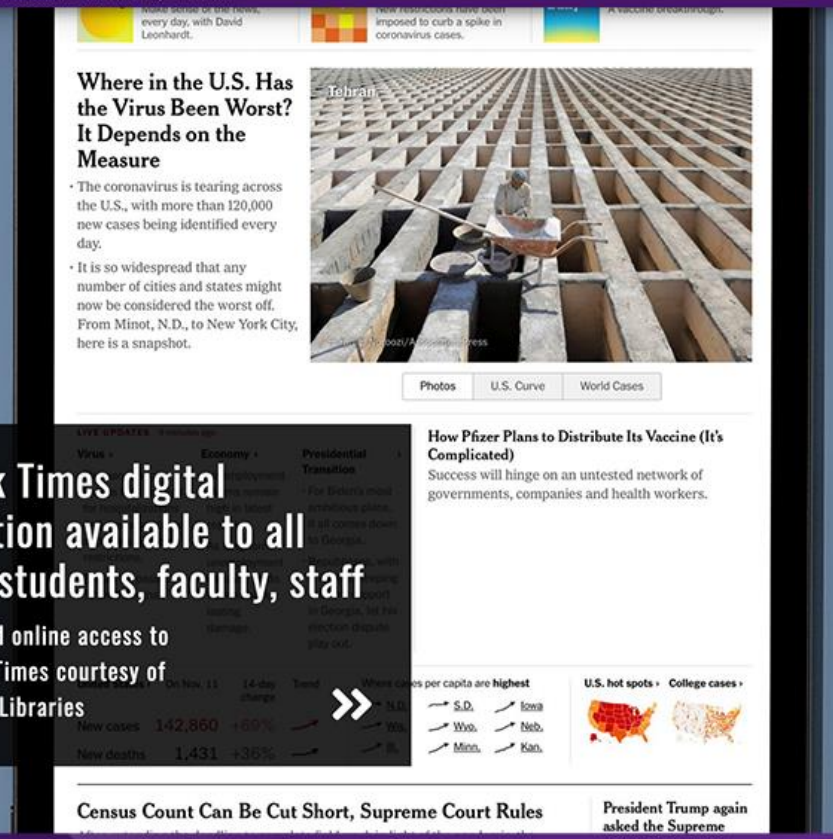
Redesigning for Cognitive Ease

Alyssa Panetta
Web Designer/Developer
University Libraries
University at Albany
(she/her)

About Me

- 20+ years as a Designer and Front-End Developer
- 5 years at University Libraries



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COVID-19 FAQ

TODAY'S HOURS

WCAG 2.0 A

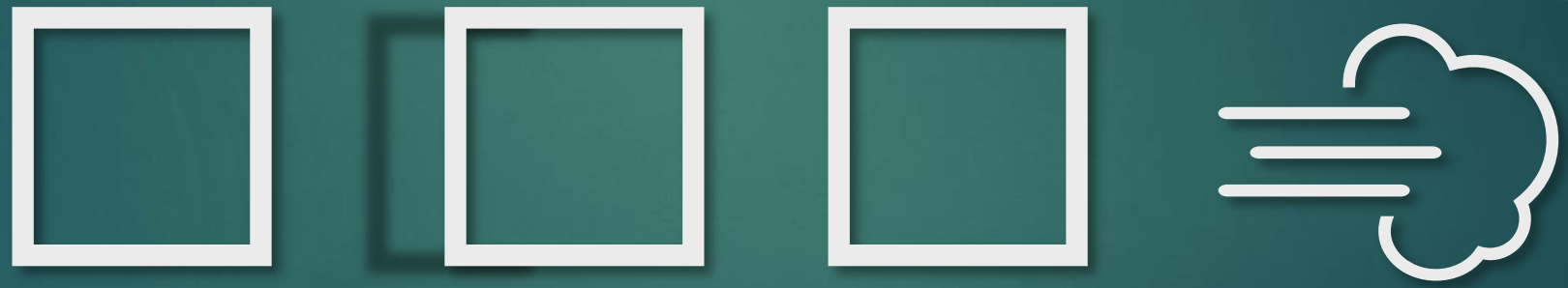
SURGERY

RADIATION

CHEMO

I'M OK!

New User Experience



How accessible is your site for users with cognitive disabilities?

Agenda

- My new user experience
- Cognitive load
- Ways to reduce cognitive load in our web designs

My New User Experience

WCAG 2.0 Success Criteria

- Perceivable
- Operable
- Understandable
- Robust

My Basic WCAG 2.0 Goals

- Alternative text on images
- Color contrast for text
- Video captions
- ARIA tags

Disability

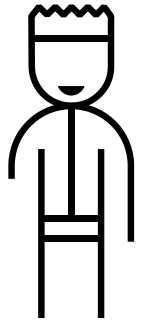
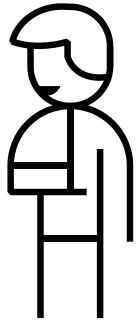
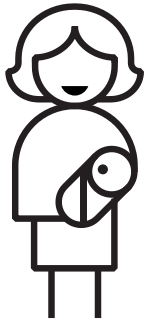
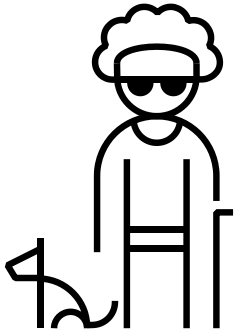
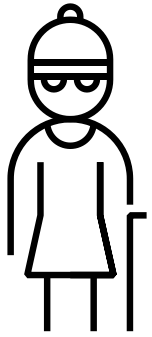
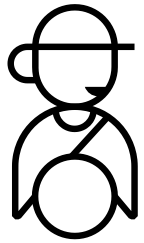
≠

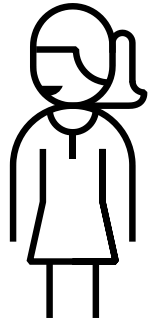
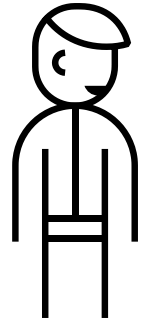
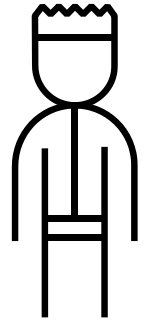
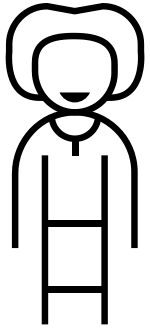
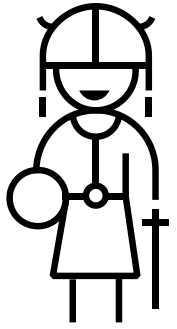
CONDITION

Disability

=

MISMATCH

	Permanent	Temporary	Situational
Touch	 One arm	 Arm injury	 New parent
See	 Blind	 Cataract	 Distracted driver

	Permanent	Temporary	Situational
Hear	 Deaf	 Ear infection	Bartender
Speak	 Non-verbal	 Laryngitis	 Heavy accent

WCAG 3 Functional Needs

- Vision and Visual
- Hearing and Auditory
- Sensory Intersections
- Mobility
- Motor
- Physical and Sensory Intersections
- Speech
- Attention
- Language and Literacy
- Learning
- Memory
- Executive Function
- Mental Health
- Cognitive and Sensory Intersections

