### Information about importing data

After submitting the website using the online form and once the snapshot has been successfully archived, a bibliographic record will be generated in Helveticat.

The following documents list the MARC21 fields that appear in the bibliographic records for websites in Helveticat

- 1. Content taken from the submission web form (first version)
- 2. Content added automatically (first version)
- 3. Content that has been adapted over time

☑ Web Archive Switzerland: MARC21 fields extracted from the submission web form, following AACR2 (in German) (PDF, 458 kB, 03.02.2022)

#### More on this topic

#### Helveticat 3

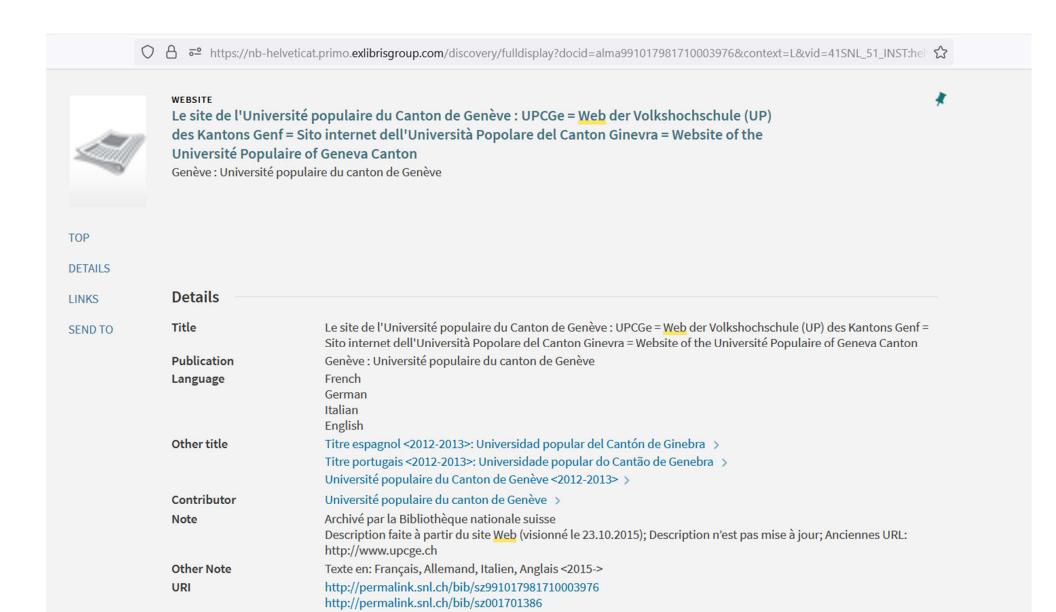
#### FAQs on web archiving

Here you find answers to questions concerning the collection, harvesting, archiving and the use of the web archive.

Last modification 03.02.2022

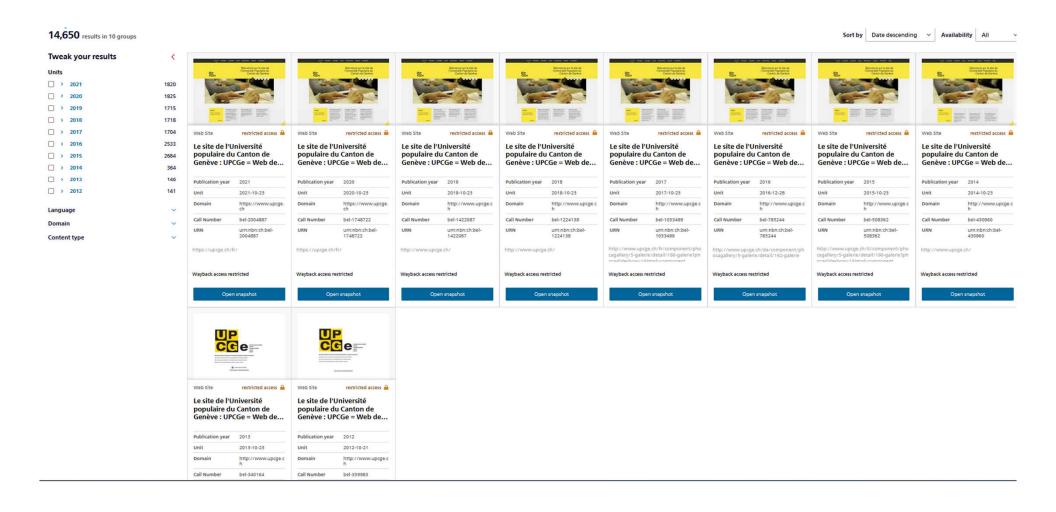
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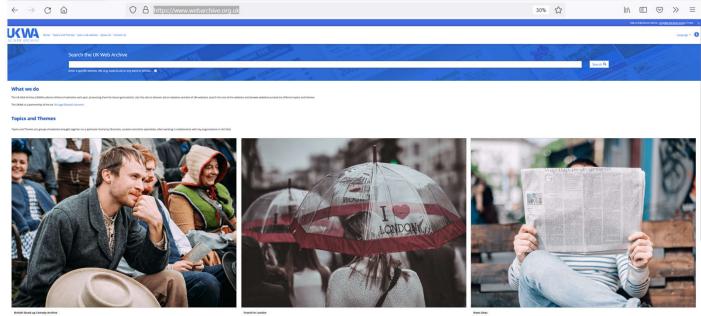
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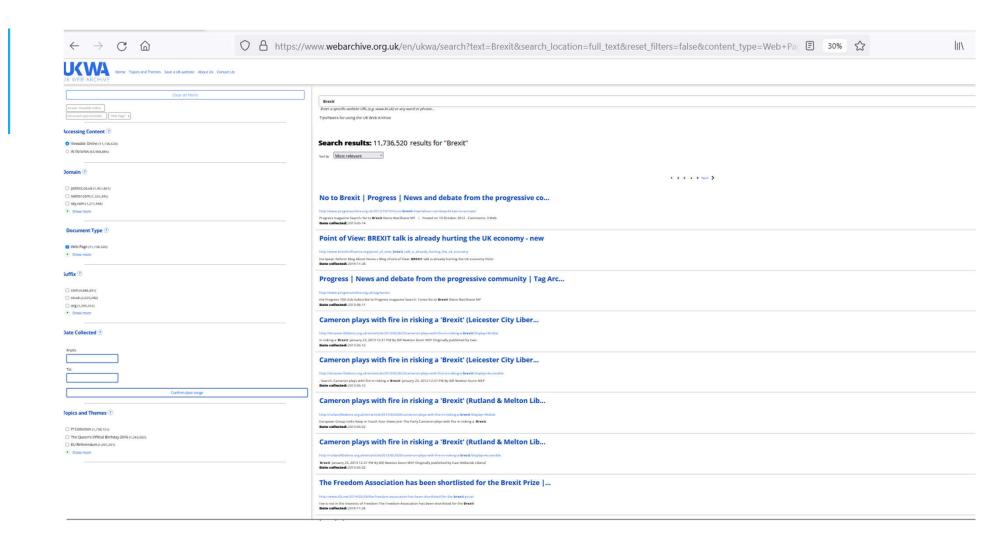


https://www.e-helvetica.nb.admin.ch/search?group=bel-272634&sort=ehs\_publication\_date%20desc





https://www.bl.uk/collection-guides/uk-web-archive# and https://www.webarchive.org.uk/



# What is available in our Reading Rooms?

Millions of websites collected under Legal Deposit. There are two British Library locations (London and Boston Spa in Yorkshire), six others in the UK and one in Ireland that have access to the UK Web Archive collection. You can view these resources at the six UK Legal Deposit Libraries (in 9 locations).

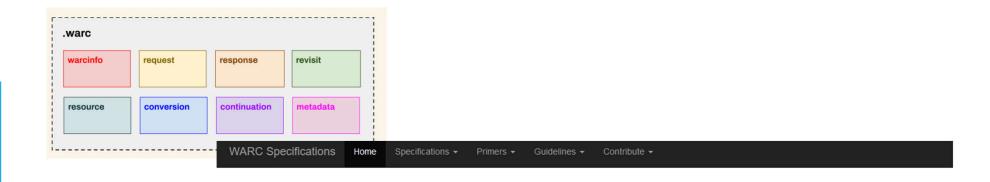
Locations: The British Library (St. Pancras and Boston Spa), National Library of Wales (Aberystwyth and Cardiff), National Library of Scotland (Edinburgh and Glasgow), Bodleian Library (Oxford), Cambridge University Library, and the Library of Trinity College, Dublin.

