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Creating Metadata for a Digital Database: A Case Study

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ABSTRACT

Digitizing a complex collection that contains a variety of content types creates a great challenge to make the entire contents of the documents fully accessible to meet researchers' needs. The authors provide a case study that describes an innovative approach to create metadata for a complex legislative history digital database with several features: (1) Focus on users' legislative history research needs to select search fields beyond the traditional access points; (2) Innovatively apply the **Dublin Core Metadata Standards** and the concept of *Functional Requirements for Bibliographic Records* (FRBR) to contextually design the database and user interface; (3) Contextually create metadata for legislative documents in order meet complex research needs: locating all the documents of a particular legislative history; finding related documents, or a particular document; searching a particular author/sponsor's information; searching multiple legislative histories. The authors also provide sample metadata records, sample user interface screen with search features. This case study shows that digital technology helps not only to convert information from a variety of source materials to a single accessible (digital) format, but also offers multiple access points to match complex research needs because digital technology can contextually organize information in an active form.

Categories and Subject Descriptors

D.2.2 [Design Tools and Techniques]: *Modules and interfaces, Structured programming, User interfaces*; D.2.10 [Design]: *Methodologies*; D.4.3 [File Systems Management]: *Access methods, Directory structures, File organization*; D.4.7 [Organization and Design]: *Hierarchical design, Interactive systems*; H.3 [Information Storage and Retrieval]: *Indexing method*; H.3.3 [Information Search and Retrieval]: *Query formulation, Retrieval models, Search process, Selection process*; H.3.7 [Digital Libraries]: *Collection, Dissemination, Standards, User issues*; H.5.2 [User Interfaces]: *Screen design, Theory and methods, User-centered design*

Keywords

Digitization, knowledge management, metadata creation, legislative history research, legal research

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INTRODUCTION

Research in legislative history is important in United States public law study, since most legal decisions and rulings are based on interpretations that become precedents. As Robert Berring mentioned in his book *Finding the Law*: "One way of determining what a statute 'really means' is to perform a legislative history [1]." The complicated U. S. legal system, however, has made legislative history research more difficult because such research often encounters a series of steps in a complex legal process. "A traditional legislative history is the gathering together of every relevant document that was part of the process of enacting the statute [2]." "Legislative histories can be very extensive, especially for laws with many titles and sections and on legislative matters that may have been percolating over several congresses in various legislative measures [3]." Thus, a legislative history is a complex compilation of relevant legislative documents that provide the history of a law. What do researchers want to find out in legislative history research? "The belief is that by examining the evidence of what the legislators knew and said at the time it acted, the researcher can discover what they really meant. In the matter of federal legislation, this process leads one through a large number of documents of various types [4]." Even though legislative history research is important but complicated, it seems that there was no efficient reference tool besides the Congressional Index Services.

Generally researchers first have to find the Popular Law Name and Public Law Number, then locate a document list from the *CIS Index*, then find the document based on the citation or the access number. Sometimes, there is no identification such as a "doc number" or CIS number. Researchers often have to devote extended periods of time to find the documents one-by-one through a great number of books, microforms, or databases. Finally, researchers can pull the documents together, but only after this long, sophisticated search process. In addition, the *CIS Index* has limited time coverage, since it covers legislative history from 1970. Annual editions usually lag two years. These constraints increase difficulty for researchers to do legislative history research on older as well as current laws.

Figures 1-2: CIS Index

Public Law 103-412 108 Stat. 4239
American Indian Trust Fund Management Reform Act of 1994

October 25, 1994

Public Law

1.1 Public Law 103-412, approved Oct. 25, 1994. (H.R. 4833) (S. 1044) PL103-412 11 p.

To reform the management of Indian Trust Funds, and for other purposes: Department of Interior responsibilities to Indian trust fund account holders, including accounting and reporting requirements. Specifies procedures for when to withdraw trust funds from BIA management, and requires the Department of Interior to provide technical assistance to tribes regarding trust fund investments. Distribution with the Department of Interior of Federal Lands for American Indians to ensure coordinated efforts by BIA, BLM, and Minerals Management Service relating to the management of Indian trust funds.

P.L. 103-412 Reports

102nd Congress

2.1 H. Rep. 102-499, "Mismanaged Trust: The Bureau of Indian Affairs' Management of the Indian Trust Fund," Apr. 24, 1992. (S. 1044) H. REP. 102-499 11 p.

Report, based on Subcomm. on Environment, Energy, and Natural Resources (1992-4) hearings, extensive problems with BIA management of Indian Trust Funds. "Inspective BIA fund management and accounting deficiencies, etc." (S. 1044) H. REP. 102-499 11 p.

103rd Congress

3 2.2 H. Rep. 103-778 on H.R. 4833, "American Indian Trust Fund Management Reform Act of 1994," Oct. 3, 1994. (S. 1044) H. REP. 103-778 11 p.

