

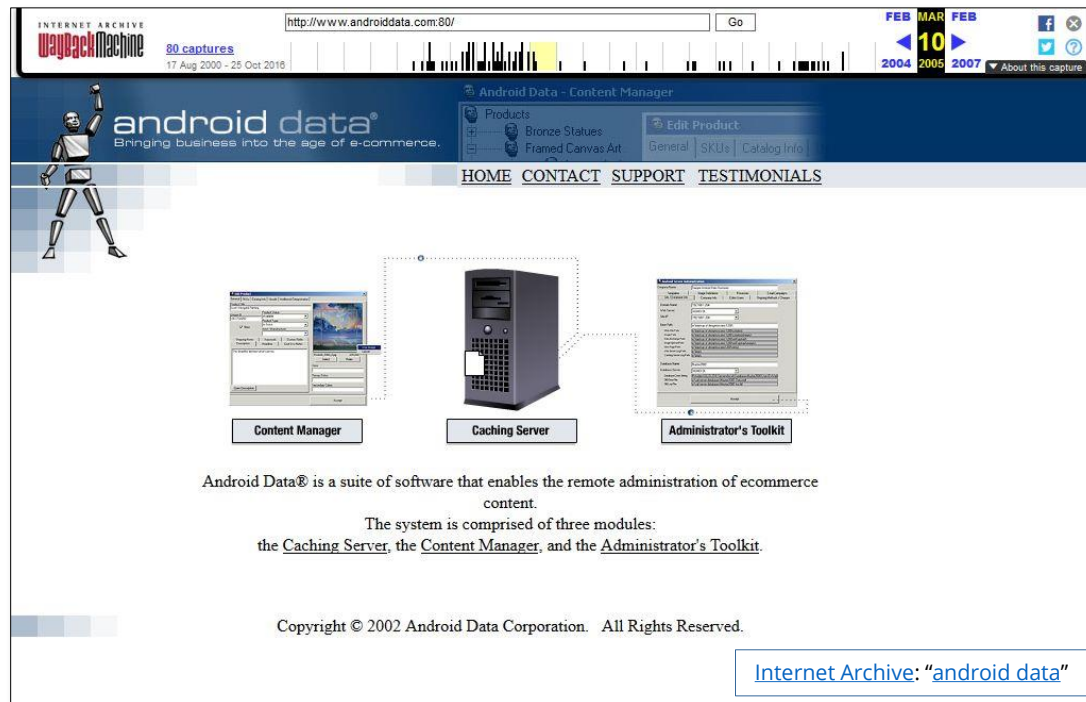


# TECHSHOW2023

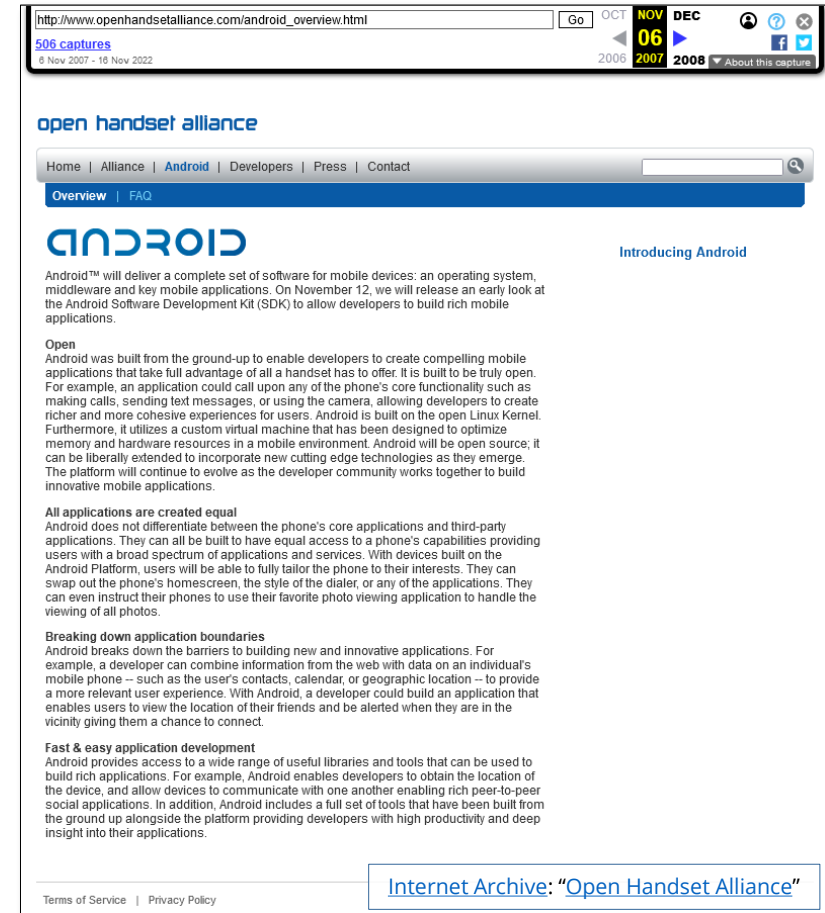
## **Evidentiary Use of the Temporal Web**

Presented by: Nicholas Taylor and Joe Dugan

# Specht v. Google, Inc. (2010)



[Specht v. Google, Inc., 758 F. Supp. 2d 570 \(N.D. Ill. Dec. 17, 2010\)](#)







**the web exists in space...**

"Tiles" by [Ole Husby](#) under [CC BY-SA 2.0](#)





**...it also exists in time**

"Irregular paving" by [Stephen Edmonds](#) under [CC BY-SA 2.0](#)



# two contemporary(?) websites



[The New York Times](https://www.nytimes.com)

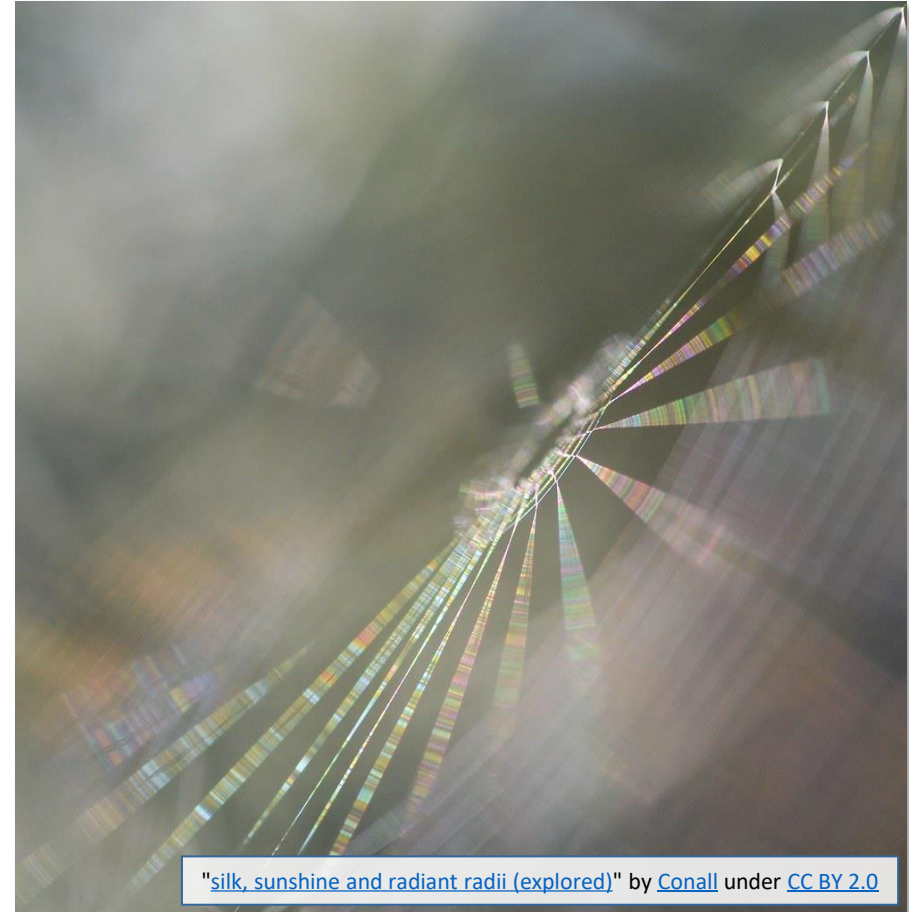
# why do the temporal attributes of web content matter?

- cases may turn on when specific information was publicly available and/or discoverable on the web
  - when first published
  - when updated
  - when absent
- examples:
  - patent disclosures
  - use of marks or copyrighted materials
  - terms of service
  - advertised claims regarding products or services
  - business relationships



# why not just rely on client's own records?

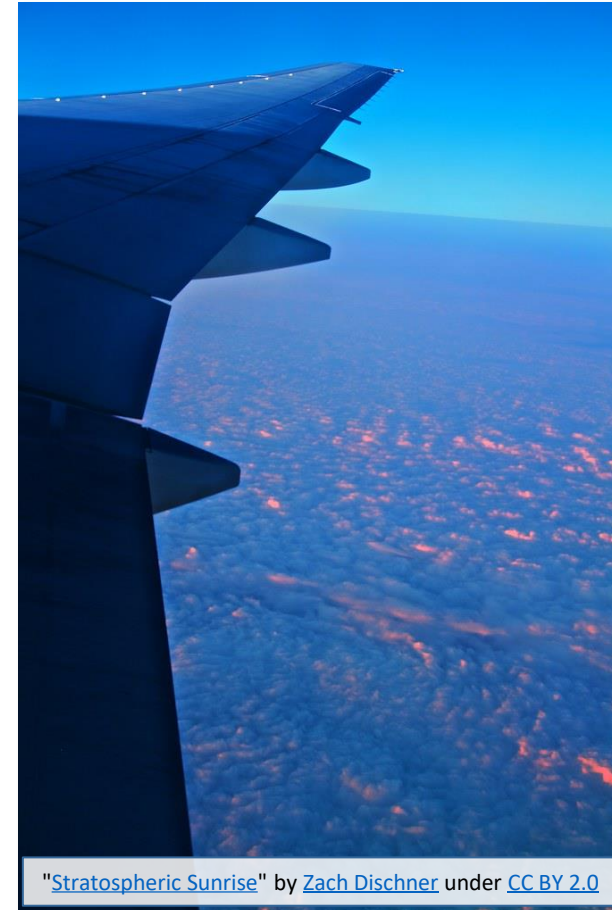
- unsystematic and/or incomplete recordkeeping
- savvy opposing counsel may check open sources for counter-indicative evidence
- material info disseminated via third party platforms
- some questions (e.g., discoverability) can't be definitively settled w/ client records alone



"silk, sunshine and radiant radii (explored)" by [Conall](#) under [CC BY 2.0](#)

# overview

- Internet Archive Wayback Machine (IAWM)
  - background
  - interface + features
  - authentication
  - temporal coherence
- web timestamping
  - via IAWM
  - via Google
  - via Twitter





# Nicholas' background

- expert witness w/ IAWM focus
- M.L.S., UMD / M.A., Comm., Culture, & Tech., Georgetown
- Google, Sun, SCOTUS, Library of Congress, Stanford, LANL
- 16+ years in research libraries + tech firms
- 9+ years in web archiving
- presentations, peer review, grants, media contributor
- website: [nullhandle.org](http://nullhandle.org)



# Joe's background

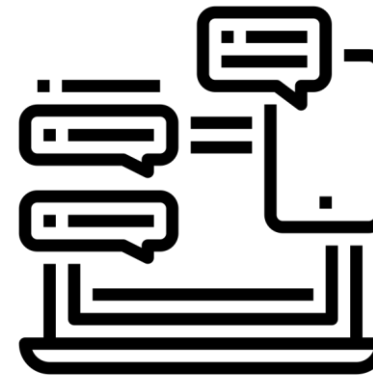
- J.D., 2015, Indiana University Maurer School of Law
- commercial litigation attorney at Gallagher Evelius & Jones in Baltimore
- previously worked as a trial attorney for DOJ, Civil Division
- clerked on U.S. District Court and U.S. Court of Appeals
- serves as his firm's unofficial go-to lawyer for ediscovery problem solving
- very recent experience navigating Slack ESI collection in the context of a discovery dispute





# “Document Retention, Litigation Holds, and Ediscovery Best Practices with Emerging Communication Technologies”

- our 2<sup>nd</sup> session, Friday at 3:15p
- ediscovery ramifications of emerging communication tech – e.g., Zoom, Microsoft Teams, Google Drive, etc.
- topics: risk mitigation, client counseling strategies, benefits + drawbacks of DIY collection, primer on data exporting
- check out slides + CLE materials



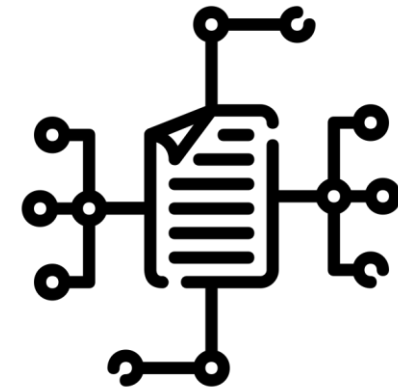
Created by Nhor  
from Noun Project



Created by Start Up Graphic Design  
from Noun Project



Created by DailyYouth  
from Noun Project



Created by HAMEL KHALED  
from Noun Project

A topographic map is spread out on a wooden surface. A compass with a yellow cord and a clear plastic ruler are placed on the map. The map shows various geographical features like mountains, rivers, and roads. The text "IAWM background" is overlaid on the map in a large, bold, black font.

# IAWM background

"Irregular paving" by Stephen Edmonds under [CC BY-SA 2.0](#)



# Internet Archive

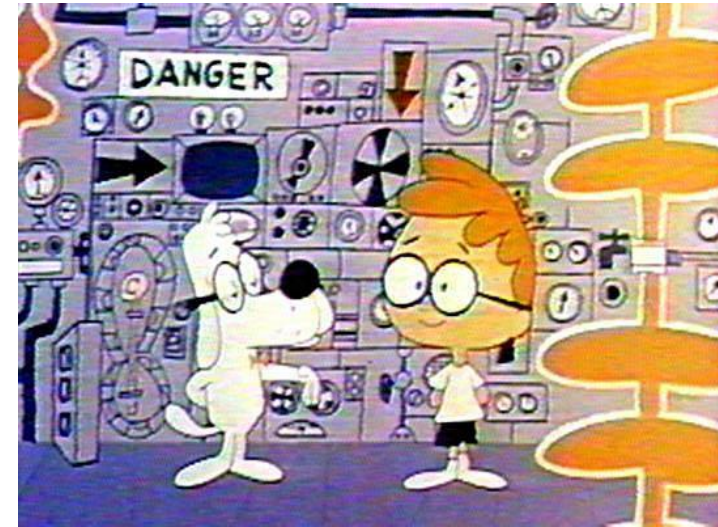
- non-profit digital library
- “universal access to all knowledge”
- provides free public access to collections of all types of digital materials



# IAWM

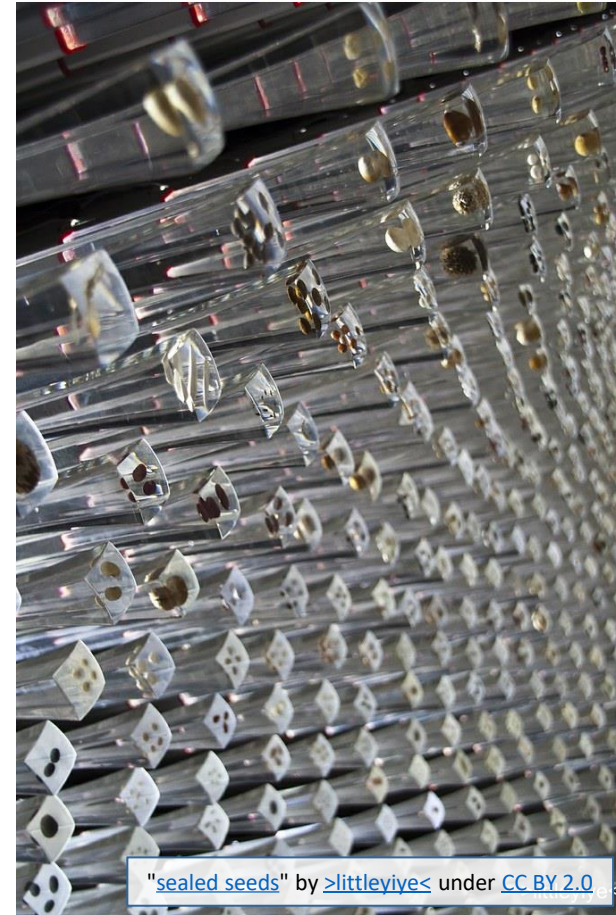
- free, open archive of websites  
1996 – present
- web content is both culturally  
significant + ephemeral
- IAWM referenced in:
  - [a 2002 patent application](#)
  - [a 2003 PTAB proceeding](#)
  - [a 2004 U.S. federal court case](#)

INTERNET ARCHIVE  
**WayBackMachine**



# IAWM archival coverage

- “best effort” archive
- popular + more recent content is better archived
- content of interest to cultural heritage orgs is increasingly better archived
- social media less well archived
- non-public web content not archived









A hand-drawn sketch of a user interface layout on a piece of paper. The sketch shows a rectangular frame containing several horizontal lines, suggesting a list or a table. There are also some smaller rectangular boxes and lines around the main frame, indicating different sections or components of the interface. The drawing is done in black ink on a light-colored paper.


# **IAWM interface + operation**

"Irregular paving" by [Stephen Edmonds](#) under [CC BY-SA 2.0](#)

# IAWM home

SIGN UP | LOG IN  UPLOAD









ABOUTBLOGPROJECTSHELPDONATE  CONTACTJOBSVOLUNTEERPEOPLE


INTERNET ARCHIVE  
**WaybackMachine**


Explore more than 602 billion [web pages](#) saved over time


[BROWSE HISTORY](#)

Find the Wayback Machine useful? [DONATE](#)



 **Tools**  
[Wayback Machine Availability API](#)  
Build your own tools.  
[WordPress Broken Link Checker](#)  
Banish broken links from your blog.  
[404 Handler for Webmasters](#)  
Help users get where they were going.

 **Subscription Service**  
Archive-It enables you to capture, manage and search collections of digital content without any technical expertise or hosting facilities. [Visit Archive-It to build and browse the collections.](#)

 **Save Page Now**

[SAVE PAGE](#)

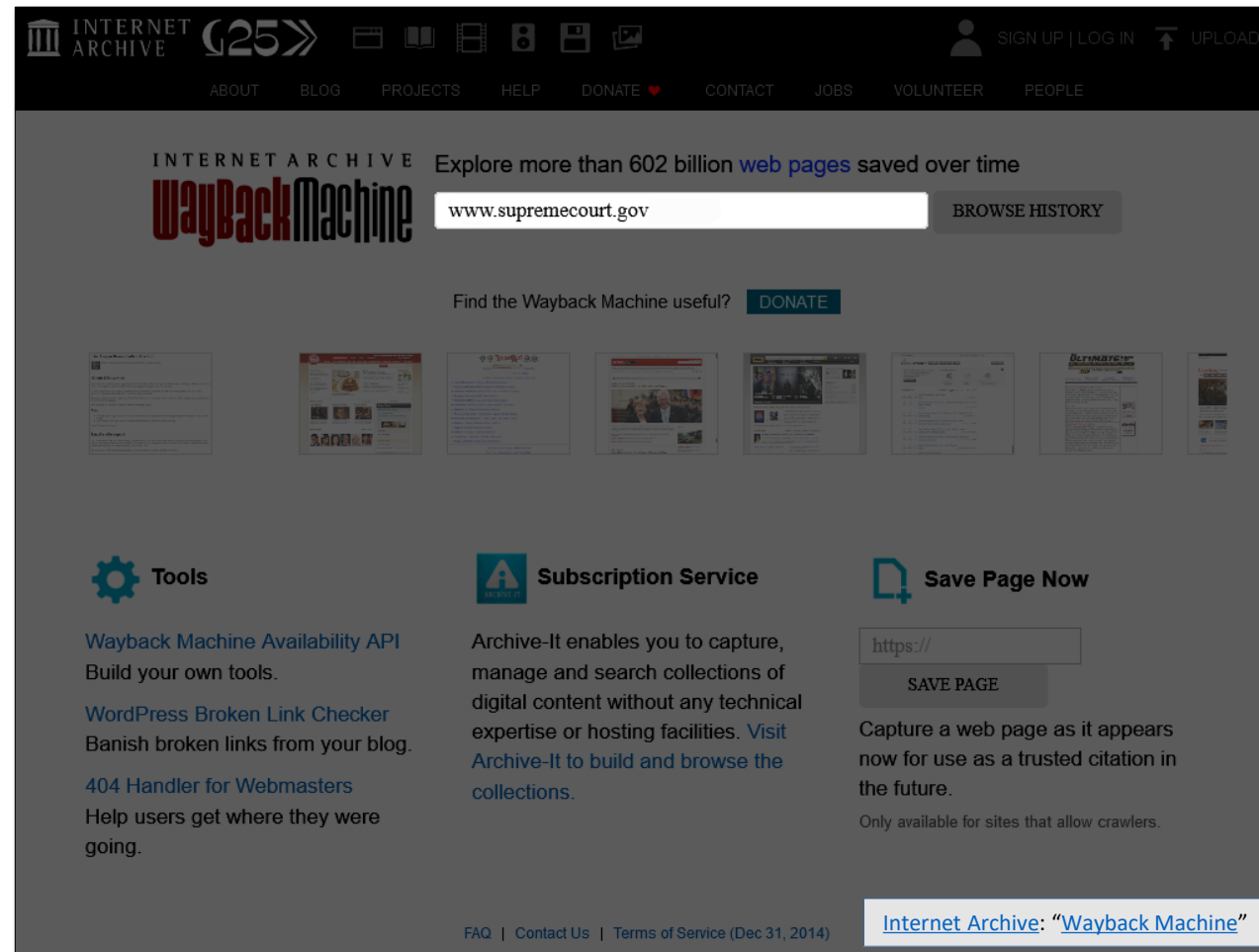
Capture a web page as it appears now for use as a trusted citation in the future.

Only available for sites that allow crawlers.

[FAQ](#) | [Contact Us](#) | [Terms of Service \(Dec 31, 2014\)](#)

[Internet Archive: "Wayback Machine"](#)

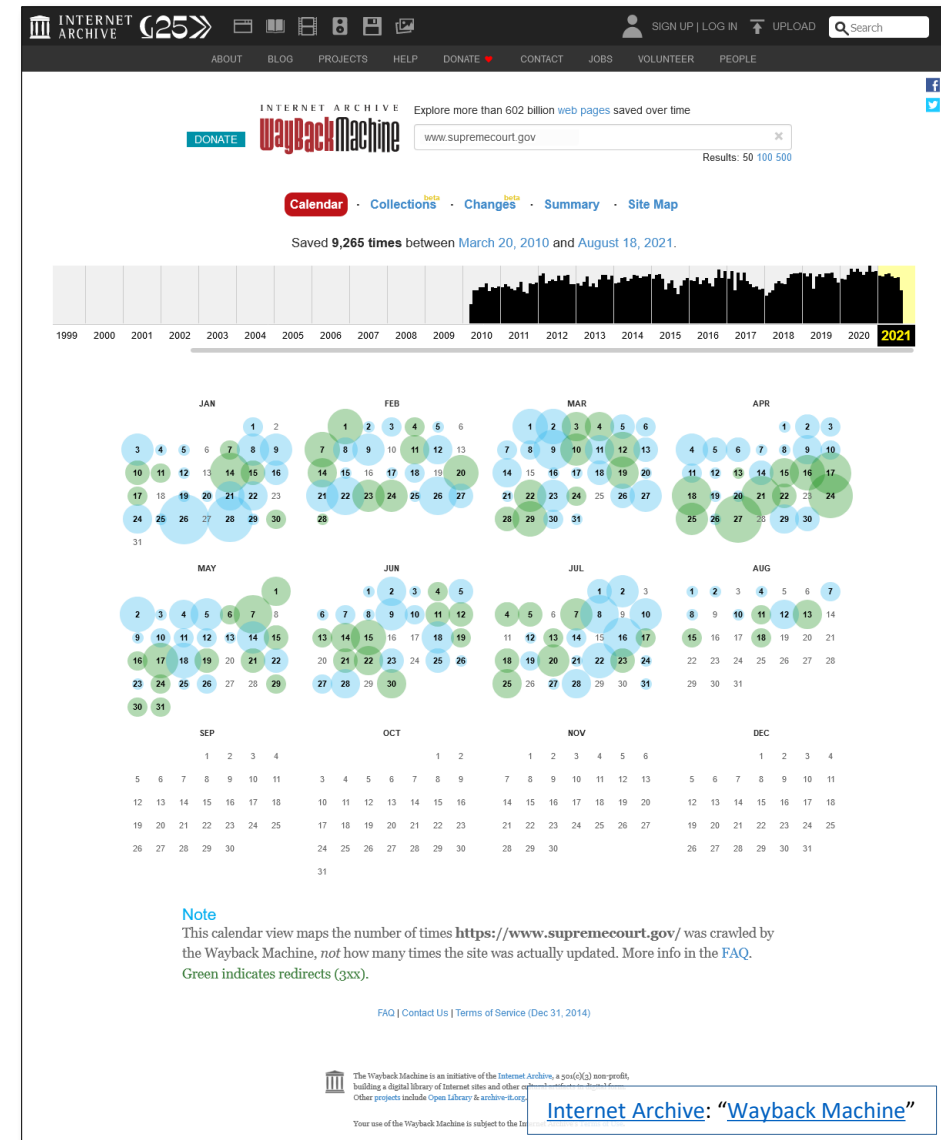
# IAWM home: search box





# IAWM calendar page

- landing page presents archival coverage for specified web address for year selected in timeline
- bubble size indicates relative number of captures for that date
- bubble color indicates status code provided by the web server to the IA archiving agent
  - blue means [a successful retrieval](#), with no errors
  - green means [a redirect was encountered](#)



# IWM calendar page: captures by year

- click to another year in the timeline to change the calendar view below
- let's click to 2011

The screenshot shows the Internet Archive Wayback Machine interface. At the top, the Internet Archive logo and "25" anniversary banner are visible. The search bar contains the URL "www.supremecourt.gov" and shows "Results: 50 100 500". Below the search bar, there are links for "Calendar", "Collections", "Changes", "Summary", and "Site Map". A timeline bar shows years from 1999 to 2021, with 2011 highlighted. Below the timeline, a calendar grid displays the number of captures for each day of the year. The calendar is organized by month (JAN to DEC). The number of captures is represented by the size of the circles, with green indicating redirects. A note at the bottom explains that the calendar view maps the number of times the URL was crawled by the Wayback Machine, not how many times the site was actually updated. More info is in the FAQ. Green indicates redirects (3xx). At the bottom right, there is a link to "Internet Archive: 'Wayback Machine'" and a footer with the Internet Archive logo and a note about its non-profit status.

INTERNET ARCHIVE 25

ABOUT BLOG PROJECTS HELP DONATE CONTACT JOBS VOLUNTEER PEOPLE

INTERNET ARCHIVE Explore more than 602 billion web pages saved over time

DONATE Wayback Machine www.supremecourt.gov Results: 50 100 500

Calendar Collections Changes Summary Site Map

Saved 9,265 times between March 20, 2010 and August 18, 2021.

1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Note

This calendar view maps the number of times <https://www.supremecourt.gov/> was crawled by the Wayback Machine, not how many times the site was actually updated. More info in the [FAQ](#). Green indicates redirects (3xx).