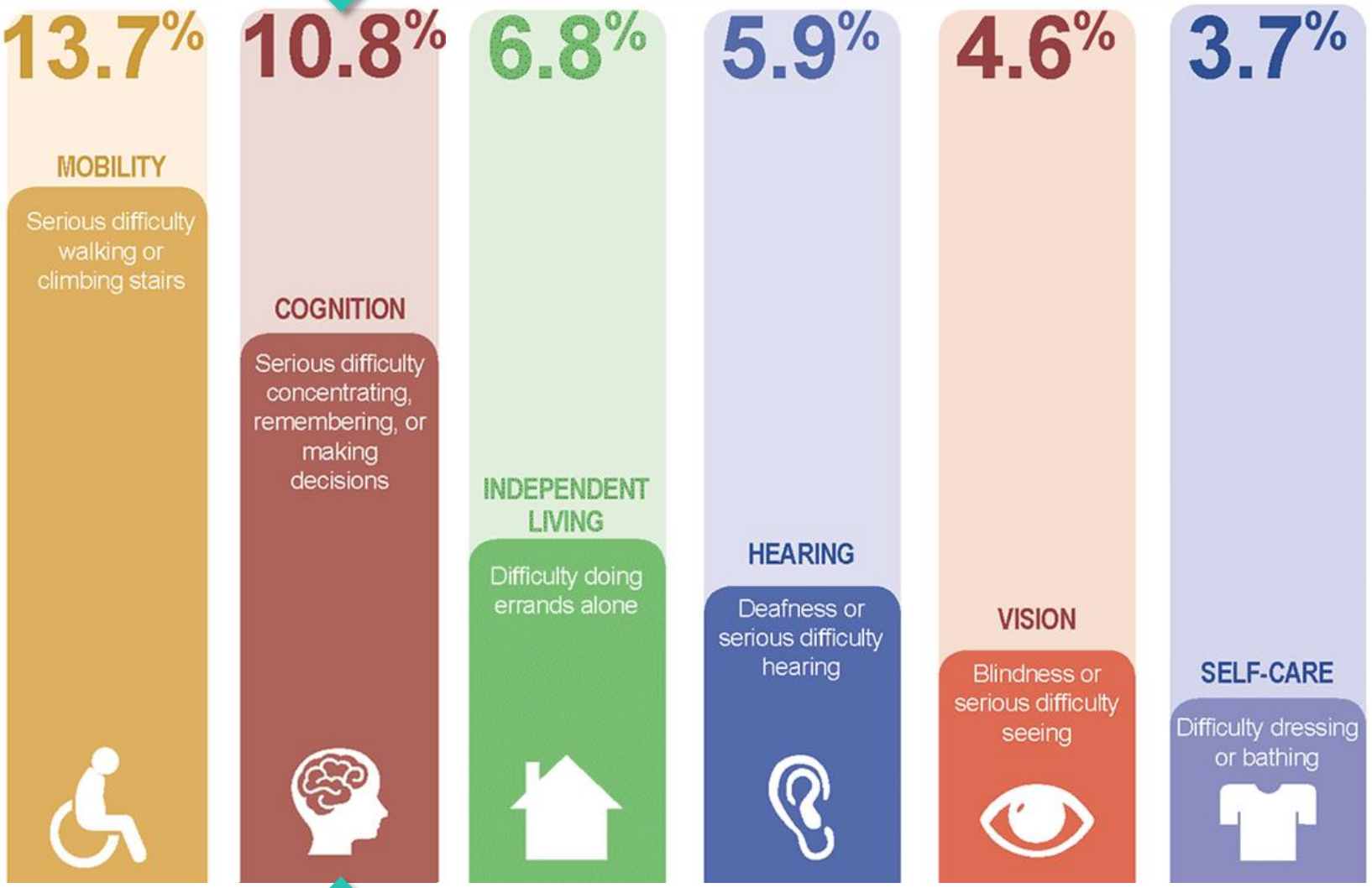
coming in ? years

W3C WCAG 3.0 Draft

Cognitive Functional Needs

- Attention
- Language and Literacy
- Learning
- Memory
- Executive Function
- Mental Health
- Cognitive and Sensory Intersections

26%
adults in the US have
some type of disability


13.7%
MOBILITY
Serious difficulty walking or climbing stairs
10.8%
COGNITION
Serious difficulty concentrating, remembering, or making decisions
6.8%
INDEPENDENT LIVING
Difficulty doing errands alone
5.9%
HEARING
Deafness or serious difficulty hearing
4.6%
VISION
Blindness or serious difficulty seeing
3.7%
SELF-CARE
Difficulty dressing or bathing

My Functional Needs

Cognitive

- Seizure Disorder
- Poor Memory
- “Choice” dyslexia
- Constant Fatigue

Sensory

- Impaired Vision
- Sensitivity to Light
- Sensitivity to Motion

Motor

- Weakness in my dominant (right) side

My Online Challenges

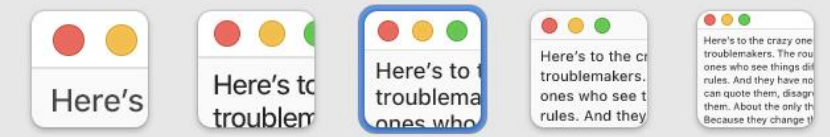
Competing Assistive Tech

Built-in Retina Display

Search

Display | Arrangement | Color | Night Shift

Resolution:
- Default for display
- Scaled



Larger Text — **Default** — More Space

Brightness:

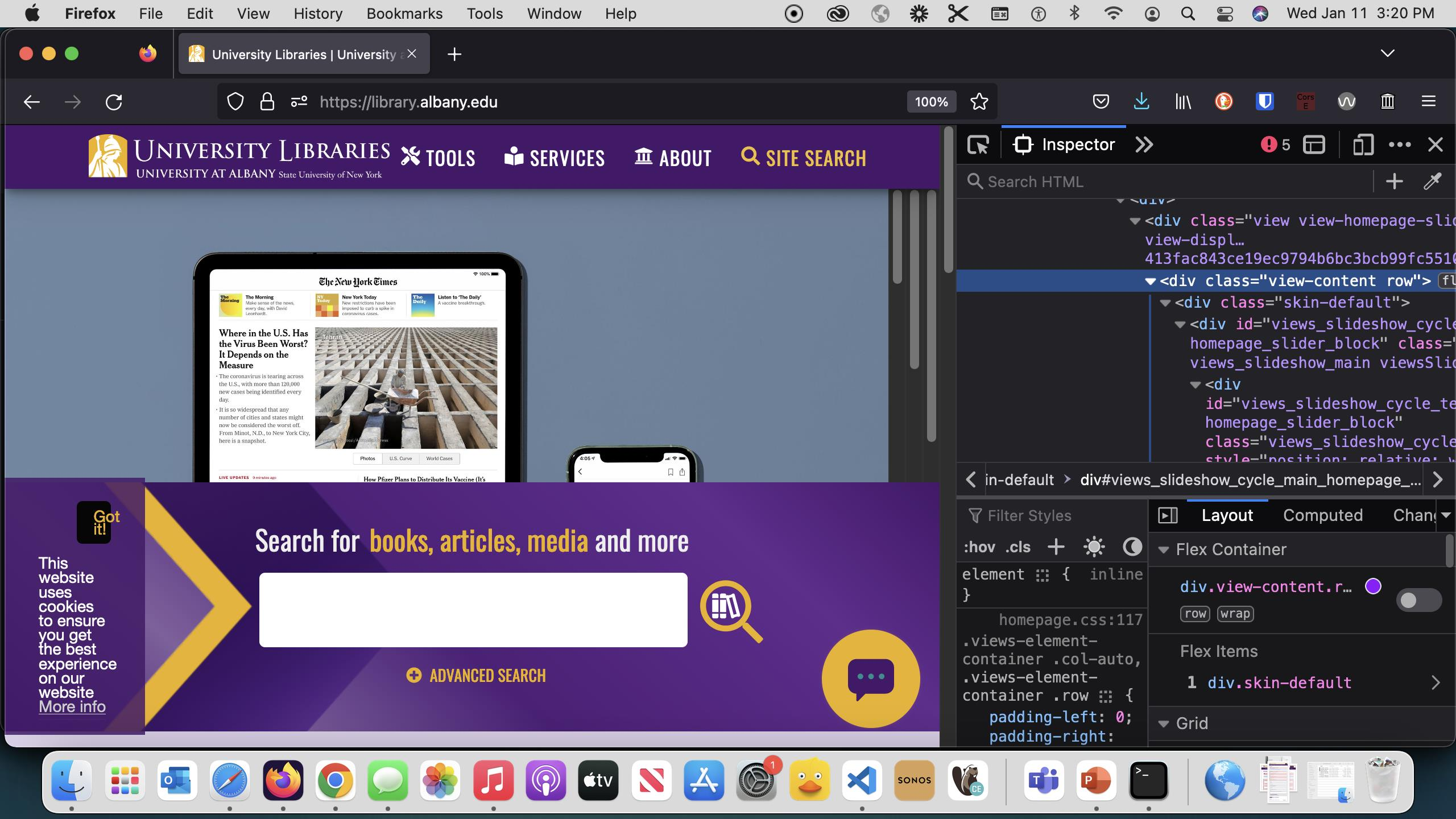
- [x] Automatically adjust brightness

AirPlay Display: Off

- [x] Show mirroring options in the menu bar when available

Gather Windows

?


Firefox File Edit View History Bookmarks Tools Window Help
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https://library.albany.edu
100%
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UNIVERSITY AT ALBANY State University of New York
TOOLS
SERVICES
ABOUT
SITE SEARCH
The New York Times
Where in the U.S. Has the Virus Been Worst? It Depends on the Measure
Got it!
This website uses cookies to ensure you get the best experience on our website
More info
Search for books, articles, media and more
ADVANCED SEARCH
Inspector
Search HTML
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div#views_slideshow_cycle_main_homepage_...
Filter Styles
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element { inline }
homepage.css:117
.views-element-container .col-auto, .views-element-container .row { padding-left: 0; padding-right:
Layout
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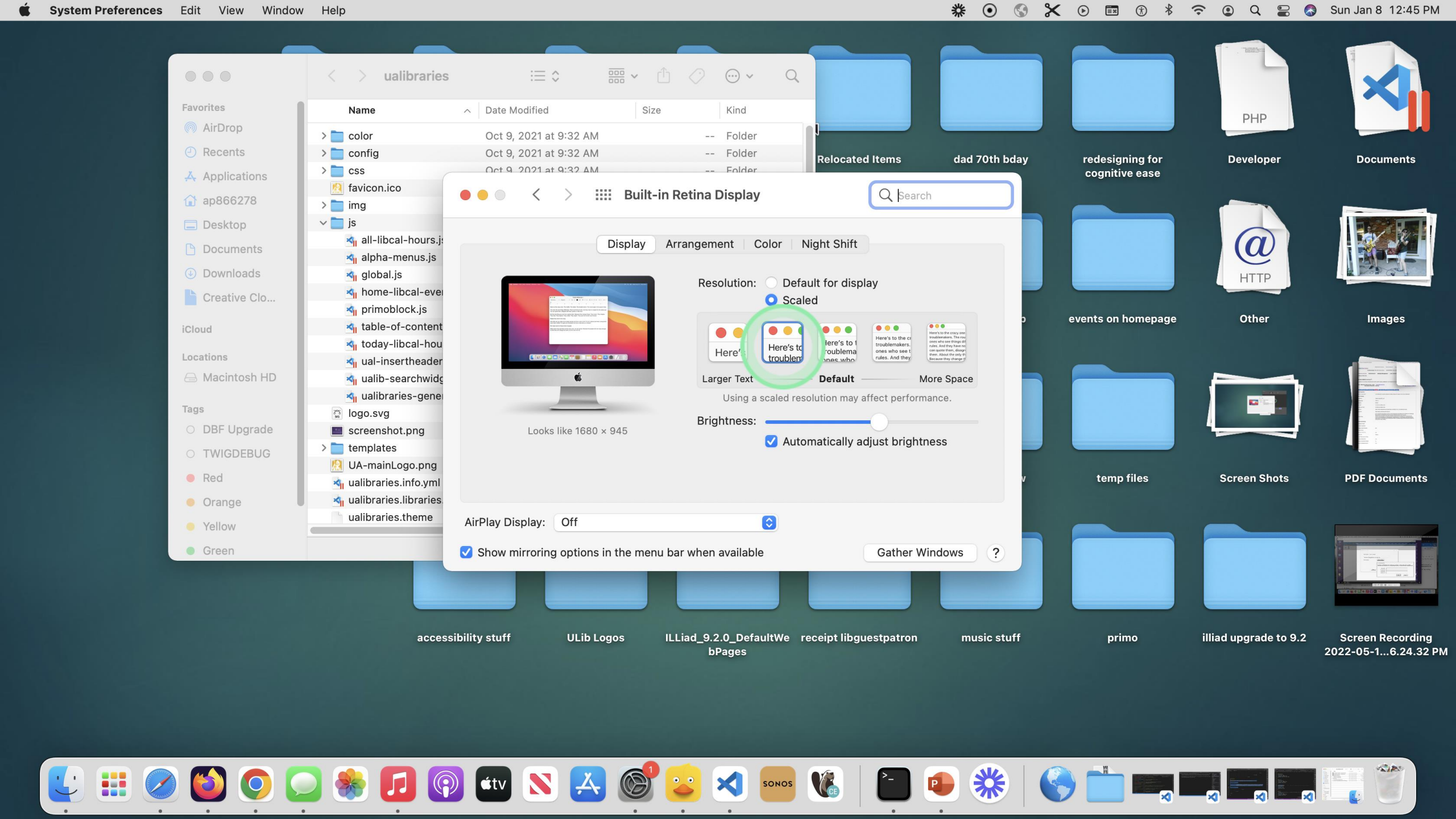
Flex Container
div.view-content.r…
row
wrap
Flex Items
1 div.skin-default
Grid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Applications
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Desktop
Documents
Downloads
Creative Clo...
iCloud
Locations
Macintosh HD
Tags
DBF Upgrade
TWIGDEBUG
Red
Orange
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Green
Name
Date Modified
Size
Kind
color Oct 9, 2021 at 9:32 AM -- Folder
config Oct 9, 2021 at 9:32 AM -- Folder
css
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img
js
all-libcal-hours.j
alpha-menus.js
global.js
home-libcal-eve
primoblock.js
table-of-content
today-libcal-hou
ual-insertheader
ualib-searchwidg
ualibraries-gene
logo.svg
screenshot.png
templates
UA-mainLogo.png
ualibraries.info.yml
ualibraries.libraries
ualibraries.theme
Built-in Retina Display
Search
Display
Arrangement
Color
Night Shift
Looks like 1680 × 945
Resolution:
Default for display
Scaled
Larger Text
Default
More Space
Using a scaled resolution may affect performance.
Brightness:
Automatically adjust brightness
AirPlay Display:
Off
Show mirroring options in the menu bar when available
Gather Windows
Relocated Items
dad 70th bday
redesigning for cognitive ease
Developer
Documents
events on homepage
Other
Images
temp files
Screen Shots
PDF Documents
accessibility stuff
ULib Logos
ILLiad_9.2.0_DefaultWebPages
receipt libguestpatron
music stuff
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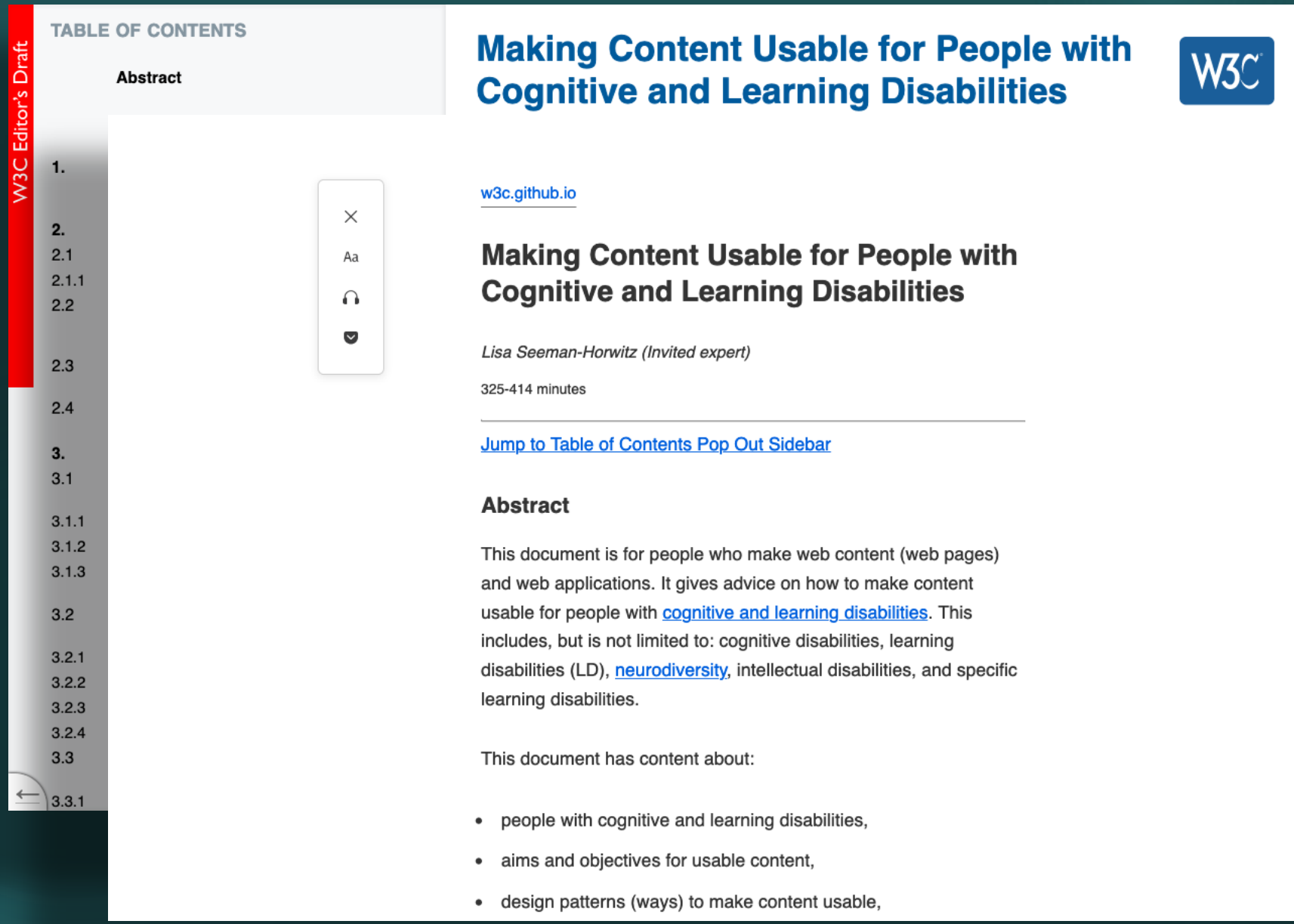