Curated collections: There are over 100 curated collections available in the 'Topics and Themes' section of the UK Web Archive website.

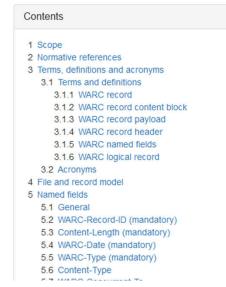
You will need to use a Library PC to access the web archive collection.

# THIS IS A DOMAIN OF EXPERIMENTATION AND LEARNING

- What is the process of collecting websites/webpages?
- How are the results stored?
- How do we preserve collected web materials in the long term?
- What are the options and ways in which web access be provided?
- ☐ What kinds of tools do Users of web archives need?







# The WARC Format 1.0

Standard

Web sites and web pages emerge and disappear from the world wide web every day. For the past ten years, memory organizations have tried to find the most appropriate ways to collect and keep track of this vast quantity of important material using web-scale tools such as web crawlers. A web crawler is a program that browses the web in an automated manner according to a set of policies; starting with a list of URLs, it saves each page identified by a URL, finds all the hyperlinks in the page (e. g. links to other pages, images, videos, scripting or style instructions, etc.), and adds them to the list of URLs to visit recursively. Storing and managing the billions of saved web page objects itself presents a challenge.

At the same time, those same organizations have a rising need to archive large numbers of digital files not necessarily captured from the web (e.g., entire series of electronic journals, or data generated by environmental sensing equipment). A general requirement that appears to be emerging is for a container format that permits one file simply and safely to carry a very large number of constituent data objects for the purpose of storage, management, and exchange. Those data objects (or resources) must be of unrestricted type (including many binary types for audio, CAD, compressed files, etc.), but fortunately the container needs only minimal knowledge of the nature of the objects.

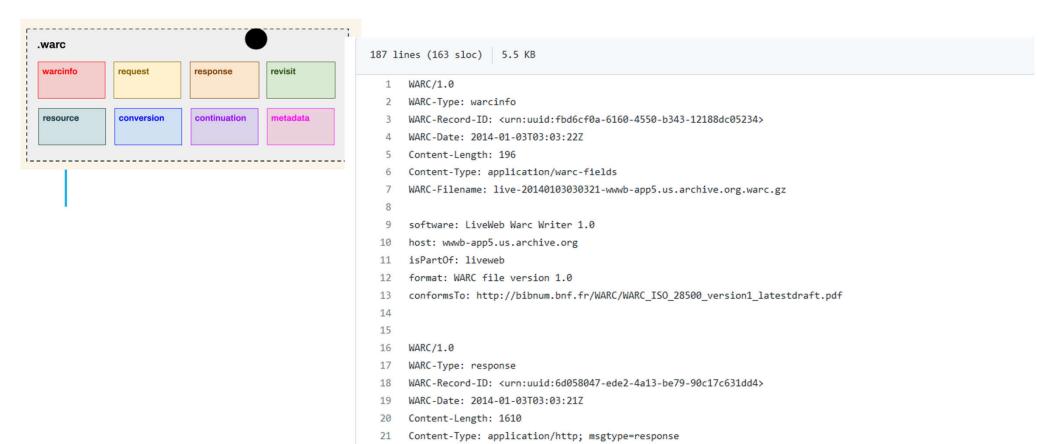
The WARC (Web ARChive) file format offers a convention for concatenating multiple resource records (data objects), each consisting of a set of simple text headers and an arbitrary data block into one long file. The WARC format is an extension of the ARC File Format [ARC] that has traditionally been used to store "web crawls" as sequences of content blocks harvested from the World Wide Web. Each capture in an ARC file is preceded by a one-line header that very briefly describes the harvested content and its length. This is directly followed by the retrieval protocol response messages and content. The original ARC format file is used by the Internet Archive (IA) since 1996 for managing billions of objects, and by several national libraries.

The motivation to extend the ARC format arose from the discussion and experiences of the International Internet Preservation Consortium (IIPC), whose members include the national libraries of Australia, Canada, Denmark, Finland, France, Iceland, Italy, Norway, Sweden, The British Library (UK), The Library of Congress (USA), and the Internet Archive (IA). The California Digital Library and the Los Alamos National Laboratory also provided input on extending and generalizing the format.

The WARC format is expected to be a standard way to structure, manage and store billions of resources collected from the web and elsewhere. It will be used to build applications for harvesting (such as the open source Heritrix web crawler), managing, accessing, and exchanging content. The way WARC files will be created and resources will be stored and rendered will depend on software and applications implementations.

Besides the primary content recorded in ARCs, the extended WARC format accommodates related secondary

https://iipc.github.io/warc-specifications/specifications/warc-format/warc-1.0/



WARC-Payload-Digest: sha1:B2LTWWPUOYAH7UIPQ7ZUPQ4VMBSVC36A

WARC-Warcinfo-ID: <urn:uuid:fbd6cf0a-6160-4550-b343-12188dc05234>

WARC-Target-URI: http://example.com?example=1

# From example at:

https://github.com/webrecorder/pywb/blob/main/sample\_archive/warcs/example.warc

2425

26

27

31

HTTP/1.1 200 OK

Accept-Ranges: bytes

Etag: "359670651"

Cache-Control: max-age=604800 Content-Type: text/html

Date: Fri, 03 Jan 2014 03:03:21 GMT



# Background

- Web archiving is conducted under the Library and Archives of Canada Act, section 8 (2) (sampling from the Internet for digital preservation purposes). Library
  and Archives Canada's (LAC) latest policy instruments recognize web-based resources as unique, born-digital documentary heritage. Collecting and preserving
  web resources ensures future access and research use.
- The Web Archiving Program began at LAC in December 2005 and has been an ongoing operational activity since 2013.
- Web archiving is a digital preservation discipline and is practiced by over 50 international memory institutions, mostly national libraries. The field is advanced
  primarily by the International Internet Preservation Consortium (IIPC) of which LAC is a founding member. In 2019, Sylvain Bélanger is serving as the Treasurer
  and a member of the Steering Committee.
- LAC employs a robust methodology for collecting web resources and social media, which includes comprehensive crawls of the Government of Canada (GC) web presence; curating thematic research collections (e.g., Centenary of the First World War, Canada 150, Federal Elections, Olympic and Paralympic Games); documenting important events in Canadian history as they unfold (e.g., Humboldt Broncos junior hockey team bus accident, forest fires in western Canada); engaging in "rescue" or preservation archiving of resources at known risk (e.g., the website of the National Inquiry into Missing and Murdered Indigenous Women and Girls); and supplementing other library and archival collections with web holdings, in collaboration with other internal and external experts (e.g., Truth and Reconciliation Web Archive).

#### Considerations

Currently, no public access is available for LAC's non-federal web holdings, which comprise 50% of the total collections (30 terabytes). Funding to develop
additional services and a comprehensive access portal is being proposed for the Central Agency Funding Request for Digital Optimization.

