Sustainable Web Archiving at Scale: An Introduction

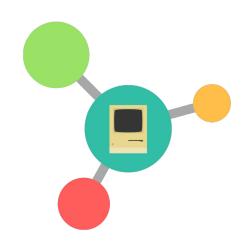


June 21-22, 2021

Day One Recap

Introduction to Web Archiving: Concepts, Policy and Practice

- What is web archiving?
- Collecting objectives/scope
- Copyright, permissions & ethics
- Capacity considerations & description/metadata
- Exercises

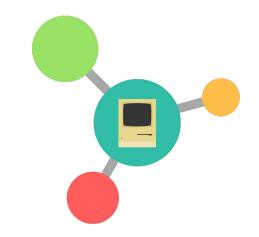


Day Two Agenda

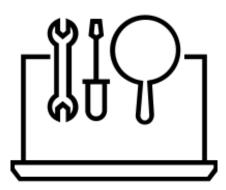
Tools + Technology

Overview, demos and hands-on exercises:

- Tools and replay mechanisms
- Internet Archive + Archive-It
- Conifer/Webrecorder
- Other tools

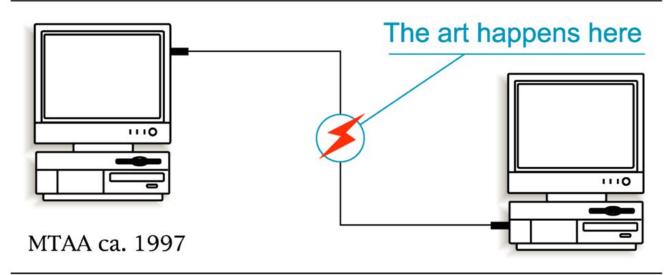


Introduction to Tools & Terms



Technology Stack: A Moving Target

Simple Net Art Diagram



Open Source vs. Subscription Services

Open Source

- Free to use
- Technical expertise
 - IT staff
 - Training
- Professional & enthusiast communities

Subscription

- Monthly/Annual costs
- Automated software updates
- IT support/Terms of Service



Community

Wide Adoption

- Less likely abandoned
- More likely to be upgraded
- Shared standards & expertise

Low Adoption

- Less incentive to continue support
- May be isolated from

community of practice

Community

- Webrecorder Monthly Community Calls
- Archive-It Quarterly Calls/User Group Meetings
- ARTIWARC
- Society of American Archivists, Web Archiving Section



Local vs. Cloud-based

Archive-it / Conifer



- Automatic software updates, web hosting

ArchiveWeb.page

- Web archives stored in Chrome browser, offline/p2p

ReplayWeb.page

- HTTP, S3, IPFS, and GoogleDrive storage

Local vs. Cloud-based

ArchiveWeb.page App / ReplayWeb.page App

- WARC and WACZ files stored locally, offering a layer of security for sensitive materials

Heritrix / Browsertrix Crawler

- Web crawls stored to local directories

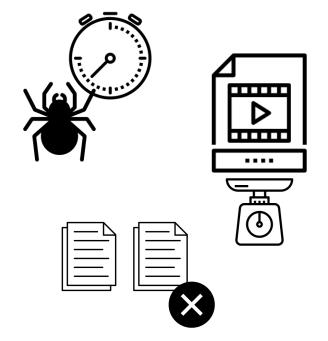


- Command line, higher technical threshold

Storage

Capacity Considerations

- Frequency
- Social media
- Video & embedded media
- Data de-duplication



Automated, Semi-automated, & Manual

Automated

Archive-It

- User-friendly web crawl scheduling & scoping

Heritrix

- Command line tool, several simultaneous crawls
- Respects robots.txt exclusions

Automated, Semi-automated, & Manual Symmetrical Archiving

Conifer & ArchiveWeb.page/ReplayWeb.page

- User-friendly, browser-based
- Manual high-fidelity collecting
- Time intensive
- Auto-pilot: autoscroll, video replay

• -	0	• .	<u>• 0</u> .	
F)	
L	IΞ	<u> </u>	5	
L	=		507)
U			\sim	

Automated, Semi-automated, & Manual Symmetrical Archiving + Scalability

Browsertrix Crawler

- Browser-based high fidelity crawler
- Supports custom browser behavior

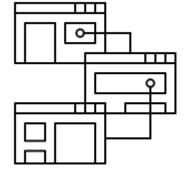
Archive-It: Umbra and Brozzler



- Rich-media and dynamic web behaviors and content

Significant Properties

- Aesthetic properties
- Custom behaviors



- Embedded media as information
- Interactive features of data-driven applications

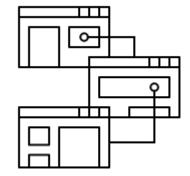
Remote/Emulated Browsers

Conifer

- Pre-configured remote browsers
- Chrome/Firefox, Java/Flash

OldWeb.today

- Emulated legacy browsers
- No capture capabilities

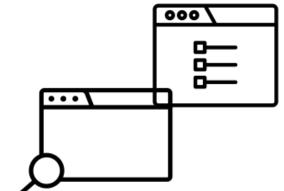


Playback/Rendering/Access

Archive-It: Wayback

- Seed URLs as access point
- Time-stamped links

Conifer / ArchiveWeb.page



- Browser-based replay, identical to capture
- Conifer: Collections, lists, descriptions
- ArchiveWeb.page: full text search

Dead Ends/Patching

Archive-It / Conifer

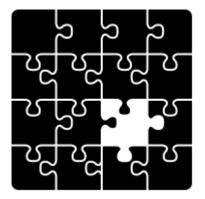
- Patching tools unite missing content

Conifer

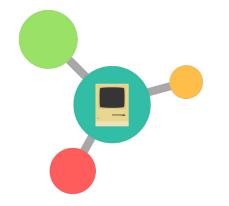
- Importing from open web archives

ArchiveWeb.page

- Page-level archiving
- Export selected pages as single WARC/WACZ



Questions?