W3C Editor's Draft

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3.3

3.3.1

Making Content Usable for People with Cognitive and Learning Disabilities

w3c.github.io

Making Content Usable for People with Cognitive and Learning Disabilities

Lisa Seeman-Horwitz (Invited expert)

325-414 minutes

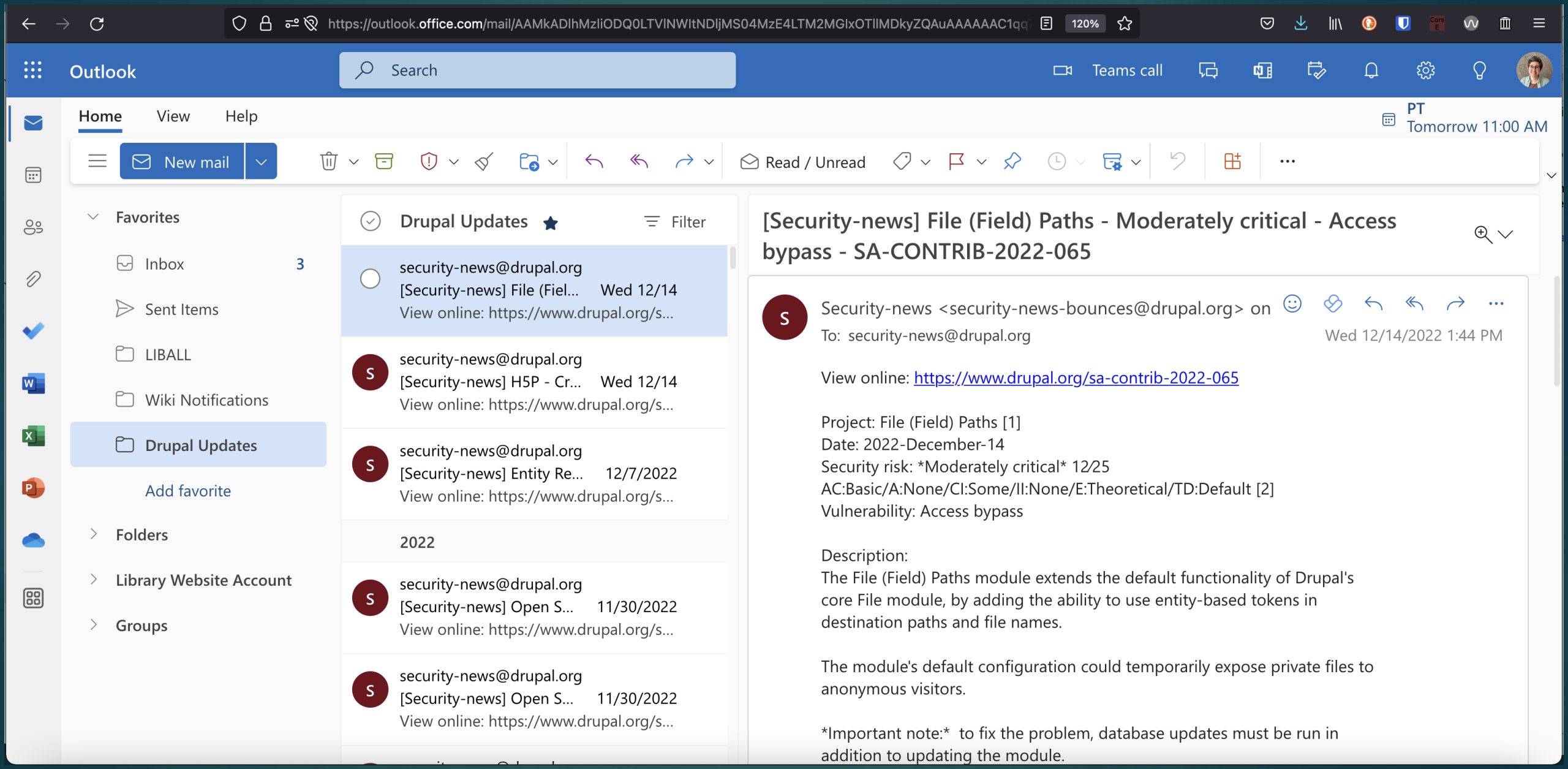
Jump to Table of Contents Pop Out Sidebar

Abstract

This document is for people who make web content (web pages) and web applications. It gives advice on how to make content usable for people with cognitive and learning disabilities. This includes, but is not limited to: cognitive disabilities, learning disabilities (LD), neurodiversity, intellectual disabilities, and specific learning disabilities.