## **Key Public Messages**

- LAC's web archiving methodology includes five main activities: 1. Domain crawls of the GC 2. Curation of thematic web and social media collections 3. Event-based crawling 4. Preservation archiving of resources at known risk and 5. Supplementing library collections or archival fonds with web holdings.
- The collection currently comprises nearly 1.5 billion digital objects and 60 terabytes of data. As of 2016, web archival holdings accrue at a minimum rate of 13 terabytes per fiscal year.

https://www.bac-lac.gc.ca/eng/transparency/briefing/2019-transition-material/Pages/digital-web-archiving.aspx

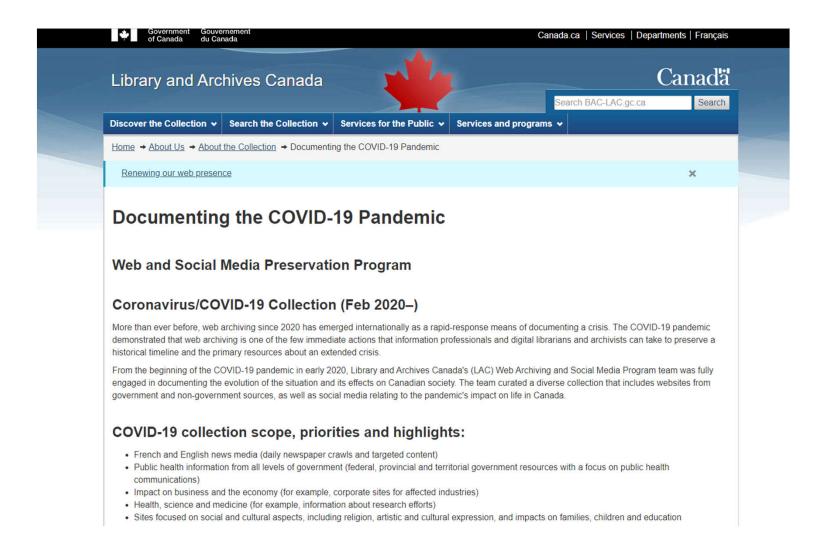
# Library and Archives Canada (LAC/BAC)

- Introduction: <a href="https://www.bac-lac.gc.ca/eng/about-us/about-collection/Pages/web-social-media-archiving.aspx">https://www.bac-lac.gc.ca/eng/about-us/about-collection/Pages/web-social-media-archiving.aspx</a>
- Web Archive Service:
- The Government of Canada Web Archive is currently April 2022 offline: <a href="https://www.bac-lac.gc.ca/eng/discover/archives-web-government/Pages/web-archives.aspx">https://www.bac-lac.gc.ca/eng/discover/archives-web-government/Pages/web-archives.aspx</a>
- There are also thematic collections, such as the COVID-19 material: https://www.bac-lac.gc.ca/eng/about-us/about-collection/Pages/documenting-2020-covid-19-pandemic.aspx



# Library and Archives Canada (LAC/BAC)

•There are also thematic collections, such as the COVID-19 material: https://www.bac-lac.gc.ca/eng/about-us/about-collection/Pages/documenting-2020-covid-19-pandemic.aspx





https://www.bnf.fr/fr/archives-de-linternet

HOME EXPLORE LEARN MORE The leading web archiving service for collecting and accessing cultural heritage on the web Built at the Internet Archive



CONTACT US

#### Welcome to Archive-It!

Contact Us

**Explore Collections** Find a Collection by Name

Search Show All Collections



## **Maryland State Document** Collection

By University of Maryland

This collection contains material created by the State of Maryland related to state planning.



# **IT History Society**

By IT History Society

The IT History Society has created this comprehensive archive of IT websites which is a valuable resource for historians, archivists and the general...



#### International Whistleblower Archive

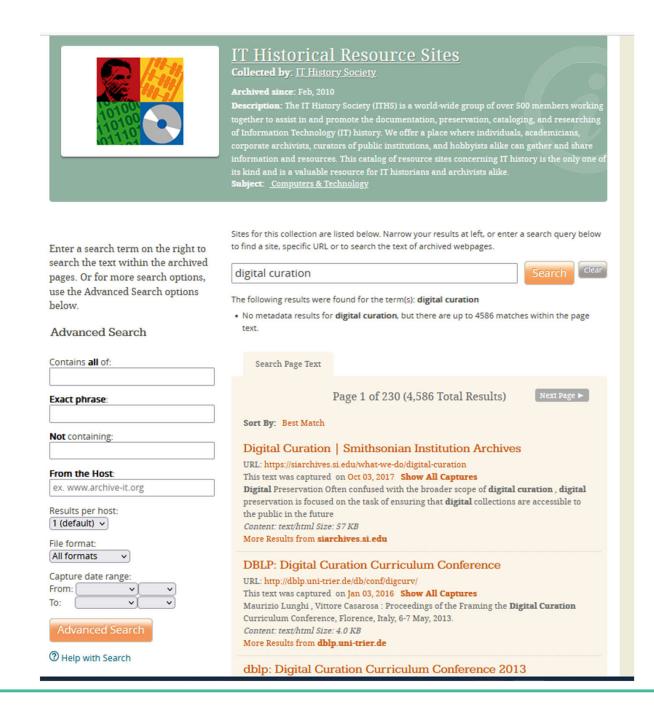
By International Whistleblower Archive

The purpose of this collection is to provide documented information about whistleblowers and the act of whistleblowing in the United States and...

**Explore Collecting Organizations** Find an Organization by Name

Search | Show All Organizations

https://archive-it.org/



https://archive-it.org/

#### WEB ARCHIVING



Image: RaHul Rodriguez https://creativecommons.org/licenses/by-sa/2.0/

The NYARC web resources program archives, preserves, and provides online public access to curated collections of websites in areas that correspond to the scope and strengths of the print collections at each research library, as well as to NYARC project websites and the institutional websites of the three museums. The initial phase of the NYARC web resources program was made possible through funding provided by The Andrew W. Mellon Foundation. For more information or to nominate websites for inclusion in NYARC's web archive collections, please email: webarchive@frick.org

#### SEARCH NYARC'S WEB ARCHIVE



Is your site archived by the NYARC Web Archiving Program? If so, let your audience know and put the "Archived by NYARC" logo on your homepage!

To learn more about our program, please see <u>Frequently Asked Questions: Web</u> Archiving.

https://nyarc.org/initiatives/web-archiving



#### New York Art Resources Consortium (NYARC)

Organization Type: Museums & Art Libraries
Organization URL: http://www.nysec.org

Organization URL: <a href="http://www.nyarc.org">http://www.nyarc.org</a>. Description: The New York Art Resources Consortium (NYARC) consists of the research libraries of three leading art museums in New York City: The Brooklyn Museum, The Frick Collection, and The Museum of Modern Art. The NYARC web resources program archives curated collections of websites in areas which Modern Art. The NYARC web resources program archives curated collections of websites in areas which correspond to the scope and strengths of the print collections at each research library, as well as NYARC spond to the scope and strengths of the print conections at each research instary, as wen as it rake ct websites and the institutional websites of the three museums.To nominate websites for inclusion

Narrow Your Results

Subject Sort By: Count (A-Z)

Arts & Humanities (10) Society & Culture (6) Universities & Libraries (1) Sites and collections from this organization are listed below. Narrow your results at left, or enter a search query below to find a collection, site, specific URL or to search the text of archived webpages.

Enter search terms here





Search Page Text Page 1 of 1 (10 Total Results)

Sort By: Collection Name (A-Z) | Collection Name (Z-A)

Sites

#### Art Resources

Collections

Archived since: Mar. 2014

Description: Art-rich websites of significance to the study of art and art history, especially those at risk of disappearance from the live web. Subject: Arts & Humanities

#### Artists' Websites

Archived since: Apr., 2014

Description: Websites of artists significant to the collections of the Brooklyn Museum, The Museum of Modern Art, and The Frick Collection.

Subject: Arts & Humanities, Society & Culture

#### **Auction Houses**

Archived since: Oct. 2010

Description: Auction houses specializing in sales of art. Includes catalogs and price results.

Subject: Arts & Humanities, Society & Culture

#### Brooklyn Museum

Archived since: Feb, 2014

Description: Brooklyn Museum's website features an extensive exhibition archive and rich video content with artist interviews, public lectures, and discussions with curators and scholars.