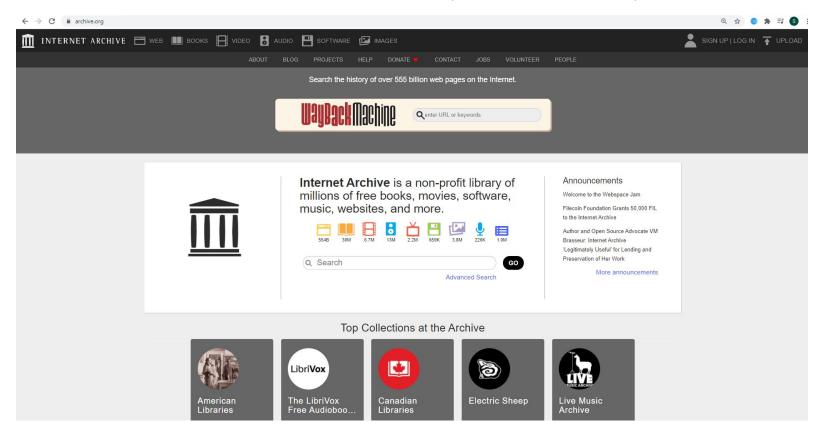


Internet Archive & Archive-It: Overview/Demo

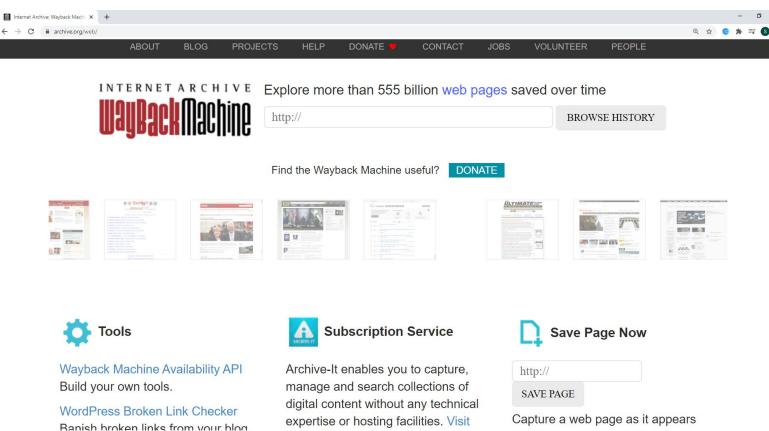




Internet Archive (archive.org)



Wayback Machine (archive.org/web)



Search the history o	f over 555 billion web	pages on the Interne
----------------------	------------------------	----------------------



Q enter URL or keywords



https://www.dpoe.network/workshops/

Latest Show All

Hrm.

IATE

The Wayback Machine has not archived that URL.

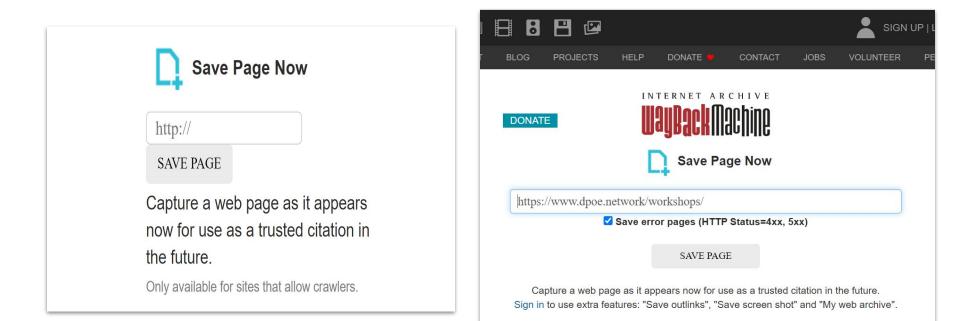
This page is available on the web!

Help make the Wayback Machine more complete!

Save this url in the Wayback Machine

Click here to search for all archived pages under https://www.dpoe.network/workshops/.

Save Page Now (web.archive.org/save)





Saving page https://www.dpoe.network/workshops/

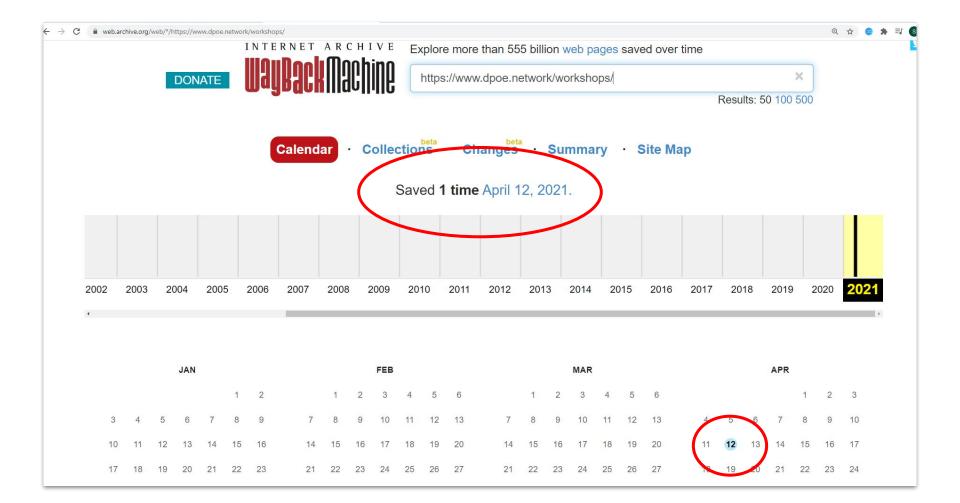
✓ Done!