FAQ | Contact Us | Terms of Service (Dec 31, 2014)

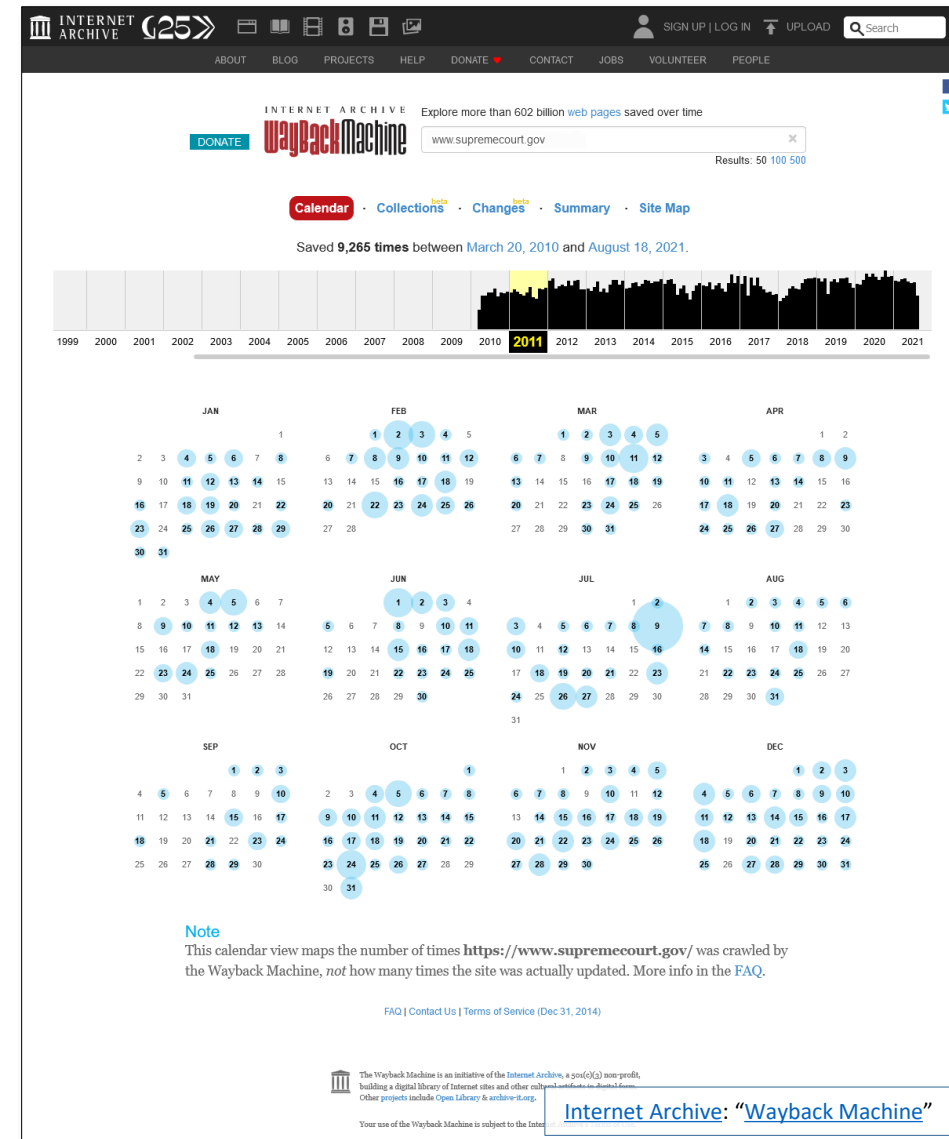
The Wayback Machine is an initiative of the Internet Archive, a 501(c)(3) non-profit building a digital library of Internet sites and other cultural heritage in digital form. Other projects include Open Library & archive-it.org.

Your use of the Wayback Machine is subject to the [Terms of Service](#).

Internet Archive: "Wayback Machine"

# IAWM calendar page

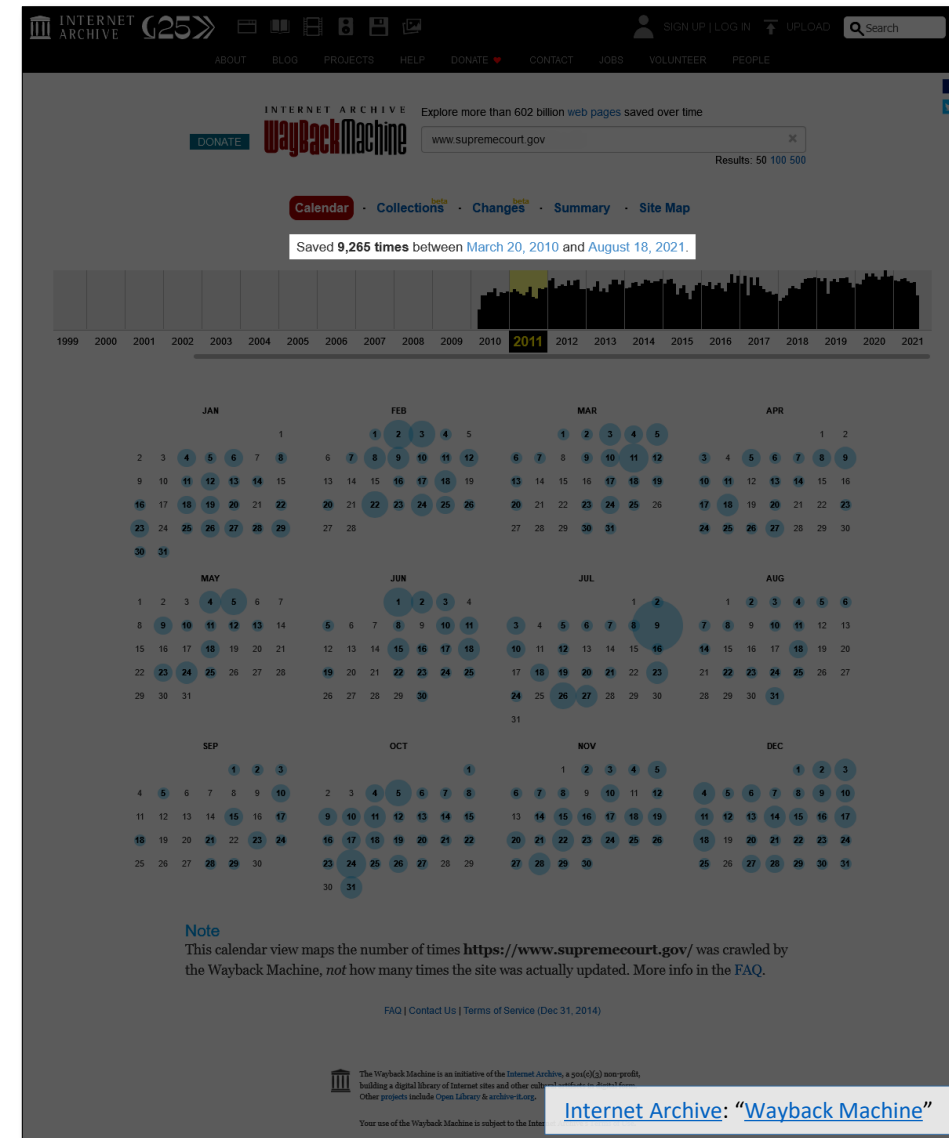
- note that there are fewer captures in 2011, as indicated by:
  - shorter bars on the timeline histogram
  - generally smaller bubbles than in 2021
- general trend is that websites are better archived over time
- let's take a closer look at some of the other interface elements





# IWM calendar page: captures range

- number of captures for the specified web address + their date range is displayed at the top
- links are provided to the first + last captures in the date range



# IAWM calendar page: timeline histogram

- the timeline histogram provides a visual summary of the relative number of captures over time
- each year segment has 12 columns – one for each month
- the year displayed in detail below is highlighted in yellow in the timeline



# IWM calendar page: calendar

- archival coverage for every day of the year selected in the timeline
- this is the 2011 calendar

The screenshot shows the Internet Archive Wayback Machine interface. At the top, the navigation bar includes links for ABOUT, BLOG, PROJECTS, HELP, DONATE, CONTACT, JOBS, VOLUNTEER, and PEOPLE. The main header features the Internet Archive logo and the text "Explore more than 602 billion web pages saved over time". Below this, a search bar contains the URL "www.supremecourt.gov" and shows "Results: 50 100 500". The "Calendar" tab is selected, displaying a timeline from 1999 to 2021. The year 2011 is highlighted, and a calendar grid for 2011 is shown below. The calendar grid displays the number of times the website was crawled by the Wayback Machine for each day of the year. A "Note" section explains that the calendar view maps the number of times the website was crawled, not how many times the site was actually updated. The footer includes the Internet Archive logo and a link to the "Wayback Machine" page.

INTERNET ARCHIVE 25

ABOUT BLOG PROJECTS HELP DONATE CONTACT JOBS VOLUNTEER PEOPLE

INTERNET ARCHIVE Explore more than 602 billion web pages saved over time

DONATE waybackmachine

www.supremecourt.gov Results: 50 100 500

Calendar Collections Changes Summary Site Map

Saved 9,265 times between March 20, 2010 and August 18, 2021.

1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Note  
This calendar view maps the number of times <https://www.supremecourt.gov/> was crawled by the Wayback Machine, not how many times the site was actually updated. More info in the [FAQ](#).

FAQ | Contact Us | Terms of Service (Dec 31, 2014)

The Wayback Machine is an initiative of the Internet Archive, a 501(c)(3) non-profit, building a digital library of Internet sites and other cultural heritage in digital form. Other projects include Open Library & Archive-It.org.

Your use of the Wayback Machine is subject to the [Terms of Service](#)

Internet Archive: "Wayback Machine"



# IAWM calendar page: 23 March 2011 capture

- hovering over a date for which there is at least one capture presents the number of captures + capture time(s)
- clicking on a capture time takes you to the re-representation of the resource captured on that date at that time
- let's click through

The screenshot shows the Internet Archive Wayback Machine interface. At the top, the navigation bar includes links for ABOUT, BLOG, PROJECTS, HELP, DONATE, CONTACT, JOBS, VOLUNTEER, and PEOPLE. The main header displays the Internet Archive logo and the text "Explore more than 602 billion web pages saved over time". Below this, a search bar contains the URL "www.supremecourt.gov" and shows "Results: 50 100 500". The "Calendar" tab is selected, showing a bar chart of captures from 1999 to 2021. A tooltip for March 23, 2011, indicates "1 snapshot" at "01:38:42". The calendar grid shows the number of captures for each day of the month. A note at the bottom explains that the calendar maps the number of times the URL was crawled, not the number of updates. The footer includes the Internet Archive logo and a link to the "Wayback Machine".

Internet Archive 25

ABOUT BLOG PROJECTS HELP DONATE CONTACT JOBS VOLUNTEER PEOPLE

Internet Archive Explore more than 602 billion web pages saved over time

DONATE waybackmachine

www.supremecourt.gov Results: 50 100 500

Calendar Collections Changes Summary Site Map

Saved 9,265 times between March 20, 2010 and August 18, 2021.

1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

MARCH 23, 2011  
1 snapshot  
• 01:38:42

Note  
This calendar view maps the number of times <https://www.supremecourt.gov/> was crawled by the Wayback Machine, not how many times the site was actually updated. More info in the [FAQ](#).

FAQ | Contact Us | Terms of Service (Dec 31, 2014)

The Wayback Machine is an initiative of the Internet Archive, a 501(c)(3) non-profit, building a digital library of Internet sites and other cultural heritage in digital form. Other projects include Open Library & archive-it.org.

Your use of the Wayback Machine is subject to the Internet Archive Terms of Use.

Internet Archive: "Wayback Machine"

# IAWM resource page

- IAWM resource page for [www.supremecourt.gov](https://www.supremecourt.gov) for the 23 March 2011 capture
- note that archived webpages have a top-justified IAWM overlay banner to:
  - remind the user they're within the IAWM context
  - facilitate navigation
  - provide additional info about the current capture + other captures of the resource located at the same web address
- let's look at the IAWM banner

The screenshot shows the Supreme Court of the United States website. At the top, there is a Wayback Machine banner indicating the page was captured on March 23, 2011. The website header includes the Supreme Court logo and the text "SUPREME COURT OF THE UNITED STATES". A search bar is located in the top right corner. The main content area is divided into three columns. The left column contains a "Supreme Court Documents" menu with links to Docket, Oral Arguments, Merits Briefs, Bar Admissions, Court Rules, Case Handling Guides, Opinions, and Orders and Journals. Below this is a "Supreme Court Information" menu with links to About the Supreme Court, Visiting the Court, Public Information, Jobs, and Links. The middle column features a large empty box, a calendar for March 2011, and a list of cases for argument on 3/22/2011. The right column contains a "Recent Decisions" list with links to various cases, including Matrixx Initiatives, Inc. v. Siracusano, Kasten v. Saint-Gobain Performance Plastics Corp., and others. A "What's New" section is located at the bottom of the middle column. The footer contains links to Home, Help, Site Map, Contact Us, About Us, FAQ, Website Policies and Notices, Privacy Policy, and USA.GOV.

Internet Archive Wayback Machine  
https://www.supremecourt.gov/  
9,265 captures  
20 Mar 2010 - 18 Aug 2021  
FEB MAR APR  
23  
2010 2011 2012  
Search: All Documents Docket Files  
For Search Term: Search Help  
Printer-Friendly Version

Supreme Court Documents  
Docket  
Oral Arguments  
Merits Briefs  
Bar Admissions  
Court Rules  
Case Handling Guides  
Opinions  
Orders and Journals

Supreme Court Information  
About the Supreme Court  
Visiting the Court  
Public Information  
Jobs  
Links

Supreme Court of the United States

March 2011

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Argument Days  
Non-argument Days  
Conference Days  
Holiday

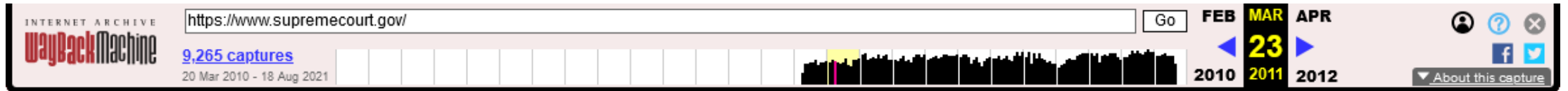
List of cases for argument on 3/22/2011  
Duryea, PA, et al. v. Guarnieri, Charles J. (09-1476)  
Fox, Ricky D. v. Vice, Billy R., et al. (10-114)

Recent Decisions  
3/22/11 - Matrixx Initiatives, Inc. v. Siracusano  
3/22/11 - Kasten v. Saint-Gobain Performance Plastics Corp.  
3/21/11 - Felkner v. Jackson  
3/07/11 - Milner v. Department of Navy  
3/07/11 - Wall v. Kholi  
3/07/11 - Skinner v. Switzer  
3/02/11 - Pepper v. United States  
3/02/11 - Snyder v. Phelps  
3/01/11 - Henderson v. Shinseki  
3/01/11 - Staub v. Proctor Hospital  
More..

What's New

March 22, 2011 | Version 2009.0  
Home | Help | Site Map | Contact Us | About Us | FAQ | Website Policies and Notices | Privacy Policy | USA.GOV  
Supreme Court of the United States  
Internet Archive: "Supreme Court of the United States"

# IAWM banner




- IAWM overlay banner for the resource page for the 23 March 2011 capture of [www.supremecourt.gov](https://www.supremecourt.gov/)
- offers many of the same features as the calendar page: search box, captures range, timeline histogram

# IAWM banner: temporal navigation



- yellow highlighted date is the capture date of the currently accessed web resource
- to the left and right are temporal navigation links for different intervals – from top to bottom:
  - one month ago / one month ahead
  - last preceding capture / next successive capture
  - one year ago / one year ahead
- for less-frequently captured web resources, intervals may be longer than a month or year

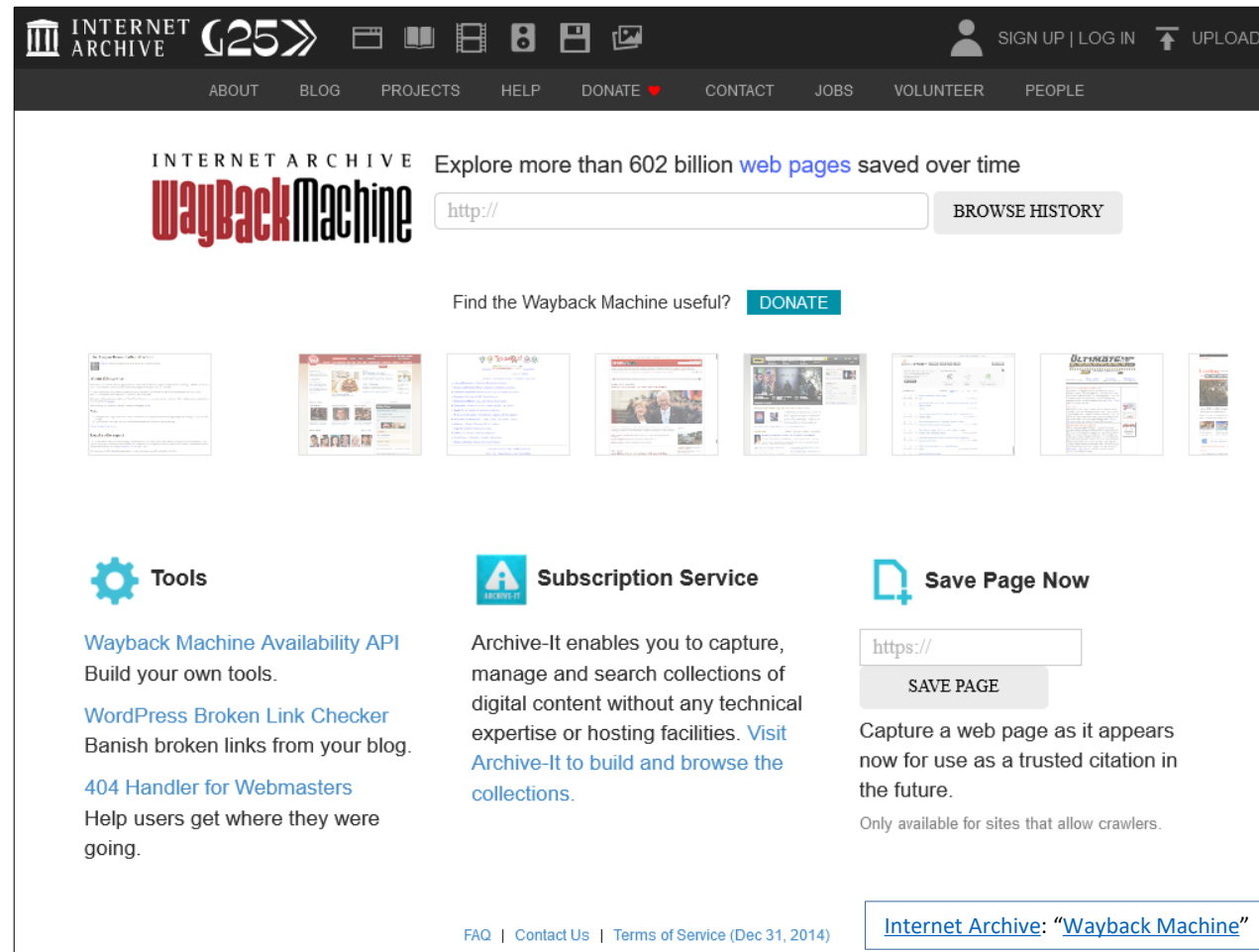




# Full-Text Search (of Home Pages)

"Typeset" by [Paul Hudson](#) under [CC BY 2.0](#)

# full-text search (of home pages)



The screenshot shows the Internet Archive Wayback Machine homepage. At the top is a dark navigation bar with the Internet Archive logo, a '25' anniversary badge, and icons for various media types. To the right are links for 'SIGN UP | LOG IN' and an 'UPLOAD' button. Below this is a secondary navigation bar with links: ABOUT, BLOG, PROJECTS, HELP, DONATE (with a heart icon), CONTACT, JOBS, VOLUNTEER, and PEOPLE.

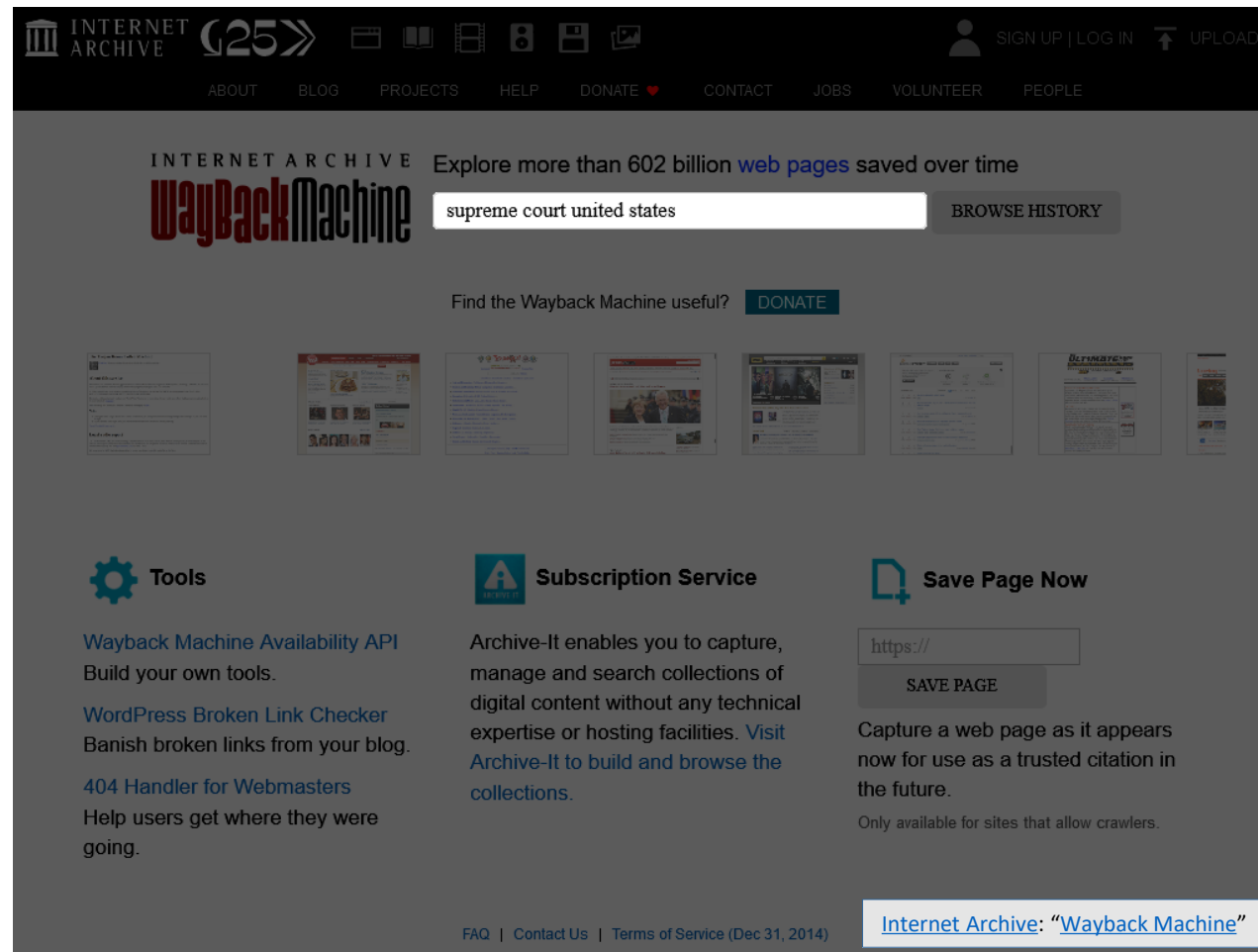
The main content area features the 'INTERNET ARCHIVE WayBackMachine' logo on the left. To its right is the text 'Explore more than 602 billion web pages saved over time'. Below this is a search input field containing 'http://' and a 'BROWSE HISTORY' button. Further down is a 'Find the Wayback Machine useful?' section with a 'DONATE' button. Below this is a row of eight small thumbnail images of various web pages.

The bottom section is divided into three columns:

- Tools:** Includes links for 'Wayback Machine Availability API' (Build your own tools), 'WordPress Broken Link Checker' (Banish broken links from your blog), and '404 Handler for Webmasters' (Help users get where they were going).
- Subscription Service:** Features the 'Archive-It' logo and text: 'Archive-It enables you to capture, manage and search collections of digital content without any technical expertise or hosting facilities. Visit Archive-It to build and browse the collections.'
- Save Page Now:** Includes a 'Save Page Now' icon, a search input field with 'https://', a 'SAVE PAGE' button, and text: 'Capture a web page as it appears now for use as a trusted citation in the future. Only available for sites that allow crawlers.'

At the bottom, there is a footer with links for 'FAQ | Contact Us | Terms of Service (Dec 31, 2014)' and a box containing the text 'Internet Archive: "Wayback Machine"'.

# full-text search (of home pages): enter search string



# full-text search (of home pages): search results

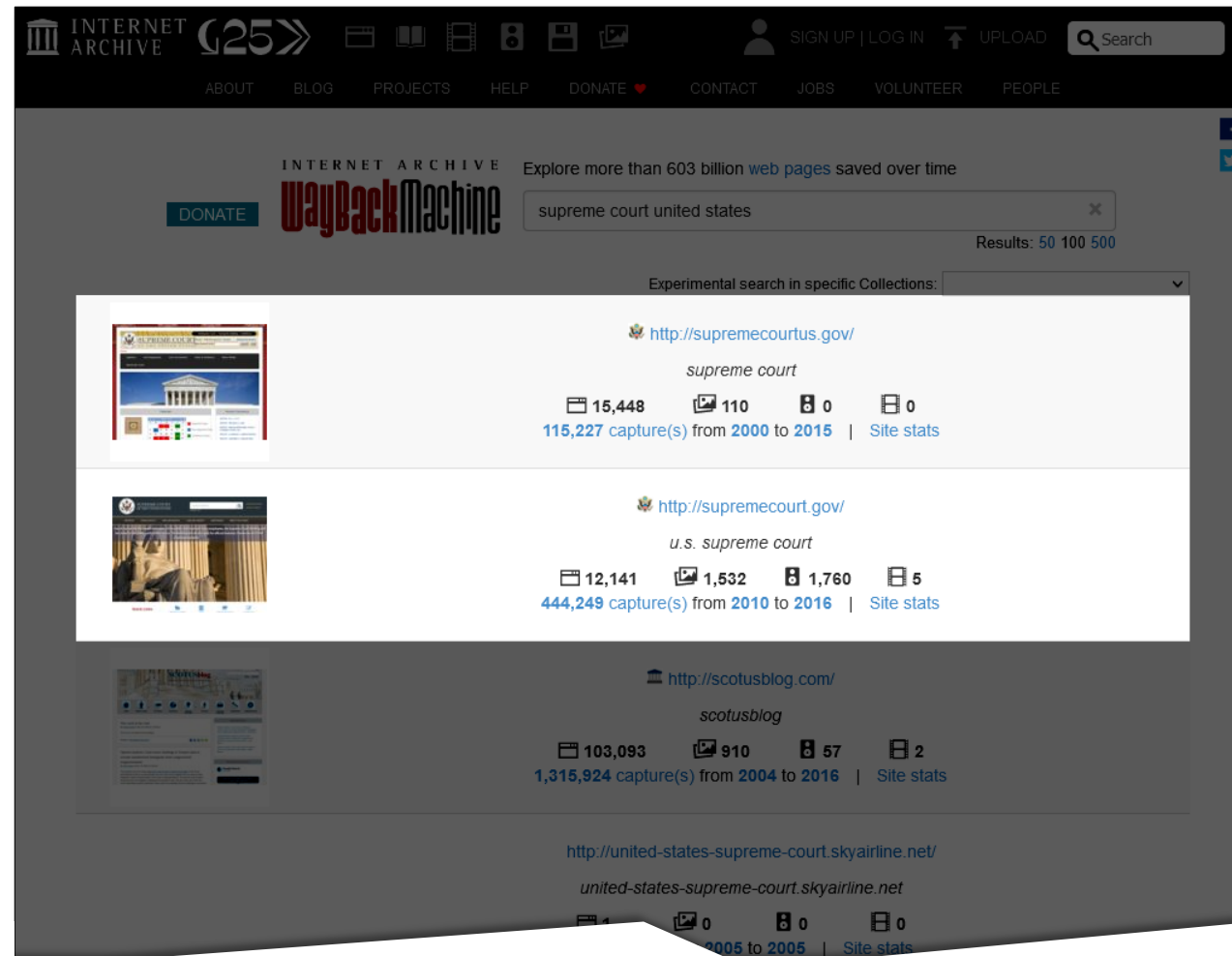
The screenshot shows the Internet Archive Wayback Machine search results for the query "supreme court united states". The interface includes a top navigation bar with links like ABOUT, BLOG, PROJECTS, HELP, DONATE, CONTACT, JOBS, VOLUNTEER, and PEOPLE. A search bar at the top right contains the query. Below the search bar, the results are displayed in a list format. Each result includes a thumbnail image, the URL, the site name, and capture statistics.

