

### End of Term Web Archive US Federal Government Websites 2008-2009

# The United States End of Term Web Archive

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CNI Project Briefing – April 3, 2012

## Building the 2008 Archive

Background
 2008 Project & Nomination of URLs
 Demo of public interface
 Data transfer
 Preparing for Access

### **Collaborating Institutions**

Library of Congress
 Internet Archive
 California Digital Library
 University of North Texas
 US Government Printing Office

### Why Archive .gov? Why Collaborate?

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- Fit with partner missions to collect and preserve at-risk (born-digital) government information
- Potential for High Research Use/Interest in Archives
- It Takes a Village
- Experienced Partners

### **Project Goals**

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- Work collaboratively to preserve public U.S. Government Web sites at the end of the current presidential administration ending January 19, 2009.
- Document federal agencies' presence on the Web during the transition of Presidential administrations.
- To enhance the existing research collections of the five partner institutions.

## **URL Nomination Tool**

 Facilitates collaboration
 Ingest seed lists from different sources
 Record known

metadata

- Branch
- Title
- Comment
- Who nominated

# Create seed lists for crawls

ol: Proj	ect URL Nomir	nation -	Mozill	a Firefo	ж																	
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### **Volunteer Nominators**

- Call for volunteers targeted:
  - Government information specialists
  - Librarians
  - Political and social science researchers
  - Academics
  - Web archivists
- 31 individuals signed up to help

### Nominator To-Dos

- Nominate the most critical URLs for capture as "in scope
- Add new URLs not already included in the list
- Mark irrelevant or obsolete sites as "out of scope"
- Add minimal URL metadata such as site title, agency, etc.

#### 🕹 Nominator Tool - Mozilla Firefox Bookmarks Tools <u>E</u>dit <u>V</u>iew Hi<u>s</u>tory Help File URL http://www.DOL.gov 🗗 Domain SURT http://(gov.dol, Nominations 7 Nomination Score 7 Nominated By June 2008 usa.gov list - Internet Archive Stanford WebBase: .gov data - California Digital Library Mary Searles - New Hampshire Law Library Mark Randazzo - U.S. Dept. of Labor, Office of Public Affairs-Division of Enterprise Communications Content Manager - U.S. Dept. of Labor, Office of Public Affairs-Division of Enterprise Communications Suzanne Cohen - Cornell University ILR School Comment The Department of Labor fosters and promotes the welfare of the job seekers, wage earners, and retire United States by improving their working conditions, advancing their opportunities for profitable employ protecting their retirement and he Agency U.S. Department of Labor U.S. Dept. of Labor Branch executive Title Home Page The United States Department of Labor Related URLs

http://dol.gov http://www.oalj.dol.gov http://www.oig.dol.gov http://www.dol.gov/arb/welcome.html

# In Scope vs. Out of Scope

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- In scope: Federal government Web sites (.gov, .mil, etc.) in the Legislative, Executive, or Judicial branches of government. Of particular interest for prioritization were sites likely to change dramatically or disappear during the transition of government
- Out of scope: Local or state government Web sites, or any other site not part of the above federal government domain
- Not captured: intranets, deep web content

### **Prioritized URLs**

### ~500 URLs nominated by volunteers



### Selected Researcher/Curator Interests

- Homeland Security
- Department of Labor
- Department of Treasury
- Education/"No Child Left Behind"
- Health Care Reform
- Stem Cell Research
- Bush Administration Budget Justifications
- Federal Program Assessments (ExpectMore.gov)

### **Crawl Schedule**

	Septe	embe	r	Octo	ber			Nove	embe	r		Dece	mber				Janu	ary			Febru	iary		- Ç	March-April-May
	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16	23	
IA	Broad	d Cra	wl								6	8								N.	Broad	Cra	wi		
LC				78			Legis	lative				Legis	lative				Legis	lative	•		Legisl	ative	£.,		
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IA/LC						6					9			1	Priori	tized	URLs	Ĩ					0	3	Prioritized URLs

- Two Approaches:
  - Broad, comprehensive crawls
  - Prioritized, selective crawls
- □ Key dates:
  - Election Day, November 4
  - Inauguration Day, January 20