DONATE

The same snapshot had been made 1 minutes and 10 seconds ago. We only allow new captures of the same URL every 30 minutes.

A snapshot was captured. Visit page: /web/20210412165535/https://www.dpoe.network/workshops/

https://www.dpoe.network/workshops/	-
https://fonts.googleapis.com/css?family=Poppins:400,600&ver=5.7	
https://www.dpoe.network/wp-content/plugins/otter-blocks/vendor/codeinwp/gutenberg-	
animation/assets/css/style.css?ver=5.7	
https://www.dpoe.network/wp-includes/css/dist/block-library/style.min.css?ver=5.7	
https://www.dpoe.network/wp-content/plugins/contact-widgets/assets/css/font-awesome.min.css?ver=4.7.0	
https://www.dpoe.network/wp-content/plugins/ultimate-social-media-icons/css/sfsi-style.css?ver=5.7	
https://www.dpoe.network/wp-content/plugins/otter-blocks/vendor/codeinwp/gutenberg-blocks/build/style.css?	
ver=1.6.3	-
https://www.dpoe.network/wp-content/plugins/otter-blocks/vendor/codeinwp/gutenberg-	1
Downloaded elements: 4	41
Return to Save Page Now	





Workshops

Sustainable Web Archiving at Scale: An Introduction

Free Workshop

Thursday, April 15th & Friday, April 16th: 2:00-5:00pm EST

Description:

As cultural production and communication have moved online, the need for archivists to document history in real time has become increasingly clear and urgent. Yet the scale and complexity of online information and media can be daunting, even as web archiving tools and practices continue to evolve. And while large institutions are able to devote staff to keeping pace with new technologies and their attendant ethical concerns, small-to-mid sized organizations frequently rely on archivists who already handle many other reconcerbibilities for this work. How does one design a web problemation

Details:

This web archiving virtual workshop is being hosted by the Digital Preservation Outreach & Education Network (DPOE-N) in partnership with the Pratt Institute School of Information. It is being offered **tuition-free**, thanks to generous support from the Andrew W. Mellon Foundation.

The application for this program is now closed.

The deadline to apply was Thursday, March 25.

s://www:apoc.petwork/workshops/	
pture r 2021	2020 2021 2022 About this ca
COLLECTED BY	
Collection: Live Web Proxy Crawls	
	ENT FUNDING · EMERGENCY HARDWARE SUPPORT WORKSH
Liveweb proxy is a component of Internet Archive's wayback machine project. The liveweb proxy captures the content of a web page in real time, archives it	
TIMESTAMPS	
s://www.dpoe.network/wp-content/plugins/ultimate-social-media-icons/images/icons_theme/default/default_fi	facebook.png -1 month 4 days
s://stats.wp.com/e-202115.js -16 hours 55 minutes	
s://connect.facebook.net/en_US/sdk.js?hash=1fe2e418acb320f5bb379a5f27352ff5&ua=modern_es6 -1 hou	
<u>s://www.dpoe.network/wp-content/uploads/2021/03/workshop-banner@2x-1024x178.png</u> +11 minutes 23 se	econds
s://connect.facebook.net/en_US/sdk.js +8 minutes 55 seconds	
s://www.dpoe.network/wp-includes/js/comment-reply.min.js?ver=5.7 +5 seconds	
s://www.dpoe.network/wp-includes/js/wp-embed.min.js?ver=5.7 +5 seconds	
<u>s://www.dpoe.network/wp-includes/js/wp-emoji-release.min.js?ver=5.7</u> +5 seconds s://www.dpoe.network/wp-content/uploads/2021/03/Sumitra.png +4 seconds	
s://www.dpoe.network/wp-content/uploads/2021/03/Amye.png +4 seconds	
s://www.dpoe.network/wp-content/dploads/2021100/Allyo.prig 14 seconds s://www.dpoe.network/wp-content/plugins/ultimate-social-media-icons/js/shuffle/modernizr.custom.min.js?ve	ver=57+4 seconds
s://www.dpoe.network/wp-content/plugins/ultimate-social-media-icons/js/shuffle/jguery.shuffle.min.js?ver=5.7	7 + 4 seconds
s://www.dpoe.network/wp-content/plugins/ultimate-social-media-icons/js/custom.js?ver=5.7 +4 seconds	
s://www.dpoe.network/wp-content/themes/neve/assets/js/build/modern/frontend.js?ver=2.7.3 +4 seconds	
s://www.dpoe.network/wp-includes/js/jguery/ui/core.min.js?ver=1.12.1 +4 seconds	
s://www.dpoe.network/wp-content/plugins/ultimate-social-media-icons/js/shuffle/random-shuffle-min.js?ver=5	<u>=5.7</u> +4 seconds
s://www.dpoe.network/wp-content/uploads/2020/11/cropped-DPOE-N-Logo-FINAL.png +3 seconds	