Thumbnail	URL	Site Name	Captures	Range	Site Stats		
	<a href="http://supremecourtus.gov/">http://supremecourtus.gov/</a>	supreme court	15,448	110	0	0	115,227 capture(s) from 2000 to 2015   Site stats
	<a href="http://supremecourt.gov/">http://supremecourt.gov/</a>	u.s. supreme court	12,141	1,532	1,760	5	444,249 capture(s) from 2010 to 2016   Site stats
	<a href="http://scotusblog.com/">http://scotusblog.com/</a>	scotusblog	103,093	910	57	2	1,315,924 capture(s) from 2004 to 2016   Site stats
	<a href="http://united-states-supreme-court.skyairline.net/">http://united-states-supreme-court.skyairline.net/</a>	united-states-supreme-court.skyairline.net	1	0	0	0	2005 to 2005   Site stats

Internet Archive: "Wayback Machine"



# full-text search (of home pages): top two results



Internet Archive: "Wayback Machine"

# full-text search (of home pages): capture counts for top two results

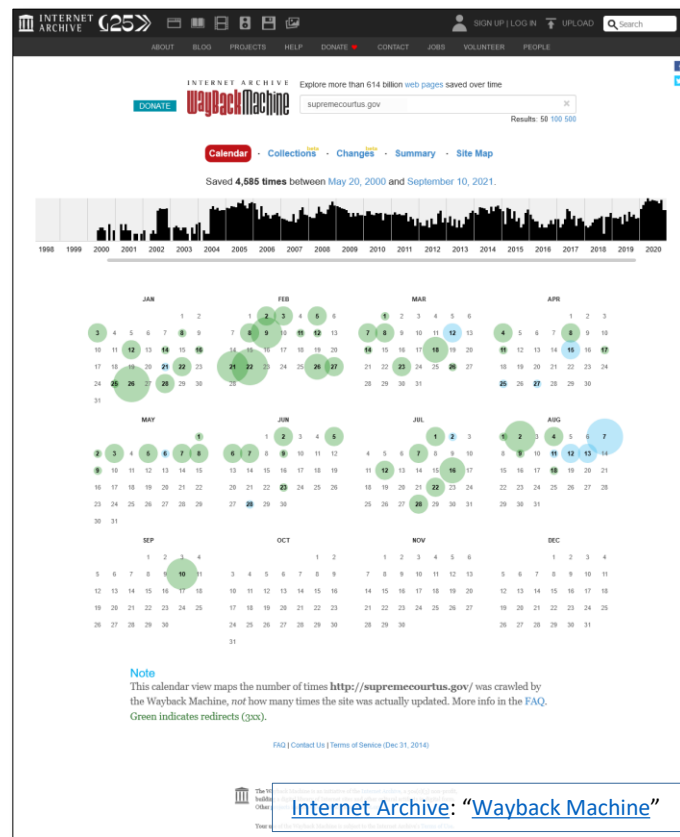
The screenshot shows the Internet Archive Wayback Machine interface. At the top, there's a navigation bar with links like ABOUT, BLOG, PROJECTS, HELP, DONATE, CONTACT, JOBS, VOLUNTEER, and PEOPLE. A search bar is on the right. Below the navigation bar, the main header says "INTERNET ARCHIVE" and "WayBack Machine" with a "DONATE" button. A search bar contains the text "supreme court united states". Below the search bar, it says "Results: 50 100 500". There's a dropdown menu for "Experimental search in specific Collections:". The search results are listed below, each with a thumbnail, URL, title, and capture statistics.

Thumbnail	URL	Title	Capture Statistics
	<a href="http://supremecourtus.gov/">http://supremecourtus.gov/</a>	supreme court	15,448 captures, 110 images, 0 videos, 0 audio files. 115,227 capture(s) from 2000 to 2015. Site stats
	<a href="http://supremecourt.gov/">http://supremecourt.gov/</a>	u.s. supreme court	12,141 captures, 1,532 images, 1,760 videos, 5 audio files. 444,249 capture(s) from 2010 to 2016. Site stats
	<a href="http://scotusblog.com/">http://scotusblog.com/</a>	scotusblog	103,093 captures, 910 images, 57 videos, 2 audio files. 1,315,924 capture(s) from 2004 to 2016. Site stats
	<a href="http://united-states-supreme-court.skyairline.net/">http://united-states-supreme-court.skyairline.net/</a>	united-states-supreme-court.skyairline.net	1 capture, 0 images, 0 videos, 0 audio files. 1 capture(s) from 2005 to 2005. Site stats

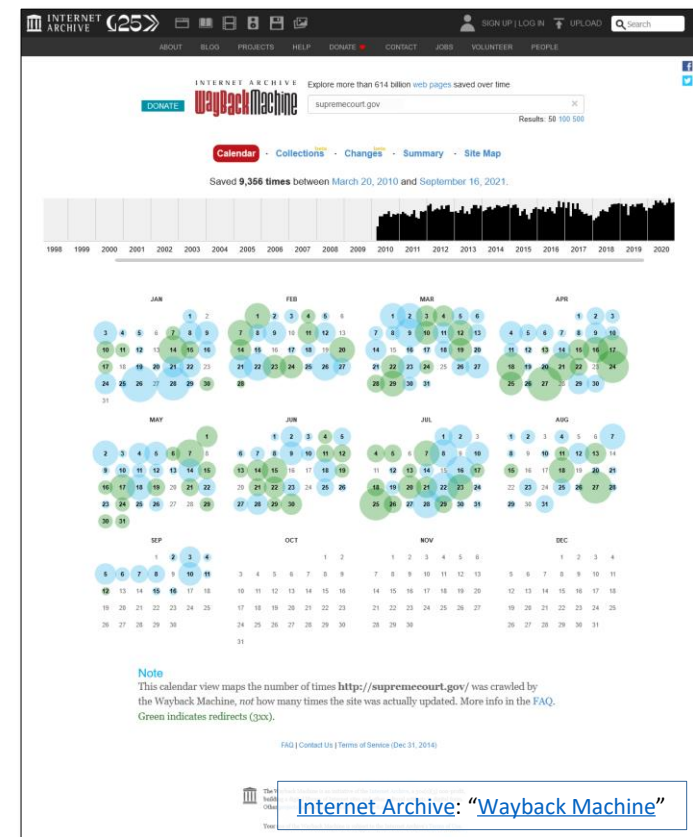
Internet Archive: "Wayback Machine"

# IAWM calendar pages

[supremecourtus.gov](https://supremecourtus.gov)



[supremecourt.gov](https://supremecourt.gov)

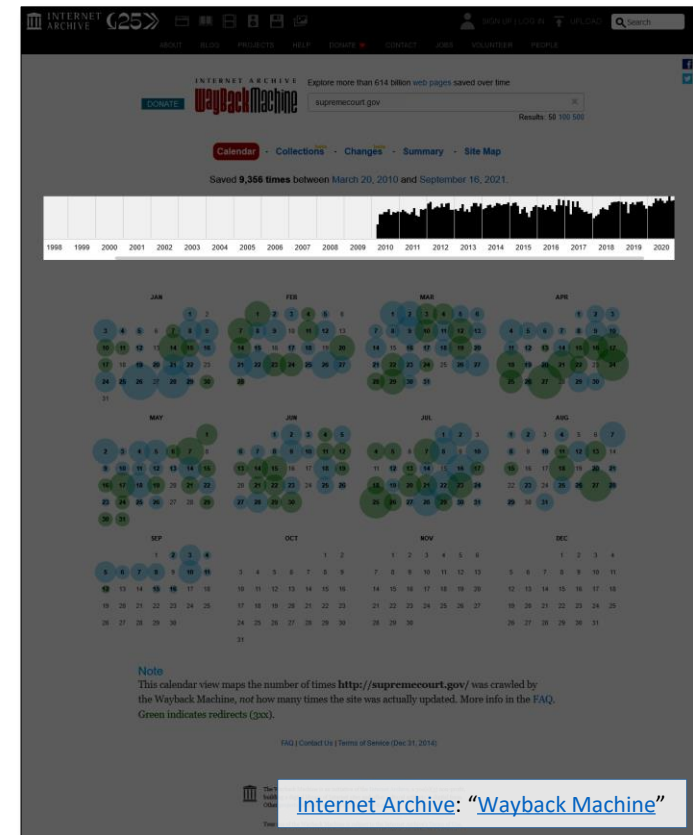


# IAWM calendar pages: timeline histograms

[supremecourtus.gov](http://supremecourtus.gov)



[supremecourt.gov](http://supremecourt.gov)





## IAWM resource page

- this is the first capture for [supremecourtus.gov](http://supremecourtus.gov/), from 20 May 2000





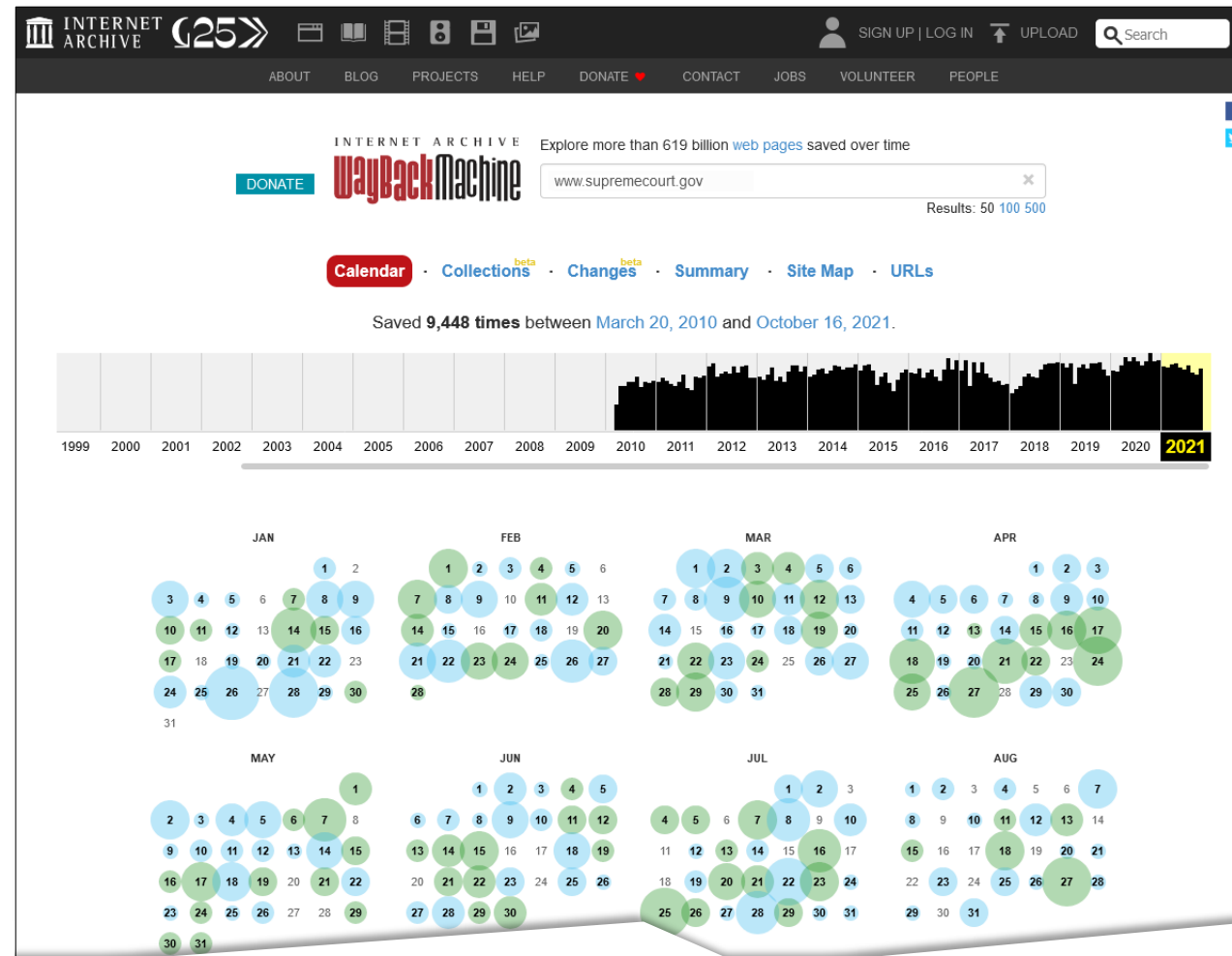
# Collections Tool + Full-Text Search

"Boxes in the University Archives" by [University of Illinois Library](#) under [CC BY 2.0](#)

# Collections tool

- IAWM captures have diverse provenance:
  - [web-wide crawls](#)
  - [contract crawls](#)
  - [Archive-It crawls](#)
  - [Alexa donations](#)
  - [ArchiveTeam crawls](#)
  - [Save Page Now](#)
- Collections tool shows sources of captures
- why does provenance matter?
  - some sources have more focused crawls, indicating quality
  - some sources offer additional search + discovery options

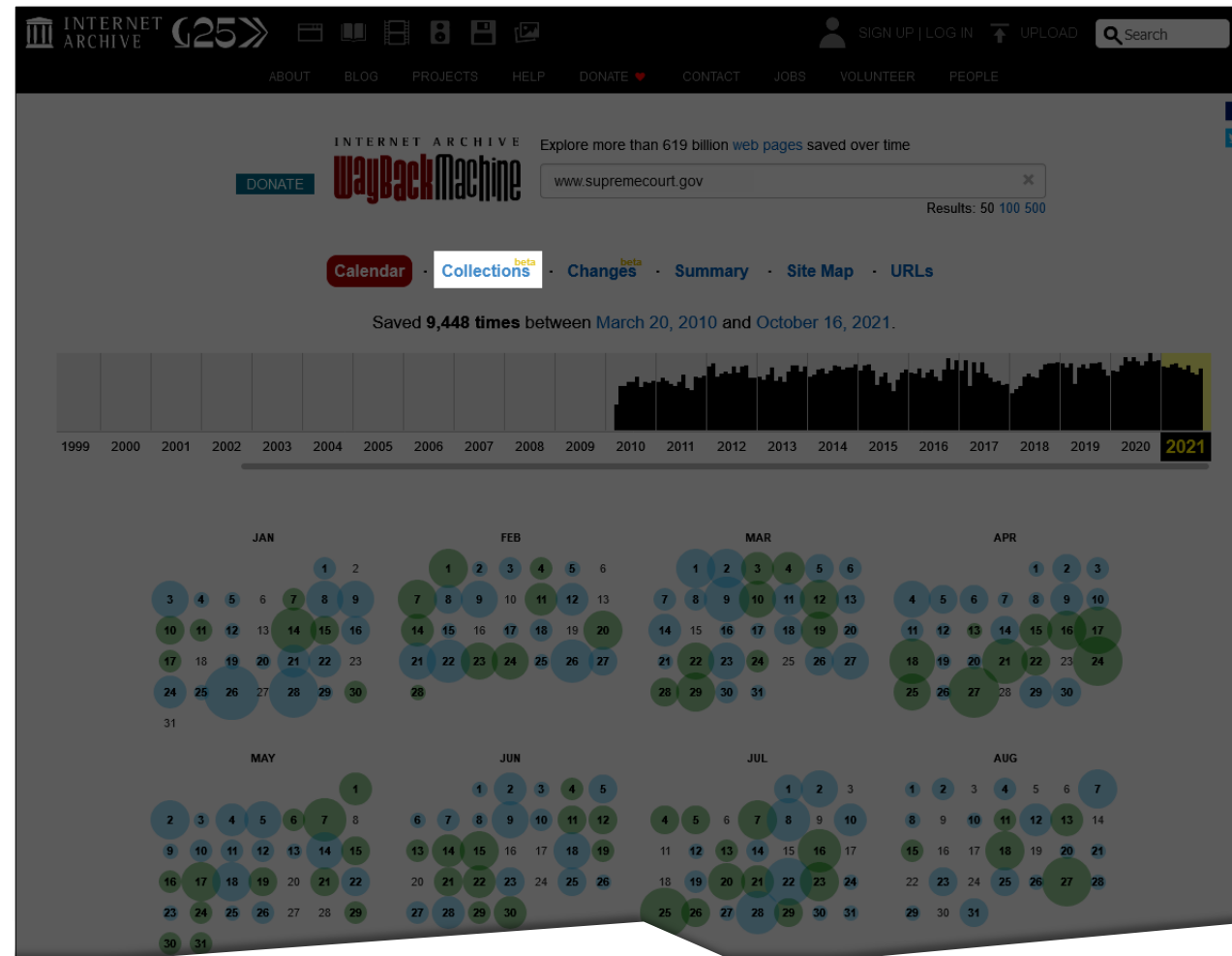
# IAWM calendar page



Internet Archive: "Wayback Machine"

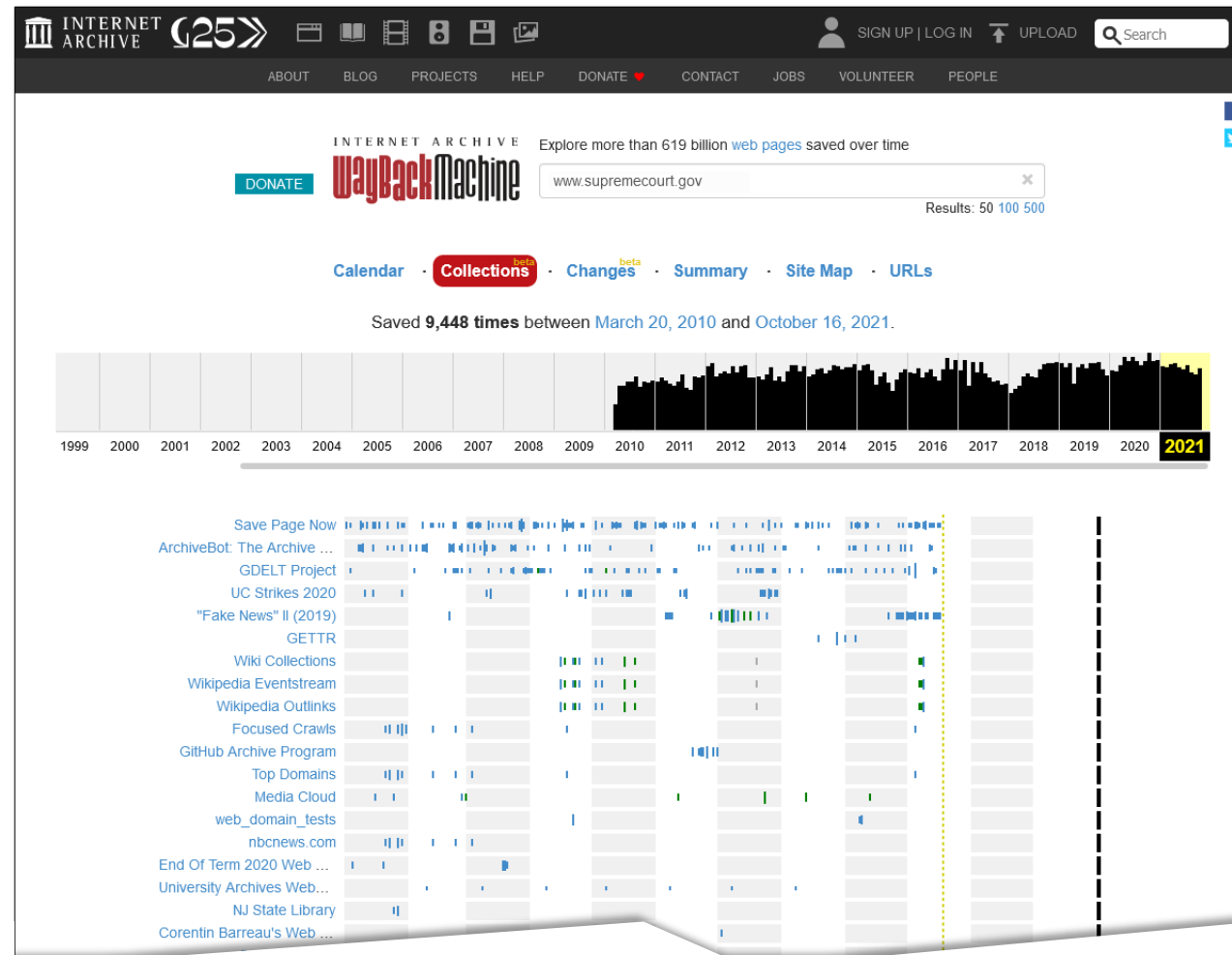


# IAWM calendar page



Internet Archive: "[Wayback Machine](#)"

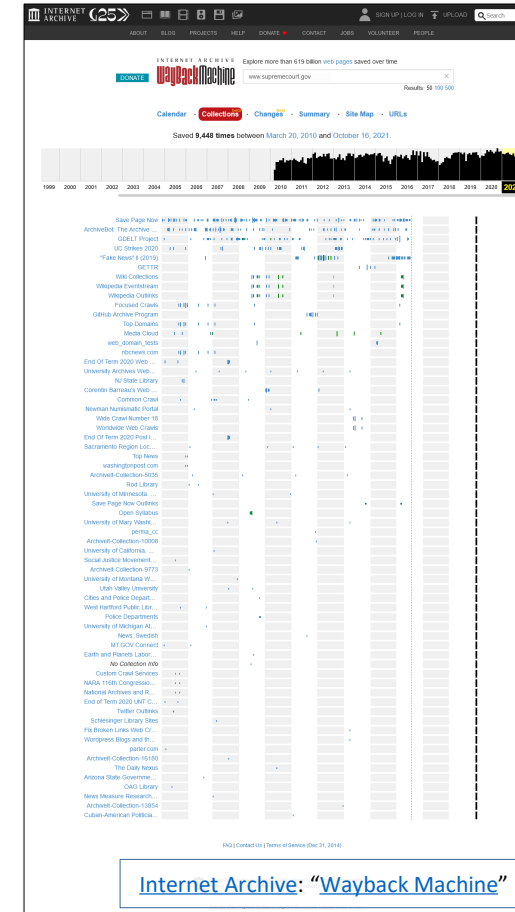
# Collections tool



Internet Archive: "Wayback Machine"

# Collections tool

- hover over individual collection names
- look for string in link target web address: *ArchiveIt-Collection*
- [Archive-It](#) is IA's subscription web archiving service
- used by 100s of orgs to run selective web crawls + curate topical collections
- has [its own discovery portal](#) w/ [full-text search](#)



# Archive-It full-text search

The screenshot shows the Archive-It full-text search interface. At the top, there is a navigation bar with links for HOME, EXPLORE, LEARN MORE, and CONTACT US. The main heading is "Explore All Archives". Below this, there is a search bar with the placeholder text "Enter search terms here" and a "Search" button. To the left of the search bar, there is a section for "Advanced Search" with various filters: "Contains all of:", "Exact phrase:", "Not containing:", "From the Host:", "Results per host:", "File format:", and "Capture date range:". The "Advanced Search" section also includes an "Advanced Search" button and a "Help with Search" link. The main content area is a large yellow box with the text "Please enter terms above to search for archived content." At the bottom of the page, there is a footer with the Archive-It logo and text, and a navigation bar with links for Home, Learn More, and Contact Us. A blue box at the bottom right contains the text "Archive-It: 'Explore Archived Content'".

Archive-It  
Built at the Internet Archive

HOME EXPLORE LEARN MORE CONTACT US

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

Explore All Archives

Enter a search term on the right to search the text within the archived pages. Or for more search options, use the Advanced Search options below.

Enter search terms here Search Clear

Advanced Search

Contains all of:

Exact phrase:

Not containing:

From the Host:  
ex. www.archive-it.org

Results per host:  
1 (default)

File format:  
All formats

Capture date range:  
From: To:

Advanced Search

Help with Search

Collecting Organizations Collections Sites Search Page Text

Please enter terms above to search for archived content.

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 Contact Us  
About Archive-It  
News/Press  
Meet the Team

Archive-It: "Explore Archived Content"

# Archive-It full-text search

Archive-It

HOME EXPLORE LEARN MORE CONTACT US

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

Explore All Archives

Enter a search term on the right to search  
the text within the archived pages. Or for  
more search options, use the Advanced  
Search options below.

Enter search terms here

Advanced Search

Contains all of:

Exact phrase:  
press release

Not containing:

From the Host:  
www.supremecourt.gov

Results per host:  
Unlimited

File format:  
All formats

Capture date range:  
From: To:

[Help with Search](#)

Collecting Organizations Collections Sites Search Page Text

Please enter terms above to search for archived content.

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 Contact Us  
About Archive-It  
News/Press  
Meet the Team

Archive-It: "Explore Archived Content"



# Archive-It full-text search

The screenshot displays the Archive-It full-text search interface. At the top, there's a navigation bar with the Archive-It logo, links for HOME, EXPLORE, LEARN MORE, and CONTACT US, and a 'Login' button. A tagline states: 'The leading web archiving service for collecting and accessing cultural heritage on the web. Built at the Internet Archive'. Below this, the 'Explore All Archives' section provides instructions on how to use the search bar and advanced search options. The 'Advanced Search' section includes fields for 'Contains all of:', 'Exact phrase:' (with 'press release' entered), 'Not containing:', 'From the Host:' (with 'www.supremecourt.gov' entered), 'Results per host:' (set to 'Unlimited'), 'File format:' (set to 'All formats'), and 'Capture date range:' (From and To fields). The search results section shows 'Page 1 of 12 (231 Total Results)' and a 'Next Page' button. The first result is titled 'Home - Supreme Court of the United States' and includes details about the collection, URL, capture date, and content. The second result is titled 'Press Release 04/29/13' and includes details about the collection, URL, capture date, and content.

ARCHIVE-IT

HOME EXPLORE LEARN MORE CONTACT US

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

Explore All Archives

Enter a search term on the right to search the text within the archived pages. Or for more search options, use the Advanced Search options below.