Subject: Arts & Humanities, Society & Culture

#### Catalogues Raisonnés

Archived since: May, 2014

Description: Born-digital catalogues raisonnes (scholarly compilations of an artist's work)

Subject: Arts & Humanities

#### Museum of Modern Art

Archived since: Feb, 2014

Description: Archived versions of MoMA's websites (including MoMA collection records, exhibition

sites, MoMA Magazine, and POST blog)

Subject: Arts & Humanities

#### New York Art Resources Consortium (NYARC)

Archived since: Mar. 2014

Description: The New York Art Resources Consortium (NYARC) consists of the research libraries of three leading art museums in New York City: The Brooklyn Museum, The Frick Collection, and The Museum of Modern Art. With funding from The Andrew W. Mellon Foundation, NYARC was formed in 2006 to facilitate collaboration that results in enhanced resources to research communities. Subject: Arts & Humanities

New York City Galleries

Archived since: Sep, 2014

Description: Galleries and art dealers based in New York City

Subject: Arts & Humanities, Society & Culture

#### Restitution of Lost or Looted Art

Archived since: Oct. 2014

Description: Sites dedicated to restitution efforts and provenance of artworks that may be lost, stolen

Subject: Arts & Humanities, Society & Culture

#### The Frick Collection

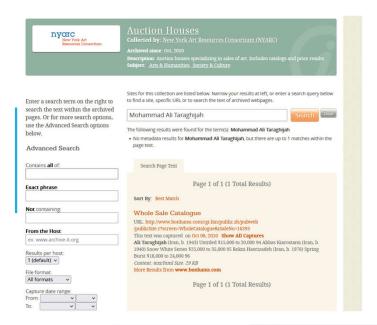
Archived since: Jan, 2014

Description: The Frick Collection is an internationally recognized museum and research center,

known for Old Master paintings, European sculpture and decorative arts. Subject: Arts & Humanities, Society & Culture, Universities & Libraries

Page 1 of 1 (10 Total Results)

https://www.archive-it.org/organizations/484

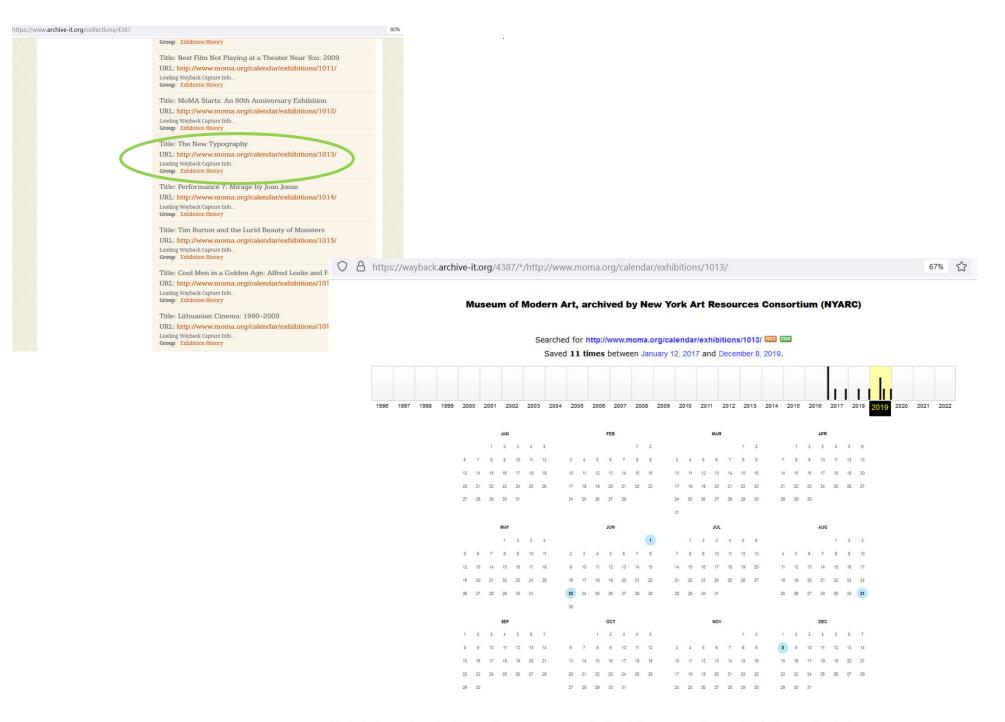


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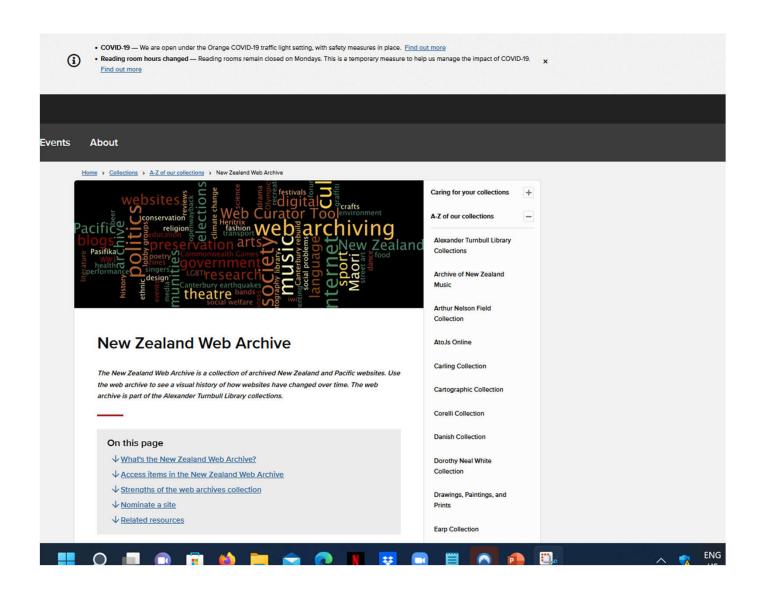
You are viewing an archived web page, collected at the request of New York Art Resources Consortium (NYARC) using Archive-It. This page was captured on 06:59:35 Oct 08, 2010, India is part of the Auction Houses collection. The information on this web page may be out of date. See All versions of this archived page. Found 0 archived media items out of 0 total on this page.

O 🐧 https://wayback.archive-it.org/2135/20101008065935/http://www.bonhams.com/cgi-bin/public.sh/pubweb/publicSite.r?screen=WholeCatalogu 🌣

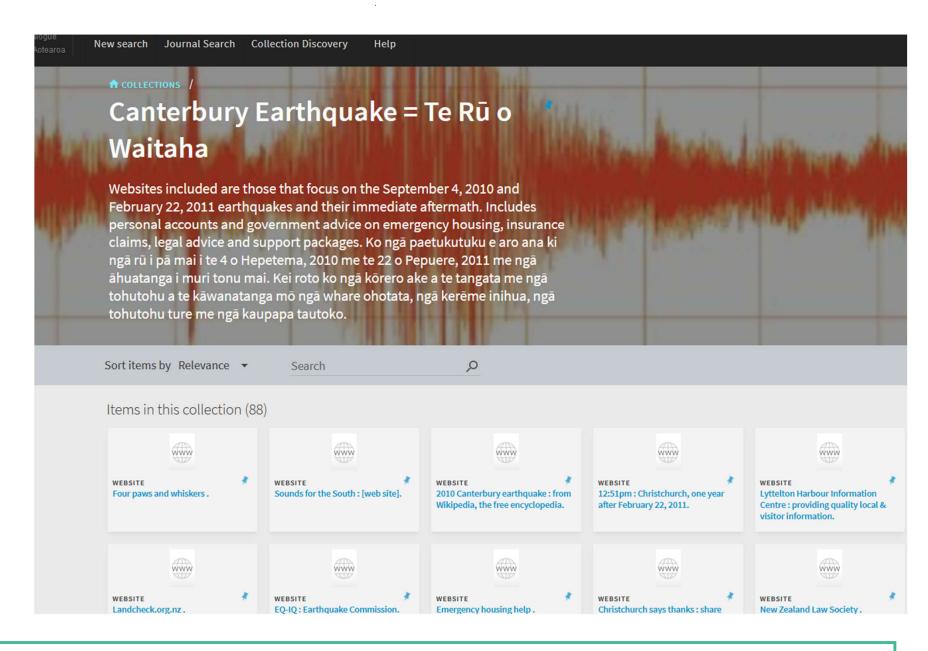
В	onhams	Print Sale Lots  Close Screen					
Sale 16393 - Modern & Contemporary Arab, Iranian, Indian & Pakistani Art Royal Mirage, Dubai							
Lot	Description	Estimate					
1	Youssef Kamel (Egypt, 1890-1971) Cairo street scene	\$4,000 to 6,000					
2	Saliba Douaihy (Lebanon, 1912-1994) Landscape	\$4,000 to 6,000					
3	Nasser Chaura (Syria, 1920-1992) Landscape	\$12,000 to 15,000					
4	Moustapha Farroukh (Lebanon, 1902-57) Street Scene	\$3,000 to 5,000					
5	Cesar Gemayel (Lebanon, 1898-1958)	\$15,000 to 25,000					
6	Sohrab Sepehri (Iran, 1928-1980) Kashan	\$60,000 to 80,000					
7	Iran Darroudi (Iran, b. 1936) Eshgh Khamoush Shodeh	\$30,000 to 50,000					
8	Abdur Rahman Chughtai (Pakistan, 1897-1975) Maiden contemplating moths at a flame	\$45,000 to 55,000					
9	Ustad Allah Bux (Pakistan, 1895-1978) Sohni and Mahinwal	\$8,000 to 12,000					
10	Nazem Al Jaafari (Syria, b. 1918) From Jabal Al-Arab	\$25,000 to 28.000					



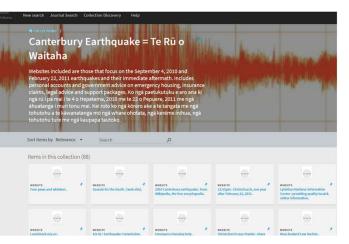
This calendar view maps the number of captures of http://www.moma.org/calendar/exhibitions/1013/, not how many times the site was actually updated.