### Results

# Between September 2008 and November 2009: Over 3,000 "sites" archived (or is it 4,622?\*)

 160 million files/documents
 Over 15 TB of data

\*counting is tricky: sites are loosely defined

http://after-school.gov http://afterschool.gov http://www.afterschool.gov http://gears.tucson.ars.ag.gov http://www.tucson.ars.ag.gov http://www.uswcl.ars.ag.gov http://agingstats.gov http://www.agingstats.gov http://agoa.gov http://www.agoa.gov http://ahcpr.gov http://www.ahcpr.gov http://meps.ahrq.gov http://www.ahrq.gov http://aids.gov http://airnow.gov http://alc.gov http://amberalert.gov http://amc.gov http://amembassy-fiji.gov http://americaslibrary.gov http://www.americaslibrary.gov http://americasoutdoors.gov http://americasstory.gov http://americastory.gov http://americore.gov http://americorp.gov http://americorps.gov http://americorpse.gov http://www.etd.ameslab.gov http://www.external.ameslab.gov http://www.msg.ameslab.gov http://sc94.ameslab.gov http://www.scl.ameslab.gov

### Data Transfer

- Goal: Distribute 15.9 TB of collected content among partners
- LC's central transfer server used:
   "Pulled" and "pushed" data from and to partners via Internet2, May 2009 Mid 2010
  - Common transfer tools, specifications were key

More info here: http://blogs.loc.gov/digitalpreservation/2011/07/theend-of-term-was-only-the-beginning/

### Transfer Tools: Bagger

Spring Rich Client Application		
File Window Help	ate Bag In Place Validate Bag Is Bag Complete Close Bag Save Bag Save Bag As	
• Bagger	a 🔯 🔀 Bag Info	4 🖸 53
Payload	File name:       O:\web capture\Bagger\cybercemetery         Profile: <no profile="">         Bag-Info       Serialize Type?:         Image: Standard       Image: Standard         Bag-Size       85.6 KB         Payload-Oxum       87248.2         Bagging-Date       2011-10-14</no>	Add X X X
Tag Files  Tag Files  Cybercemetery  Bagit.txt  Bag-info.txt  manifest-md5.txt		4 8 53
	Complete: 😑 Valid: 😑 Profile Compliant: 🐼	
	[Fri Oct 14 15:07:01 EDT 2011]: This space will contain messages generated by the creating and updating of bags.         Mouse over the status label to see it's description.         [Fri Oct 14 15:08:31 EDT 2011]: Opened the bag O:\AndersonTeamWork         [Fri Oct 14 15:09:26 EDT 2011]: Failed to create bag: Unknown format         [Fri Oct 14 15:10:17 EDT 2011]: Opened the bag O:\web capture\Bagger\cybercemetery	• •

### **Preparing for Access**

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### 1<sup>st</sup> Tuesday of each month, 12:00 pm:

Anything to report on public access?



No, nothing to report on public access.

### Internet Archive also had:

- A full copy of the content from all EOT partners
- A QA "Playback" tool (takes screen images of archived materials)
- An export of the Nomination Tool metadata from UNT
- MODS record extractor tool

### CDL had:

Browse by: All       Results: 196 Items       Results: 196 Items       Browse by: Face1   Itels   Author       Browse by: Face1   Itels   Author       Page: 1 2 3 4 5 Net         Sorted by: relevance       I       Author:       Alfred Greene, Photographer       Page: 1 2 3 4 5 Net         Subject       I       Author:       Alfred Greene, Photographer       Requires cookie*         Museum       Subjects:       School children California Dublin   Schools California Dublin   Students		eXtensible Tex					graphic
1       Author:       Alfred Greene, Photographer         Collection of the Dublin Heritage Museum       (196)         Heritage Museum       Schools California Dublin       (1935)         Schools California Dublin       (39)         California Dublin       Students California Dublin       California Students Dublin       California Students California Dublin       Students California Dublin       California Students California Dublin       Requires cookie*         2       Author:       Unknown       California California Dublin       Title:       Elizabeth Flanagan Nevin (1901-1902), photograph       Image         2       Author:       Unknown       Title:       Elizabeth Flanagan Nevin (1901-1902), photograph       Image         Potrait photographs       (25)       Subjects:       Teachers California Dublin       California Dublin       Collection	Results:	196 Items	<mark>.</mark> €0!			Browse b	y Facet   <u>Title</u>   <u>Author</u>
Dublin (Calif.)       2       Author:       Unknown         School       (30)       Title:       Elizabeth Flanagan Nevin (1901-1902), photograph image         California Dublin       Published:       1902         Portrait       (25)       Subjects:       Teachers California Dublin   Nevin, Elizabeth Flanagan   Collection of the Dublin Heritage Museum	Subjec	<u>Collection of</u> <u>the Dublin</u> <u>Heritage</u> <u>Museum</u> <u>Schools</u> <u>California</u> <u>Dublin</u> <u>Pioneer</u>	(39)	·	Title: Published: Subjects:	Murray Public School, (1935), photograph       Image         1935       School children California Dublin   Teachers California Dublin   Schools California Dublin         Req         Students California Dublin   Collection of the Dublin Heritage Museum       Req	uires cookie*
Dublin         Similar Items:         Find         Requires           cookie*         cookie*         cookie*	•	Dublin (Calif.) School children California Dublin Portrait photographs - - California	(30)	-	Title: Published: Subjects:	Elizabeth Flanagan Nevin (1901-1902), photograph Image 1902 <u>Teachers California Dublin   Nevin, Elizabeth Flanagan   Collection of the Dublin Heritage Museum</u>	