Items in the archive are listed below. Narrow your results at left, or enter a search query below to find a collecting organization, collection, site, specific URL or to search the text of archived webpages.

Enter search terms here Search Clear

Advanced Search

Contains **all** of:

Exact phrase:  
press release

Not containing:

From the Host:  
www.supremecourt.gov

Results per host:  
Unlimited

File format:  
All formats

Capture date range:  
From: To:

Collecting Organizations Collections Sites Search Page Text

Page 1 of 12 (231 Total Results) Next Page

Sort By: Best Match

**Home - Supreme Court of the United States**  
Collection: California Political Blogs By University of California Libraries  
URL: <http://www.supremecourt.gov/>  
This text was captured on Apr 21, 2013 Show All Captures  
Press release regarding the DOMA and Prop 8 arguments audio and transcript release.  
Content: application/xhtml+xml Size: 78 KB

**Press Release 04/29/13**  
Collection: Georgetown Law Center By Georgetown Law Library  
URL: <http://www.supremecourt.gov/ctrules/2013revisedrules.pdf>  
This text was captured on May 02, 2013 Show All Captures  
FOR IMMEDIATE RELEASE For Further Information Contact: April 29, 2013 Kathy Arberg at (202) 479-3211 The Supreme Court of the United States has adopted a revised version of the Rules of the Court.  
Content: application/pdf Size: 145 KB

Archive-It: "<https://archive-it.org/explore/?show=ArchivedPages...>"



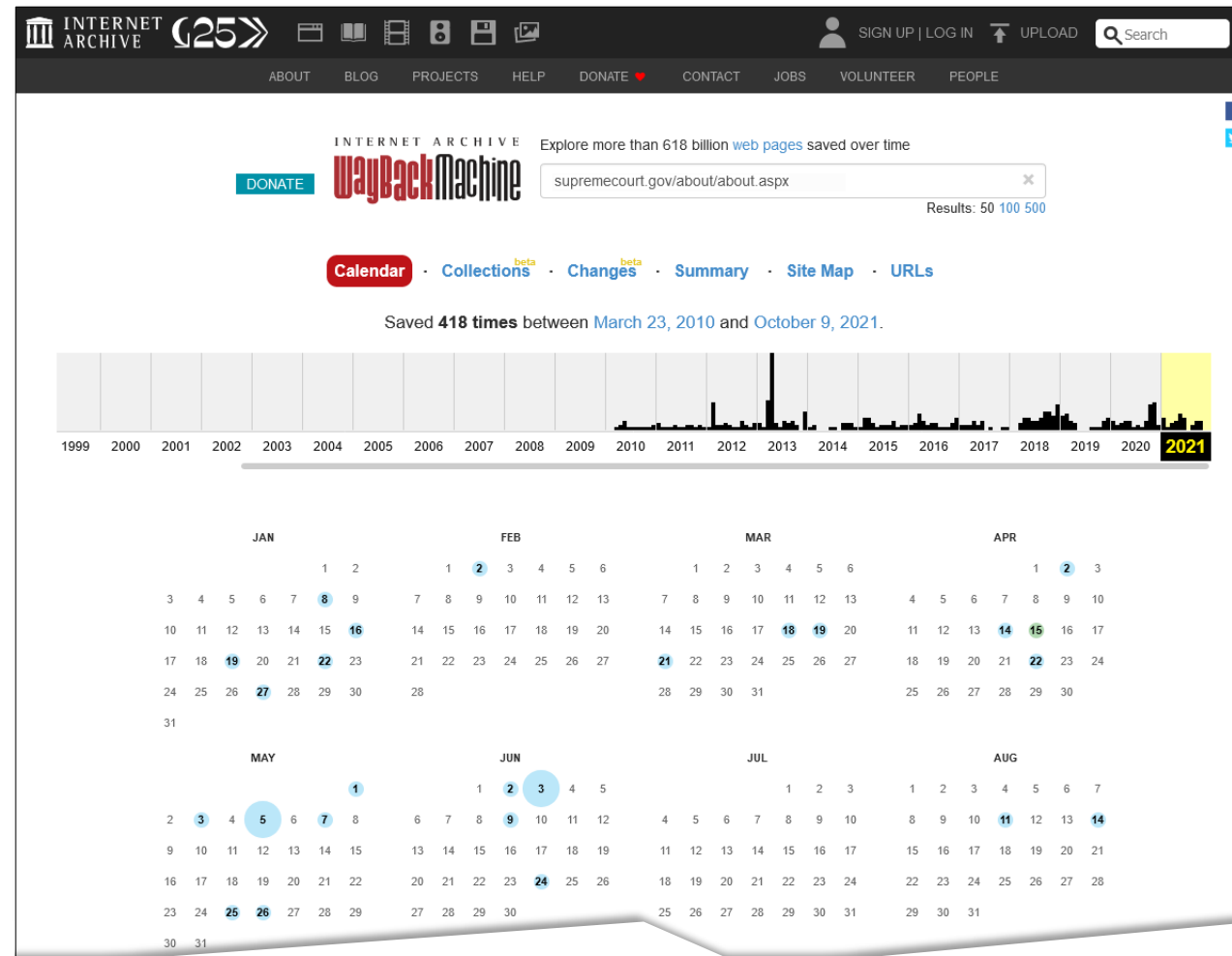
# Changes Tool

"the before-after-situation" by Michael Mueller under [CC BY 2.0](#)

# Changes tool

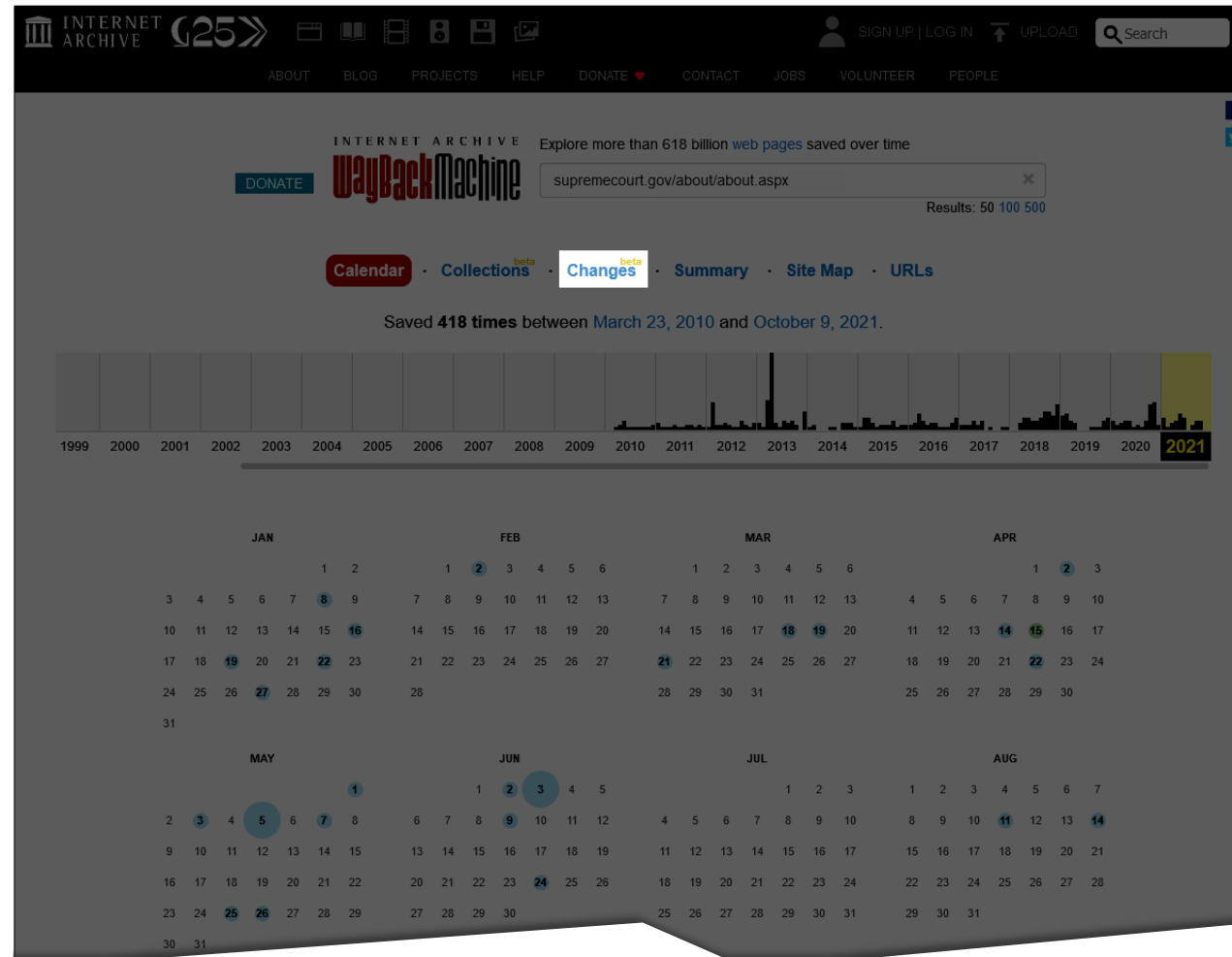
- flags differences in text b/t 2 captures of same web page
- caveats:
  - doesn't consider non-textual elements
  - doesn't account for intermediate changes
  - changes may not matter for legal issue
- use to:
  - identify when a web page changed
  - quickly visualize the text changes over time
  - establish when web page text was substantially identical

# IAWM calendar page



Internet Archive: "Wayback Machine"



# IAWM calendar page






Internet Archive: "Wayback Machine"





# Changes tool


 **INTERNET ARCHIVE** 




 [SIGN UP](#) | [LOG IN](#)  [UPLOAD](#)

[ABOUT](#) [BLOG](#) [PROJECTS](#) [HELP](#) [DONATE](#) [CONTACT](#) [JOBS](#) [VOLUNTEER](#) [PEOPLE](#)

 [DONATE](#)

Explore more than 618 billion [web pages](#) saved over time




Results: 50 [100](#) [500](#)

[Calendar](#) · [Collections](#) <sup>beta</sup> · [Changes](#) <sup>beta</sup> · [Summary](#) · [Site Map](#) · [URLs](#)

"Changes" is a tool you can use to identify, and display, changes in the content of archives of URLs.  
First you can select two different archives for a URL, based on an interface that shows the degree of relative change from one archive to another.  
Then you can see the replay of the two URLs you select, side-by-side, with changes highlighted in Blue and Yellow.

2021

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Dec																															
Nov																															
Oct																															
Sep																															
Aug																															
Jul																															
Jun																															
May																															
Apr																															
Mar																															
Feb																															
Jan																															

Variation: Low  Hi

2020

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Dec																															
Nov																															
Oct																															
Sep																															
Aug																															
Jul																															
Jun																															
May																															
Apr																															
Mar																															
Feb																															
Jan																															

Internet Archive: ["Wayback Machine"](#)

# Changes tool: choose 28 September 2021 capture

INTERNET ARCHIVE 25» SIGN UP | LOG IN UPLOAD Search

ABOUT BLOG PROJECTS HELP DONATE CONTACT JOBS VOLUNTEER PEOPLE

INTERNET ARCHIVE Explore more than 618 billion web pages saved over time

DONATE WayBackMachine

supremecourt.gov/about/about.aspx Results: 50 100 500

Calendar · Collections · **Changes** · Summary · Site Map · URLs

"Changes" is a tool you can use to identify, and display, changes in the content of archives of URLs.  
First you can select two different archives for a URL, based on an interface that shows the degree of relative change from one archive to another.  
Then you can see the replay of the two URLs you select, side-by-side, with changes highlighted in Blue and Yellow.

Tue, 28 Sep 2021 02:12:27 GMT Compare

2021

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Dec  
Nov  
Oct  
Sep  
Aug  
Jul  
Jun  
May  
Apr  
Mar  
Feb  
Jan

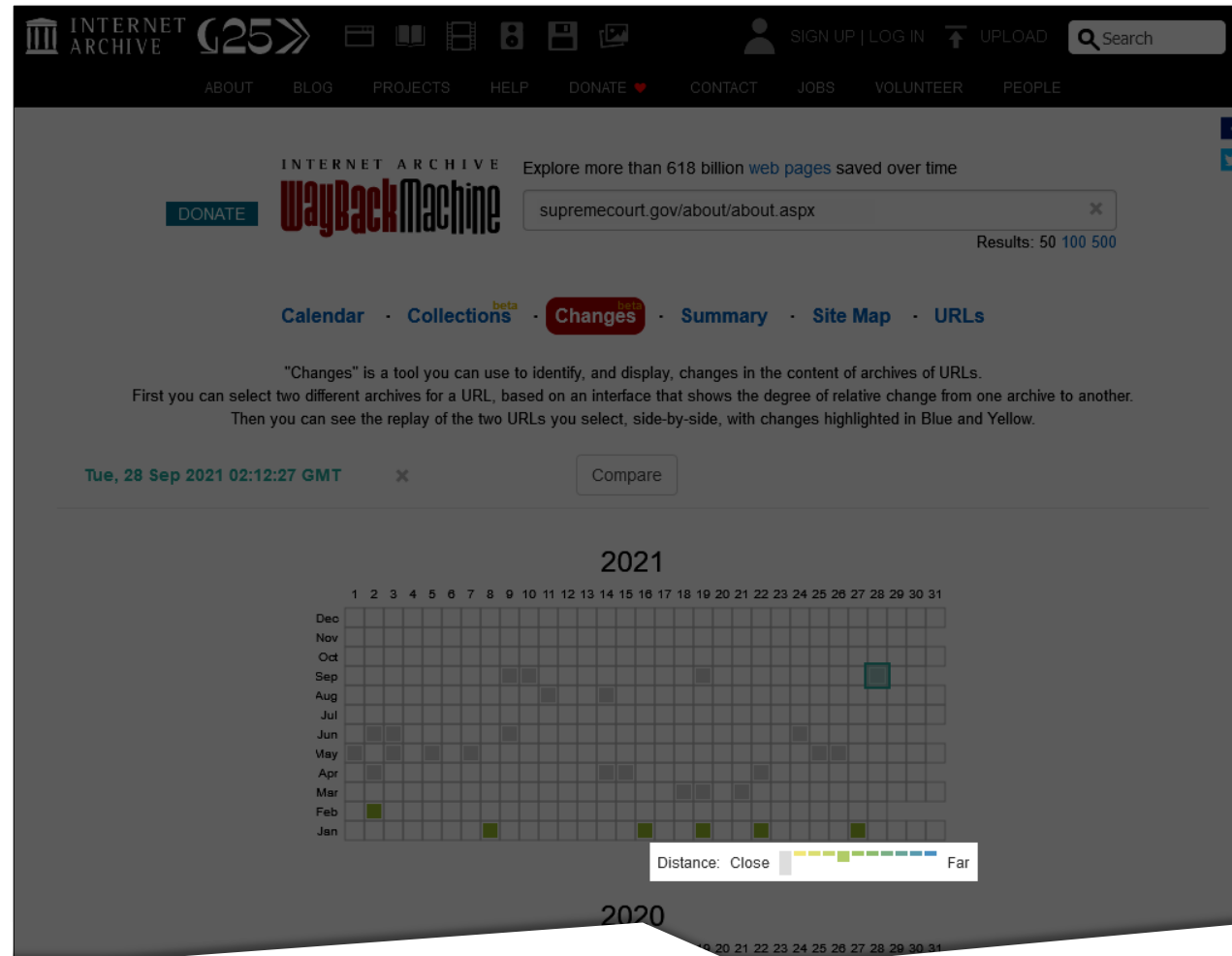
Distance: Close Far

2020

19 20 21 22 23 24 25 26 27 28 29 30 31

Internet Archive: "Wayback Machine"

# Changes tool: degree of difference key



Internet Archive: "Wayback Machine"

# Changes tool: degree of difference key

The screenshot shows the Internet Archive Wayback Machine interface. At the top, there's a navigation bar with links like ABOUT, BLOG, PROJECTS, HELP, DONATE, CONTACT, JOBS, VOLUNTEER, and PEOPLE. Below this, the Wayback Machine logo is prominent, along with a search bar containing the URL 'supremecourt.gov/about/about.aspx'. The 'Changes' tool is selected in the navigation menu. A description explains that the tool identifies and displays changes in the content of archives of URLs. Below the description, a color-coded key for the 'Distance' of change is shown, ranging from 'Close' (light yellow) to 'Far' (dark blue). At the bottom, a calendar grid for the year 2020 is displayed, with a small green square indicating a change on September 28th.

INTERNET ARCHIVE 25 Explore more than 618 billion web pages saved over time

DONATE WayBack Machine

supremecourt.gov/about/about.aspx Results: 50 100 500

Calendar · Collections · **Changes** · Summary · Site Map · URLs

"Changes" is a tool you can use to identify, and display, changes in the content of archives of URLs.  
First you can select two different archives for a URL, based on an interface that shows the degree of relative change from one archive to another.  
Then you can see the replay of the two URLs you select, side-by-side, with changes highlighted in Blue and Yellow.

Distance: Close Far

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

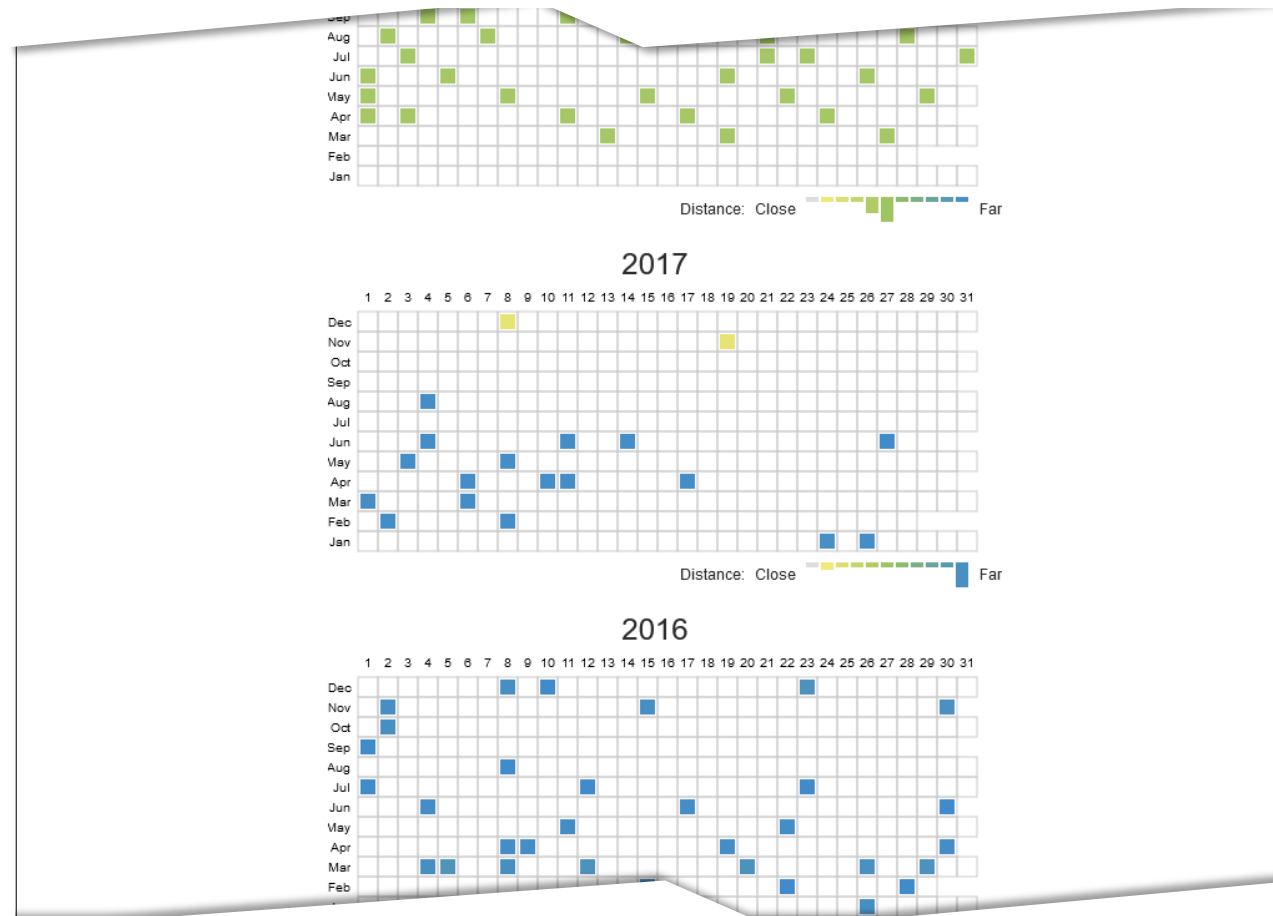
Dec  
Nov  
Oct  
Sep  
Aug  
Jul  
Jun  
May  
Apr  
Mar  
Feb  
Jan

2020

Distance: Close Far

Internet Archive: ["Wayback Machine"](#)

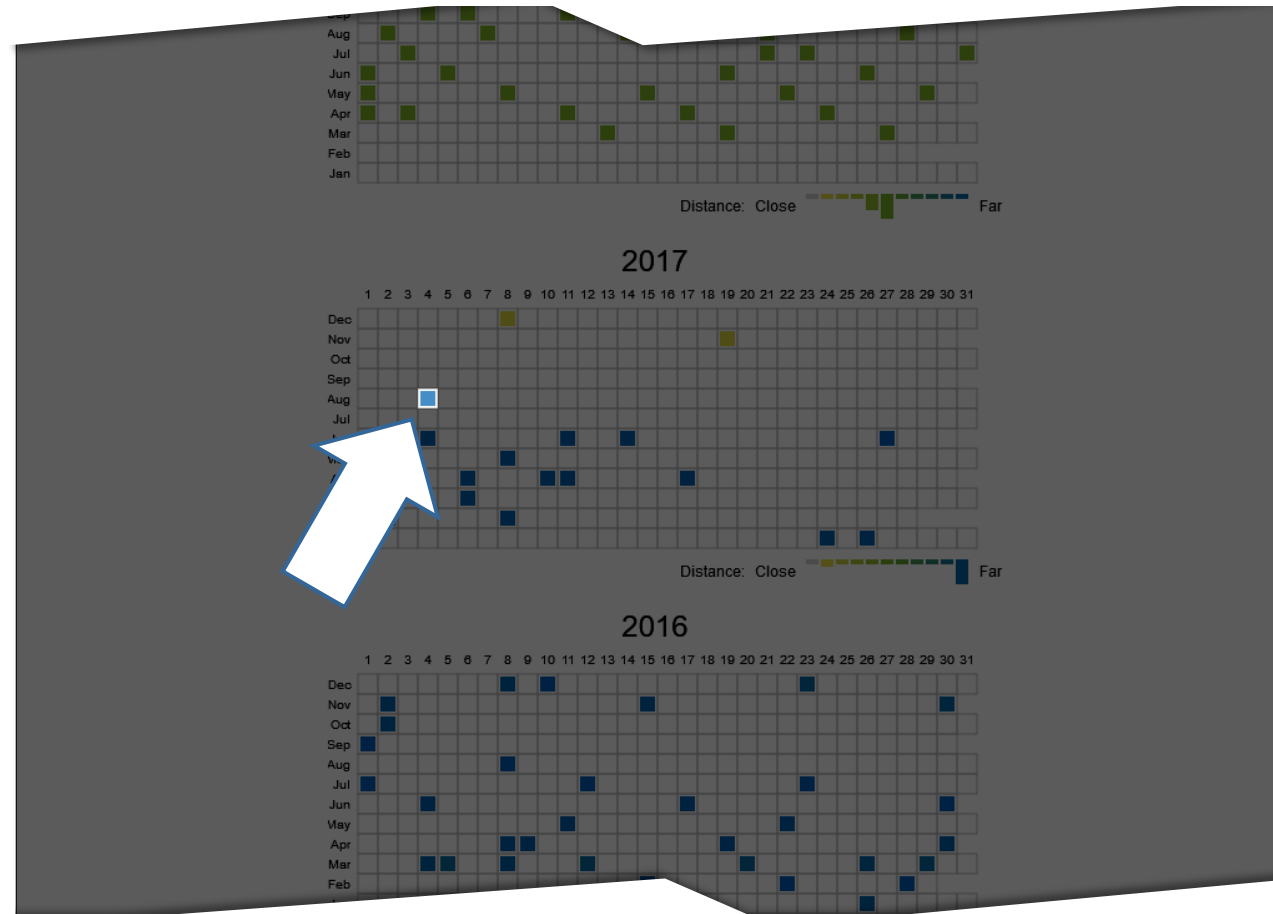
# Changes tool: difference from 2017 captures



Internet Archive: ["Wayback Machine"](#)





# Changes tool: compare w/ 4 August 2017 capture





Internet Archive: ["Wayback Machine"](#)

# Changes tool: two captures selected

 **INTERNET ARCHIVE** 


ABOUT · BLOG · PROJECTS · HELP · DONATE · CONTACT · JOBS · VOLUNTEER · PEOPLE

INTERNET ARCHIVE

Explore more than 618 billion [web pages](#) saved over time

DONATE



Results: 50 100 500

[Calendar](#) · [Collections](#) <sup>beta</sup> · [Changes](#) <sup>beta</sup> · [Summary](#) · [Site Map](#) · [URLs](#)

"Changes" is a tool you can use to identify, and display, changes in the content of archives of URLs.  
First you can select two different archives for a URL, based on an interface that shows the degree of relative change from one archive to another.  
Then you can see the replay of the two URLs you select, side-by-side, with changes highlighted in Blue and Yellow.

Tue, 28 Sep 2021 02:12:27 GMT

Compare

Fri, 04 Aug 2017 23:39:27 GMT

2021

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Dec																															
Nov																															
Oct																															
Sep																															
Aug																															
Jul																															
Jun																															
May																															
Apr																															
Mar																															
Feb																															
Jan																															

Distance: Close Far

2020

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Dec																															
Nov																															
Oct																															
Sep																															
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Jun																															
May																															
Apr																															
Mar																															
Feb																															
Jan																															

Internet Archive: ["Wayback Machine"](#)

# Changes tool: two captures selected

INTERNET ARCHIVE 25» SIGN UP | LOG IN UPLOAD Search

ABOUT BLOG PROJECTS HELP DONATE CONTACT JOBS VOLUNTEER PEOPLE

INTERNET ARCHIVE Explore more than 618 billion web pages saved over time

DONATE WayBack Machine supremecourt.gov/about/about.aspx Results: 50 100 500

Calendar · Collections · **Changes** · Summary · Site Map · URLs

"Changes" is a tool you can use to identify, and display, changes in the content of archives of URLs.  
First you can select two different archives for a URL, based on an interface that shows the degree of relative change from one archive to another.  
Then you can see the replay of the two URLs you select, side-by-side, with changes highlighted in Blue and Yellow.

Tue, 28 Sep 2021 02:12:27 GMT Compare Fri, 04 Aug 2017 23:39:27 GMT

2021

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Dec  
Nov  
Oct  
Sep  
Aug  
Jul  
Jun  
May  
Apr  
Mar  
Feb  
Jan

Distance: Close Far

2020

Internet Archive: ["Wayback Machine"](#)

# Changes tool: click *Compare*

The screenshot shows the Internet Archive Wayback Machine interface. At the top, there's a navigation bar with links like ABOUT, BLOG, PROJECTS, HELP, DONATE, CONTACT, JOBS, VOLUNTEER, and PEOPLE. Below this, the Wayback Machine logo is prominent, along with a search bar containing the URL 'supremecourt.gov/about/about.aspx'. The 'Changes' tool is highlighted in the navigation menu. The main content area explains the tool's purpose: to identify and display changes in the content of archives of URLs. It provides instructions on how to use the tool, mentioning the selection of two different archives for a URL. Below the text, there's a 'Compare' button. The interface also displays a calendar grid for the year 2021, with a legend indicating 'Distance: Close' (green) and 'Far' (blue). The grid shows various dates with colored squares indicating changes. The year 2020 is partially visible at the bottom.