Wayback Machine browser extensions, apps and add-ons



Chrome Extension

Firefox Add On

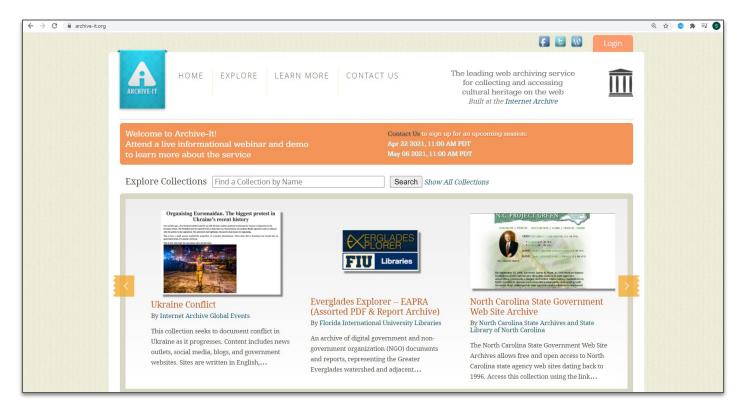
Safari Extension

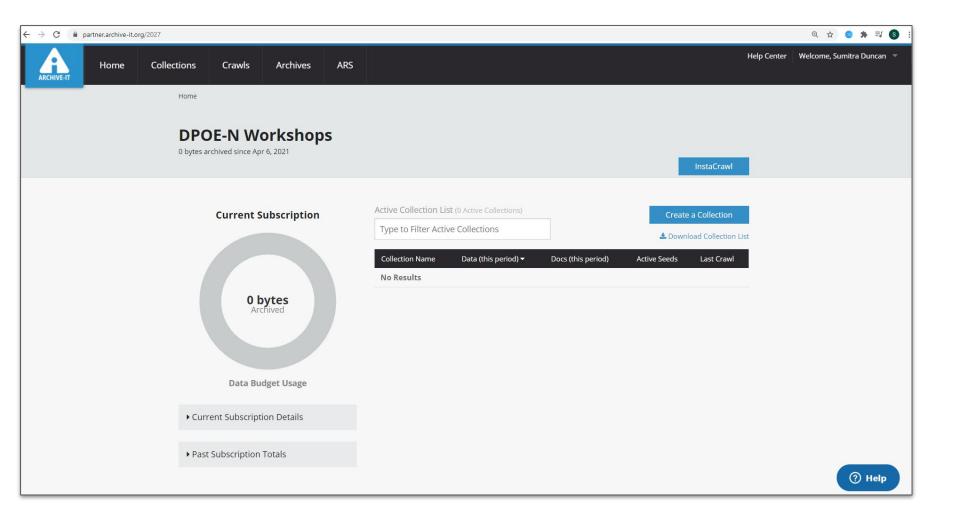
iOS App

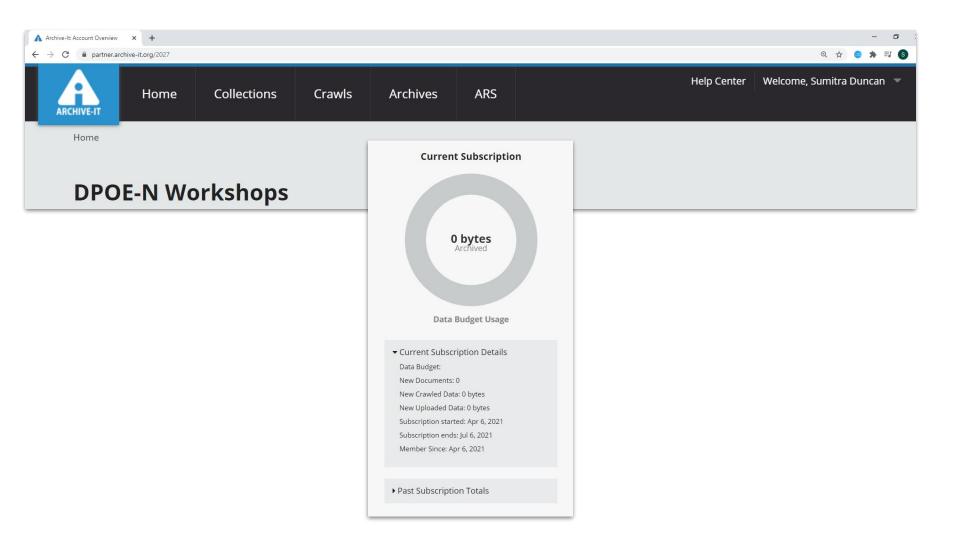
Android App



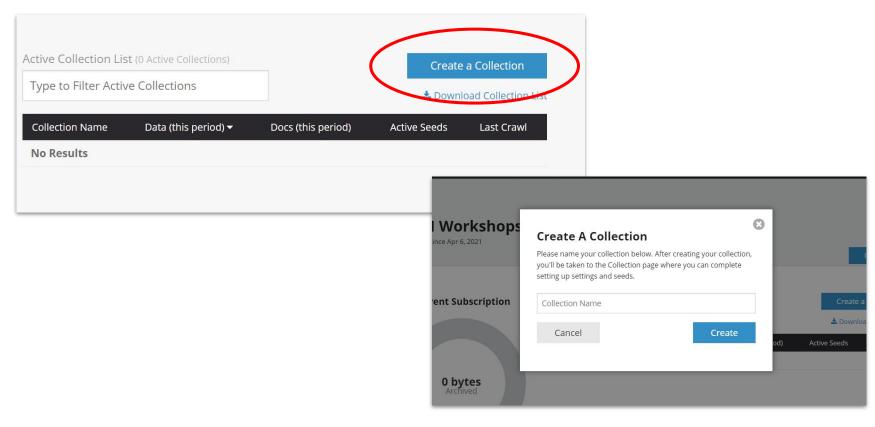
Archive-It (archive-it.org)