This document has content about:

- people with cognitive and learning disabilities,
- aims and objectives for usable content,
- design patterns (ways) to make content usable,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120%
Outlook
Search
Teams call
Home
View
Help
PT
Tomorrow 11:00 AM
New mail
Read / Unread
Favorites
Inbox 3
Sent Items
LIBALL
Wiki Notifications
Drupal Updates
Add favorite
Folders
Library Website Account
Groups
Drupal Updates
Filter
security-news@drupal.org
[Security-news] File (Fiel... Wed 12/14
View online: https://www.drupal.org/s...
security-news@drupal.org
[Security-news] H5P - Cr... Wed 12/14
View online: https://www.drupal.org/s...
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[Security-news] Entity Re... 12/7/2022
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2022
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[Security-news] Open S... 11/30/2022
View online: https://www.drupal.org/s...
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[Security-news] Open S... 11/30/2022
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[Security-news] File (Field) Paths - Moderately critical - Access bypass - SA-CONTRIB-2022-065
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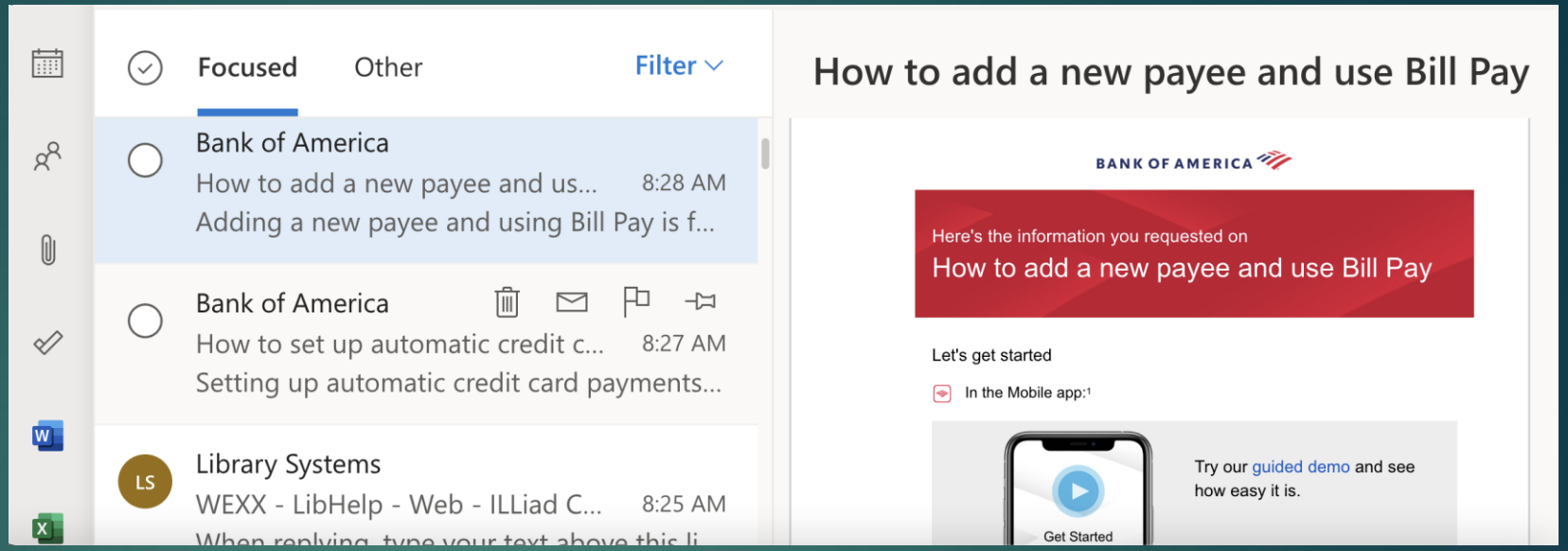
To: security-news@drupal.org
Wed 12/14/2022 1:44 PM
View online: https://www.drupal.org/sa-contrib-2022-065
Project: File (Field) Paths [1]
Date: 2022-December-14
Security risk: *Moderately critical* 12/25
AC:Basic/A:None/CI:Some/II:None/E:Theoretical/TD:Default [2]
Vulnerability: Access bypass
Description:
The File (Field) Paths module extends the default functionality of Drupal's core File module, by adding the ability to use entity-based tokens in destination paths and file names.
The module's default configuration could temporarily expose private files to anonymous visitors.
Important note: to fix the problem, database updates must be run in addition to updating the module.

120%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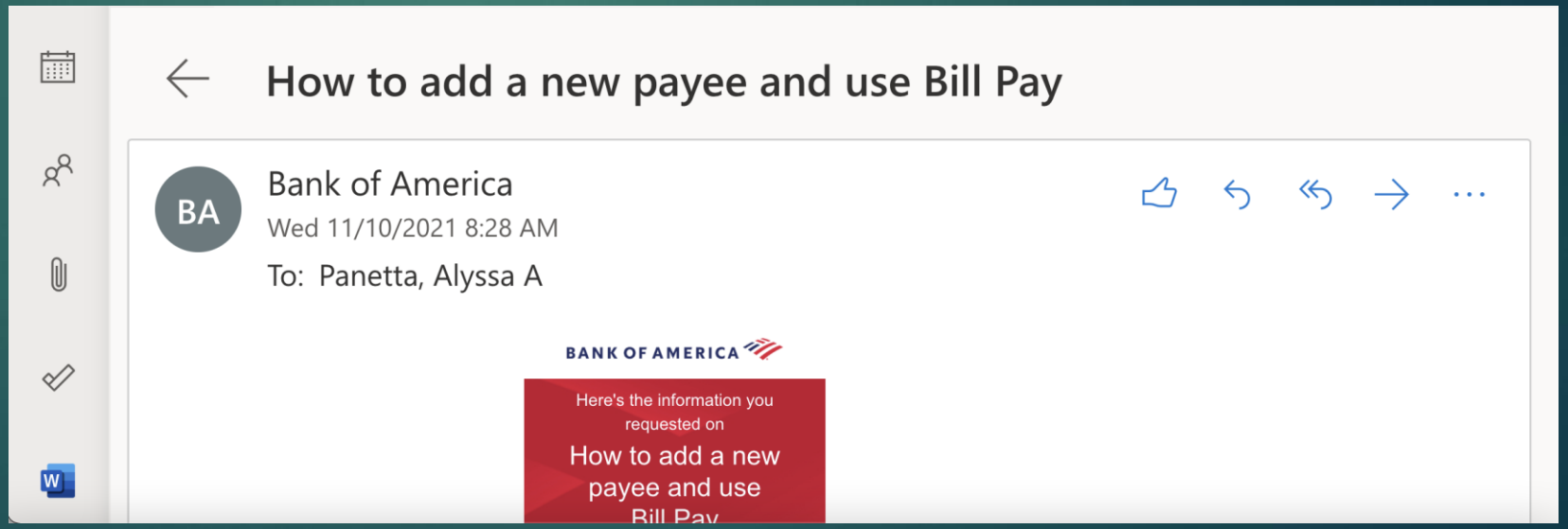
Other
Filter
Bank of America
How to add a new payee and us...
8:28 AM
Adding a new payee and using Bill Pay is f...
Bank of America
How to set up automatic credit c...
8:27 AM
Setting up automatic credit card payments...
LS
Library Systems
WEXX - LibHelp - Web - ILLiad C...
8:25 AM
How to add a new payee and use Bill Pay
BANK OF AMERICA
Here's the information you requested on
How to add a new payee and use Bill Pay
Let's get started
In the Mobile app:1
Get Started
Try our guided demo and see how easy it is.