Internet Archive: ["Wayback Machine"](#)

# Changes tool: compare 28 Sep. 2021 + 4 Aug. 2017 captures

INTERNET ARCHIVE (25) WEB BOOKS VIDEO AUDIO SOFTWARE IMAGES SIGN UP | LOG IN UPLOAD Search

ABOUT BLOO PROJECTS HELP DONATE CONTACT JOBS VOLUNTEER PEOPLE

INTERNET ARCHIVE Explore more than 618 billion web pages saved over time

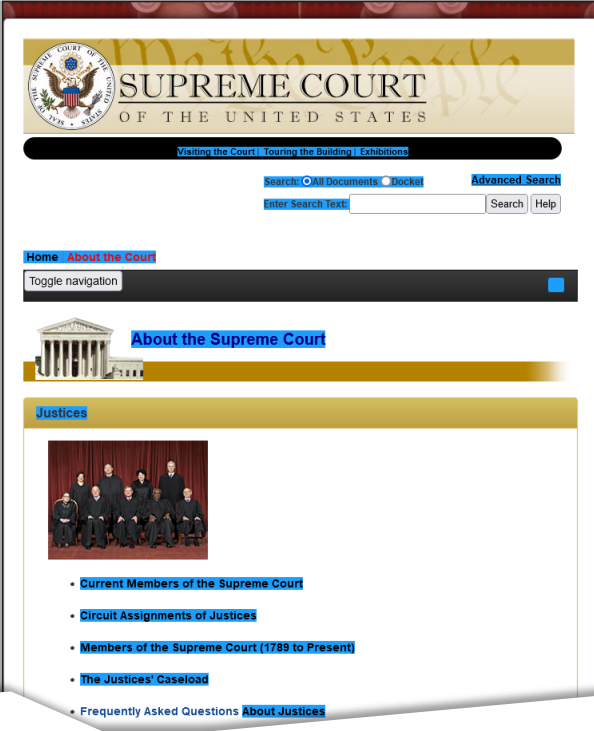
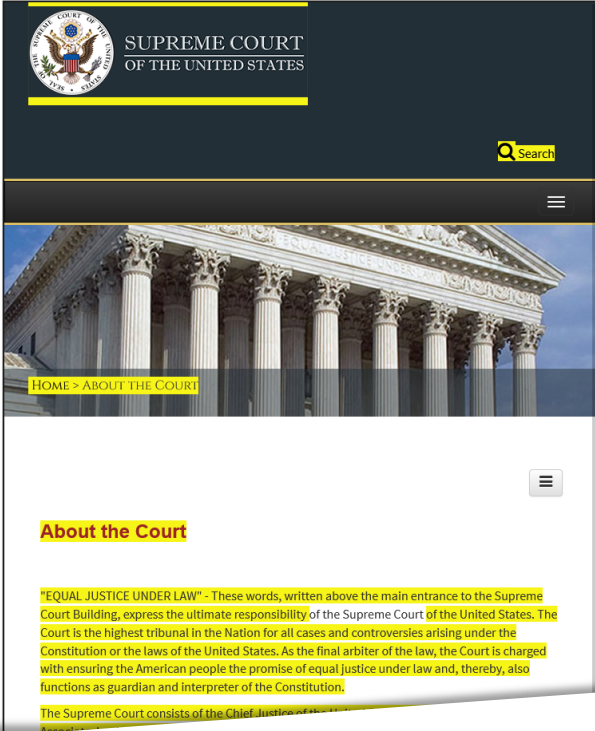
DONATE WayBackMachine Enter a URL or words related to a site's home page Results: 50 100 500

Compare any two captures of supremecourt.gov/about/about.aspx from our collection of 418 dating from Tue, 23 Mar 2010 to Sat, 09 Oct 2021.

Please select a capture Please select a capture

2021 (35) September (4) Tue, 28 Sep 2021 02:12:27 GMT Fri, 04 Aug 2017 23:39:27 GMT August (1) 2017 (19)

Open in new window Open in new window

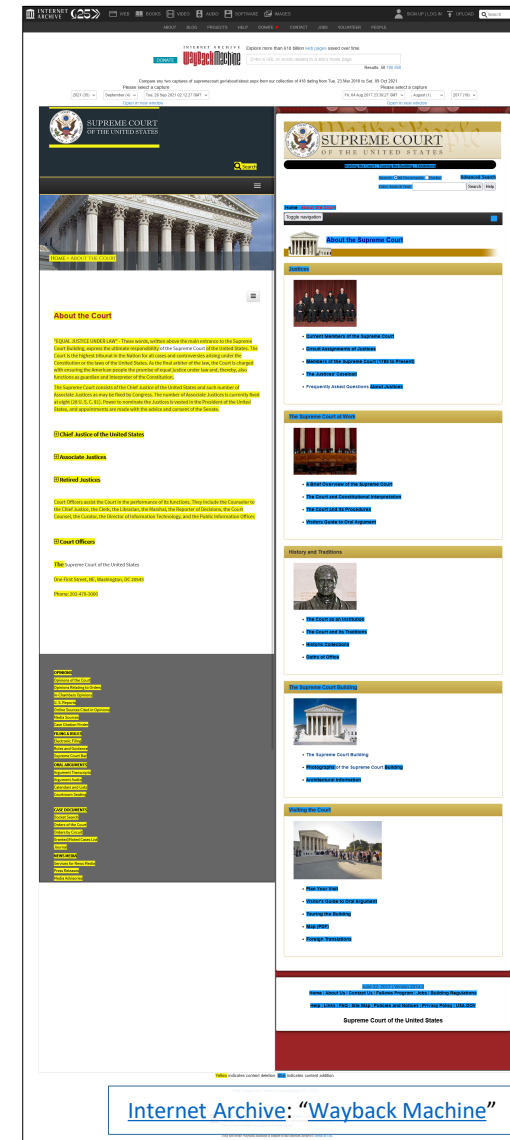


Internet Archive: "Wayback Machine"









# Changes tool: comparing captures


- yellow highlighted text was deleted
- blue highlighted text was added
- note that the website design has changed significantly, but this isn't specifically detected by the Changes tool
- however, major text changes often accompany major website design changes




# Changes tool: choose 28 September 2021 capture

 **INTERNET ARCHIVE**    SIGN UP | LOG IN  UPLOAD

ABOUT BLOG PROJECTS HELP DONATE  CONTACT JOBS VOLUNTEER PEOPLE

 **WayBackMachine**


Explore more than 618 billion [web pages](#) saved over time



Results: 50 [100](#) [500](#)

[Calendar](#) · [Collections](#) <sup>beta</sup> · [Changes](#) <sup>beta</sup> · [Summary](#) · [Site Map](#) · [URLs](#)


"Changes" is a tool you can use to identify, and display, changes in the content of archives of URLs.  
First you can select two different archives for a URL, based on an interface that shows the degree of relative change from one archive to another.  
Then you can see the replay of the two URLs you select, side-by-side, with changes highlighted in Blue and Yellow.

Tue, 28 Sep 2021 02:12:27 GMT 

Compare

2021

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Dec																															
Nov																															
Oct																															
Sep																															
Aug																															
Jul																															
Jun																															
May																															
Apr																															
Mar																															
Feb																															
Jan																															

Distance: Close  Far

2020

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Dec																															
Nov																															
Oct																															
Sep																															
Aug																															
Jul																															
Jun																															
May																															
Apr																															
Mar																															
Feb																															
Jan																															

Internet Archive: ["Wayback Machine"](#)

# Changes tool: compare w/ 2 February 2021 capture

INTERNET ARCHIVE 25» SIGN UP | LOG IN UPLOAD Search

ABOUT BLOG PROJECTS HELP DONATE CONTACT JOBS VOLUNTEER PEOPLE

INTERNET ARCHIVE Explore more than 618 billion web pages saved over time

DONATE Wayback Machine supremecourt.gov/about/about.aspx Results: 50 100 500

Calendar Collections Changes Summary Site Map URLs

"Changes" is a tool you can use to identify, and display, changes in the content of archives of URLs.  
First you can select two different archives for a URL, based on an interface that shows the degree of relative change from one archive to another.  
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Tue, 28 Sep 2021 02:12:27 GMT Compare

2021

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Dec  
Nov  
Oct  
Sep  
Aug  
Jul  
Jun  
May  
Apr  
Mar  
Feb  
Jan

Distance: Close Far

2020

Internet Archive: "Wayback Machine"

# Changes tool: two captures selected

INTERNET ARCHIVE 25» SIGN UP | LOG IN UPLOAD Search

ABOUT BLOG PROJECTS HELP DONATE CONTACT JOBS VOLUNTEER PEOPLE

INTERNET ARCHIVE Explore more than 618 billion web pages saved over time

DONATE WayBack Machine supremecourt.gov/about/about.aspx Results: 50 100 500

Calendar · Collections · **Changes** · Summary · Site Map · URLs

"Changes" is a tool you can use to identify, and display, changes in the content of archives of URLs.  
First you can select two different archives for a URL, based on an interface that shows the degree of relative change from one archive to another.  
Then you can see the replay of the two URLs you select, side-by-side, with changes highlighted in Blue and Yellow.

Tue, 28 Sep 2021 02:12:27 GMT Compare Tue, 02 Feb 2021 19:04:56 GMT

2021

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Dec  
Nov  
Oct  
Sep  
Aug  
Jul  
Jun  
May  
Apr  
Mar  
Feb  
Jan

Distance: Close Far

2020

Internet Archive: "Wayback Machine"

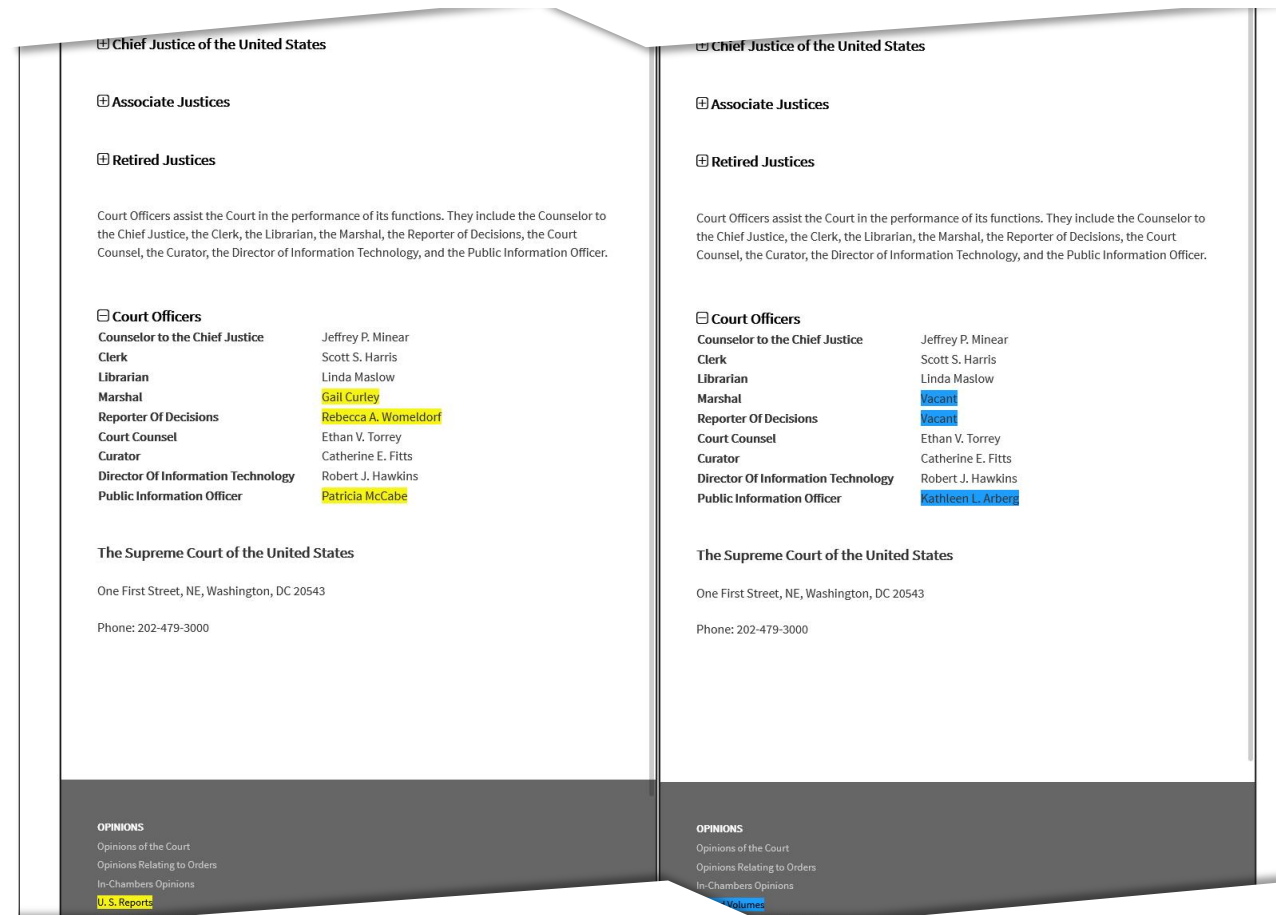
# Changes tool: click *Compare*

The screenshot shows the Internet Archive Wayback Machine interface. At the top, there's a navigation bar with links like ABOUT, BLOG, PROJECTS, HELP, DONATE, CONTACT, JOBS, VOLUNTEER, and PEOPLE. Below this, the Wayback Machine logo is prominent, along with a search bar containing the URL 'supremecourt.gov/about/about.aspx'. The 'Changes' tool is highlighted in the navigation menu. The main content area explains the tool's purpose: to identify and display changes in the content of archives of URLs. It provides instructions on how to use the tool, mentioning the selection of two different archives for a URL. Below the text, there's a 'Compare' button. The interface also displays a calendar grid for the year 2021, with a legend indicating 'Distance: Close' (green) and 'Far' (blue). The calendar shows various dates with colored squares indicating changes. The year 2020 is partially visible at the bottom.


Internet Archive: ["Wayback Machine"](#)



# Changes tool: compare 28 Sep. 2021 + 2 Feb. 2021 captures



Internet Archive: ["Wayback Machine"](#)



# Authentication + Admissibility

"Quality control" by [Lars Plougmann](#) under [CC BY-SA 2.0](#)

# authentication + admissibility overview

- IAWM cited in 300+ U.S. federal court cases
- harder to authenticate than other web content
- strategies include:
  - judicial notice
  - IA affidavit
  - witness w/ personal knowledge
  - expert witness
  - mutual stipulation



"Dollar" by Images Money under CC BY 2.0

# judicial notice (FRE 201)

## Wikipedia

- *“Judicial notice is a rule in the law of evidence that allows a fact to be introduced into evidence if the truth of that fact is so notorious or well known, or so authoritatively attested, that it **cannot reasonably be doubted**...Facts and materials admitted under judicial notice are accepted without being formally introduced by a witness or other rule of evidence”*

[Wikipedia: “Judicial notice”](#)

## FRE 201

### Judicial Notice of Adjudicative Facts

- b. Kinds of Facts That May Be Judicially Noticed. The court may judicially notice a fact that is not subject to reasonable dispute because it:
  2. can be accurately and readily determined from sources whose accuracy cannot reasonably be questioned.

[Legal Information Institute: “Rule 201. Judicial Notice of Adjudicative Facts | Federal Rules of Evidence”](#)

# authentication via judicial notice

- efficient but inconsistent + jurisdiction-sensitive
- vital to research a given court's disposition towards IAWM evidence
- judges may themselves introduce IAWM evidence
- more likely to prevail in absence of specific assertions of unreliability



"Earthrise" by [Bill Anders](#) under [Public Domain](#)

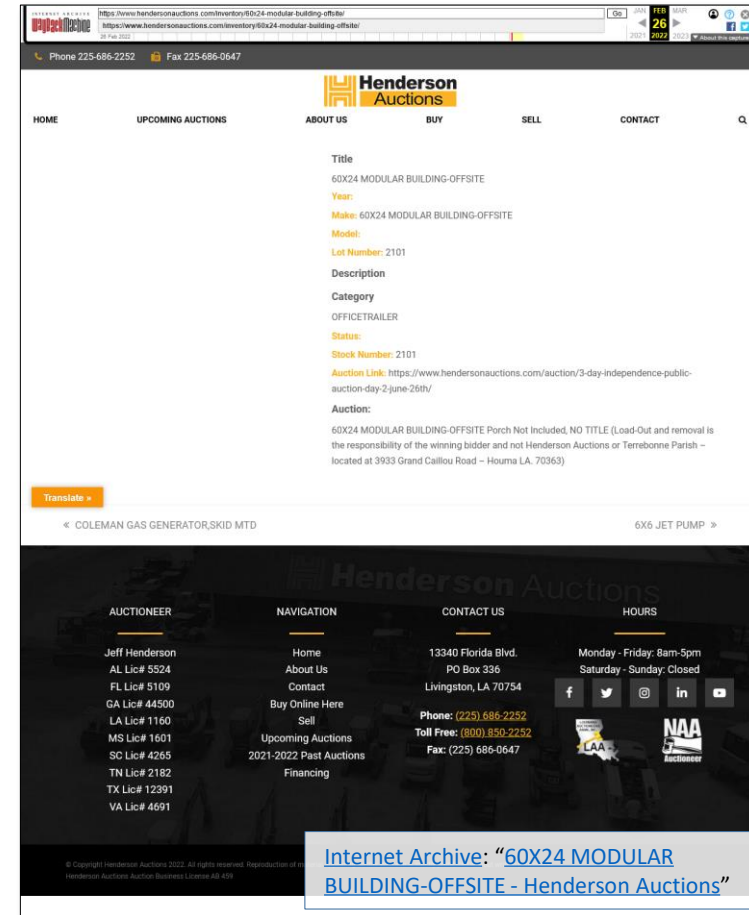


# ***Weinhoffer v. Davie Shoring, Inc. (2022)***

- IAWM used to show online auction terms of sale
- district court's admission of IAWM evidence via judicial notice reversed

*“Here, there was no testimony to authenticate the archived webpage. Our sister circuits' decisions that the Wayback Machine is not self-authenticating are persuasive in the context of judicial notice. In sum, **the district court erred in taking judicial notice of the terms because a private internet archive falls short of being a source whose accuracy cannot reasonably be questioned as required by Rule 201.**”*

[Weinhoffer v. Davie Shoring, Inc., No. 20-30568, at \\*7 \(5th Cir. Jan. 20, 2022\)](#)



[Internet Archive: "60X24 MODULAR BUILDING-OFFSITE - Henderson Auctions"](#)



# authentication via IA affidavit

- reliable + efficient
- incorrect application explains most of its authentication failures
- works best for simple cases
- but less ideal when conclusions require interpretation



"Paperwork" by [Damian Gadal](#) under [CC BY 2.0](#)

# IA affidavit guidance

## **Do I really need an affidavit from the Internet Archive?**

No. Please consider alternatives to an affidavit from the Internet Archive. Judicial notice and stipulation to a document's authenticity are two typical and straightforward options that might be used instead of an affidavit. Since our resources are limited, we urge you to pursue these alternatives before coming to us with authentication requests.

## **Does the Internet Archive's affidavit mean that the printout was actually the page posted on the Web at the recorded time?**

The Internet Archive's affidavit only affirms that the printed document is a true and correct copy of our records. It remains your burden to convince the finder of fact what pages were up when.

[Internet Archive: "Legal FAQ"](#)

# *Telewizja Polska USA, Inc. v. Echostar Satellite Corp. (2004)*

- IAWM used to show advertisement of partner business service after contract expiration
- IAWM evidence admitted

*“...Plaintiff has presented no evidence that the Internet Archive is unreliable or biased. And Plaintiff has neither denied that the exhibit represents the contents of its website on the dates in question, nor come forward with its own evidence challenging the veracity of the exhibit. Under these circumstances, the Court is of the opinion that [the IA affidavit] is sufficient to satisfy Rule 901's threshold requirement for admissibility. Plaintiff is free to raise its concerns regarding reliability with the jury.”*

[Telewizja Polska USA, Inc. v. Echostar Satellite Corp., 02 C 3293, at \\*14 \(N.D. Ill., Jun. 3 2004\)](#)



# witness w/ personal knowledge – FRE 901(b)(1)

## Authenticating or Identifying Evidence

- b) Examples. The following are examples only – not a complete list – of evidence that satisfies the requirement:
  - 1) Testimony of a Witness with Knowledge. Testimony that an item is what it is claimed to be.

[Legal Information Institute](#): “[Rule 901. Authenticating or Identifying Evidence](#) | Federal Rules of Evidence”

# authentication via witness w/ personal knowledge

- more effective when leveraging witness w/ personal knowledge of historical web content
- less effective when instrumentally entering into record a comparison performed by a random person



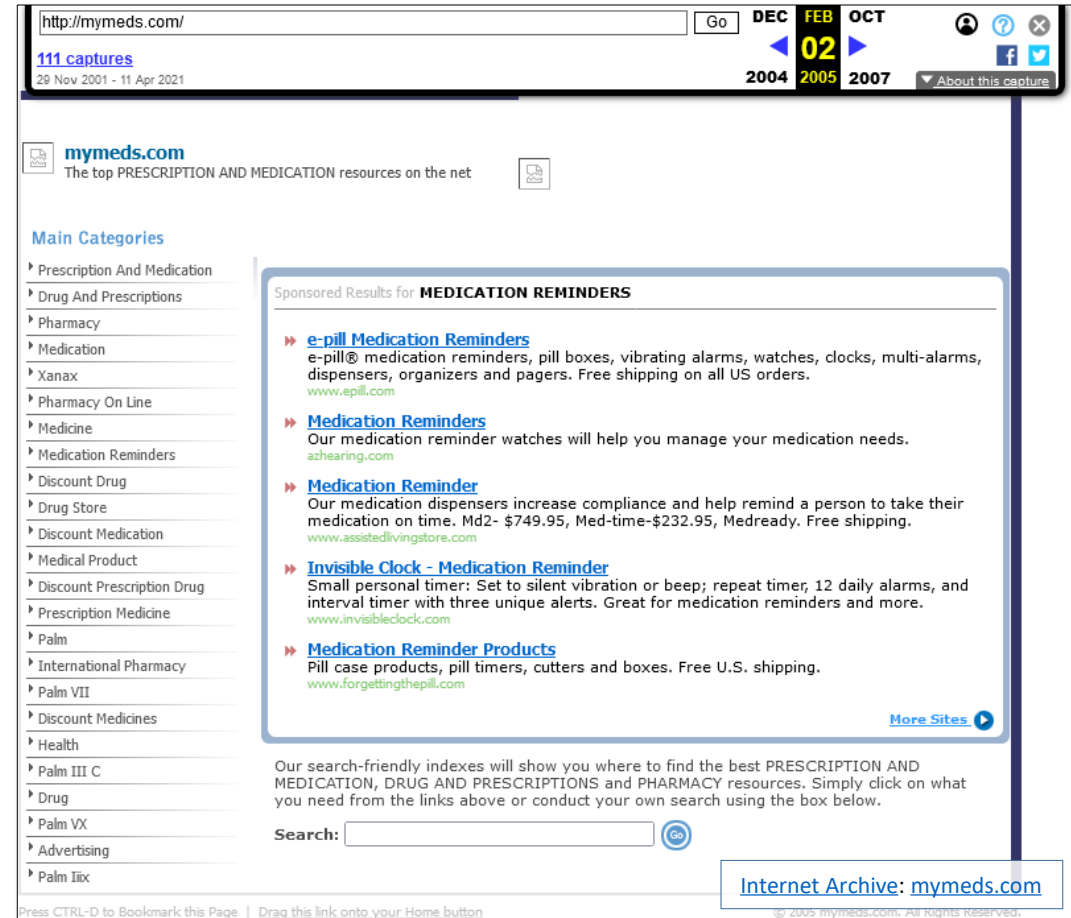
"One year + of journals" by [Pain Chaud](#) under [CC BY-ND 2.0](#)

# United States v. Bansal (2011)

- IAWM used to show operation of an online pharmacy
- IAWM evidence admitted

*“To authenticate that the screen-shot was what it purported to be, the government called a witness to testify about how the Wayback Machine website works and how reliable its contents are. The witness also compared the screenshots with previously authenticated and admitted images from Bansal's website and concluded, based upon her personal knowledge, that the screenshots were authentic. This was evidence ‘sufficient to support a finding’ that the screenshots were ‘what they purport[ed] to be,’ rendering them admissible under Rule 901(b)(1). Accordingly, we will affirm the District Court.”*

[United States v. Bansal, 663 F.3d 634, 652, at \\*667-668 \(3d Cir.2011\)](#)





# expert witnesses – FRE 702

## Testimony by Expert Witnesses

- a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- b) the testimony is based on sufficient facts or data;
- c) the testimony is the product of reliable principles and methods; and
- d) the expert has reliably applied the principles and methods to the facts of the case.

[Legal Information Institute: "Rule 702. Testimony by Expert Witnesses | Federal Rules of Evidence"](#)

# authentication via expert witness

- reliable but more involved + less-used mechanism
- use when interpretation, explanation, or qualification needed
- expert witnesses have included:
  - digital forensics specialists
  - patent examiners
  - web archiving professional(s)



["Test tubes and other recipients in chemistry lab"](#) by [Old Photo Profile](#) under [CC BY 2.0](#)

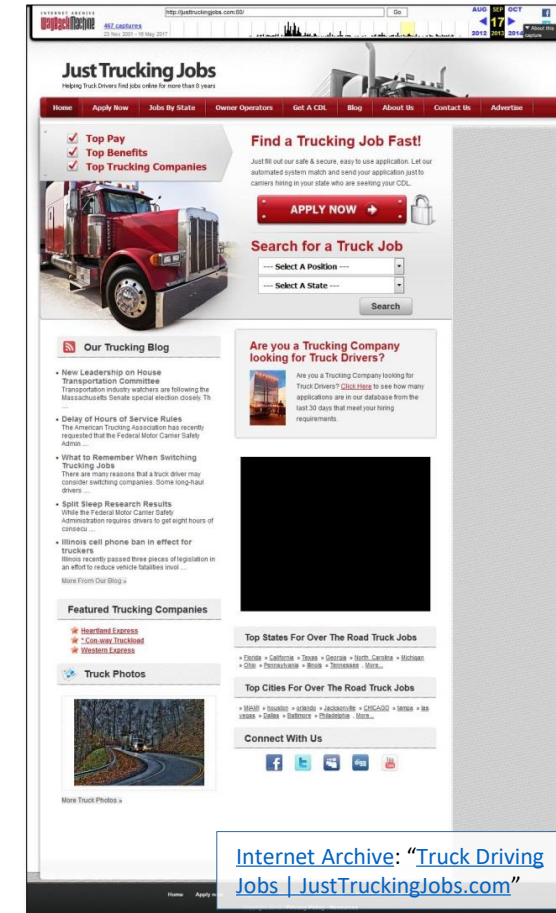
# ***Marten Transport, Ltd. v. PlattForm Advertising, Inc. (2016)***

- IAWM used to show ongoing use of mark over period of time
- IAWM evidence admitted

***“PlattForm argues that Mr. Fischer, in opining that certain websites referenced Marten in the past as shown by the Wayback Machine, improperly acts as a surrogate for the experts who created the Internet Archive.***

*The Court rejects this challenge. **PlattForm relies on Khoday v. Symantec Corp.**, 93 F.Supp.3d 1067 (D.Minn.2015), but in that case, the court rejected an argument that the expert was not qualified because he had not worked at the Internet Archive to design the Wayback Machine archives or the web crawler that it used...PlattForm notes that the expert in Khoday at least had experience creating web archives, but **the court in that case did not suggest that such archiving experience was required...**In this case, Mr. Fischer has experience using tools to recover electronic data, **including the use of the Wayback Machine**, and the Court finds such experience to be **sufficient to withstand a Daubert challenge.**”*

[\*Marten Transp., Ltd. v PlattForm Advertising, Inc.\*, 184 F. Supp. 3d 1006, at \\*1009 \(D. Kan. 2016\)](#)



# ***Frye + Daubert standards***

## **Frye standard**

- established in [\*Frye v. United States\*, 293 F. 1013 \(D.C. Cir. 1923\)](#)
- “...the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.”