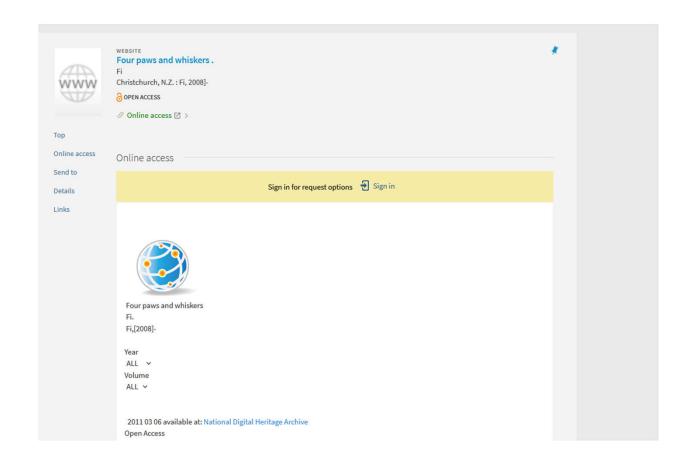


https://natlib.govt.nz/collections/a-z/new-zealand-web-archive/

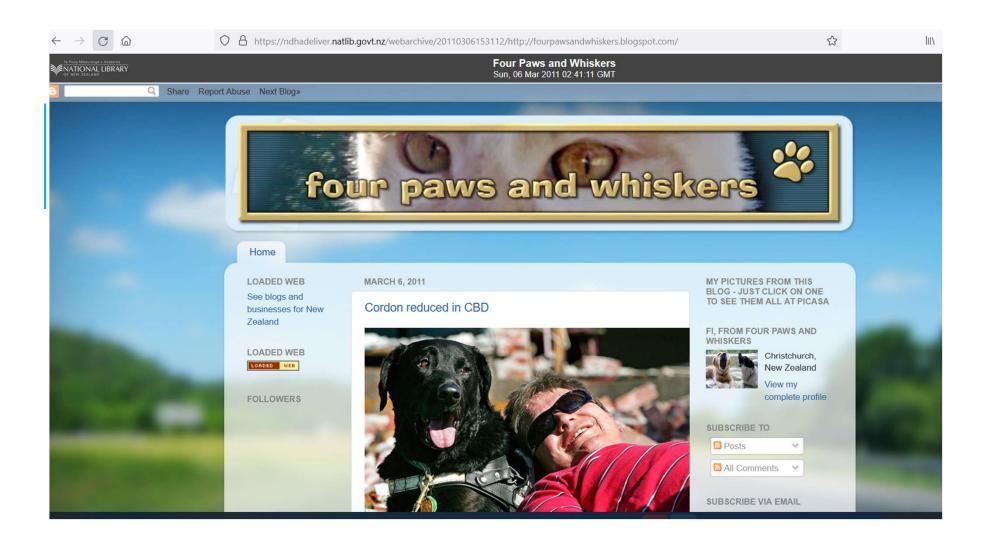


https://natlib-primo.hosted.exlibrisgroup.com/primo-explore/collectionDiscovery?vid=NLNZ&collectionId=81279506680002836

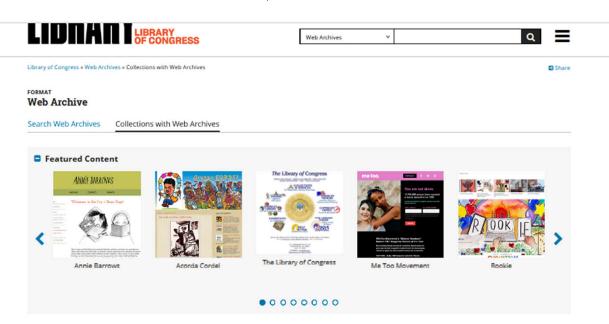




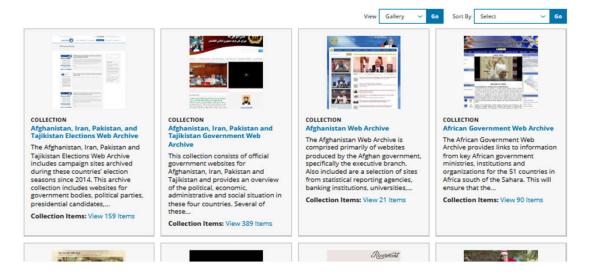
 $https://natlib-primo.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=NLNZ\_ALMA11269970330002836\&context=L\&vid=NLNZ\&lang=en\_US\&adaptor=Local\%20Search\%20Engine$ 



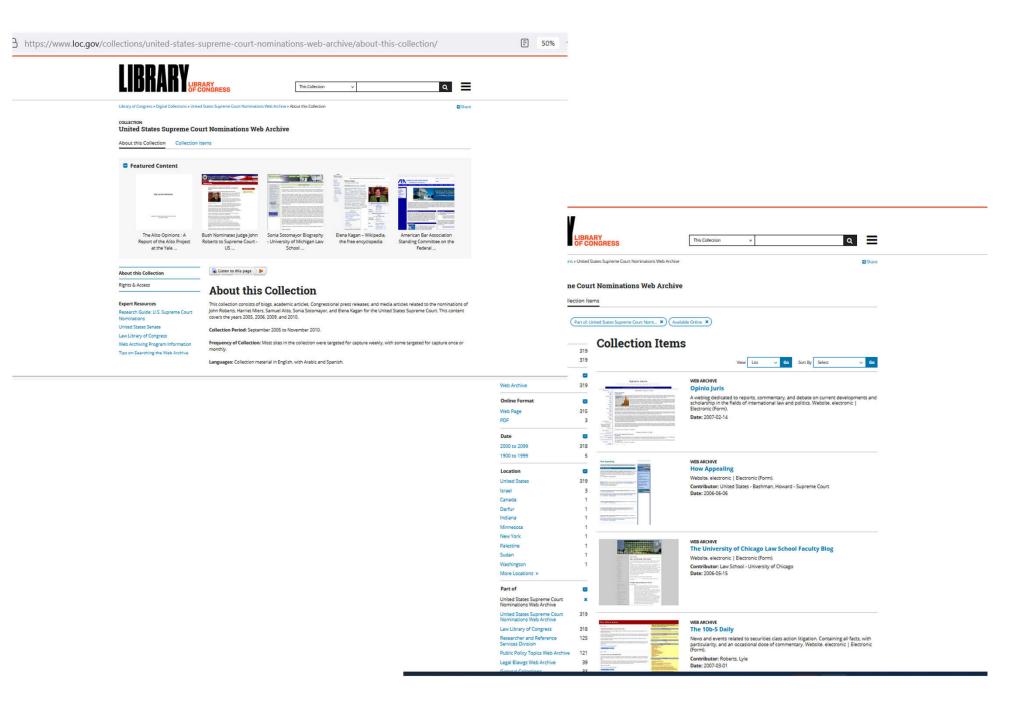
https://ndhadeliver.natlib.govt.nz/webarchive/20110306153112/http://fourpawsandwhiskers.blogspot.com/



## **Collections with Web Archives**



https://www.loc.gov/web-archives/collections/



https://www.loc.gov/collections/united-states-supreme-court-nominations-web-archive/about-this-collection/



Explore

Community

Categories

y Res

Research

**First Australians** 

Trove / Help / Categories / Websites

# Websites category

#### Contents

Australian Web Archive

Restricted content

What can I do if I am concerned about an archived webpage?