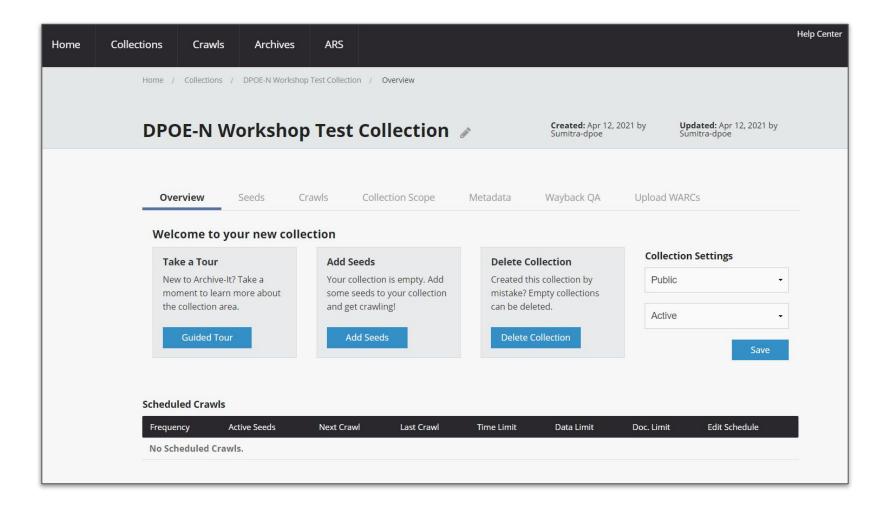






Creating New Collections



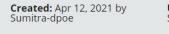


Adding Seeds to a Collection

DPOE-N V	Vorkshop Te	st Collection	(data	Created: Apr 12 Sumitra-dpoe	2, 2021 by	Updated: Apr 12, 2021 by Sumitra-dpoe	
Overview	Seeds Crawls	Collection Scope	Metadata	Wayback QA	Upload W	'ARCs	
Seed List (0 Seeds)							
Type to Filter See	ds					📩 Dewnload Seed I	List
Run Crawl Ed	it Settings Add Metada	ta Edit Groups Del	ete Seeds Add	Rules	Manage S	Seed Group; Add Seeds	
🗹 🔻 Seed URL	Group 📽 Stati	us 🕸 Frequency 🕰	Type 😋	Access 📽 🛛 L	ast Crawl	Captures Weyback	
No Results							

Collections	Crawls	Archives	ARS				нер сеп
Home /	Collections /	DPOE-N Workshop	Test Collection	/ Seeds			
DPC	DE-N W	Aut	d Seeds		8	Updated: Apr 12 Sumitra-dpoe	, 2021 by
	erview			per line below to add them to this collection. poe.network/		ARCs	
	o Filter Seeds	Acces	55:	Public		🕹 Dowi	nload Seed List Add Seeds
×	Seed URL	Gro Frequ	iency:	One-Time	÷	Captures \	Wayback
No Re	sults	Seed	Туре:	Standard	•		
		1.1	Cancel	Add Seeds			

DPOE-N Workshop Test Collection 🥒



Updated: Apr 12, 2021 by Sumitra-dpoe

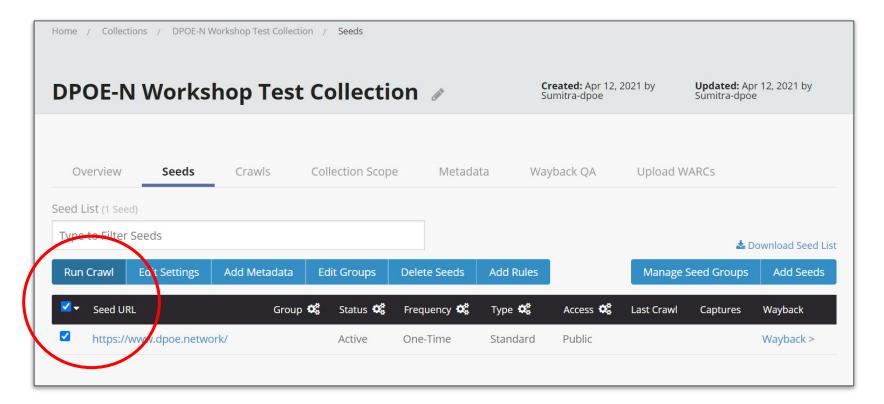
Ove	erview	Seeds	Crawls	Collecti	on Scop	e Metad	ata	Wayba	ck QA	Upload W	ARCs	
Seed Lis	st (1 Seed)										
Type t	o Filter S	Seeds									📥 D	ownload Seed List
Run C	irawl	Edit Settings	Add Metadata	Edit G		Delete Seeds	Add Ru			Manage	Seed Groups	Add Seeds
	Seed URI	l	Group	¢\$ St	atus 📽	Frequency 😂	Туре 🕻	¢,	Access 📽	Last Crawl	Captures	Wayback
	https://w	/ww.dpoe.networ	·k/	Ac	tive	One-Time	Standa	ird F	Public			Wayback >