[Legal Information Institute: “Frye Standard”](#)

## **Daubert standard**

- established in [\*Daubert v. Merrell Dow Pharmaceuticals, Inc.\*, 509 U.S. 579 \(1993\)](#)
- “...the trial judge...must make a preliminary assessment of whether the testimony's underlying reasoning or methodology is scientifically valid and properly can be applied to the facts at issue.”

[Legal Information Institute: “Daubert Standard”](#)

# admissibility trends summary – U.S. federal courts

	judicial notice		IA standard affidavit		witness w/ personal knowledge		expert witness	
admitted?	yes	no	yes	no	yes	no	yes	no
U.S. district court	47	12	14	3	6	4	7	0
U.S. circuit court	1	2	2	0	3	1	2	0

- based on analysis of ~300 U.S. federal court cases mentioning IAWM
- affidavit + expert witness succeed most consistently
- examples of all strategies succeeding at circuit court level, but [recent ruling](#) will likely make judicial notice less successful going forward





# Temporal (In)coherence

"clock composition" by [Lisa Ann Yount](#) under [CC0 1.0](#)



# temporal (in)coherence

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34 captures 27 Oct 2002 - 10 Jun 2017

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Features: Wunder Photos, NEXRAD radar, Regional Radar, NEW Zoom Satellite, Maps, Trip Planner

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Heat Index

Windchill

Humidity

Radar

Dew Point

Wind

Visibility

Visible Satellite

Satellite

Fronts

Snow Depth

Jet Stream

Flight Rules

Health Maps

UV Forecast

Air Quality

Peak Air Quality Index

International

United States

Canada

Mexico

Central America

South America

Northern Asia

Varina, Iowa

Local Time: 1:09 PM CST Set My Timezone

Lat/Lon: 42.6° N 94.8° W | MSN Map

Current Conditions

Updated: 12:55 PM CST on December 09, 2004

Observed at Storm Lake, Iowa (History)

Elevation: 1486 ft / 453 m

41 °F / 5 °C

Light Drizzle

Windchill: 37 °F / 3 °C

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Dew Point: 41 °F / 5 °C

Wind: 6 mph / 9 km/h from the South

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Internet Archive: "Weather Underground: Varina, Iowa Forecast"

# temporal (in)coherence: *About this capture*

The screenshot shows the Weather Underground website for Varina, Iowa (ZIP Code 50593). The page is dated December 9, 2004, at 1:09 PM CST. The current conditions are 41°F / 5°C with light drizzle. The 5-day forecast shows temperatures ranging from 31°F to 47°F. A white arrow points to the date 'DEC 09' in the top navigation bar.

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34 captures 27 Oct 2002 - 10 Jun 2017

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Crawl data donated by Alexa Internet. This data is currently not publicly accessible

TIME STAMPS

http://icons.wunderground.com/data/wximagenew/a/abbv/29-banner.jpg +9 years 5 months  
http://icons.wunderground.com/data/wximagenew/d/d70dave/0-thumb.jpg +9 years 18 days  
http://banners.wunderground.com/cgi-bin/statefarmbanner?zip=50593&width=150 +1 year 3 months  
http://www.wunderground.com/data/nids/DMX19\_thumb\_1.jpg +9 months 7 days  
http://icons.wunderground.com/graphics/smash/blue\_localRadar.gif -20 days 1 minute  
http://icons.wunderground.com/graphics/smash/blue\_weatherStation.gif -20 days 52 seconds  
http://icons.wunderground.com/graphics/highleft.gif -20 days 48 seconds  
http://icons.wunderground.com/graphics/smash/blue\_noWarning.gif -20 days 43 seconds  
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http://icons.wunderground.com/graphics/smash/blue\_ski.gif -20 days 13 seconds  
http://icons.wunderground.com/graphics/smash/blue\_envelope2.gif -20 days 11 seconds  
http://icons.wunderground.com/graphics/smash/blue\_tripPlanner.gif -20 days 4 seconds  
http://icons.wunderground.com/graphics/lowright.gif -20 days 2 seconds  
http://icons.wunderground.com/graphics/smash/blue\_radar.gif -19 days 23 hours

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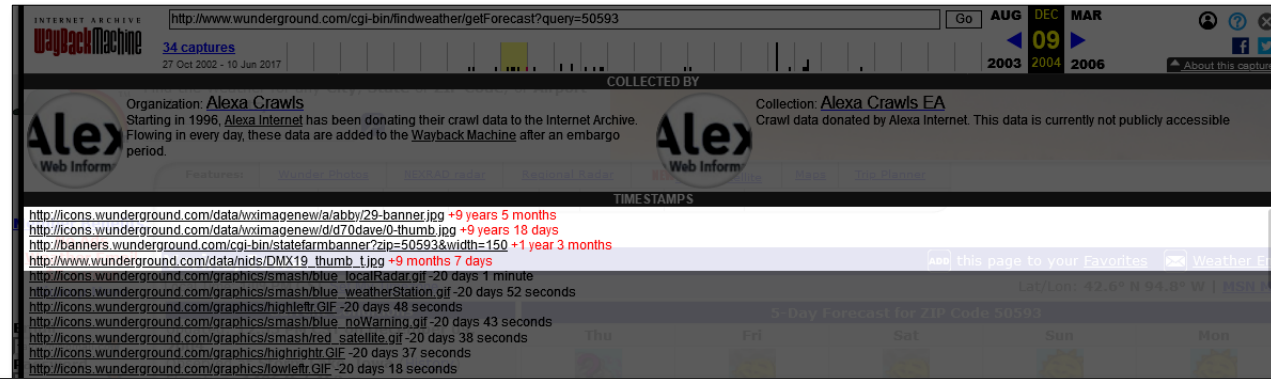
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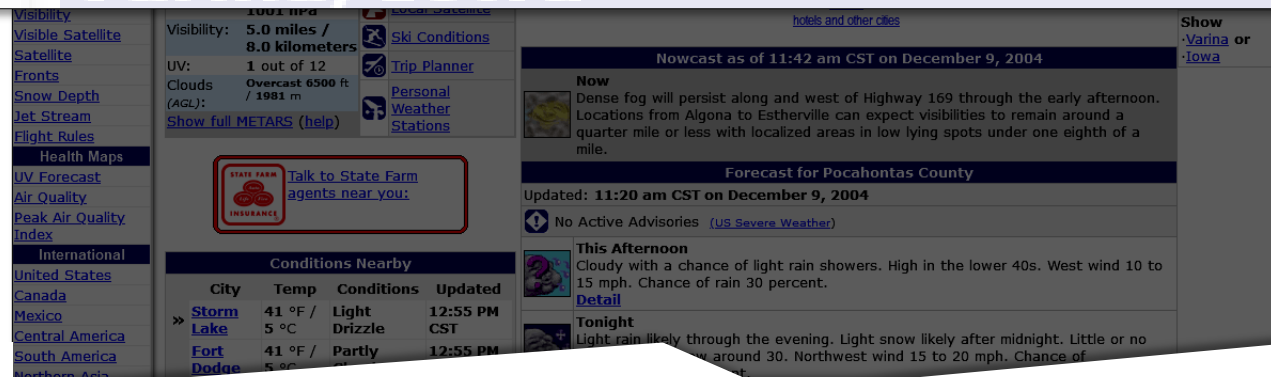
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Maps: Temperature Heat Index Windchill Humidity Radar Dew Point Wind Visibility Visible Satellite Satellite Fronts Snow Depth Jet Stream Flight Rules Health Maps UV Forecast Air Quality Peak Air Quality Index International United States Canada Mexico Central America South America Northern Asia

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[in Varina](#)

[Best Rates GUARANTEED Discount Hotels](#)

**Wunder Photos**

Show Varina or Iowa

**Nowcast as of 11:42 am CST on December 9, 2004**

**Now**

Dense fog will persist along and west of Highway 169 through the early afternoon. Locations from Algona to Estherville can expect visibilities to remain around a quarter mile or less with localized areas in low lying spots under one eighth of a mile.

**Forecast for Pocahontas County**

Updated: 11:20 am CST on December 9, 2004

No Active Advisories (US Severe Weather)

**This Afternoon**

Cloudy with a chance of light rain showers. High in the lower 40s. West wind 10 to 15 mph. Chance of rain 30 percent.

[Detail](#)

**Tonight**

Light rain likely through the evening. Light snow likely after midnight. Little or no snow after midnight. High around 30. Northwest wind 15 to 20 mph. Chance of

Scott G. Ainsworth, et al.: "Only One Out of Five Archived Web Pages Existed as Presented"

Internet Archive: "Weather Underground: Varina, Iowa Forecast"

# temporal (in)coherence

Internet Archive WayBackMachine

http://www.wunderground.com/cgi-bin/findweather/getForecast?query=50593

34 captures 27 Oct 2002 - 10 Jun 2017

Find the Weather for any City, State or ZIP Code, or Airport Code or Country

Webpage was captured on 9 December 2004 at 1:09p CST.

Member Benefits:  
No Ads  
Weather Email  
\$5 a year  
Signup Here

Email: taylorm@gmail.com  
Password: \*\*\*\*\*  
Login

Print This Page

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Temperature  
Heat Index  
Windchill  
Humidity  
Radar  
Dew Point  
Wind  
Visibility  
Visible Satellite  
Satellite  
Fronts  
Snow Depth  
Jet Stream  
Flight Rules  
Health Maps  
UV Forecast  
Air Quality  
Peak Air Quality Index

International  
United States  
Canada  
Mexico  
Central America  
South America  
Northern Asia

**Varina, Iowa**  
Local Time: 1:09 PM CST [Set My Timezone](#)

**Current Conditions**  
Updated: 12:55 PM CST on December 09, 2004  
Observed at Storm Lake, Iowa ([History](#))  
Elevation: 1486 ft / 453 m

41 °F / 5 °C  
Light Drizzle

Windchill: 37 °F / 3 °C  
Humidity: 100%  
Dew Point: 41 °F / 5 °C  
Wind: 6 mph / 9 km/h from the South  
Pressure: 29.56 in / 1001 hPa  
Visibility: 5.0 miles / 8.0 kilometers  
UV: 1 out of 12  
Clouds: Overcast 6500 ft / 1981 m  
[Show full METARS \(help\)](#)

[Local Radar](#)  
[Regional Radar](#)  
[Local Satellite](#)  
[Ski Conditions](#)  
[Trip Planner](#)  
[Personal Weather Stations](#)

[Talk to State Farm agents near you:](#)

**Conditions Nearby**

City	Temp	Conditions	Updated
Storm Lake	41 °F / 5 °C	Light Drizzle	12:55 PM CST
Fort Dodge	41 °F / 5 °C	Partly Cloudy	12:55 PM CST

**Forecast for Pocahontas County**  
Updated: 11:20 am CST on December 9, 2004

No Active Advisories ([US Severe Weather](#))

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Thu 43° | 29° Chance of Rain [Detail](#)  
Fri 36° | 22° Mostly Cloudy [Detail](#)  
Sat 47° | 34° Mostly Cloudy [Detail](#)  
Sun 41° | 15° Partly Cloudy [Detail](#)  
Mon 31° | 15° Partly Cloudy [Detail](#)

Click [Detail](#) for hourly wind, temperature, humidity and UV forecasts.  
Alternate Computer Forecast: [AVN MOS Weather Graph](#) | [Local Allergy Info from Pollen.com](#)

[Meet Locals](#)  
[read their Hotel Tips and Travel Guides for Varina, IA](#)

[Unbiased reviews and advice for Varina hotels and other cities](#)

[in Varina](#)  
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Internet Archive WayBackMachine

34 captures

27 Oct 2002 - 10 Jun 2017

Go AUG DEC MAR 2003 09 2004 2006

Find the Weather for any City, State or ZIP Code, or Airport Code or Country

Member Benefits:  
No Ads  
Weather Email  
\$5 a year  
Signup Here

Email  
taylor@gmail.com  
Password  
\*\*\*\*\*  
Login

Print This Page  
Maps  
Temperature

Features: Wunder Photos NEXRAD radar Regional Radar NEW Zoom Satellite Maps  
Tropical / Hurricane Marina Severe Astronomy Ski Education Favorites Personal Weather Stations

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29.50 in / 1001 hPa  
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Local Radar  
Regional Radar  
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Ski Conditions  
Trip Planner  
Personal Weather Stations

UV: 1 out of 12  
Clouds: Overcast 6500 ft / 1981 m  
[Show full METARS \(help\)](#)

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Webpage was captured on 9 December 2004 at 1:09p CST.

Timestamp in text on webpage corroborates time of capture (i.e., 9 December 2004 at 1:09p CST).

Text on webpage and associated infographic indicate current conditions as raining. Infographic captured on 12 December 2004 at 8:54a CST.

Talk to State Farm agents near you:

Scott G. Ainsworth, et al.: "Only One Out of Five Archived Web Pages Existed as Presented"

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Member Benefits:  
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Webpage was captured on 9 December 2004 at 1:09p CST.

Timestamp in text on webpage corroborates time of capture (i.e., 9 December 2004 at 1:09p CST).

Radar graphic reflects weather conditions (clear) at the time of its capture: 12 September 2005 at 5:34p CDT.

Text on webpage and associated infographic indicate current conditions as raining. Infographic captured on 12 December 2004 at 8:54a CST.

Nowcast as of 11:42 am CST on December 9, 2004

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[Detail](#)

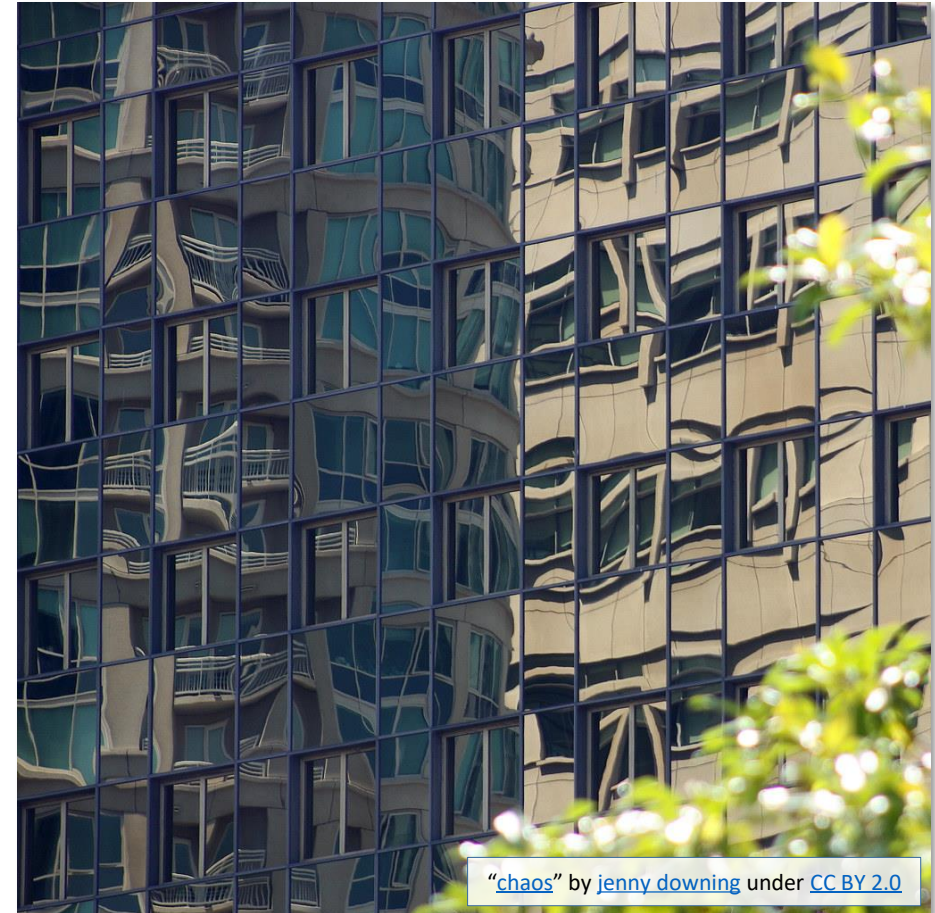
Scott G. Ainsworth, et al.: "Only One Out of Five Archived Web Pages Existed as Presented"

Internet Archive: "Weather Underground: Varina, Iowa Forecast"



# what's going on here?

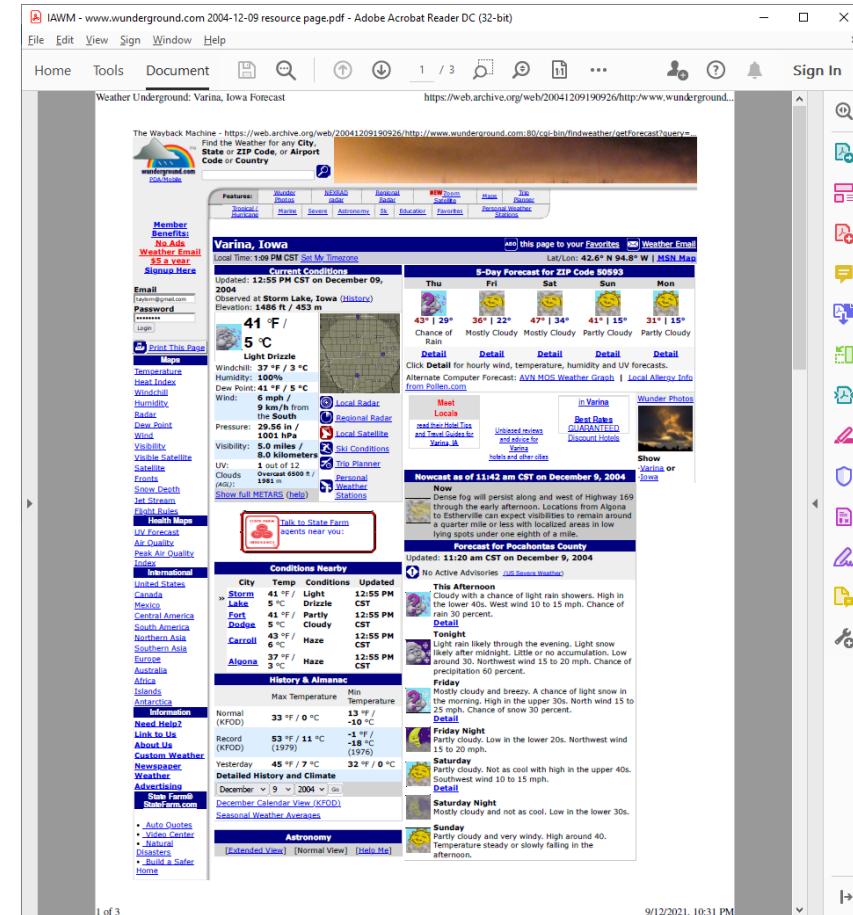
- archiving of web resources is time-staggered
- IAWM reconstitutes archived webpage w/ most temporally proximate elements
- IAWM may therefore re-present fictitious web pages
- examine capture dates + assess materiality of temporal incoherence





# problems w/ PDF

- IAWM evidence submitted as PDF screenshots
- temporal variations no longer apparent
- if temporal coherence is an issue, provide supplementary info



# how to have admitted

- IA will still provide an affidavit
- however, this IAWM evidence is more easily contested
- or viewed as less credible by judge
- consider an expert witness







# Timestamping Content Changes

"Annual\_rings" by [Lige Eglite](#) under [CC BY 2.0](#)



# sources of temporal information

## conspicuous

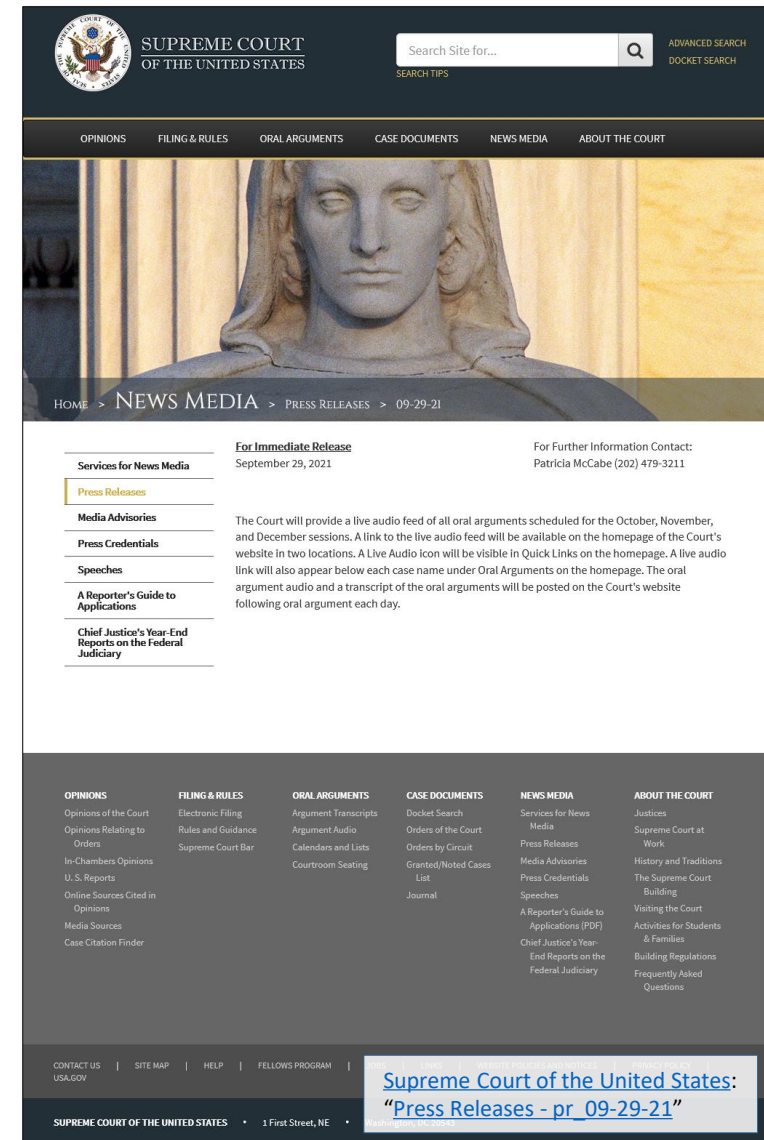
- (system-generated) datetime string in webpage text
- IAWM capture timestamp

## less obvious

- (system-generated) datetime string in webpage source code
- Google [before: operator](#)
- Twitter [until: operator](#)
- IAWM capture datetime of webpage w/ inlinks
- web server  $\rightleftarrows$  client network headers (e.g., X-Archive-Orig-last-modified)
- timestamps in embedded image metadata (e.g., [Exif](#), [XMP](#))

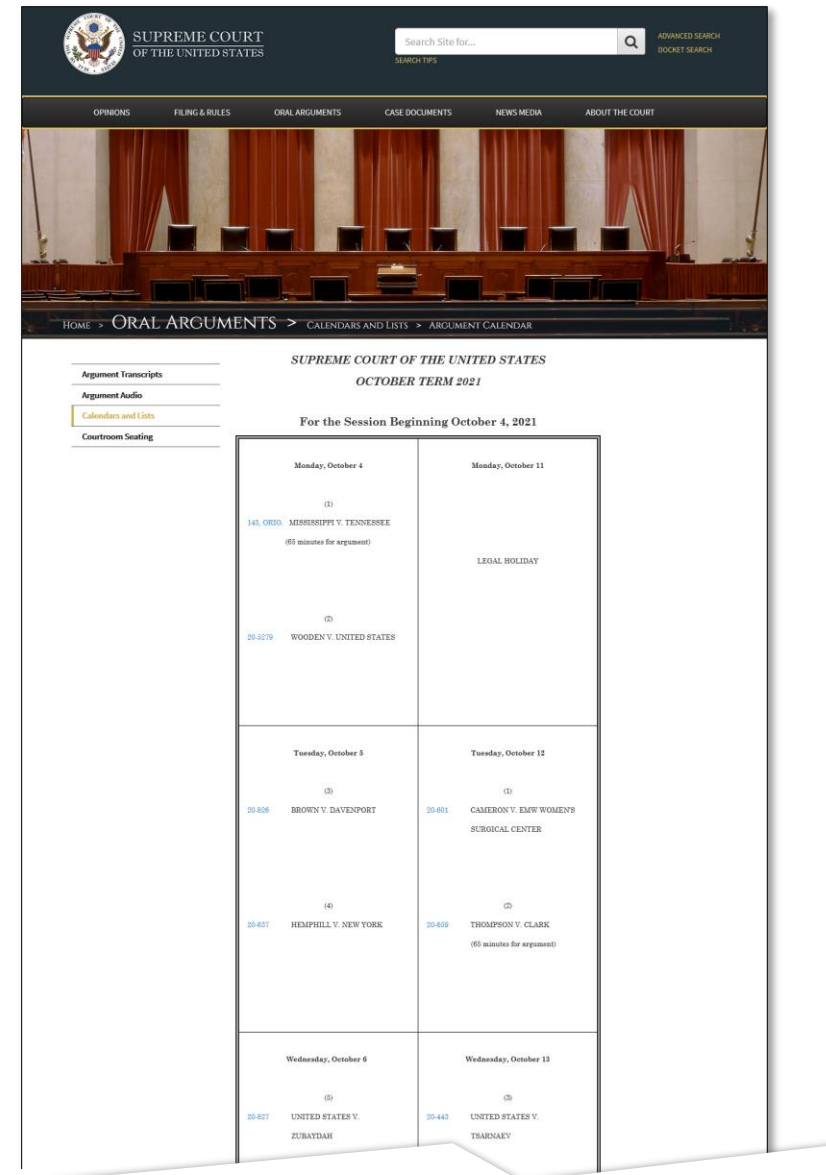
# when was a webpage first published?

- when was the webpage for the oral argument live audio stream first made available?
- press release said it would go live at the start of October Term 2021
- link would be published on the home page



# when was a webpage first published?

- first oral arguments of the term were scheduled for 4 October 2021
- stream presumably went live no later than that, but what about the webpage?