Disclaimer

Explore archived websites from over 8 billion records stored on the Australian Web Archive. This includes material relevant to the cultural, social, political, research and commercial life and activities of Australia and Australians.

Check out Related Pages for more information.

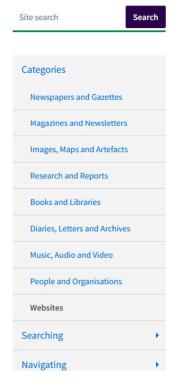
#### **Australian Web Archive**

The Australian Web Archive contains:

- Australian websites selected for the PANDORA Web Archive (one of the world's first web archiving initiatives)
- Australian Government websites (formerly accessible through the Australian Government Web Archive)
- Websites with addresses that end in .au (collected annually)

These websites are saved as snapshots of how they appeared at the time that they were online, and then preserved on the archive as a copy.

Material will continue to be added to the Australian Web Archive and online material is collected in accordance with the Library's function as stated in the National Library Act 1960, the legal denosit provisions of the



#### **Restricted content**

Some archived webpages are restricted from public use for a variety of reasons. It may be because the organisation that published the webpage has asked for it to be restricted. Other reasons include:

Privacy (personal	Sensitive personal data that may make a person easily identifiable or locatable, and possibly
data):	subject to harm such as identify theft or acts of violence. This includes, but is not limited to,
	date of birth, address, medical data, LGBTQI status.
Privacy (other):	Content that may be considered an invasion of privacy but is not sensitive personal data.
Defamation:	Content that is subject to defamation proceedings.
Cultural	Content that may be in violation of recognised cultural protocols. This includes, but is not
protocols:	limited to, the content related to deceased persons from Indigenous communities.
Court order:	Content that cannot be published due to a court order. This includes, but is not limited to,
	content that is subject to a suppression order.
Criminal:	Content deemed criminal under legislation. This includes, but is not limited to, child
	pornography or child abuse images, content that advocates the committing of a terrorist act
	and images falling under non-consensual image sharing laws.
Harmful:	Content that may be considered harmful by some but is not necessarily illegal. This includes
	but is not limited to, pornographic images of consenting adults, hate speech and content
	that advocates unsafe behaviour.
Copyright:	Content that may be subject to copyright or licensing agreements. If the request relates to
	copyright, the applicant must supply evidence that they are the rights holder or their agent.
Commercial:	Content that may be of significant commercial advantage or sensitivity.
Protected	$\label{thm:constraints} Government \ data \ that is sensitive, of ficial \ or \ classified \ and \ exempt \ from \ publication \ under$
government data:	the Freedom of Information Act 1982.
Other:	Any reason that falls outside the above listed categories.

Some are restricted permanently while others will be released after a period of time.

Don't worry - there are millions of more pages in the web archive that can help you with your research. Keep browsing.

https://trove.nla.gov.au/help/categories/websites-category #australian-web-archive

#### ORIGINAL PAPER



# From archive to analysis: accessing web archives at scale through a cloud-based interface

Nick Ruest 1 • Samantha Fritz 2 • Ryan Deschamps 2 • Jimmy Lin 3 • Ian Milligan 2 •

Received: 14 August 2020 / Accepted: 1 November 2020 / Published online: 6 January 2021 © The Author(s) 2021

#### Abstract

This paper introduces the Archives Unleashed Cloud, a web-based interface for working with web archives at scale. Current access paradigms, largely driven by the scope and scale of web archives, generally involve using the command line and writing code. This access gap means that subject-matter experts, as opposed to developers and programmers, have few options to directly work with web archives beyond the page-by-page paradigm of the Wayback Machine. Drawing on first-hand research and analysis of how scholars use web archives, we present the interface design and underpinning architecture of the Archives Unleashed Cloud. We also discuss the sustainability implications of providing a cloud-based service for researchers to analyze their collections at scale.

 $\textbf{Keywords} \ \ \text{Web archives} \cdot \text{Interface design} \cdot \text{Digital humanities} \cdot \text{Accessibility} \cdot \\ \text{Sustainability}$ 

#### 1 Introduction

Nick Ruest, Samantha Fritz, Ryan Deschamps, Jimmy Lin, and Ian Milligan. 2021, "From Archive to Analysis: Accessing Web Archives at Scale through a Cloud-Based Interface." International Journal of Digital Humanities 2, no. 1-3: 5–24. https://doi.org/10.1007/s42803-020-00029-6.



	Mission	Editorial Committee	Process and Structure	Code4Lib	
		[			Search
suie 53, 2022-05-09					

#### The DSA Toolkit Shines Light Into Dark and Stormy Archives

Themed web archive collections exist to make sense of archived web pages (mementos). Some collections contain hundreds of thousands o mementos. There are many collections about the same topic. Few collections on platforms like Archive-It include standardized metadata. Reviewir the documents in a single collection thus becomes an expensive proposition. Search engines help find individual documents but do not provide an overall understanding of each collection as a whole. Visitors need to be able to understand what individual collections contain so they can make decisions about individual collections and compare them to each other. The Dark and Stormy Archives (DSA) Project applies social media storytelling to a subset of a collection to facilitate collection understanding at a glance. As part of this work, we developed the DSA Toolkit, which help! archivists and visitors leverage this capability. As part of our recent International Internet Preservation Consortium (IIPC) grant, Los Alamos Nationa Laboratory (LANL) and Old Dominion University (ODU) piloted the DSA toolkit with the National Library of Australia (NLA). Collectively we have made numerous improvements, from better handling of NLA mementos to native Linux installers to more approachable Web User Interfaces. Our

by Shawn M. Jones, Himarsha R. Jayanetti, Alex Osborne, Paul Koerbin, Martin Klein, Michele C. Weigle, Michael L. Nelson

Editor's Note: This article makes use of Robust Links. Next to each hyperlink the reader will discover a menu that allows them to visit an archived version of the linked resource in case the current version has changed or is no longer available. Visit the Robust Links project for tools and more information on combating reference rot.

#### Web Archive Collections Are Too Large To Understand At A Gland

Web archives are invaluable for a variety of research studies. Historians & have analyzed how humans interacted on extinct websites, like Geocitie Social scientists & have used them to study the changes in social commerce over time. Journalists can use web archive evidence to bring attention questionable medical practices & and document changes in government policy &...

Some archivists create themed web archive collections by selecting web pages for preservation that support a topic. Each web page, or original resource, can change over time. Archivists capture these original resources at specific points in time, turning each observation into a memento. The date and time of capture is that memento's memento-datetime. A Time Map contains the set of mementos for an original resource. Active-II & is a popular platform, for creating themse deep schole collections. Themsel collections also exist at the Library of Congress & Conflet & the Creation Web Archive & the UK Web Archive & and throw & collections.

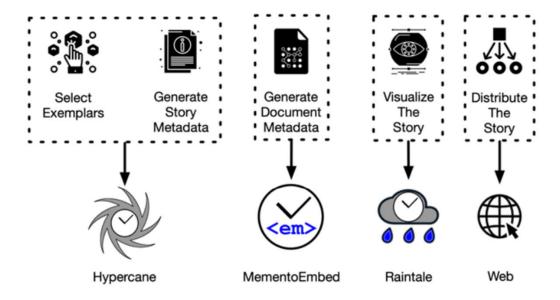


Figure 8. How the DSA Toolkit fits with the storytelling model shown in Figure 7.