### Caveats

As with any web archive, the crawler is good, but not always perfect!

 Full-text index of 16 TB of data
 Some behaviors designed to help rank and navigate such a large body of content

### Beta Interface

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End of Term Web Archive

US Federal Government Websites 2008-2009

Home

Search Full Text

Site List

#### Overview

**Project Background** 

**Project Partners** 

End of Term 2012

The End of Term Web Archive documents the United States Government's World Wide Web presence during the transition between the administrations of President George W. Bush and President Barack Obama.



Committee on Natural Resources, Republican Site – Sep. 15, 2008

#### Use this archive to:

Browse over 3000 U.S. Govt. websites Search the full text of over 160 million files

Explore Data

Contact Us Help

The 2008 End of Term web archive contains over 16 terabytes of data collected from U.S. Government agency websites between September 2008 and November 2009.

#### eotarchive on Twitter

Join us Monday, Oct 17th at the Federal Depository Library Conference for a project overview & demo! http://t.co/T0w9ZP6V

Jul 2011 – Cooperative Archiving: Event Harvesting in Perspective @NDIIPP #pub http://t.co/myzfecWj

Jul 2011 – The End of Term Was Only the Beginning @NDIIPP #pub http://t.co/2gyDHAd4

May 2011 – Curation of the End of Term Archive. #UNT #pub http://t.co/50J3nnW4

Dec 2010 – Findings of the Web Archive Survey of Federal Depository Libraries #UNT

### Full text search

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#### Archival Search Sample XSLT

This simple XSLT demonstrates the transformation of OpenSearch XML results into a fully-functional, human-friendly HTML search page. No JSP needed.

Search for no child left behind	Search	🗆 HTML	🗆 PDF	🗆 MS Word	
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Results 1-10 of about 548,834 (2.341 seconds)

#### 1. No Child Left Behind - ED.gov

No Child Left Behind - ED.gov Advanced Search Students Parents Teachers Administrators NCLB Overview Stronger Accountability More Local Freedom Proven Methods Choices for Parents A-Z Index About ED Budget & Performance Press Room Publications Teaching Resources FAQs Contact Help Jobs at ED Online Services Recursos en español State Information Web Survey Features A-Z Index Find your way around the NCLB section. GO > NCLB Policy Policy documents on accountability, choice, SES, teacher quality, and more. GO > NCLB State Status See the status of your state's efforts to achieve NCLB goals. GO... Program NCLB Policy Letters No Child Left Behind Programs By Subject By Title By CFDA# Search News... Contacts Budget Annual Reports and Plans Jobs at ED Inspector General No FEAR Act Data Site Policies...

http://www.ed.gov/ndb/landing.jhtml - 35k - text/html <u>All versions (1)</u> - <u>More from ed.gov</u>

#### 2. Friday, January 12, 2007 - Texas Times: Reinvigorating No Child Left Behind

Friday, January 12, 2007 - Texas Times: Reinvigorating **No Child Left Behind**... http://cornyn.senate.gov/calendar/2007/01/12/reinvigorating-no-child-left-behind/index.html - 1k - text/html <u>All versions (1)</u> - <u>More from senate.gov</u>

#### 3. President Bush Discusses No Child Left Behind

President Bush Discusses **No Child Left Behind** Skip Main Navigation PRESIDENT | VICE PRESIDENT... Audio Photos En Español Fact Sheet: The **No Child Left Behind** Act: Challenging Students... objective. And the **No Child Left Behind** Act was all part of making sure that we get it right in the schools... **No Child Left Behind** says, look, we trust the local folks. I don't want Washington, D.C. running... the education system functions for all. And that's the spirit of **No Child Left Behind**. By measuring... things that I think is most important about the **No Child Left Behind** Act is that when you measure... unfair to the children. And the **No Child Left Behind** Act demands result for every **child**, for the good... time to reauthorize the **No Child Left Behind** Act, my attitude is, instead of softening **No Child Left**...