Supreme Court of the United States: "Monthly Argument"

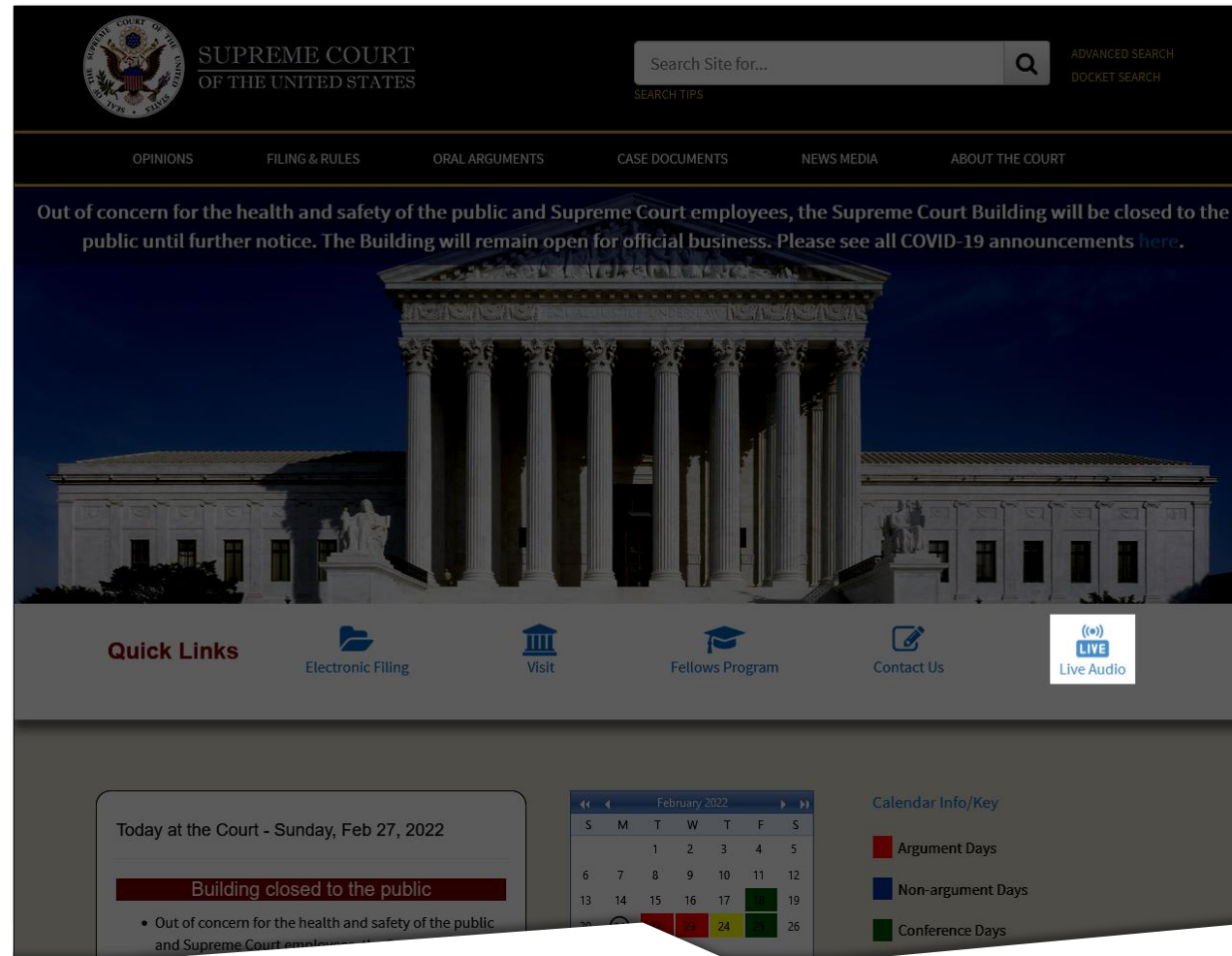


# when was a webpage first published?



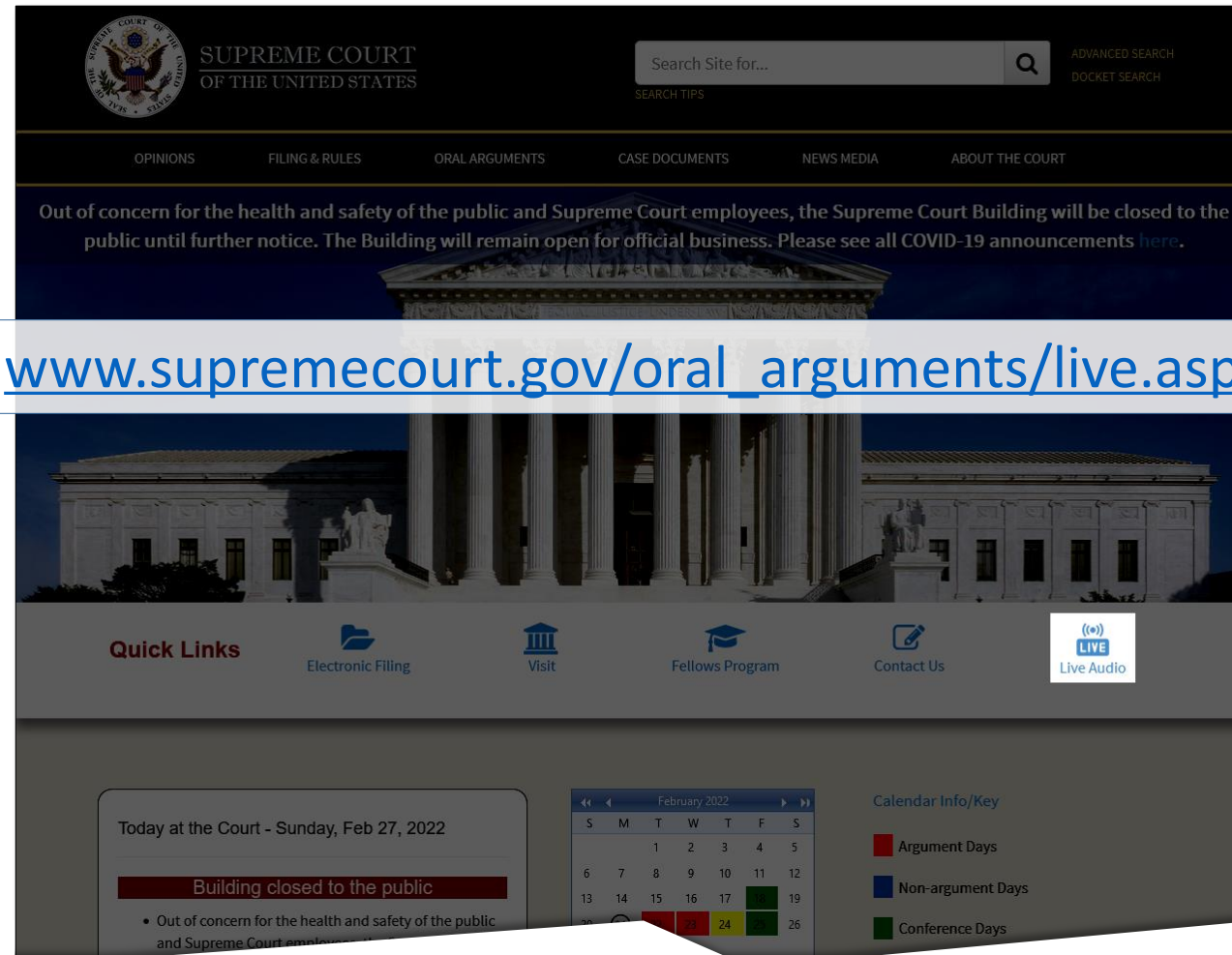
Supreme Court of the United States: "[Home](#)"

# when was a webpage first published?



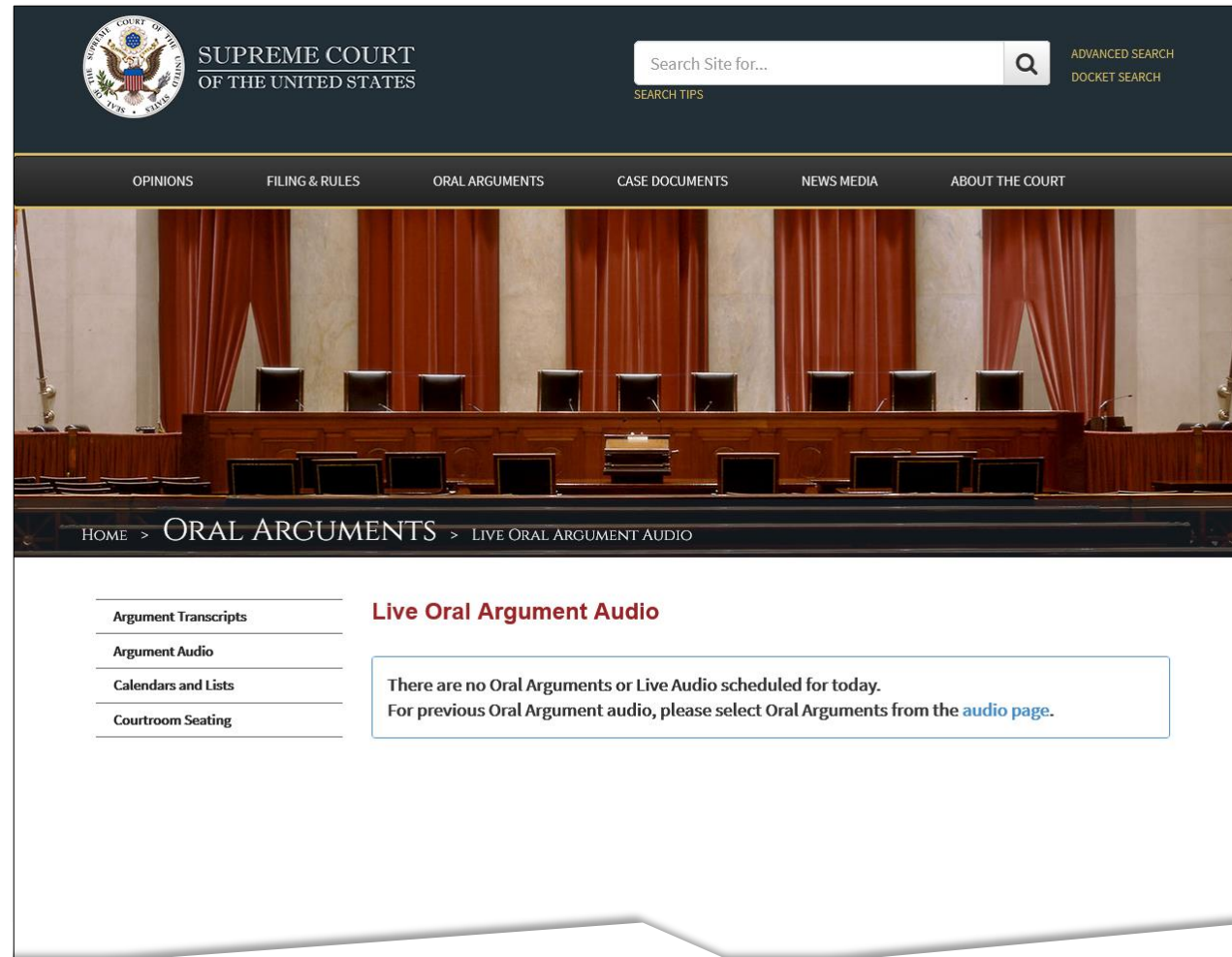
Supreme Court of the United States: "[Home](#)"

# when was a webpage first published?



Supreme Court of the United States: "[Home](#)"

# when was this webpage first published?



Supreme Court of the United States: "[Live Oral Argument Audio](#)"

# when did link appear on home page?

The screenshot shows the official website of the Supreme Court of the United States. At the top, there is a dark blue header with the Court's seal on the left, the text "SUPREME COURT OF THE UNITED STATES" in the center, and a search bar on the right. Below the header is a navigation bar with links to "OPINIONS", "FILING & RULES", "ORAL ARGUMENTS", "CASE DOCUMENTS", "NEWS MEDIA", and "ABOUT THE COURT". A large banner image of the Supreme Court Building is featured, with a text overlay stating: "Out of concern for the health and safety of the public and Supreme Court employees, the Supreme Court Building will be closed to the public until further notice. The Building will remain open for official business. Please see all COVID-19 announcements [here](#)." Below the banner is a "Quick Links" section with icons for "Electronic Filing", "Visit", "Fellows Program", "Contact Us", and "Live Audio". At the bottom, there is a "Today at the Court" section for Sunday, Feb 27, 2022, which includes a red banner stating "Building closed to the public" and a list of events. To the right of this is a calendar for February 2022, showing argument days in red, non-argument days in blue, and conference days in green. A "Calendar Info/Key" section explains the color coding. At the very bottom, a link reads "Supreme Court of the United States: 'Home'".

**Supreme Court of the United States**

Search Site for...

ADVANCED SEARCH  
DOCKET SEARCH

OPINIONS FILING & RULES ORAL ARGUMENTS CASE DOCUMENTS NEWS MEDIA ABOUT THE COURT

Out of concern for the health and safety of the public and Supreme Court employees, the Supreme Court Building will be closed to the public until further notice. The Building will remain open for official business. Please see all COVID-19 announcements [here](#).

**Quick Links**

- Electronic Filing
- Visit
- Fellows Program
- Contact Us
- Live Audio

Today at the Court - Sunday, Feb 27, 2022

**Building closed to the public**

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February 2022

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26

Calendar Info/Key

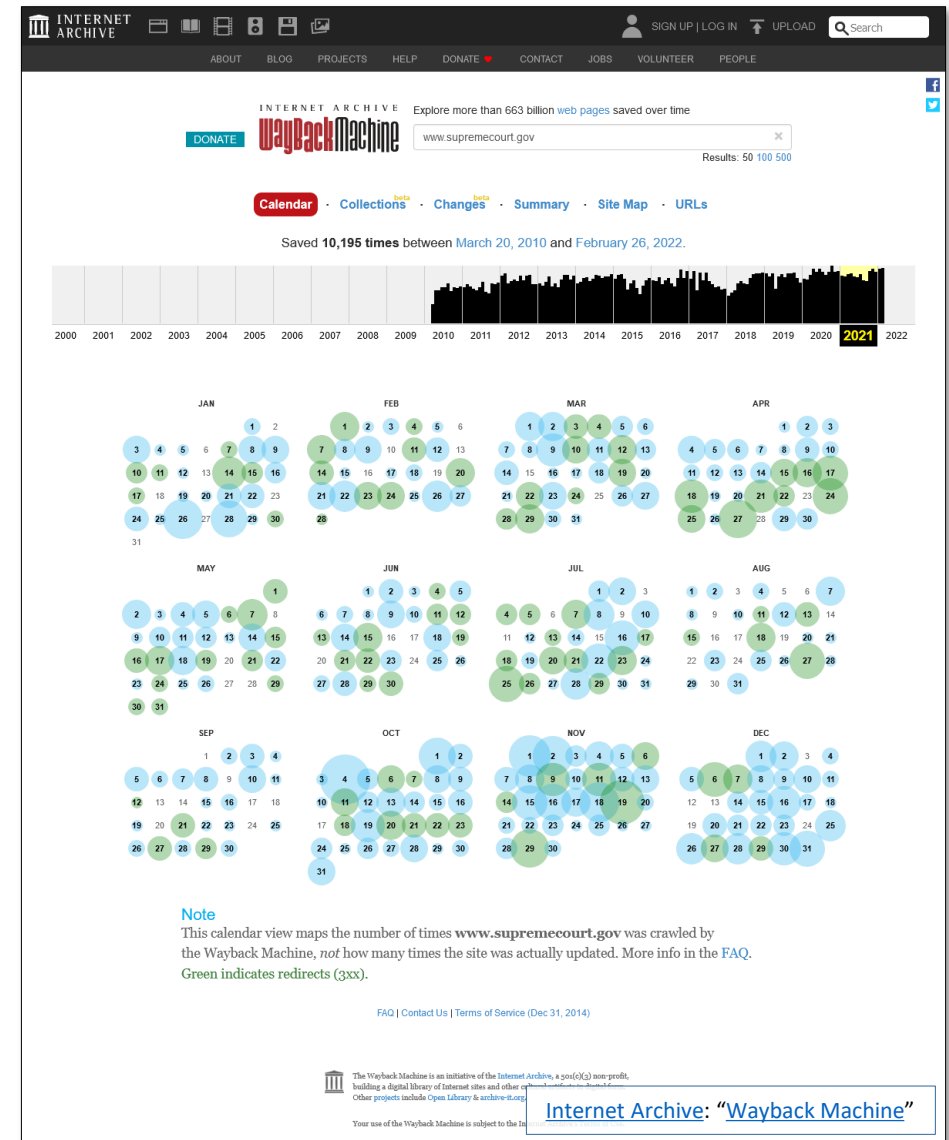
- Argument Days
- Non-argument Days
- Conference Days

Supreme Court of the United States: "[Home](#)"



# when did link appear on home page?

- brute force (i.e. try inside-outside dates, then narrow down)
- use [Archive-It](#) to [search for “live audio”](#)
- use [CDX Server API](#) to bulk retrieve captures, then run local full-text search for “live audio”



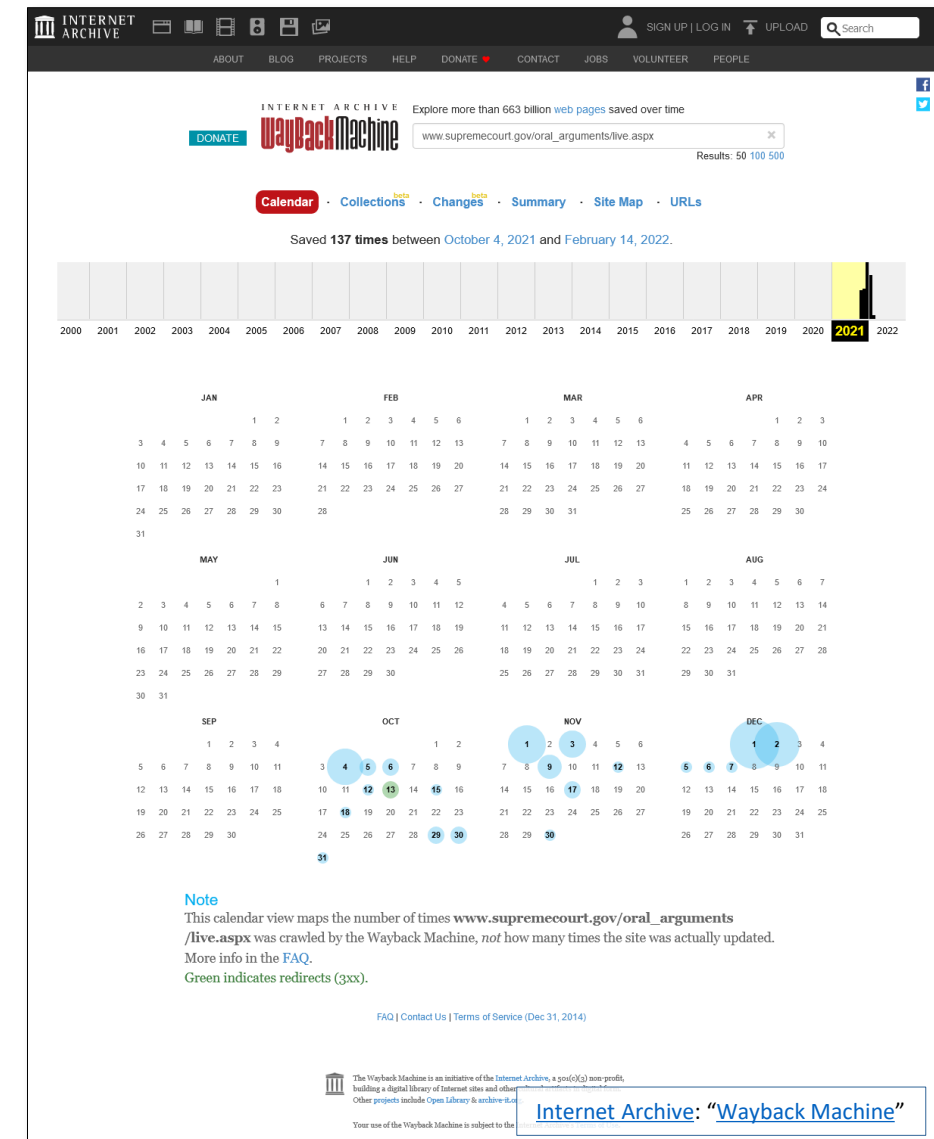


# when did link appear on home page?

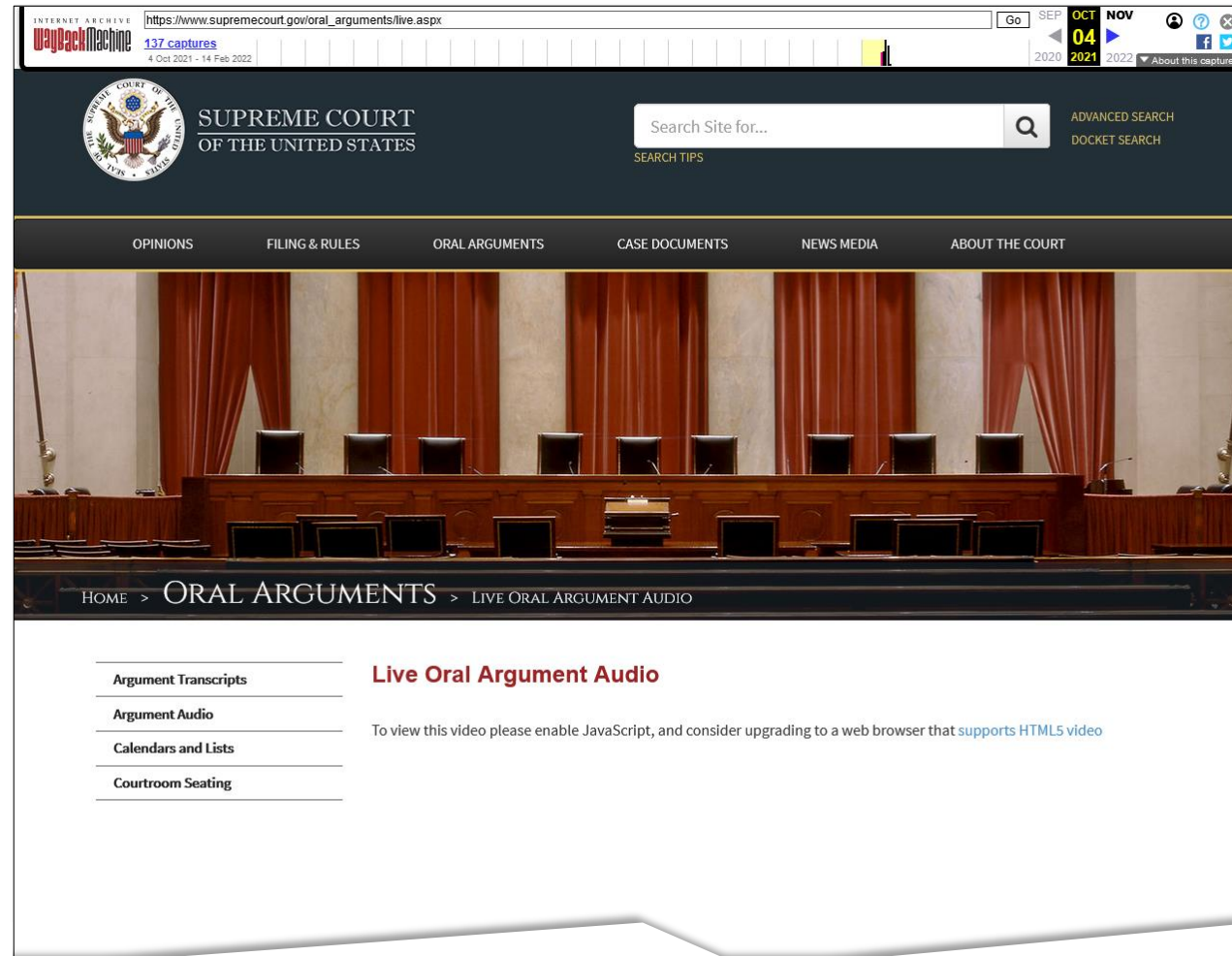


# captures of webpage itself

- timeline histogram only shows captures for calendar years 2021 + 2022, up to current date
- click back to 2021
- IAWM calendar page shows captures dating back to 4 October 2021



# first capture of webpage: 4 October 2021



Internet Archive: "[Live Oral Argument Audio](#)"