S. M. Jones, H. Jayanetti, A. Osborne, P. Koerbin, M. Klein, M. C. Weigle, and M. L. Nelson, 2022, "The DSA Toolkit Shines Light Into Dark and Stormy Archives," Code4Lib Journal, Issue 53, 2022-05-09, https://journal.code4lib.org/articles/16441

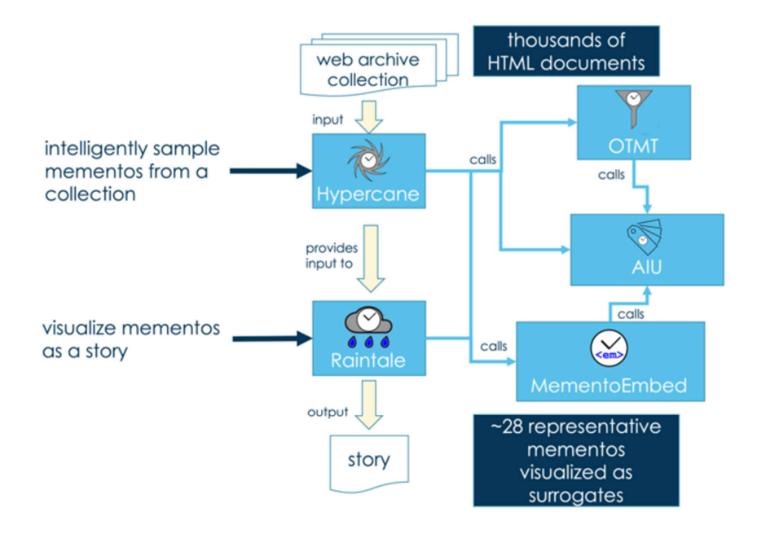


Figure 11. The DSA Toolkit workflow for producing a story relies heavily on Hypercane and Raintale.

S. M. Jones, H. Jayanetti, A. Osborne, P. Koerbin, M. Klein, M. C. Weigle, and M. L. Nelson, 2022, "The DSA Toolkit Shines Light Into Dark and Stormy Archives," Code4Lib Journal, Issue 53, 2022-05-09, https://journal.code4lib.org/articles/16441

Home / Education: Open Data in Schools

# **Education: Open Data in Schools**



How Open Data can benefit educational purposes

iii 31/01/2018

Often, when Open Data is discussed, the focus lies most of the time on business opportunities and the various benefits that Open (Government) Data holds for the economy and government, in particular with regards to fostering business innovation and efficiency gains. Further benefits however have also been quantified on other dimensions, such as the environmental and societal ones. Concerning the latter, the focus lies here on the added value that Open Data brings for democracy by enhancing transparency of political processes as well as boosting participation of citizens in the decision-making at local, regional and/or national level. However, little attention is given on the use of Open Data in the field of education. More and more European countries have acknowledged this potential and have started some proof of concept projects to introduce Open Data in the school curriculum.

One example thereof is the Open Data for Education competition in Northern Ireland. In 2016, the government of Northern Ireland launched a competition for innovative ideas on how to use Open Data for Education (#ODNI4EDU). The objective was to use available Open Data provided via the public sector portal to assist with teaching in primary and secondary schools. The best two ideas were awarded £20,000 towards developing their prototypes into classroom-ready applications. One of the winners was "Our Raging Planets", a platform that helps pupils learn about the possible impact of natural disasters. The application allows teachers to demonstrate what could happen if a disaster, which occurred at the other side of the planet, would strike at home. At the same time, it enables pupils to get acquainted with the geographic implications of global warming and how data can help take informed decisions.

A further example comes from Germany where a collaborative Open Data school project was launched in Moers. In Moers, a town with approximately 100,000 inhabitants in Germany's federal state of North Rhine-Westphalia, the local administration and the Open Knowledge Foundation set out to explore the potential of Open Data in the classroom. The project — DatenmachenSchule of a in the project plant of the Rhine-Whall University of Applied Sciences. Like the Northern Irish project, the idea here as well is to make school lessons more interactive by employing Open Data.

The project showed how data can be used in the school curriculum in a variety of subjects. In mathematics or computer science lectures, data was used in assignments. In subjects such as politics or social studies, pupils were able to learn more about their local government, its budget and spending, by using Open Data publicly available on the open budget platform offenerhaushalt.de@. Other school lessons included data on the demographic development of Moers' districts. For example, in the case of the demographic development data, seventh graders were asked to analyse the statistics and compare the insights to their personal experiences. In groups, pupils were then tasked to identify good locations for a nursing home, a kindergarten and a supply store for young families. They then reflected which data was useful and which data might be missing, before discussing further potential use cases of publicly available data. Furthermore, data on energy consumption in schools was used in environmental science classes. It provided pupils with insights into their own school's energy use and enabled them to see their school's performance compared to other schools in the area. Pupils were able to understand how they can help save energy and contribute to a sustainable use of resources. Such examples and many more use cases of Open Data in the classroom, can be found in the published quidelines@ of the DatenMachenSchule project.

A similar initiative was launched in Switzerland as well, where steps have been taken to introduce Open Data in the school curriculum. Data analysis is part of the Lehrplan 21 of curriculum - a plan adopted in 2014 to harmonise the school curriculum in the 21 German-speaking and multi-lingual cantons. As part of the Media and Informatics curriculum

https://data.europa.eu/en/datastories/education-open-data-schools



Archive-It Help Center > Archive-It User Guide > Getting Started Articles in this section Archive-It Video Curriculum Guide for new Archive-It users Sylvie Rollason-Cass Follow Updated 1 month ago On this page: Known Web Archiving Challenges · Getting Started · Navigating Archive-It Live chat support · Administrative Functions Pre-crawl Scoping Quickstart Guide for Trials Test Crawls PDF Only Crawls Post Crawl Analysis What is web archiving? · Getting the most from your post crawl reports • Understanding your Hosts Report Support Ticket Submission Quality Assurance · Advanced Training Webinars Set up and administer your Advanced Scoping account · Archiving Video Content Archiving Social Media Assign user access levels · Advanced Quality Assurance · Access to Archive-It Collections Monitor your data budget Under the Hood Describing Web Archives See more Intro to Brozzler

https://support.archive-it.org/hc/en-us/articles/216489103-Archive-It-Video-Curriculum-

• WARC Tools for Management and Preservation

#### RESEARCH ARTICLE



# Digital sources and digital archives: historical evidence in the digital age

Trevor Owens 1 1 · Thomas Padilla 2 1

Received: 6 July 2019 / Accepted: 22 April 2020/ Published online: 4 May 2020 © Springer Nature Switzerland AG 2020

#### Abstract

As the cultural record becomes increasingly digital the evidentiary basis of history expands and shifts. How must historical scholarship change when the evidentiary basis shifts toward the digital? Through explorations of a series of born digital and digitized sources, we identify and discuss key issues relating to humanities scholars ability to develop claims and arguments grounded in digital sources and digital archives. In exploring these issues in digital source criticism, we work to provide practical guidance for scholars on key issues and questions to consider when working with born digital and digitized primary sources.

 $\textbf{Keywords} \ \ Digital \ history \cdot Historigraphy \cdot Research \ methods \cdot Collections \ as \ data \cdot Source \ criticism \cdot Digitization \cdot Archives$ 

The world is full of potential primary sources. Almost anything can be a source. The rings of a tree testify to weather conditions and changes in climate (Cronon 1983). Probate records document the material goods individuals held at the end of their lives (Bushman 1992). Court proceedings offer insight into the experiences of the oppressed (Pagan 2003). Just as any kind of physical object might serve as a source, so does a digital source. As societies increasingly express themselves using digital means, the

Trevor Owens and Thomas Padilla, 2021, "Digital sources and digital archives: historical evidence in the digital age," Int J Digit Humanities 1, 325–341. https://doi.org/10.1007/s42803-020-00028-7

# Full-Text and URL Search Over Web Archives



Miguel Costa

Abstract Web archives are a historically valuable source of information. In some respects, web archives are the only record of the evolution of human society in the last two decades. They preserve a mix of personal and collective memories, the importance of which tends to grow as they age. However, the value of web archives depends on their users being able to search and access the information they require in efficient and effective ways. Without the possibility of exploring and exploiting the archived contents, web archives are useless. Web archive access functionalities range from basic browsing to advanced search and analytical services, accessed through user-friendly interfaces. Full-text and URL search have become the predominant and preferred forms of information discovery in web archives, fulfilling user needs and supporting search APIs that feed third-party applications. Both fulltext and URL search are based on the technology developed for modern web search engines. However, while web search engines enable searching over the most recent web snapshot, web archives enable searching over multiple snapshots from the past. This means that web archives have to deal with a temporal dimension that is the cause of new challenges and opportunities, discussed throughout this chapter.