Adding Metadata to Seed URLs

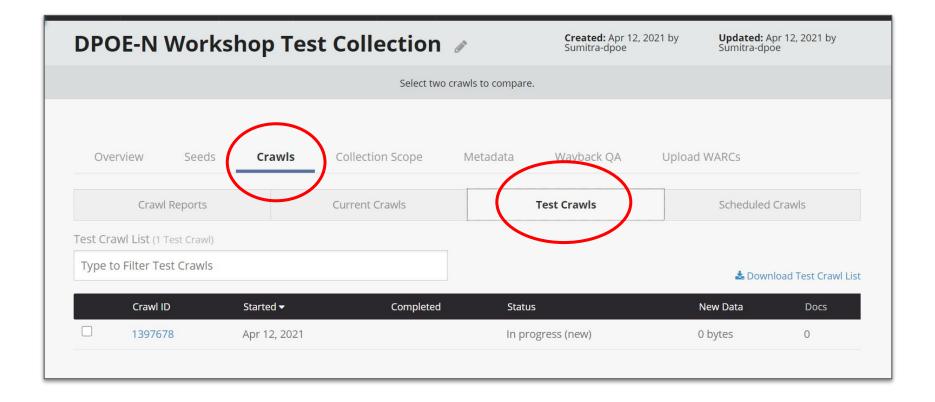
Home	Collections	Crawls	Archives	ARS		Help Center	Welcome, S
http	s://www.	dpoe.n	etwork/	(and	Active ▼ Public ▼ One-Time	•	
Created: A	opr 12, 2021 U	pdated: Apr 12, 2	2021		In collection DPOE-N We	orkshop Test (Collection
Settir No me	ngs Metada etadata. Click "Edi		wling History adata.	Notes	Seed Scope Import from WorldCa	at Ec	dit

https://www.dpoe.network/ a Active - Public - One-Time -						
Created: Apr 12, 202 ⁻	1 Updated:	ed: Apr 12, 2021			In collection DPOE	N Workshop Test Collectio
Settings	Metadata	Crawling History	Notes	Seed Scope		
						Done
Title	Digita	I Preservation Outreac	h & Education	Network	Save	Grab Title
Creator						Save
Subject						Save
Description						Save
Publisher						Save
Contributor						Save

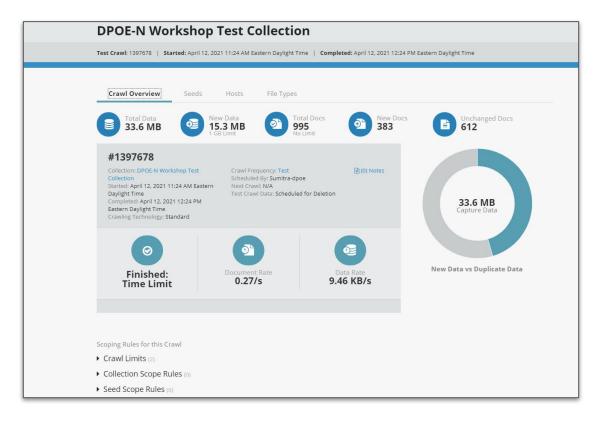
Initiating Crawls

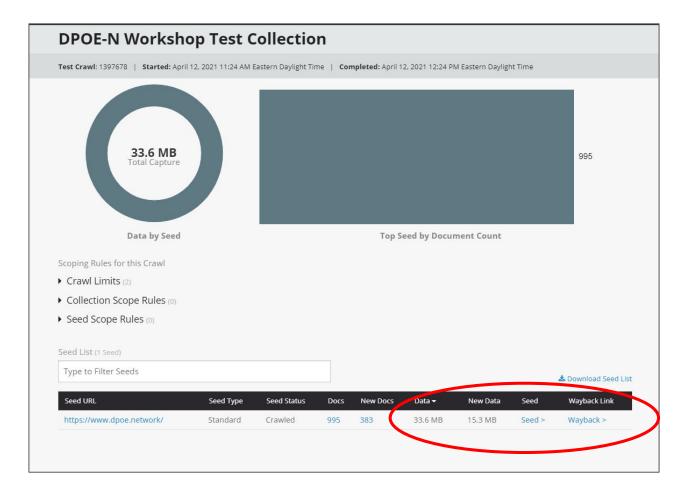


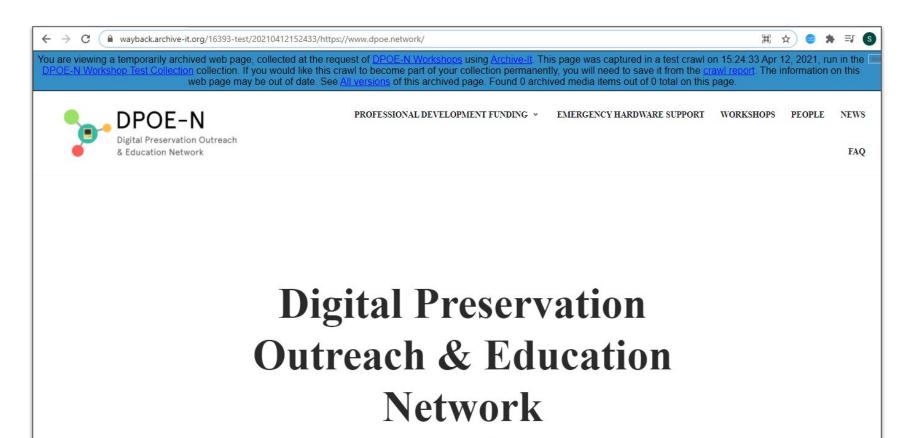
PC	DE-N Worksho	p Test Collection	l II	Created: Apr 12, 2021 by Sumitra-dpoe	Updated : Apr 12, 20 Sumitra-dpoe				
t	Run Crawl Please select options below for a test crawl or one-time crawl of the selected seeds.								
ec	Crawl Type	One-Time Crawl	Test Crawl)					
/F RL	Doc. Limit	Whole Number, e.g. 1000	00		Documents	d Li			
	Data Limit	1			GB	us			
	Time Limit	1 Hour			÷				
	Crawl PDFs Only								
	Crawling Technology	Standard	○ Brozzler						
	1 selected seed will be crawled.								
	Cancel				Crawl				