http://www.whitehouse.gov/news/releases/2006/10/20061005-6.html - 43k - text/html All versions (1) - More from whitehouse.gov

#### 4. No Child Left Behind

No Child Left Behind Skip Main Navigation PRESIDENT | VICE PRESIDENT | FIRST LADY | MRS. CHENEY... Education So That No Child is Left Behind As America enters the 21 st Century full of hope and... met. In America, no child should be left behind. Every child should be educated to his or her full... establishing annual assessments in grades 3-8, within two years of enacting this plan. "No Child Left Behind... of disadvantaged students will be recognized and rewarded with "No Child Left Behind" bonuses... in closing the achievement gap will be honored with awards from a "No Child Left Behind" school... eligible to receive a one-time the achievement gap.

### Site List

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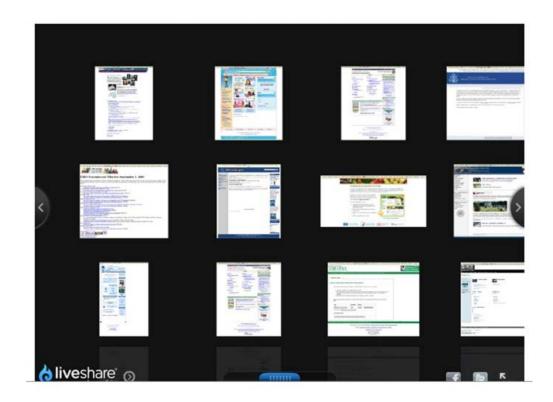


in these catalogs is also searchable over the Internet. This page links to the two methods for search the main Library of Congress Online Catalog and to several

• usa (1)

### Browse by Image

### Internet Archive tools for visualizing web archived data ("explore data")



# Forthcoming: Tag cloud extracted from metadata

109th Congress 110th Congress AIDS AmeriCorps BLM California Congress Congressman DOE Education Employment Environment Federal Federal government FirstGov GIS Government Home Home Page House of Representatives JPL Jet Propulsion Laboratory Jobs NASA NCCC NIH NIST NOAA National Representative Texas U.S. U.S. Congressman U.S. Geological Survey US USA USDA USGS United States VISTA agriculture air quality animals astronomy astrophysics awards basin benefits biology birds budget business cancer cartography chemistry children climate commerce communications CONGRESS congressman conservation council of economic advisors data database department development disability district drought earth earth science earthquake earthquakes earthscience ecology economic indicators ecosystem education electronic employment endangered energy engineering environmental executive agencies exports federal federal government fish fisheries flood geographic geography geology geophysics government grants groundwater habitat health health care history home home page homeland security homepage housing hurricane hydrologic hydrology information insect insurance international jobs lake learning legislative branch mammal manufacturing maps marine medical military national service navigation news non-profit observatory ocean oil opportunities outreach partnerships physics policy pollution publications quality rader recreation refuge regulations remote sensing representative research resources river safety satellite Science security seismic seismicity seismology service services small business software space species standards statistics stream streamflow students technology topography trade training transportation tsunami united states veterans volcances volunteer volunteers Water water quality watershed weather wetland wildlife x-ray youth

Classification of the End-of-Term (EOT) Archive: *Extending Collection Development Practices to Web Archives* University of North Texas Libraries | IMLS National Leadership Grant

Project Background

Archive Classification

SMEs: SuDocs Classification Scheme

Link Analysis: Web graph

Cluster Analysis

SMEs : Cluster Tagging

Conclusion



### Background

- Problem
  - The absence of descriptive metadata or classification schemes thwarts discovery & access
  - WARC files (ISO 28500)
    - Specifies formats needed for storage, management, and exchange of data objects (or resources); Not designed for user access
  - Wayback access
    - Need to know a resource's URL
- Objective: Classify materials in accord with the Superintendent of Documents (SuDocs) Classification Numbering System
- Outcome: Enable librarians to utilize existing selection practices to identify materials in the EOT Archive



# Classification: Size Challenge

 U	

Domains	# URLs	Subdomains
gov	137,847,822	14,339
mil	3,555,425	1,677

SURTS: Reordering URLs by domain structure

URL: http://marriagecalculator.acf.hhs.gov/marriage/ SURT: http://(gov,hhs,acf,marriagecalculator,)