170%


How to add a new payee and use Bill Pay
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Bank of America
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To: Panetta, Alyssa A
BANK OF AMERICA
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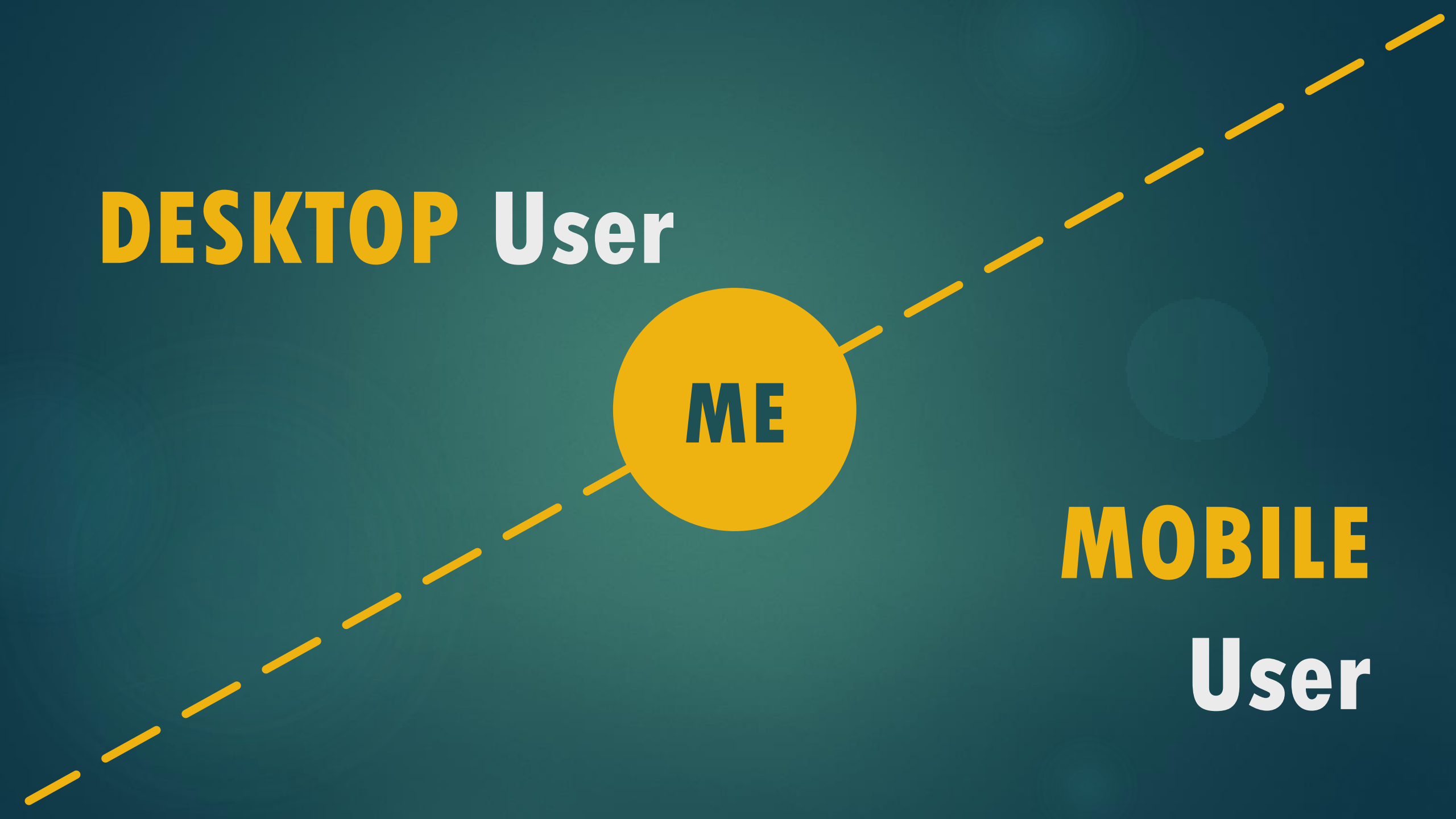
How to add a new payee and use Bill Pay


DESKTOP User
ME
MOBILE
User

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Everything

ADVANCED SEARCH

Tweak your results

Expand My Results

Sort by Relevance

Availability

- Available online
- Peer-reviewed (Scholarly) Journals
- Open Access
- Owned by library

Publication Date

Resource Type

Library

Subject

Author/Creator

Location

Language

Online Collection

Institution

Place

ABOUT THE TOPIC

Cascading Style Sheets

Cascading Style Sheets (CSS) was introduced within the HTML 4.0 specification to separate content from formatting, and to provide precise document layout and format control. The Hypertext Markup Language allows authors to intersperse tags for controlling the display or ...VIEW MORE

Source: Encyclopedia of Multimedia, 2nd Ed

Created: 2008

Full text available

0 selected PAGE 1 25,786 Results

1 BOOK

Introduction to web mapping

Dorman, Michael, 1984- author.

2020

Available at University Library University Library Books (GA139 .D67 2020)

2 BOOK

DOM scripting : web design with JavaScript and the Document Object Model

Keith, Jeremy.

©2005

Available at Science Library Science Library Books (QA 76.73 J38 K45X 2005)

3 BOOK

CSS

McFarland, David Sawyer

2015

CSS lets you create professional-looking websites, but learning its finer points can be tricky-even for seasoned web developers...

OVERWHELMING

Increased Cognitive Load

Cognitive Load

LONG-TERM

Memory

STORAGE

vs

FUNCTION

WORKING

Memory

Cognitive Load

How much working memory we are using

Forms of Cognitive Load

Intrinsic

- How complex the given task is
- Ex. Online banking v. Stockbroker trading

Extraneous

- Added friction, distractions, design complexity
- Use of unfamiliar patterns

Germane

- Connects current info/challenge with existing mental models stored in your long-term memory

Intrinsic

- How complex the given task is
- Ex. Online banking v. Stockbroker trading

Extraneous

- Added friction, distractions, design complexity
- Use of unfamiliar patterns

Germane

- Connects current info/challenge with existing mental models stored in your long-term memory

REDUCED

Increased Cognitive Load

“For any task to be successful, motivation must equal or surpass cognitive load.”

Microsoft Inclusive Design for Cognitive Guidebook

Video: Building for the Brain: designing for cognitive inclusion

How can we design to reduce cognitive load?

Making Content Usable for People with Cognitive and Learning Disabilities

Help users understand what things are and how to use them.

Help users find what they need.

Help users focus.

Help users avoid mistakes and know how to correct them.

Use clear, understandable content.

Support adaptation and personalization.