Crawl Reports





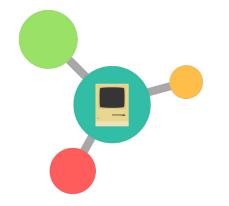


We support digital preservation education and outreach in the nation's libraries, archives and museums.

https://archive-it.org/organizations/2027

Explore >> DPOE-N Workshops						
	DPOE-N M Archive-It Partner Sir Organization Type: Q Organization URL:	nce: Apr, 2021				2
Narrow Your Results			nization are listed below. Nar ific URL or to search the text		, or enter a sear	
There are no further ways to narrow your results.	Enter search tei	rm <mark>s h</mark> ere			Search	Clear
	Collections	Sites	Search Page Text			
			Page 1 of 1 (1 Total 1	Results)		
	Sort By: Collectio	on Name (A-Z)	Collection Name (Z-A)			
	DPOE-N Wor		st Collection			
	Archived since: Ap No description.	pr, 2021				
			Page 1 of 1 (1 Total 1	Results)		

Questions?



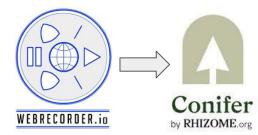
Conifer

- Open source, high-fidelity service
- Online
- Free up to 5 GB
- Service plans for 40+ GB



Conifer: Background

- Previously the Webrecorder.io service
- Designed with net artists in mind
- High-fidelity capture of dynamic web
- Conifer now under Rhizome only



Conifer: Sessions

- Individual interactions w the web at time of capture
- Replicates any captured experience in any order
- Bound set: exactly what was clicked on or interacted with-nothing else
- Accessed by URL but individual URLs cannot removed
- Sessions are basis for Collections



Conifer: Sessions

Sessic				
	Session from 4/15/2021, 10:53:15 PM	1 Pages	2mins	2.59 MB
	Patch of	0 Pages	1min	67.32 KB
	Session from 4/12/2021, 5:30:25 PM	3 Pages	1min	415.10 MB
12 Apr MON 2021 ■ Delete		Ethics and Archiv	ing the Web: W	https://eaw.rhizome.org/ https://vimeo.com/277336026 https://vimeo.com/277336026



Conifer: Collections

- Any number of sessions.
- Sessions seamlessly interact with each other
- Public Access:
 - Title & description
 - Lists



Conifer: Collection Manager

OPOE-N Workshop	•			Q arr	occarther -
© COLLECTION by <u>amccarther</u> DPOE-N Workshop	۹ is:page		-		
This collection demonstrates the types of	∷ TIMESTAMP IF	PAGE TITLE	URL 🛊	CAPTURE B \$	SESSI_+
+ New Session ····	4/15/2021, 10:56:		https://twitter.com/ha:		fckghtsyzla
	4/15/2021, 10:53:		https://twitter.com/dp		plxoiflp3s6
Collection Cover	4/12/2021, 5:30:4	Ethics and Archivir	https://vimeo.com/27.		afk767lwc
Collection Resources	4/12/2021, 5:30:3	Ethics and Archivir	https://vimeo.com/27		afk767lwc
LISTS (3 Public) EDIT +	4/12/2021, 5:30:2	National Forum on	https://eaw.rhizome.or		afk767lwc
Soap Library Instagram (1)	4/12/2021, 4:57:3	Lisa Simpson Episo	https://giphy.com/gifs/		qadurbsne
Rhizome EAW Vimeo (1)	4/12/2021, 4:57:2	Lisa Simpson Episo	https://giphy.com/gifs/		qadurbsne
Lisa Simpson GIF / Copyri (1)	4/12/2021, 4:47:43	Ethics and Archivir	https://vimeo.com/27		3djpdue2i
	4/12/2021, 4:47:39	Ethics and Archivir	https://vimeo.com/27		3djpdue2i
	1/10/0004 1 17 00		10 11 12		011 1 01



Conifer: Collection Cover

Collection Mana	ger DPOE-N Workshop PUBLIC	😫 amccarther 🕶
by amccarther	orkshop	
Overview Browse	All	
 Soap Library Instagram Rhizome EAW Vimeo Lisa Simpson GIF / Copyright on the Web 	 COLLECTION by ancearther DPOE-N Workshop This collection demonstrates the types of media which can be captured using Conifer and approaches to designing a successful capture strategy for your own content. Soap Library Instagram Soap Library (@soaplibrary) • Instagram photos and videos https://www.instagram.com/soaplibrary/ 4/12/2021, 4:16:42 PM 	



Conifer: Remote Pre-configured Browsers

- Older versions of Firefox and Chrome
- Java and Flash plug-ins
- May reveal content that is not compatible with modern browsers
- Test in advance
- Capture browser = Replay browser



Conifer: Pre-configured browsers

Collection	Manager DPOE-N Workshop PUBLIC	🕒 amccarther 🗝
Chrome v76 -	o/20111010003846/http://www.newmuseum.org/	Mon, 10 Oct 2011 00:38:46 GMT Internet Archive -
U	Create a new capture	
	Ready to add a new capture to your collection DPOE-N Workshop	

Conifer: Iterative capturing

- Individual URLs can <u>not</u> be removed from a session
- Review in advance for pages/media that may cause issues
- If an error is encountered, file a bug report and delete the session from the collection





Conifer: Patching & Importing

Patching

- Browse mode, behaves as it would offline
- Missing content prompts error message
- Patching automatically starts a new session from missing URL that is added to the collection

Importing/Extraction

- Patches content from open web archives



Conifer: Patching & Importing

Collection	Manager DPOE-N Workshop PUBLIC	Q amccarther -	
6 Chrome v76 ▼	o/20111010003846/http://www.newmuseum.org/	Mon, 10 Oct 2011 00:38:46 GMT Internet Archive + Extract	
	Create a new capture		
	Ready to add a new capture to your collection DPOE-N Workshop		
			Conife

Webrecorder

ReplayWeb.page + ReplayWeb.page App

- Provides a web archive replay system as a single web site (which also works offline)
- Allows users to view web archives from anywhere, including local computer or even Google Drive.