Revisions made, with an amendment to the text of a substitute of H.R. 4833, the American Indian Trust Fund Management Reform Act of 1994, to require BIA's compliance on Indian trust funds. Includes provisions for:

3 a. Clarify Department of Interior responsibilities to Indian trust fund account holders, including accounting and reporting requirements. b. Allow tribes to withdraw trust funds from BIA management, require the Department of Interior to establish criteria for approving other investment plans for trust funds, and direct the Department of Interior to provide technical assistance to tribes regarding trust fund investment plans. c. Establish within the Department of Interior an Office of Special Trusts for American Indians to oversee investments related to BIA, BLM, and Minerals Management Service relating to the management of Indian trust funds. H.R. 4833 as revised to H.R. 1444 and S. 929.

P.L. 103-412 Debate

148th Congressional Record

4 102nd Congress, 2nd Session 1994

4.1 Oct. 3, House consideration and passage of H.R. 4833.

5 4.2 Oct. 7, Senate consideration and passage of H.R. 4833.

P.L. 103-412 Hearings

101st Congress

6 3.1 "Review of the Bureau of Indian Affairs' Management of the \$1.7 Billion Indian Trust Fund," hearings before the Subcommittee on Environment, Energy, and Natural Resources, House Government Operations Committee, Oct. 26, 1989. (S. 1044) H. HEARINGS 101-111 11 p.

7 3.2 "Continuing Failure To Adequately Manage the Indian Trust Fund," hearings before the Subcommittee on Environment, Energy, and Natural Resources, House Government Operations Committee, Apr. 24, Sept. 25, 1990. (S. 1044) H. HEARINGS 101-111 11 p.

102nd Congress

8 3.3 "Bureau of Indian Affairs' Management of the \$2 Billion Indian Trust Fund," hearings before the Subcommittee on Environment, Energy, and Natural Resources, House Government Operations Committee, Apr. 24, Sept. 25, 1990. (S. 1044) H. HEARINGS 102-111 11 p.

May 20, 1993. (S. 1044) H. REP. 103-111 11 p.

9 3.4 "Indian Trust Fund Management," hearings before the Senate Select Committee on Indian Affairs, Aug. 12, 1992. (S. 1044) S. HEARINGS 103-111 11 p.

10 3.5 "Native American Trust Fund Accounting and Management Reform Act of 1992," hearings before the Senate Select Committee on Indian Affairs, June 23, 1992. (S. 1044) S. HEARINGS 103-111 11 p.

11 3.6 "BIA Management of Indian Trust Funds, Part 1," hearings before the Subcommittee on Native American Affairs, House Natural Resources Committee, May 11, 1994. (Not available at time of publication.) (S. 1044) H. HEARINGS 103-111 11 p.

12 3.7 "Oklahoma Tribal Concerns," hearings before the Subcommittee on Native American Affairs, House Natural Resources Committee, Jan. 26, 1994. (Not available at time of publication.) (S. 1044) H. HEARINGS 103-111 11 p.

13 3.8 "BIA Management of Indian Trust Funds, Part 2," hearings before the Subcommittee on Native American Affairs, House Natural Resources Committee, Aug. 11, 1994. (Not available at time of publication.) (S. 1044) H. HEARINGS 103-111 11 p.

14 3.9 Hearings on mismanagement of BIA trust fund revenues before the Subcommittee on Environment, Energy, and Natural Resources, House Government Operations Committee, Sept. 26, 1994. (Not available at time of publication.) (S. 1044) H. HEARINGS 103-111 11 p.

108 S.9 Public Law 103-412

No Sudec number, nor CIS fiche number.

GREAT CHALLENGES

Emerging digital technology offers an opportunity to digitize complex legislative history documents in order to make them more accessible. Scanning and converting scanned documents into searchable pdf files initially appeared not to be difficult. However, making legislative documents fully accessible contextually is a great challenge absent a knowledge management tool that could be used directly to organize complex digital legislative documents. A review of "Dublin Core Metadata Standards" revealed that most elements apparently are not useful for describing legislative documents.

The Dublin Core User Guide employs a "one-one principle" which means only a single manifestation or version of a resource can be described. With such a limitation, how can complex relationships in legislative documents be captured in metadata?

Figure 3-4: Dublin Core Basic Elements (from Dublin Core Web site)

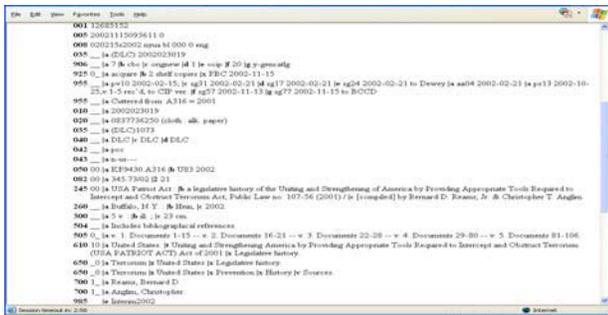
DCMES Element	Element Refinement(s)	Element Encoding Scheme(s)
Title	Alternative	-
Creator	-	-
Subject	-	LCSH MeSH DDC LCC UDC
Description	Table Of Contents Abstract	-
Publisher	-	-
Contributor	-	-
Date	Created Valid Available Issued Modified Date Accepted Date Copyrighted Date Submitted	DCMI_Period W3C-DTF
Type	-	DCMI_Type_Vocabulary
Format	-	IMT
Extent	Extent	-
	Medium	-
Identifier	-	URI
	Bibliographic_Citation	-
Source	-	URI
Language	-	ISO 639-2REC 3066
Relation	Is Version Of Has Version Is Replaced By Replaces Is Required By Requires Is Part Of Has Part Is Referenced By References Is Format Of Has Format Conforms To	URI