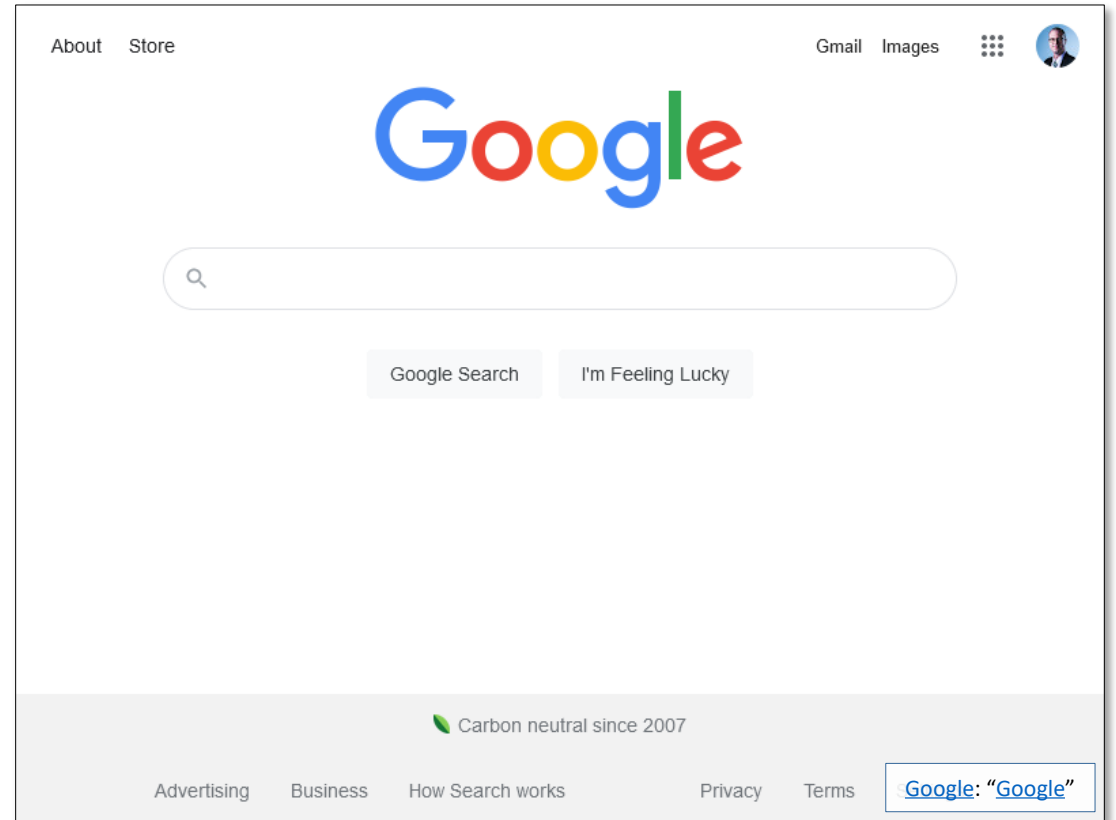


# Google Search Operators

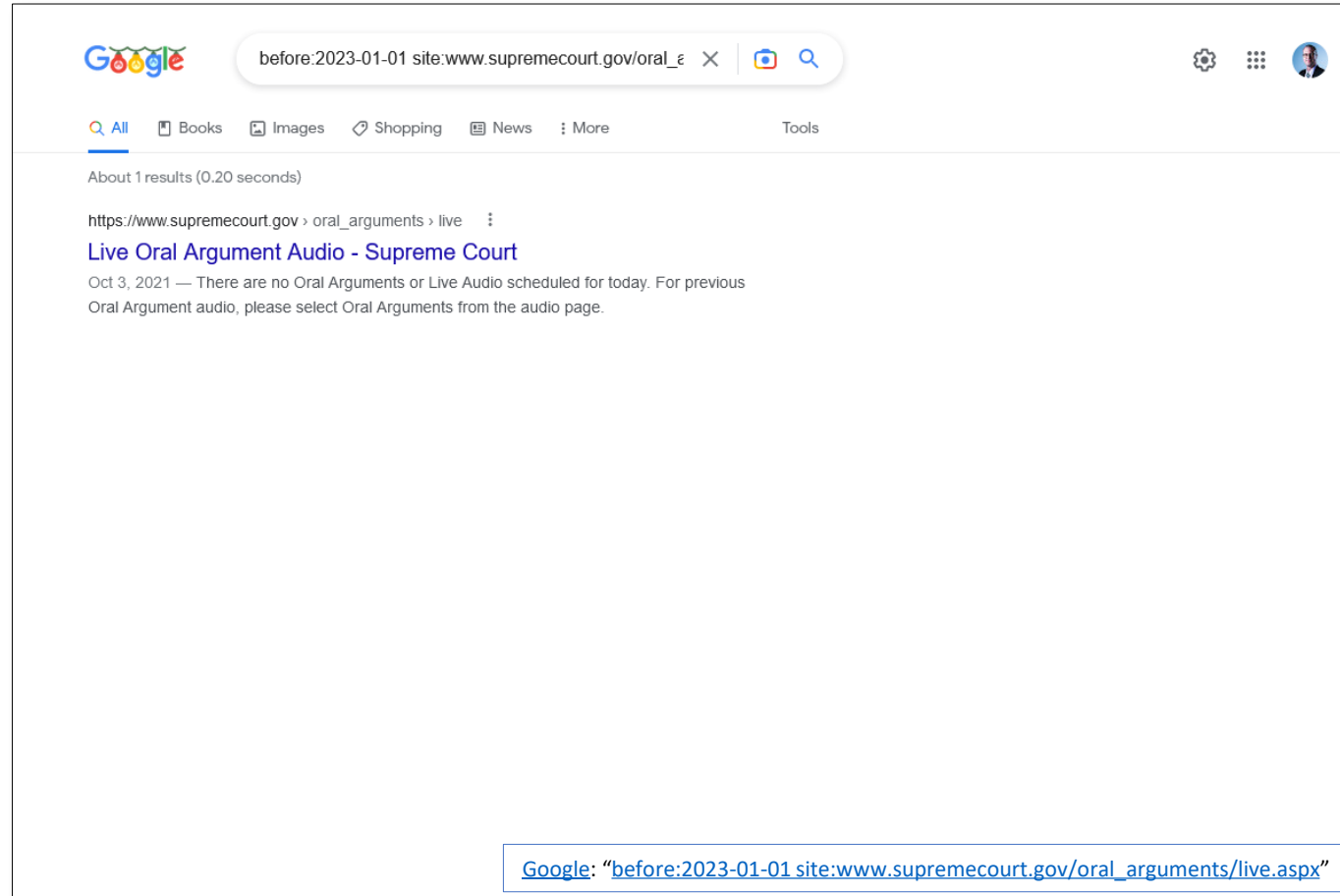
"Lego Google logo, Google, NYC, NY 3.JPG" by [Cory Doctorow](#) under [CC BY-SA 2.0](#)

# Google search operators

- [Google search operators](#) are specific commands that may be included in a search to refine the returned results
- the *before:* operator limits results to those that were updated before the specified date
- the *after:* operator limits results to those that were updated after the specified date
- the *site:* operator limits results to those w/ web addresses starting w/ the specified path

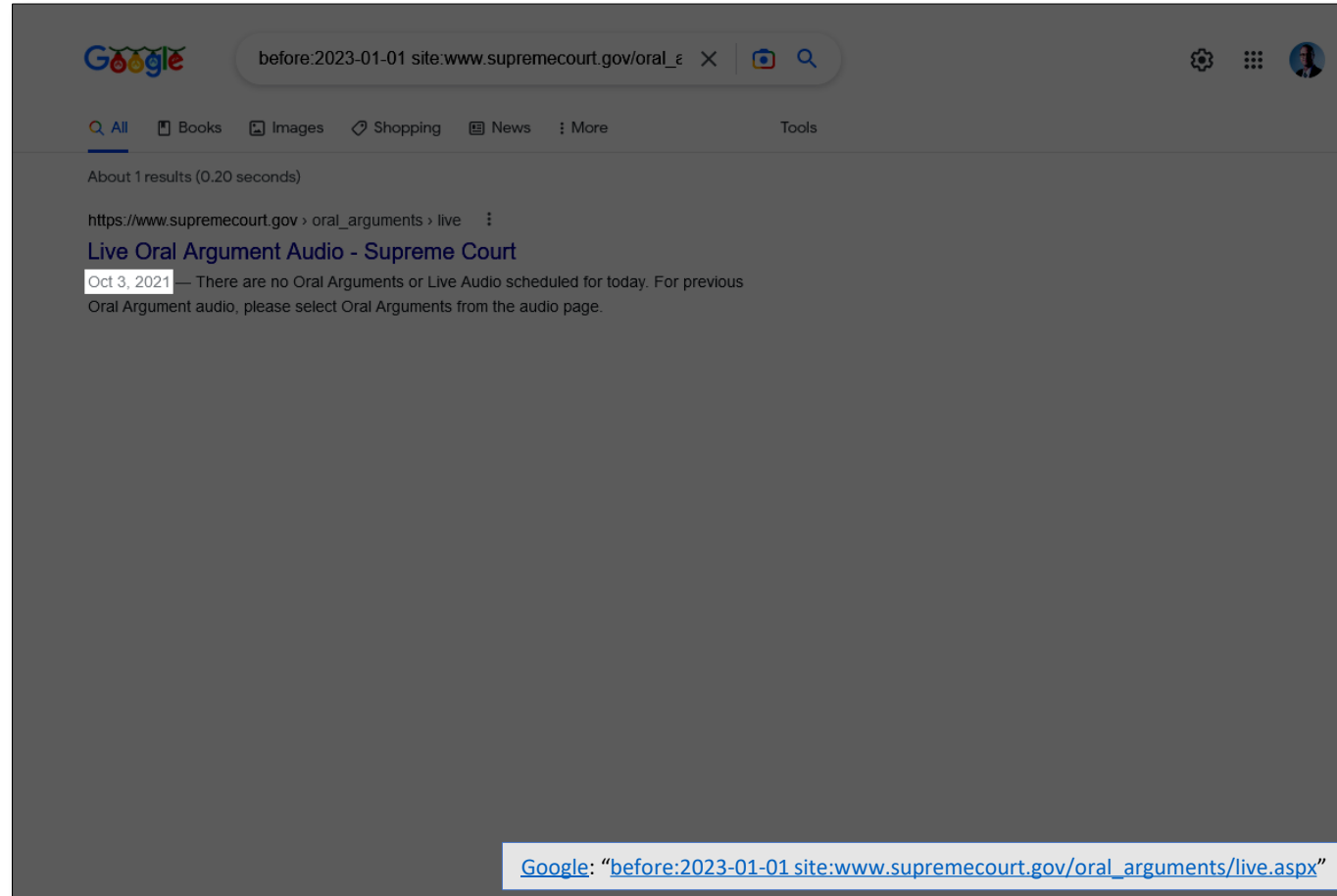


# Google search *before:* 1 January 2023

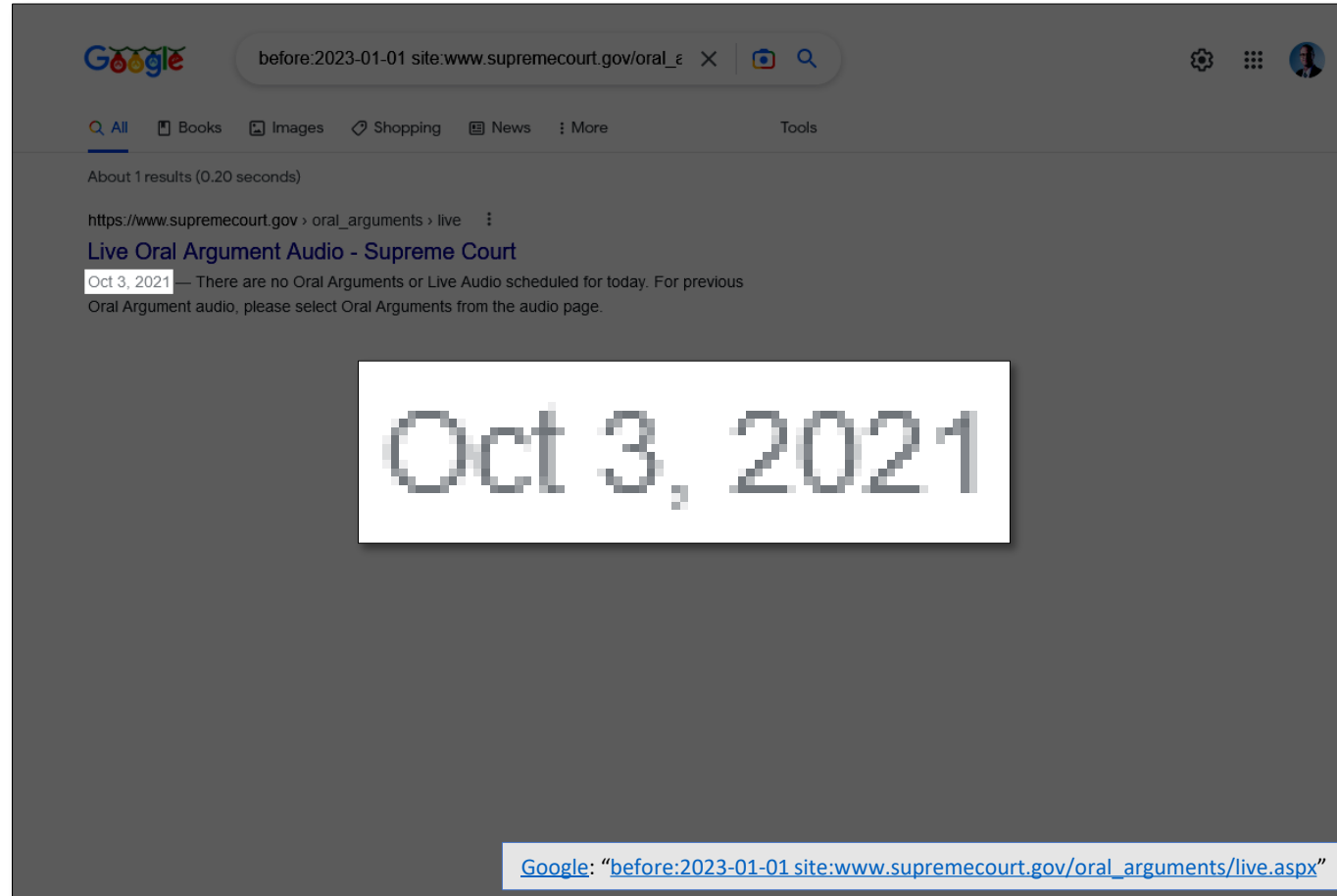




# Google search *before:* 1 January 2023



# Google search *before:* 1 January 2023



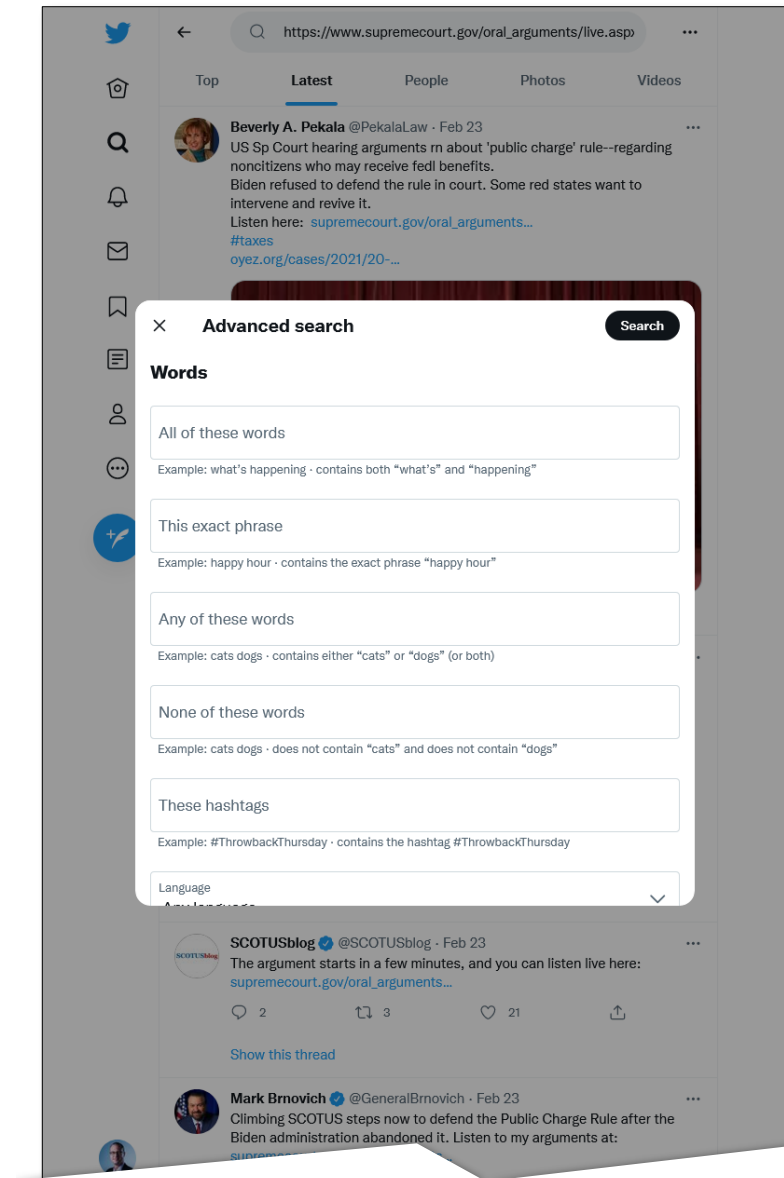
A large sand sculpture of the Twitter bird logo and the word 'TWITTER' on a beach. The bird is in the center, facing right, with its wings spread. Below it, the word 'TWITTER' is carved in large, blocky letters. The sand is wet and glistening, with some small pools of water. The ocean is visible in the background.

# Twitter Search Operators

"Twitter escultura de arena" by [Rosaura Ochoa](#) under [CC BY 2.0](#)

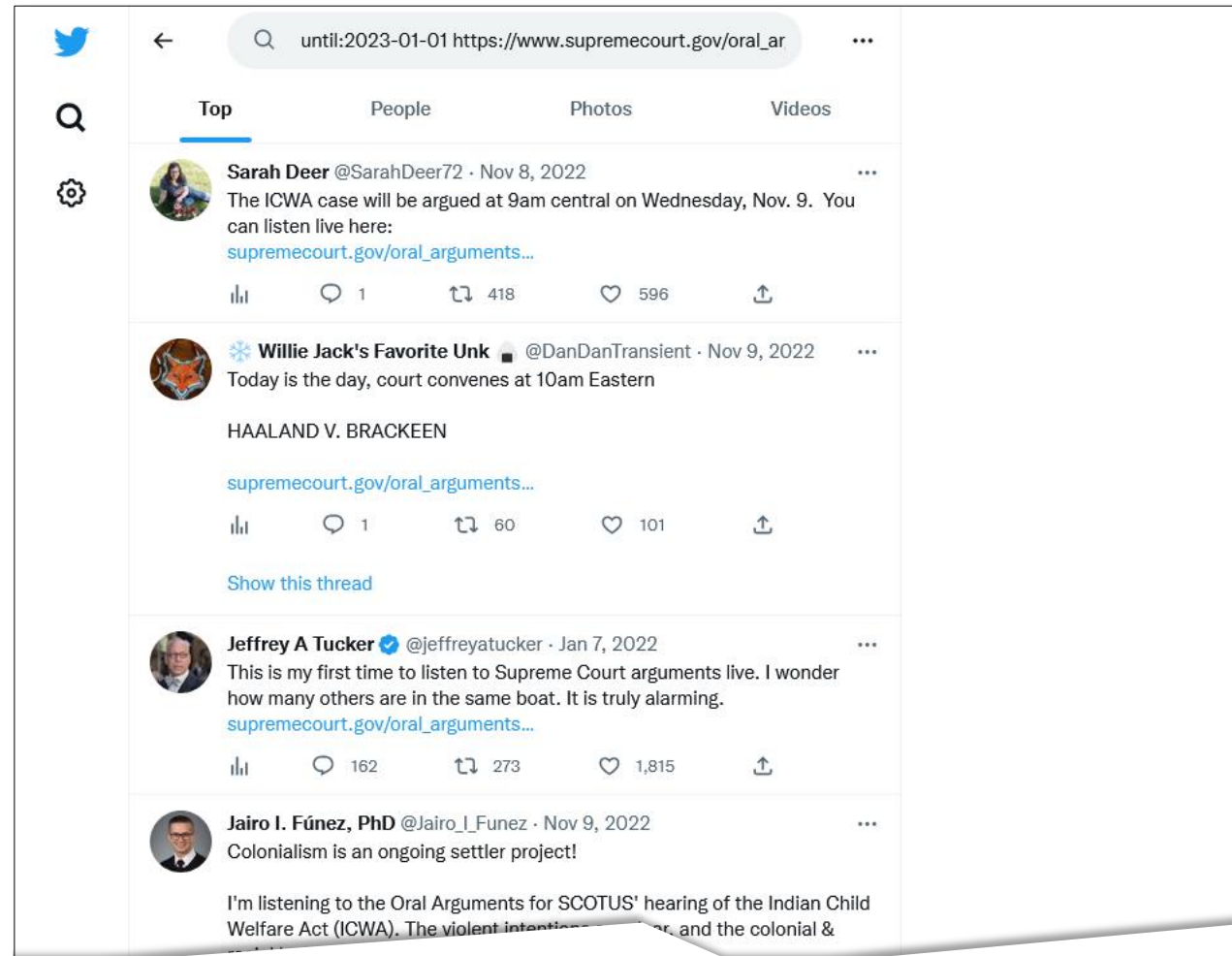
# Twitter search operators

- [Twitter search operators](#) are specific commands that may be included in a search to refine the returned results
- the *until:* operator limits returned tweets to those published before the specified date
- the *since:* operator limits returned tweets to those published after the specified date





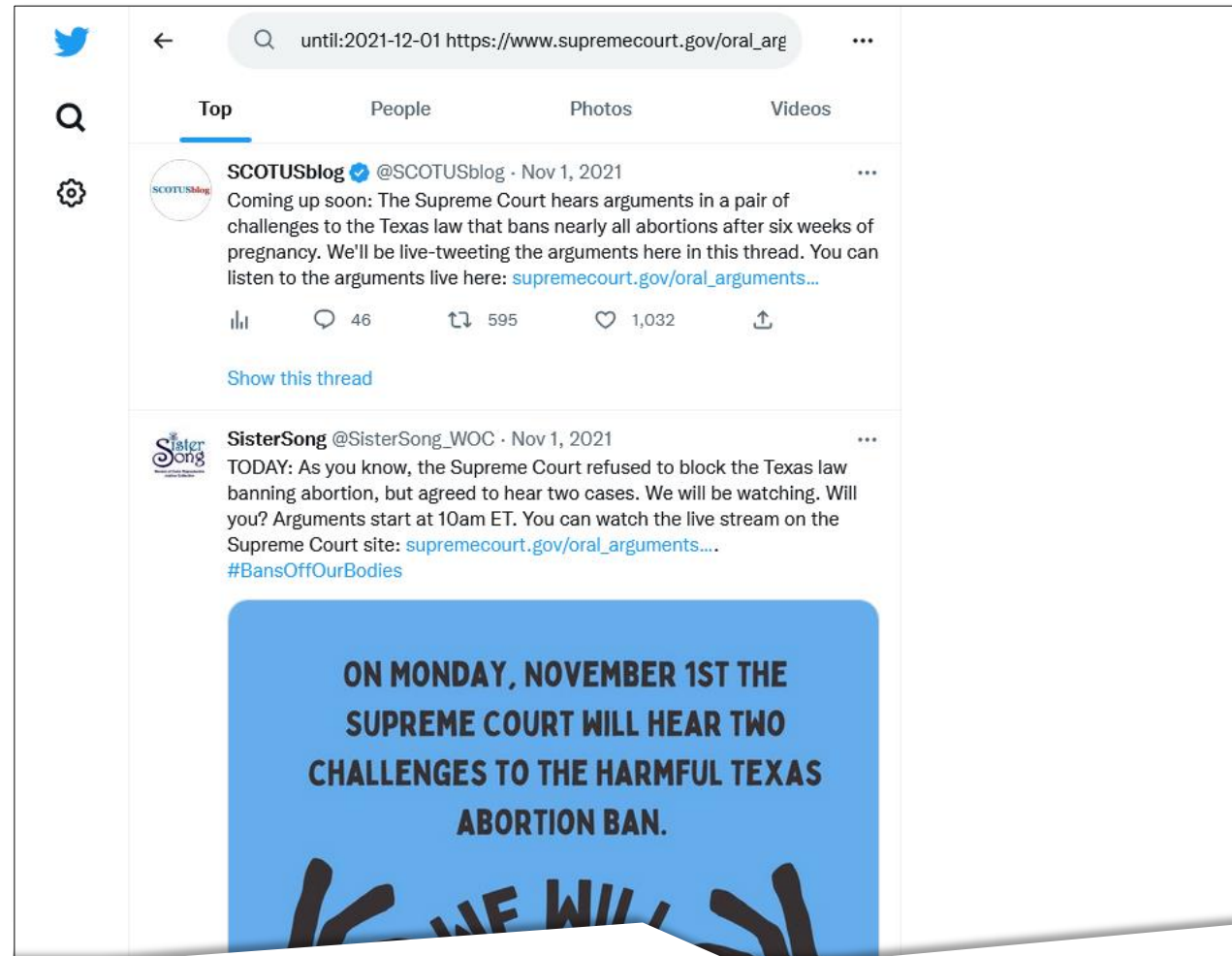
# Twitter search *until:* 1 January 2023



Twitter: "until:2023-01-01 [https://www.supremecourt.gov/oral\\_arguments/live.aspx](https://www.supremecourt.gov/oral_arguments/live.aspx)"

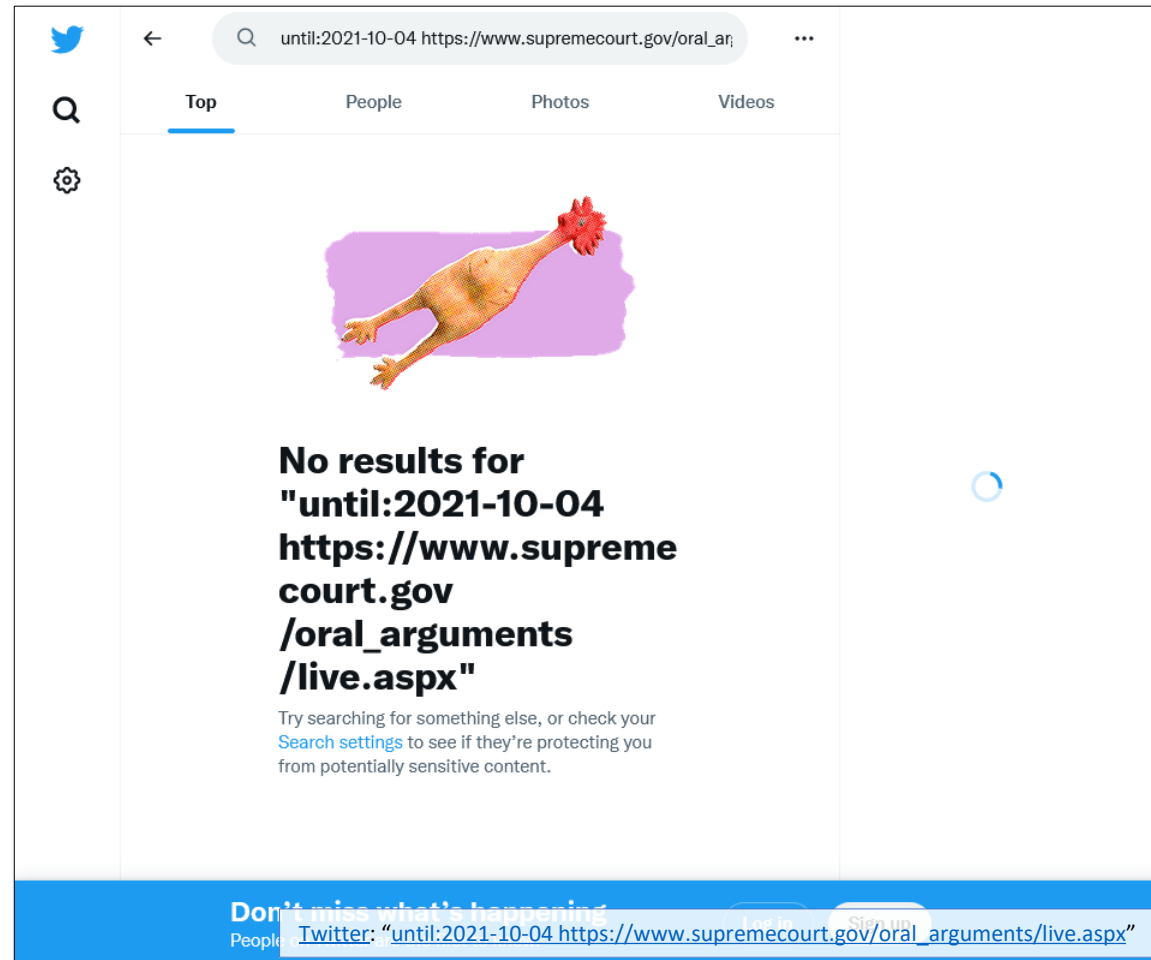


# Twitter search *until:* 1 December 2021



Twitter: "[until:2021-12-01 https://www.supremecourt.gov/oral\\_arguments/live.aspx](https://twitter.com/SCOTUSblog/status/1454888888888888888)"

# Twitter search *until*: 4 October 2021



# Twitter search *until: 5 October 2021*



Twitter: "until:2021-10-05 https://www.supremecourt.gov/oral\_arguments/live.aspx"

# timestamping content changes

## when first published

- in this example, lucky to have many traces + via diverse services
- more typical to be working w/ fragments
- key limitations on assertions:
  - generally only establish *no later than*
  - don't necessarily establish *the moment when*

## when continuously available

- use similar techniques to document availability across successive short intervals
- continuous intermediate availability more reasonable to assume than up-down-up
- can get complicated for content situated deep in a website across redesigns or platform changes
  - content may persist, but specific web address may change





# Takeaways

"Party Favors" by [Carlos Saldivia](#) under [CC BY 2.0](#)



# takeaways

- temporal attributes of web content can matter (a lot)
- IAWM is a powerful tool for surfacing historical web info
- don't take archived webpages at face value
- there are multiple ways to timestamp web content
- employ strategies for authentication of IAWM evidence
  - IA affidavit
  - witness
  - judicial notice
- for any strategy, don't neglect to provide foundation for admission



"Thank You" by [Brian Crawford](#) under [CC BY-SA 2.0](#)



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