ArchiveWeb.page + ArchiveWeb.page App

- Interactive high-fidelity Chrome extension and standalone desktop app
- Allows archiving interactively as you browse



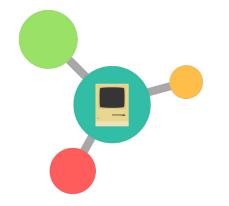
Webrecorder

Browsertrix Crawler

- Browser-based high-fidelity crawling system, designed to run a single crawl in a single Docker container.
- Combines the scalability of web crawling with the fidelity of symmetrical archiving.
- Requires basic familiarity with a command-line and Docker to run crawls.



Questions?



Additional Tools to Explore

- Social Feed Manager
- Perma.cc
- YouTube-DL
- Documenting the Now



SOCIAL

ACCOLLIGATOR DIRECTORYCOCCUSS DIRECTICS 5010642064884896 5010 2 50106422199727411 4 501064223 6442241522935 5010642284765696 96499201 501064225142647256 501064225 2 50106422284845465 501064225 80642314512644231753994425 80642314575975 5010644231855916 80106442374753977 5010644241106132 66715939747 501064424730301445 80106422374753977 501064241106132 66715939747 50106424730301445 80106422374753916445396755 50106425 8010642374735916445396755 8010642571540442396

Perma.cc ᅇ



Social

Feed

Manager

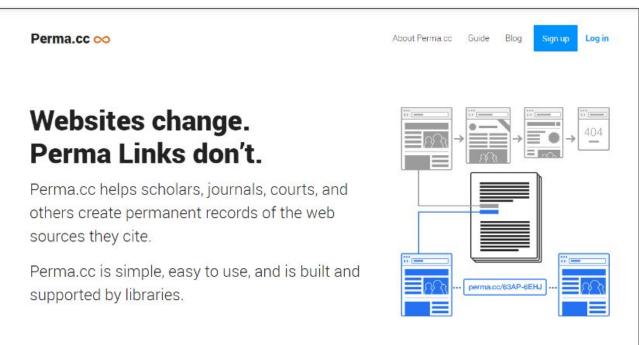
You Tube - DL

Social Feed Manager

https://gwu-libraries.github.io/sfm-ui/



Perma.cc



Sign up and use Perma.cc

How can my library get involved?

Perma.cc

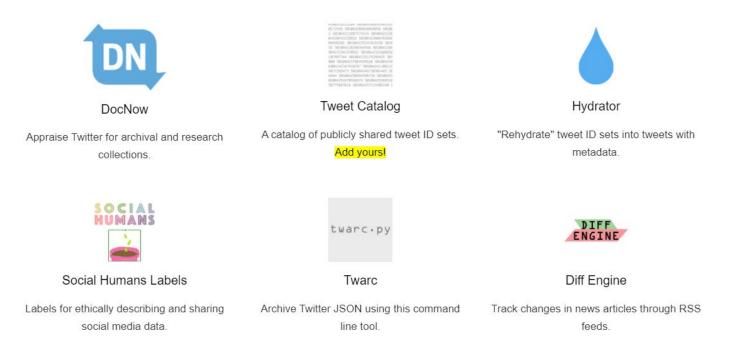
Libraries > Journals > Faculty > Courts > Law Firms > Individual Libraries play a critical Over 150 academic law Faculty use Perma.cc to Law firms use Perma cc. Courts care about the Anvone can create an prevent link rot in their to prevent link rot in account and start role in powering and journals prevent link rot accuracy, integrity and supporting Perma.cc. their court filings and with Perma.cc. reliability of the citations creating Perma Links. scholarship. in their opinions. marketing materials. Create an individual account Perma.cc for individual users Anyone can create an individual Perma.cc account, which will allow you to create records to be preserved by The Harvard Law School Library Just complete this form to get started. First name New users are able to create ten free links on a trial basis. Once you've used your trial, individuals not affiliated with a registrar must sign up for a paid subscription. Last name Many organizations qualify for free unlimited service. To see if your organization qualifies, check out our accounts page. Email address To learn more about how Perma.cc works, please review our user guide.

YouTube-DL youtube-dl.org

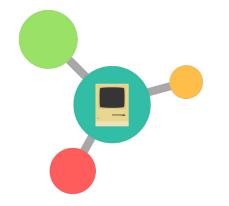
- Open source command line tool for harvesting video and audio from:
 - YouTube
 - 1,000+ other video hosting websites



Documenting the Now: Tools docnow.io



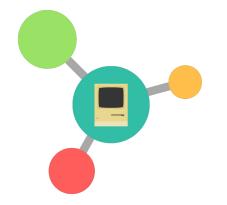
Questions?



Break: 10 minutes

Hands-on exercises: Breakout rooms

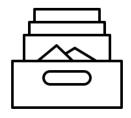
Discussion/Questions



Roadmap







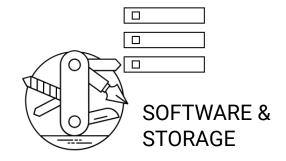
SCOPE

BUDGET & STAFF









Thank you!