Domain 
$$1$$
  $2$   $3$   
Subdomains  
Unique 1<sup>st</sup> Level Subdomains = 1,647  
After validation = 1,151 Subdomains

### Human Classification

- SuDocs Classification Scheme
- 10 SMEs classified 1,151 URLs (230/SME)
  - **70%** agreement (*n* = 808)
    - Unable to classify: 18 in scope; 36 out of scope
  - **30%** disagreement (*n* = 343)
- 3 arbitrators classified 343 URLs
  - Assigned SuDocs authors to 286 URLs
  - Unable to classify: 42 in scope; 15 out of scope



# Classification: Findings

- Overall, SuDocs Scheme worked well
- Assigned SuDocs authors to 1,040 subdomains
  - 1,111 authors (1,040 + 71 multiply authored sites)
- Major Classification Challenge
  - Determining primary author among multiple authors
- Weaknesses
  - Lacks sufficient granularity for subordinate agencies
  - Forced to classify at high level



# Link Analysis

Web graph

Identified # of outlinks and inlinks for each URL

- Subdomains
  - 1,151 1<sup>st</sup> level subdomains within .gov & .mil domains
  - Multiple URLs per subdomain
- Explored cluster analysis algorithms

Best result: Linlog Coordinates with Agglomerative Hierarchical Clustering



### **Cluster Analysis**

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Set limit on number of clusters to identify
 First analysis: Set of 55 clusters
 Second analysis: Set of 75 clusters

Cluster Analysis								
55–Set		75–Set						
39	Identical	39						
16	13 / 2 2 / 3 1 / 4	36						

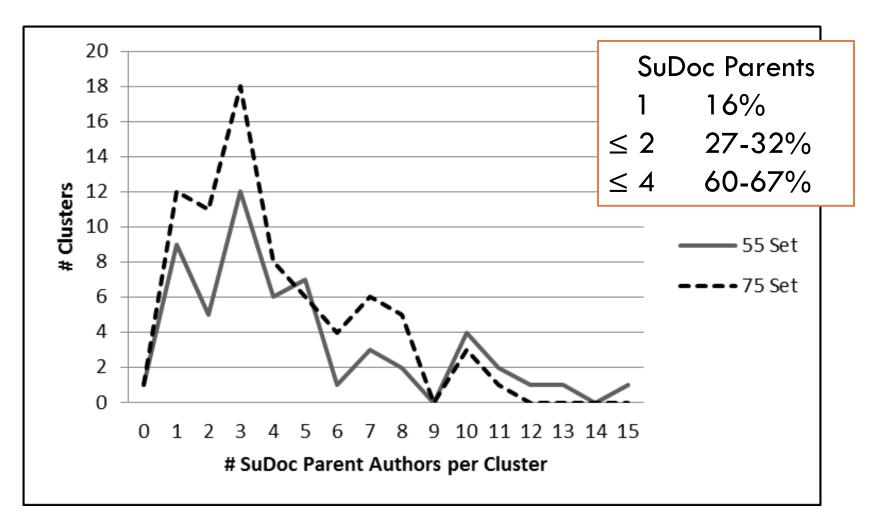
### Clusters 55-24 & 75-31

### **Identical Subdomains**

- fdic.gov
- fdicconnect.gov
- fdicig.gov
- fdicoig.gov
- fdicseguro.gov
- myfdicinsurance.gov
- egrpra.gov



### Findings: SuDoc Classification





### **Topical Evaluation of Clusters**

### Total of 130 clusters tagged (55+75)

- 12 SMEs: Each cluster tagged by 3 SMEs
  - 52 Clusters tagged 3 times
  - 39 Clusters tagged 6 times

Cluster Analysis							
55–Set		75–Set					
39	Identical	39					
16	Unique	36					



# Tag Analysis

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- How topically related are the tags?
- Two researchers independently assigned

"relatedness category" (RC)

- RC 1 = little or no relation
- RC 2 = somewhat related
- **RC 3** = strongly related

### Cluster 55–19

2 Subdomains

- federalregister.govfedreg.gov
- Cluster **SME 40 SME 32 SME 42** 55-19 federal • federal federal regulations regulations regulations **RC 3** administrative • law



# Findings: Topical Evaluation

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**Relatedness Categories (**N = 130**)** 

- **RC** 1 = little or no relation (n = 27; 21%)
- **RC** 2 = somewhat related (n = 24; 18%)
- **RC** 3 = strongly related (*n* = 79; 61%)