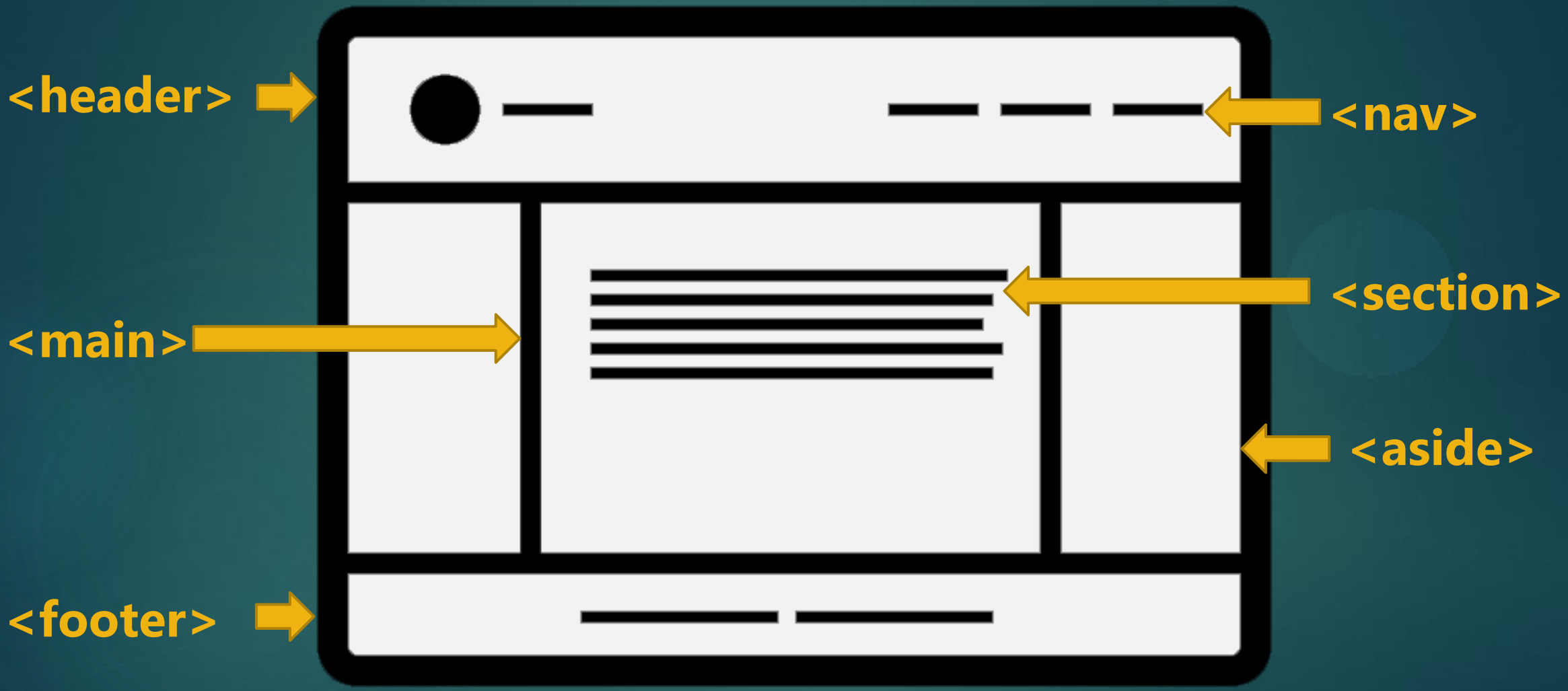
Ensure processes do not rely on memory.

Provide help and support.

Make your Site Easier To Use

- Use Semantic HTML and Familiar Layout Patterns
- Use Modern CSS and Make Your Site Flexible
- Say it Twice

Semantic HTML and Familiar Layout Patterns


<header>
<nav>
<main>
<section>
<aside>
<footer>

Maximize Germane, Minimize Extraneous

- Familiar Layouts
- Familiar Interactions
- F-pattern Scan

Use Clear Headings

- Easy to scan and meaningful
- Don’t use headings to make non-heading text bigger

Use Modern CSS and Make Your Site Flexible

Modern CSS

=

FLEXIBILITY

Modern CSS Upgrades for Flexibility

Layouts and Alignments	→	CSS Grid and CSS Math
Text and Whitespace	→	Relative Units
Honor User Preferences	→	@preference queries
Move Beyond Viewports	→	@container queries

More Information: Notes and Resources for talk
"Living the UX: When a web developer develops a disability"

Stay up to date with CSS

- Interop 2023 Dashboard
- Mastadon: @front-end.social
- Newsletters: CSS Weekly, Front-end Focus, Kevin Powell, webdev, ModernCSS.dev, CSS Layout News

> … we aim to fulfill the original ideal of the Web: a global resource, open and accessible to all … if we want sites to be accessible, we need to help authors build sites that are accessible by default … **the more semantic information the browser has the better it can do at providing accessible versions of content.**

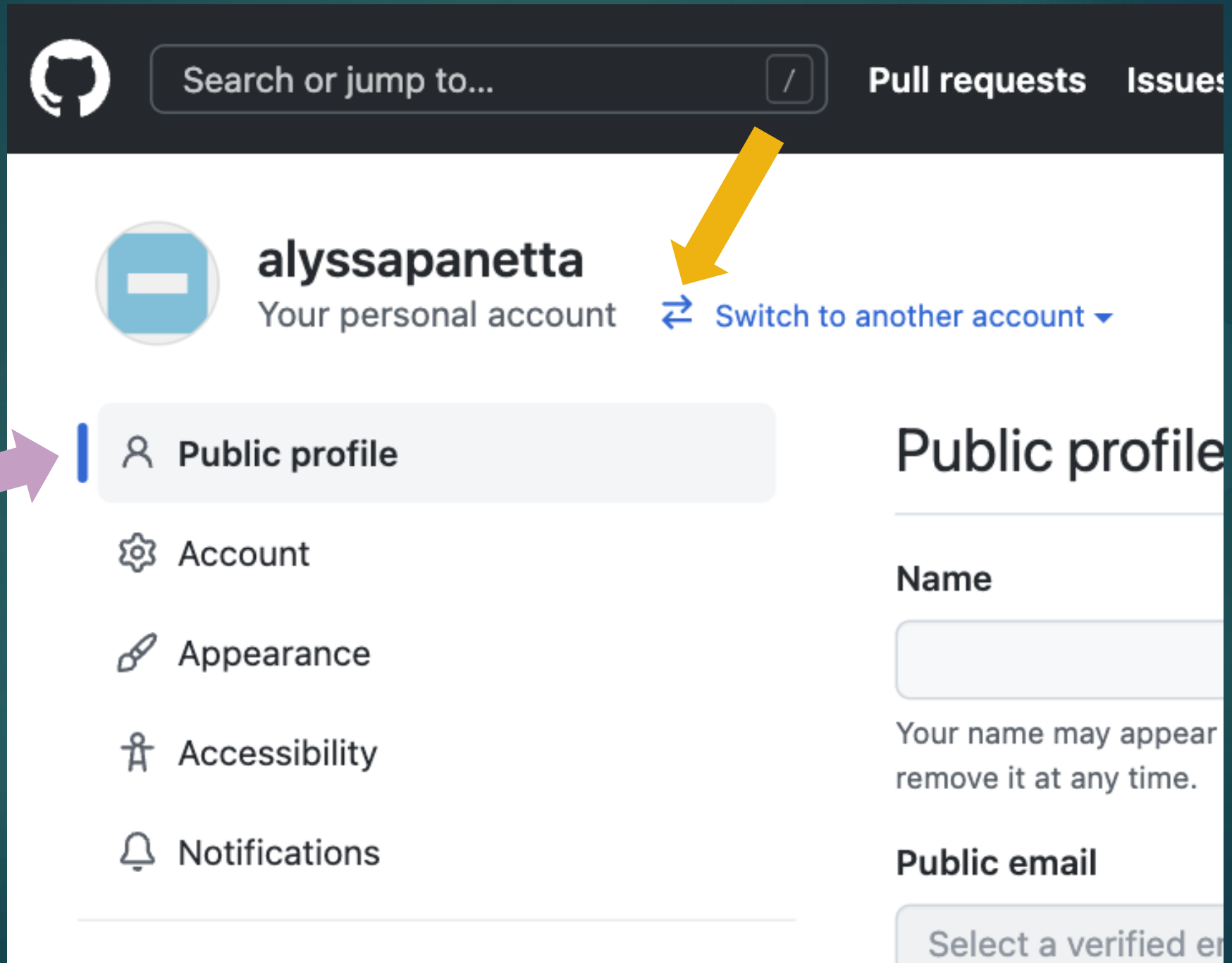
Mozilla's vision for the evolution of the Web