Coverage	Spatial	DCMI_Point ISO 3166 DCMI_Box ICM
	Temporal	DCMI_Period W3C-DTF
Rights	Access_Rights	-
	License	URI
Audience	Mediator Education_Level	-
Providence	-	-
Rights_Holder	-	-
Instructional_Method	-	-
Accrual_Method	-	-
Accrual_Periodicity	-	-
Accrual_Policy	-	-

Consulting standard works about bibliographic control such as *Anglo-American Cataloguing Rules (AACR2)*, *OCLC Bibliographic Formats and Standards*, and *Cataloging Legal Literature* also provided no significant help. Again, the treatment of a legislative history (compilation) in these works is simply one book/publication without further descriptive information about contextual relationships within that history.

Figures 5-6: traditional cataloging record for legislative history (from the Online Catalog of Library of Congress).



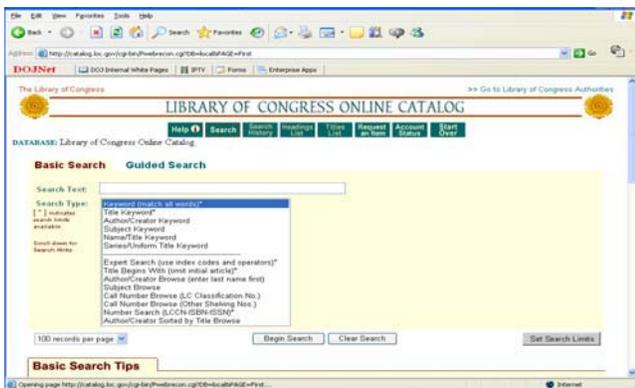


INNOVATIVE DESIGN

Designing a metadata template that suits complex legislative history research requires: (1) Selecting appropriate access points and (2) Contextually structuring and arranging legislative documents.

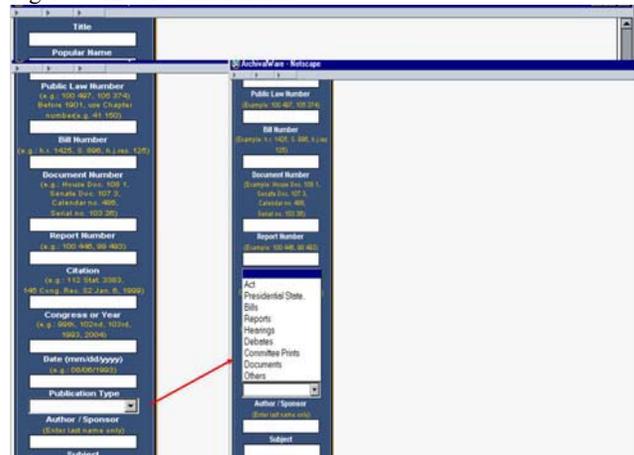
(1) Access points. Traditional access points are not sufficient for research in legislative history.

Figure 7: Traditional access points (from the Online Catalog of Library of Congress.)



Can there be additional and modified search fields which better suit legislative research? Based on the *User Guide: Using Dublin Core*: “Each element is optional and may be repeated,” plus the basic set can be extensible meaning the search fields are modifiable. This flexibility made selection easier. Focusing on legislative history research needs, 12 core elements were selected as search fields: Popular Name, Public Law Number, Title, Author/Sponsor, Bill Number, Report Number, Document Number, Citation, Congress, Date, Publication Type and Subject. Some elements are further subdivided. For example, Publication Type is subdivided by: Act (Public Law), Bill, Report, Debates, Presidential Statements. And usually Bills, Reports, and Hearings are subdivided by House and Senate.

Figure 8: 12 core search fields:

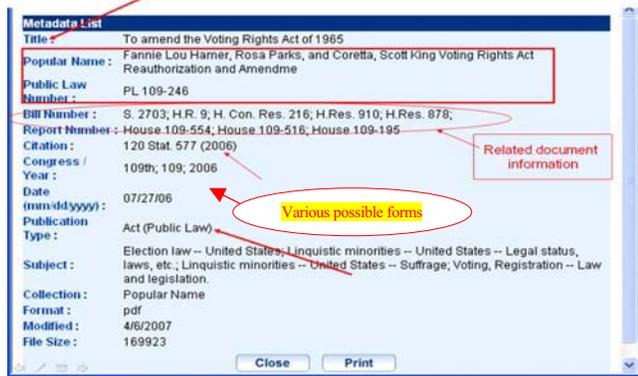
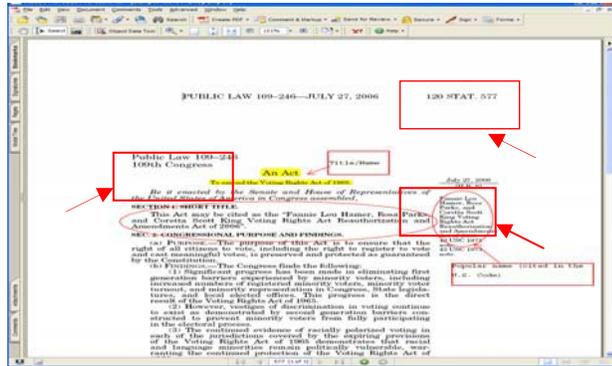


2) Context structure and legislative document arrangement. Necessary for legislative research is finding a contextual legislative history, which “is a more active form of research that will move beyond the normal federal materials. This approach can help one to focus on certain documents, or even parts of documents, making the whole process simpler [5].” A basic research need, evidently, is to find contextual legislative history information in an active form instead of a traditional way.