Clusters	RC 1	RC 2	RC 3
130	21%	18%	61%
75–Set	21%	17%	61%
55–Set	20%	20%	60%

 Cluster Analysis successfully identified strongly related subject content in the subdomains of 61% of clusters



### Impact of Increasing # of Clusters

Clusters	#	RC 1	RC 2	RC 3
Identical	39	18%	10%	72%
All	13 0	21%	18%	61%
Unique in 75– Set	36	22%	14%	64%
Unique in 55– Set	16	25%	31%	44%

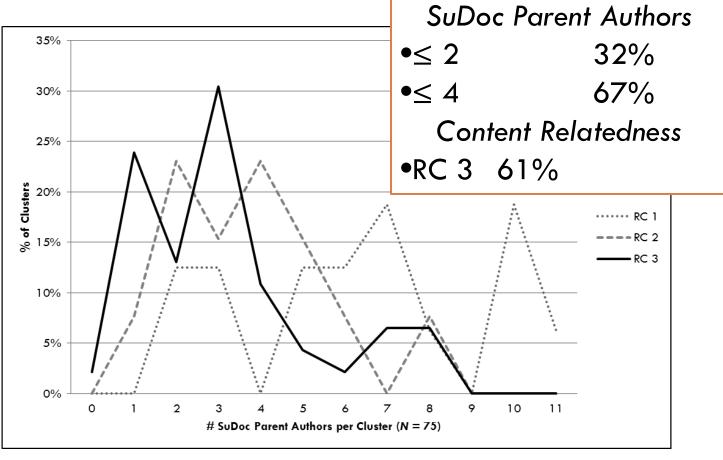
- Identical clusters had the highest percentage of topically related subdomains (72%)
- Unique clusters had a substantially higher percentage of topically related subdomains after subdivision (64% v. 44%)



### Conclusion

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Cluster analysis was reasonably effective at organizing the EOT Archive





### EOTCD Project Accomplishments

- Selection of Materials in Web Archives
  - **PROBLEM**:
    - Absence of descriptive metadata or classification schemes thwarts discovery & access; URL must be known
  - RESULT:
    - Cluster analysis holds promise for organizing Web archives into topically related groupings
    - Involving SMEs in limited-scope classification activities may generate meaningful descriptive metadata for resources in focused Web archives



### What's Next

- Using the Web graph
  - How do we leverage the graph for identifying content?
- Describing the collection
  - How can we engage faculty with our Web archives?
- Identifying change
  - How is the .gov Web changing over time?
- Full-text search
  - What other improvements to Web archive search can be made?



# Building the 2012 Archive

End of Term Presidential Harvest 2012	Other Projects   Help
Project Home About This Project	Add A URL
	Number of URLs Nominated: 0 Number of Nominators: 0
Search by URL	
http:// Search for an existing URL in the system.	submit
Browse URLs	

# Timeframe for 2012 project

### 2012

- Summer 2012: Recruitment of curators/nominators to help identify additional websites for prioritized crawling.
- July/August 2012: Bookend (baseline) crawl of government web domains begins.
- Summer/Fall 2012: Partners will crawl various aspects of government domains at varying frequencies, depending on selection polices/interests. Team will determine strategy for crawling prioritized websites.
- November February 2012–13: Crawl of prioritized websites.

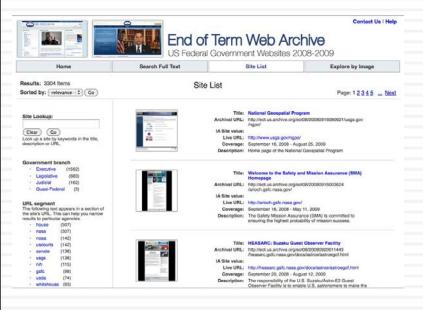
- January 2013: Depending on the outcome of the election, focused crawls will be conducted as needed during this period.
- Spring or Summer 2013: Bookend crawl, plus additional crawl of prioritized websites as determined by team.

### What You Can Do to Help

- Help nominate URLs for 2012:
  - Any nominations welcome, any amount of time you can contribute
  - Need particular help with:
    - Judicial Branch websites
    - Important content or subdomains on very large websites (such as NASA.gov) that might be related to current Presidential policies
    - Government content on non-government domains (.com, .edu, etc.)
  - Nomination Tool:

http://digital2.library.unt.edu/nomination/eth2012/

### Questions?



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http://eotarchive.cdlib.org/