#### 1 Introduction

The World Wide Web has a democratic character, and everyone can publish all kinds of information using different types of media. News, blogs, wikis, encyclopaedias, photos, interviews and public opinion pieces are just a few examples. Some of this information is unique and historically valuable. For instance, online newspapers reporting the speech of a president after winning an election or announcing an imminent invasion of a foreign country might become as valuable in the future as

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#### ORIGINAL PAPER



# When expectations meet reality: common misconceptions about web archives and challenges for scholars

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#### Abstract

As the study of digital history, politics, and culture emerges as an academic discipline, web archives will play a valuable role as sources of information. Those wishing
to engage with web archives will need both specific technical skills and a high-level
understanding of how the web works. This paper examines the nature and type of
misconceptions that web archivists form when they create and utilise web archives.
In order to carry out this research, the author qualitatively analyzed support tickets submitted by web archivists using the Internet Archive's Archive-It (AIT), the
most popular web archiving service. The tickets comprised 2544 interactions between
web archivists and AIT support specialists. This paper describes the expectations
AIT users bring to web archives, and the differences between their expectations and
the realities of the web archiving process. It identifies the most prominent misconceptions AIT users have about both web archives and the web itself, analyses the
challenges these misconceptions can pose for researchers, and recommends ways in
which these can be addressed.

Keywords Web archiving · Mental models · Digital humanities

#### 1 Introduction

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# Developing Web Archiving Metadata Best Practices to Meet User Needs

Jackie M. Dooley Karen Stoll Farrell Tammi Kim Jessica Venlet

#### ABSTRACT

The OCLC Research Library Partnership Web Archiving Metadata Working Group was established to meet a widely recognized need for best practices for descriptive metadata for archived websites. The Working Group recognizes that development of successful best practices intended to ensure discoverability requires an understanding of user needs and behavior. We have therefore conducted an extensive literature review to build our knowledge and will issue a white paper summarizing what we have learned. We are also studying existing and emerging approaches to descriptive metadata in this realm and will publish a second report recommending best practices. We will seek broad community input prior to publication.

Two recent surveys of users and managers of archived websites have shown that lack of a common approach to creating metadata is the most widely shared challenge for this community. In response, OCLC Research established a Web Archiving Metadata Working Group (WAM) to develop descriptive metadata best practices. At the group's first meeting in January 2016, we recognized that it would be inadvisable to develop best practices for descriptive metadata without first gaining a clear understanding of user needs and behavior in this context. We are taking this into account throughout the project.

- Ricky Erway, "Thoughts from Partner Staff about Web Archiving," hangingtogether.org, October 29, 2015, http://hangingtogether.org/?p=5450 (accessed January 18, 2017).
- A research team led by Matthew Weber at Rutgers University surveyed users of web archives in the winter of 2016. They expect to publish their data late in 2016.
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#### ORIGINAL PAPER



#### The values of web archives

Valérie Schafer 100 - Jane Winters2

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#### Abstract

This article considers how the development, promotion and adoption of a set of core values for web archives, linked to principles of "good governance", will help them to tackle the challenges of sustainability, accountability and inclusiveness that are central to their long-term societal and cultural worth. It outlines the work that has already been done to address these questions, as web archiving begins to move out of its establishment phase, and then discusses seven key principles of good governance that might be adapted by and embedded within web archives: participation, consensus, accountability, transparency, effectiveness and efficiency, inclusivity and legality. The article concludes with a call to action for researchers and archivists to co-create the core values for web archives that will be required if they are to remain a vital part of our cultural heritage infrastructure.

Keywords Web archives · Good governance · Sustainability · Inclusiveness · FAIR data · Openness

In gathering, preserving, curating, publishing and/or analysing an intangible and massive born-digital heritage, key stakeholders, whether they are libraries, private

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# scientific data

# OPEN DUKweb, diachronic word DATA DESCRIPTOR representations from the UK Web Archive corpus

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Lexical semantic change (detecting shifts in the meaning and usage of words) is an important task for social and cultural studies as well as for Natural Language Processing applications. Diachronic word embeddings (time-sensitive vector representations of words that preserve their meaning) have become the standard resource for this task. However, given the significant computational resources needed for their generation, very few resources exist that make diachronic word embeddings available to the scientific community. In this paper we present DUKweb, a set of large-scale resources designed for the diachronic analysis of contemporary English. DUKweb was created from the JISC UK Web Domain Dataset (1996–2013), a very large archive which collects resources from the Internet Archive that were hosted on domains ending in '.uk'. DUKweb consists of a series word co-occurrence matrices and two types of word embeddings for each year in the JISC UK Web Domain dataset. We show the reuse potential of DUKweb and its quality standards via a case study on word meaning change detection.

#### **Background & Summary**

Word embeddings, dense low-dimensional representations of words as real-number vectors<sup>1</sup>, are widely used in many Natural Language Processing (NLP) applications, such as part-of-speech tagging, information retrieval, question answering, sentiment analysis, and are employed in other research areas, including biomedical sciences and scientometrics3. One of the reasons for this success is that such representations allow us to perform vector calculations in geometric spaces which can be interpreted in semantic terms (i.e. in terms of the similarity in the meaning of words). This follows the so-called distributional hypothesiss, according to which words occurring in a given word's context contribute to some aspects of its meaning, and semantically similar words share similar contexts. In Firth's words this is summarized by the quote "You shall know a word by the company it keeps" 5.

Vector representations of words can take various forms, including count vectors, random vectors, and word embeddings. The latter are nowadays most commonly used in NLP research and are based on neural networks which transform text data into vectors of typically 50-300 dimensions. One of the most popular approaches for generating word embeddings is word2vec1. A common feature of such word representations is that they are labour-intensive and time-consuming to build and train. Therefore, rather than training embeddings from scratch, in NLP it is common practice to use existing pre-trained embeddings which have been made available to the community. These embeddings have typically been trained on very large web resources, for example Twitter, Common Crawl, Gigaword, and Wikipedia<sup>6,7</sup>

Over the past few years NLP research has witnessed a surge in the number of studies on diachronic word embeddings<sup>8,9</sup>. One notable example of this emerging line of research is 10, where the authors proposed a method for detecting semantic change using word embeddings trained on the Google Ngram corpus 11 covering 8.5 hun-

A. Tsakalidis, P. Basile, M. Bazzi, et al. 2021, "DUKweb, diachronic word representations from the UK Web Archive corpus," Sci Data 8, 269. https://doi.org/10.1038/s41597-021-01047-x

#### ORIGINAL PAPER



# Web-archiving and social media: an exploratory analysis

Call for papers digital humanities and web archives – A special issue of international journal of digital humanities

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#### Abstract

The archived web provides an important footprint of the past, documenting online social behaviour through social media, and news through media outlets websites and government sites. Consequently, web archiving is increasingly gaining attention of heritage institutions, academics and policy makers. The importance of web archives as data resources for (digital) scholars has been acknowledged for investigating the past. Still, heritage institutions and academics struggle to 'keep up to pace' with the fast evolving changes of the World Wide Web and with the changing habits and practices of internet users. While a number of national institutions have set up a national framework to archive 'regular' web pages, social media archiving (SMA) is still in its infancy with various countries starting up pilot archiving projects. SMA is not without challenges; the sheer volume of social media content, the lack of technical standards for capturing or storing social media data and social media's ephemeral character can be impeding factors. The goal of this article is three-fold. First, we aim to extend the most recent descriptive state-of-the-art of national web archiving, published in the first issue of International Journal of Digital Humanities (March 2019) with

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#### ORIGINAL PAPER



#### Social media data archives in an API-driven world

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#### Abstract

In this article, we explore the long-term preservation implications of application programming interfaces (APIs) which govern access to data extracted from social media platforms. We begin by introducing the preservation problems that arise when APIs are the primary way to extract data from platforms, and how tensions fit with existing models of archives and digital repository development. We then define a range of possible types of API users motivated to access social media data from platforms and consider how these users relate to principles of digital preservation. We discuss how platforms' policies and terms of service govern the set of possibilities for access using these APIs and how the current access regime permits persistent problems for archivists who seek to provide access to collections of social media data. We conclude by surveying emerging models for access to social media data archives found in the USA, including community driven not-for-profit community archives, university research repositories, and early industry-academic partnerships with platforms. Given the important role these platforms occupy in capturing and reflecting our digital culture, we argue that archivists and memory workers should apply a platform perspective when confronting the rich problem space that social platforms and their APIs present for the possibilities of social media data archives, asserting their role as "developer stewards" in preserving culturally significant data from social media platforms.

Keywords APIs · Developer stewards · Platform perspective · Social media data archives

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