Are there steps to make Dublin Core’s “The One-to-One Principle [6]” (which in general allows only one description of a manifestation or version of a resource) work to describe the complex relationships among legislative documents? Based on underlying concepts in *The Bibliographic Record and Information Technology*: “Access implies a mechanism for isolating a single record or related group of them from among many others... Both processes involve 1) Selecting one or more useful access points for each document from among its data elements. 2) Structuring and arranging these access points... 3) Linking each access point... 4) Linking related access points with each other [7].” Thus access points identified above could be arranged and linked with each other. But how? Contextual arrangement and linking should be based on relationships according to the concepts of *Functional Requirements for Bibliographic Records (FRBR)*: “In the context of the model, relationships serve as the vehicle for depicting the link between one entity and another, and thus as the means of assisting the user to ‘navigate’ the universe that is represented in a bibliography, catalogue, or bibliographic database. Typically the user will formulate a search query using one or more attributes of the entity for which he or she is searching, and it is through the attribute that the user finds the entity sought. The relationships reflected in the bibliographic record provide additional information that assists the user in making connections between the entity found and other entities that are related to that entity. Relationships may be reflected ... in a number of ways [8].” How can all the legislative history documents be linked together based on their complex relationships? By examining the law-making process and its relationships, one can see the entire law-making process actually is the process of “how a bill becomes law.” The central element is the bill, and many documents are related to it such as hearings, debates, reports, etc. Occasionally, one law may be involved with several bills and their relationships could be more complicated.

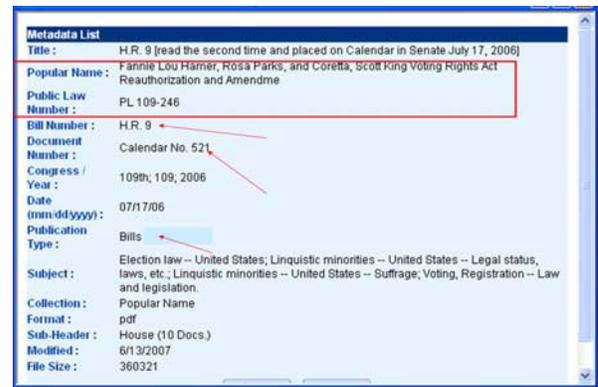
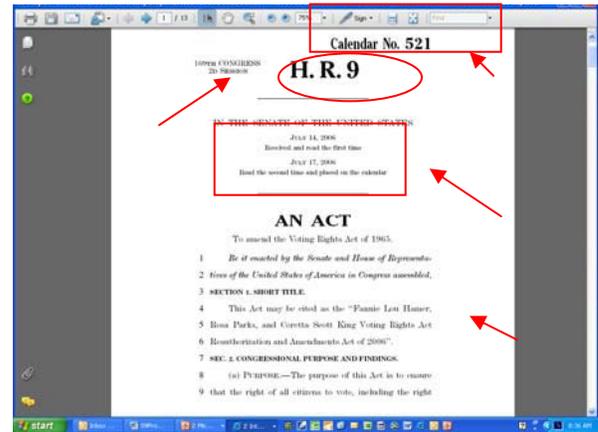
Since all documents of a particular law are part of its legislative history, the popular law name and law number should serve as a single thread that ties every document together.

Once research needs and the relationship among the legislative documents are clarified, metadata creation becomes easier. Each document should be linked with the law being researched and related document(s). Linkage could be complicated, however, due to a complex relationship among the documents. In this situation, analyze the document(s) and select key elements from each document as determined by research needs such as citation, document number, bill number, report number, etc. A few examples follow: Figure 9-10: Act (Public Law).



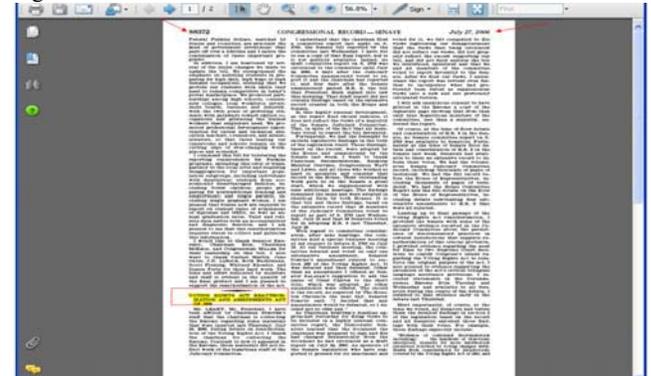
From the metadata, one can see that this document (an act) is linked by Public Law number and Popular Name. But the act also has relationships with several bills and reports thus it can be found while searching the popular name or law number. The act (document) also can be located while searching those related documents or search by citations.

Figures 11-12: Bill.



The bill number is an important key element besides the popular name and law number, since a bill is the object of debates, hearings, reports, etc. Numerous documents could be produced during the process of a bill-becoming-a-law. Here, bill-related documents can be kept together by using the central point-bill number. The date, document number and the publication type help to identify this document.

Figures 13-14: Debates.



Metadata List

Title: Voting Rights Act Reauthorization and Amendments Act of 2006 (Congressional Record 8837, July 27, 2006)

Popular Name: Fannie Lou Hamer, Rosa Parks, and Coretta Scott King Voting Rights Act Reauthorization and Amendments Act of 2006

Public Law Number: PL 109-248

Bill Number: H.R. 9, S. 2703

Citation: 152 Cong. Rec. 8837-73 (2006)

Congress / Year: 109th, 109, (2006)

Date: 07/27/2006

Publication Type: Debates

Author / Sponsor: Mr. Lincoln

Subject: Election law -- United States, Linguistic minorities -- United States -- Legal status, laws, etc., Linguistic minorities -- United States -- Suffrage, Voting, Registration -- Law and legislation.

Collection: Popular Name

Format: pdf

Modified: 3/27/2007

File Size: 140338

Debates are frequently related to a bill or multiple bills. In this instance, the related bill is one key element or linking point between debates and the bill. A sponsor is also an important key element for a bill and debates, because the researchers usually want to find out “who” did “what” at the debates.

Figures 15-16: Hearings.

CONSUMER FRAUD PREVENTION ACT OF 1995

HEARING
BEFORE THE
SUBCOMMITTEE ON CRIME
OF THE
COMMITTEE ON THE JUDICIARY
HOUSE OF REPRESENTATIVES
ONE HUNDRED FOURTEENTH CONGRESS
OR
H.R. 1499
CONSUMER FRAUD PREVENTION ACT OF 1995
APRIL 18, 1996
Serial No. 97

Printed for the use of the Committee on the Judiciary
U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1996

Metadata List

Title: Fannie Lou Hamer, Rosa Parks, and Coretta Scott King Voting Rights Act Reauthorization and Amendments Act of 2006 (part 6), hearing before the Subcommittee on the Constitution of the Committee on the Judiciary, House of Representatives, 109th Congress 2nd Session on H.R. 9 May 4, 2006 (Hearing Transcript)

Popular Name: Fannie Lou Hamer, Rosa Parks, and Coretta, Scott King Voting Rights Act Reauthorization and Amendments Act of 2006

Public Law Number: PL 109-248

Bill Number: H.R. 9

Document Number: Serial No. 109-719

Congress / Year: 109th, 109, 2006

Date: 05/04/2006

Publication Type: Hearings

Author / Sponsor: the Honorable Steven L. Largent, the Honorable Robert C. Scott, the Honorable Melvin L. Watt, the Honorable Sheila Jackson Lee, the Honorable Mike Honda, Ms. Rena Comisar, the Honorable Chris Norby, Ms. Karen Harasaki, Dr. James Thomas Tucker

Subject: Election law -- United States, Linguistic minorities -- United States -- Legal status, laws, etc., Linguistic minorities -- United States -- Suffrage, Voting, Registration -- Law and legislation.

Collection: Popular Name

Format: pdf

Sub-Header: House

Modified: 4/6/2007

File Size: 8751997

Figures 17-18: Reports

109TH CONGRESS | 2d Session | HOUSE OF REPRESENTATIVES | REPORT 109-554

PROVIDING FOR CONSIDERATION OF H.R. 9, FANNIE LOU HAMER, ROSA PARKS, AND CORETTA SCOTT KING VOTING RIGHTS ACT REAUTHORIZATION AND AMENDMENTS ACT OF 2006

JULY 12, 2006.—Referred to the House Calendar and ordered to be printed

Mr. LINCOLN DIAZ-BALART of Florida, from the Committee on Rules, submitted the following

REPORT

(To accompany H. Res. 910)

The Committee on Rules, having had under consideration House Resolution 910, by a record vote of 8 to 2, report the same to the House with the recommendation that the resolution be adopted.

Metadata List

Title: House report 109-554 (to accompany H Res 910, July 12, 2006)

Popular Name: Fannie Lou Hamer, Rosa Parks, and Coretta, Scott King Voting Rights Act Reauthorization and Amendments Act of 2006

Public Law Number: PL 109-248

Bill Number: H Res. 910

Report Number: House 109-554

Congress / Year: 109th, 109, 2006

Date (mm/dd/yyyy): 07/12/06

Publication Type: Reports (H)

Author / Sponsor: Mr. Lincoln Diaz-Balart

Subject: Election law -- United States, Linguistic minorities -- United States -- Legal status, laws, etc., Linguistic minorities -- United States -- Suffrage, Voting, Registration -- Law and legislation.

Collection: Popular Name

Format: pdf

Sub-Header: House (Docs)

Modified: 8/29/2007

File Size: 527721

Figures 19-20: Documents

107th Congress, 1st Session | House Document 107-434

REPORT ON MILITARY ACTIONS TAKEN TO RESPOND TO THE THREAT OF TERRORISM

COMMUNICATION

FROM

THE PRESIDENT OF THE UNITED STATES

TRANSMITTING

A REPORT, CONSISTENT WITH THE WAR POWERS RESOLUTION AND PUBLIC LAW 907-86, TO HELP INSURE THAT THE CONGRESS IS KEPT INFORMED ON MILITARY ACTIONS TAKEN TO RESPOND TO THE THREAT OF TERRORISM

OCTOBER 9, 2001.—Referred to the Committee on International Relations and ordered to be printed

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 2004

Metadata List

Title: House Document 107-131, report on military actions taken in response to the threat of terrorism, communication from the President of the United States

Popular Name: Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT ACT) Act of 2001

Public Law Number: PL 107-56

Congress Year: 107th, 107, 2001

Date (mm/dd/yyyy): 10/25/2001

Publication Type: Documents

Subject: Terrorism - United States - Prevention - History - Sources

Collection: Popular Name

Format: pdf

Sub-Header: House (7 Docs)

Modified: 8/25/2008

File Size: 67334

Figures 21-22: Presidential documents

Oct 26 / Administration of George W. Bush, 2001

Remarks on Signing the USA PATRIOT ACT of 2001
October 26, 2001

Through competition, and across that new, managed care market... The American people deserve a quick and certain response to the terrorist attacks of September 11. I urge the House to pass H.R. 1592 as amended. Let our Administration's leadership in combating terrorism work with the Congress to see that the Nation's national security needs are addressed to the best of our common sense.

Metadata List

Title: Remarks on signing the USA Patriot Act of 2001 Administration of George W. Bush, October 25 2001 p.1550

Popular Name: Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT ACT) Act of 2001

Public Law Number: PL 107-56

Citation: 37 Weekly Comp. Pres. Doc. 150-525 (Oct. 25, 2001)

Congress Year: 107th, 107, 2001

Date (mm/dd/yyyy): 10/25/2001

Publication Type: Presidential Statements

Author/Sponsor: George W. Bush

Subject: Terrorism - United States - Prevention - History - Sources

Collection: Popular Name

Format: pdf

Modified: 4/22/2008

File Size: 54638

A presidential document is usually officially published in the *Weekly Presidential Document*. Using that citation is one of the required elements for metadata.

By examining all these examples above, one can see that the Popular Name and Public Law number are two required fields besides actual title and date for each document as a main thread which ties up all the legislative documents within a law's history. There are also multiple links among the related documents based on their relationship. Each field is repeatable, and allowed various forms.

BENEFITS

This innovative metadata creation makes research more active and efficient, so that researchers can easily find what they need by

a simple search or browse. Here are the major benefits: Locating a particular legislative history; finding related documents or a particular document; searching an author/sponsor's information; searching across multiple histories; conducting a combined (modified) search; modifying search within the result; using multiple ways to find the same information. In addition, all the information can be sorted based on research needs. It can be also used to track bills and to compile a preliminary legislative history on the fly. Please see the following examples:

(1) Locating a particular history (a compilation of legislative documents: a) by search. Figure 23

Search Sample: Search A Particular History

Results 1-25 of 25 for field search

1. H.R. 4833 to reform the management of Indian Trust Funds, and for other purposes
Sponsor: 264K
Popular Name: American Indian Trust Fund Management Reform Act of 1994
Public Law Number: PL 103-412
Date: 10/25/1994
Publication Type: Act
Collection: Popular Name

2. H.R. 4833 Introduced October 4, 1994
Sponsor: 307K
Popular Name: American Indian Trust Fund Management Reform Act of 1994
Public Law Number: PL 103-412
Date: 10/04/1994
Author: Speaker: Bill
Collection: Popular Name
Sub-Header: House

3. H.R. 925 Introduced May 7, 1993
Sponsor: 189K
Popular Name: American Indian Trust Fund Management Reform Act of 1994
Public Law Number: 103-412
Date: 5/7/1993
Publication Type: Bills
Collection: Popular Name
Sub-Header: Senate

4. H.R. 4833 Introduced July 26, 1994
Sponsor: 344K
Popular Name: American Indian Trust Fund Management Reform Act of 1994
Public Law Number: PL 103-412
Date: 07/26/1994
Publication Type: Bills
Collection: Popular Name

b) by browse. Figure 24.

Browse Popular Name 'Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT ACT) Act of 2001'

- Bills (37 Docs.)
- Hearings (47 Docs.)
- Committee Prints (3 Docs.)
- Presidential Statements (1 Doc.)
- Debates (178 Docs.)
- Reports (12 Docs.)
- Documents (7 Docs.)
- Table of contents

(2) Finding related documents. Figure 25.

Bill and related documents

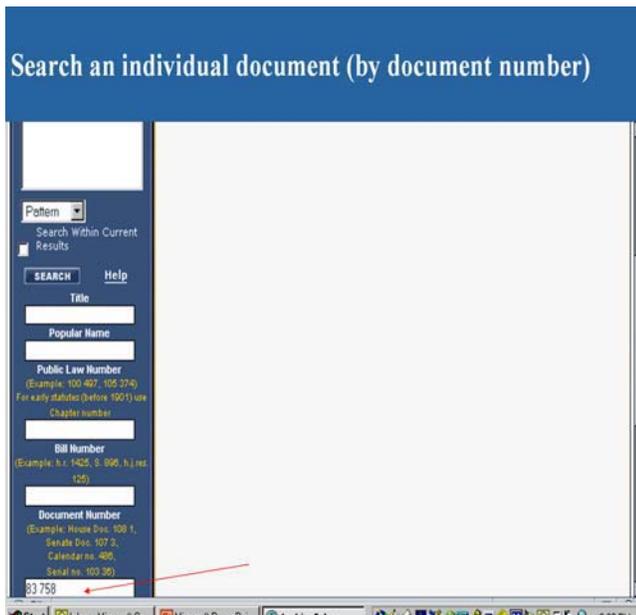
Bill Number	Title	Date	Popular Name	House	Count
3. 67	H.R. 4833 Introduced July 26, 1994	07/26/1994	Popular Name	House	334K
4. 67	Announcement by the speaker [Congressional Record H11434 November 29, 1994]	11/29/1994	Popular Name		201K
5. 67	American Indian Trust Fund Management Reform Act of 1994 [Congressional Record S14677 October 2, 1994]	10/7/1994	Popular Name		85K
6. 67	American Indian Trust Fund Management Reform Act of 1994 [Congressional Record H10483 October 3, 1994]	10/3/1994	Popular Name		836K
7. 67	The Native American Trust Fund Accounting and Management Reform Act of 1993 [Congressional Record E116 April 22, 1993]	4/22/1993	Popular Name		304K
8. 67	RIA Management of Indian Trust Funds, hearings before the Subcommittee on Native American Affairs of the Committee on Natural Resources, House of Representatives, 103rd Congress, 1st Session, on H.R. 1846, H.R. 4833, August 11, 1994	08/11/1994	Popular Name	House	2231K
9. 67	American Indian Trust Fund Management Reform Act of 1994, Mr. Miller of California, from the Committee on Natural Resources, submitted the following report [House report 103-778 II to accompany H.R. 4833]	04/22/1992	Popular Name	House	667K

(3) Search a particular document:

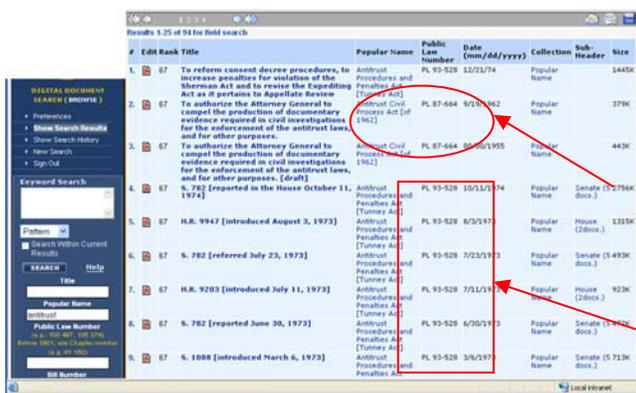
a) by citation. Figure 26.



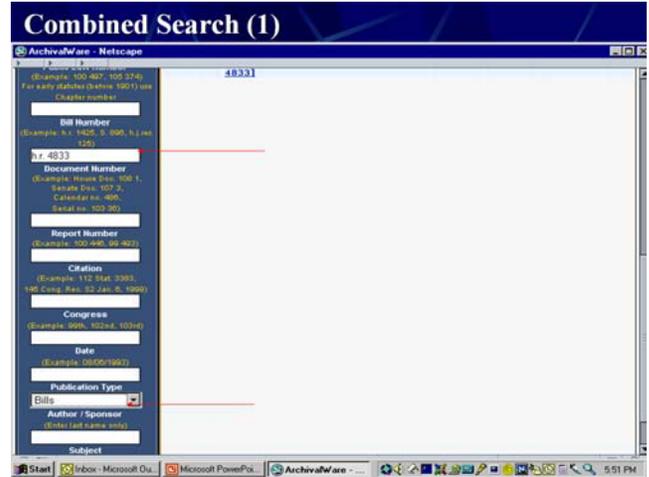
b) by document number. Figure 27.



(4) Search across multiple histories. Figure 28.



(5) Combined (modified) search. Figures 29-30.



The combined/modified search could help narrow the search results.

(6) All the information is in an active form, and it can be dynamically sorted based on a researcher's needs - e.g., chronological order, type of publication, etc.

Figure 30: search result sorted in a chronological order.

73	Miscellaneous References	00/00/00	214K
68	Index	00/00/0000	151K
67	To authorize the Attorney General to compel the production of documentary evidence required in civil investigations for the enforcement of the antitrust laws, and for other purposes. [Draft]	00/00/1955	443K
67	Antitrust administration and enforcement [Report of the Attorney General's Committee to Study the Antitrust Laws. 1955 pp. 343-349]	00/00/1955	500K
68	Department of Justice [For immediate release Friday, July 1, 1955]	7/1/1955	660K
67	H.R. 7309 [introduced July 13, 1955]	7/13/1955	981K
67	S. 3425 [introduced March 12, 1956]	3/12/1956	448K
69	S. 1023 [introduced February 4, 1957]	2/4/1957	201K
67	"Proposed civil investigative demand, a more precise method for antitrust investigation, ... Address by Honorable Victor R. Hansen Assistant Attorney General of the United States in charge of the Antitrust Division, Department of Justice Washington, DC [For release Friday, April 25, 1958 10:50 A.M. (CST)] Competitor [Except from "Second process report by the Cabinet Committee on Small Business" - Dated December 31, 1958 - page 4]	4/25/1958	4324K
70	[Remarks] by Mr. Kaufver [Congressional Record 1171 January 5, 1959	01/05/1959	3782K
67	Production of documentary evidence in certain cases [Congressional Record 1176 January 27, 1959]	1/27/1959	2396K
67	S. 716 [introduced January 27, 1959]	1/27/1959	1575K
67	S. 1003 [introduced February 9, 1959]	2/9/1959	606K
67	H.R. 4792 [introduced February 19, 1959]	2/19/1959	704K
67	Authorization for Department of Justice to make demand for evidence in civil antitrust investigations, hearing before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, United States Senate, 87th Congress 1st Session, pursuant to S. Res. 57 on S. 716 and S. 1003 ... March 3, 1959	3/3/1959	6373K
67	Reports of committees [Congressional Record 12017 June 29, 1959]	6/29/1959	8778K
67	Senate report no. 451 [To accompany S. 716]	6/29/1959	5792K
67	S. 716 [reported June 29, 1959]	6/29/1959	2180K

From this chronological sorting order, “what happened” and “when” can be easily determined.

b) Figure 31: Search result sorted by type of publication first, then date.

Rank	Title	Date (mm/dd/yyyy)	Publication Type	Size
67	To authorize the Attorney General to compel the production of documentary evidence required in civil investigations for the enforcement of the antitrust laws, and for other purposes. [draft]	09/05/1955	Act (Public Law 2 docs.)	443K
67	To authorize the Attorney General to compel the production of documentary evidence required in civil investigations for the enforcement of the antitrust laws, and for other purposes. H.R. 7205 [Introduced July 13, 1955]	9/19/1962	Act (Public Law 2 docs.)	379K
67	S. 3425 [Introduced March 12, 1956]	7/13/1955	Bills (14 docs.)	943K
69	S. 1023 [Introduced February 4, 1952]	3/12/1956	Bills (14 docs.)	448K
67	S. 716 [Introduced January 27, 1959]	2/4/1957	Bills (14 docs.)	203K
67	S. 1003 [Introduced February 9, 1959]	1/27/1959	Bills (14 docs.)	1575K
67	H.R. 4792 [Introduced February 19, 1959]	2/9/1959	Bills (14 docs.)	606K
67	S. 716 [reported June 29, 1959]	2/19/1959	Bills (14 docs.)	704K
67	S. 716 [referred July 30, 1955]	6/29/1959	Bills (14 docs.)	1800K
67	S. 167 [Introduced in the Senate January 5, 1961]	7/30/1959	Bills (14 docs.)	609K
67	H.R. 6089 [Introduced in the House April 27, 1961]	1/6/1961	Bills (14 docs.)	1956K
67	S. 167 [reported in the Senate September 20, 1961]	4/17/1961	Bills (14 docs.)	1435K
67	S. 167 [referred to the House September 22, 1961]	09/20/1961	Bills (14 docs.)	639K
67	S. 167 [reported in the House February 26, 1962]	9/22/1961	Bills (14 docs.)	1613K
69	H. Res. 558 [reported in the House March 8, 1962]	2/26/1962	Bills (14 docs.)	1241K
67	[Remarks] by Mr. Kefauver [Congressional Record 1171 January 5, 1959]	3/8/1962	Bills (14 docs.)	716K
67	Production of documentary evidence in certain cases [Congressional Record 1176 January 27, 1959]	01/05/1959	Debates (29 docs.)	3782K
67	Reports of committees [Congressional Record 12017 June 29, 1959]	1/27/1959	Debates (29 docs.)	2396K
67	Production of documentary evidence in certain cases - printing of individual views as part 2 of Senate Report 451 [Congressional Record 11432 July 2, 1959]	6/29/1959	Debates (29 docs.)	8776K
67	Bills passed over [Congressional Record 12668 July 6, 1959]	7/2/1959	Debates (29 docs.)	4770K
67	Production of documentary evidence in certain cases - printing of	7/6/1959	Debates (29 docs.)	4041K
67	Production of documentary evidence in certain cases - printing of	7/9/1959	Debates (29 docs.)	4762K

The examples above demonstrate this innovation can contextually organize legislative documents in an active form enabling researchers to find out “When?” “Who?” did “What?” during the legislative process.

(7) Metadata can also be created on the fly for current legislative documents. The same methods can be used to meta-tag current legislative documents for current bill tracking and compiling a preliminary legislative history, since digital documents are easy to add to the database.

CONCLUSION

This case study reveals the benefit of creating metadata for an innovative legislative history digital database that makes legislative documents fully searchable in an active form to satisfy complex legislative history research in addition to preserving the documents. The success of this innovation actually results from fully understanding legislative history research needs, creatively applying Dublin Core Standards, the basic theory of bibliographic control, and the concept of FRBR. Digital technology in this application demonstrates that it can be used innovatively to

provide access to many sources and to fully meet complex research needs.

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