March 23, 2022

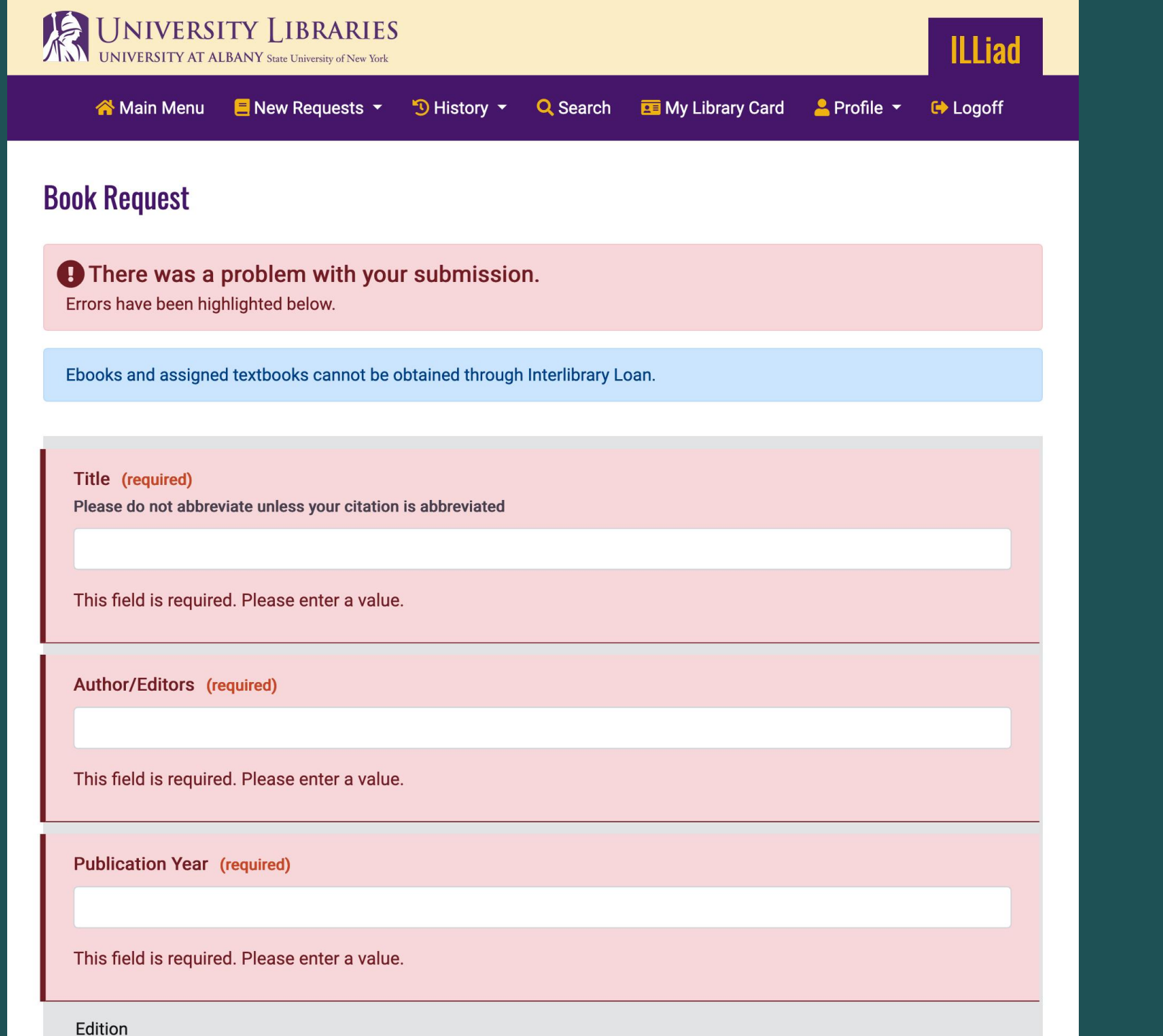
Say it Twice

Text and Icons Together

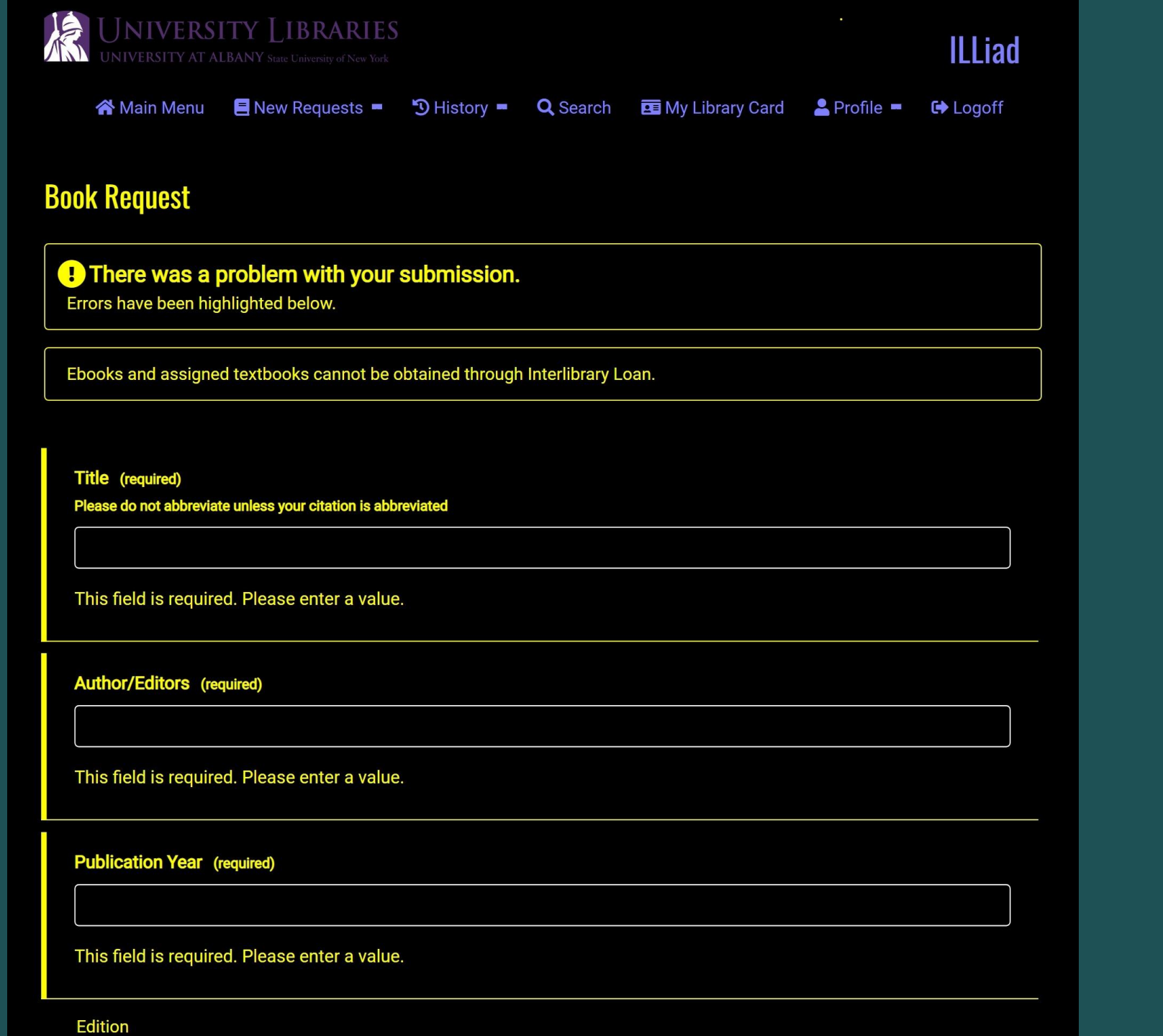
- Add relevant icons to text navigation links
- Add relevant text to icons for clarification, using Tooltips when needed


Search or jump to...
/
Pull requests
Issues
alyssapanetta
Your personal account
Switch to another account
Public profile
Account
Appearance
Accessibility
Notifications
Public profile
Name
Your name may appear
remove it at any time.
Public email
Select a verified e

Go Beyond Color Alone



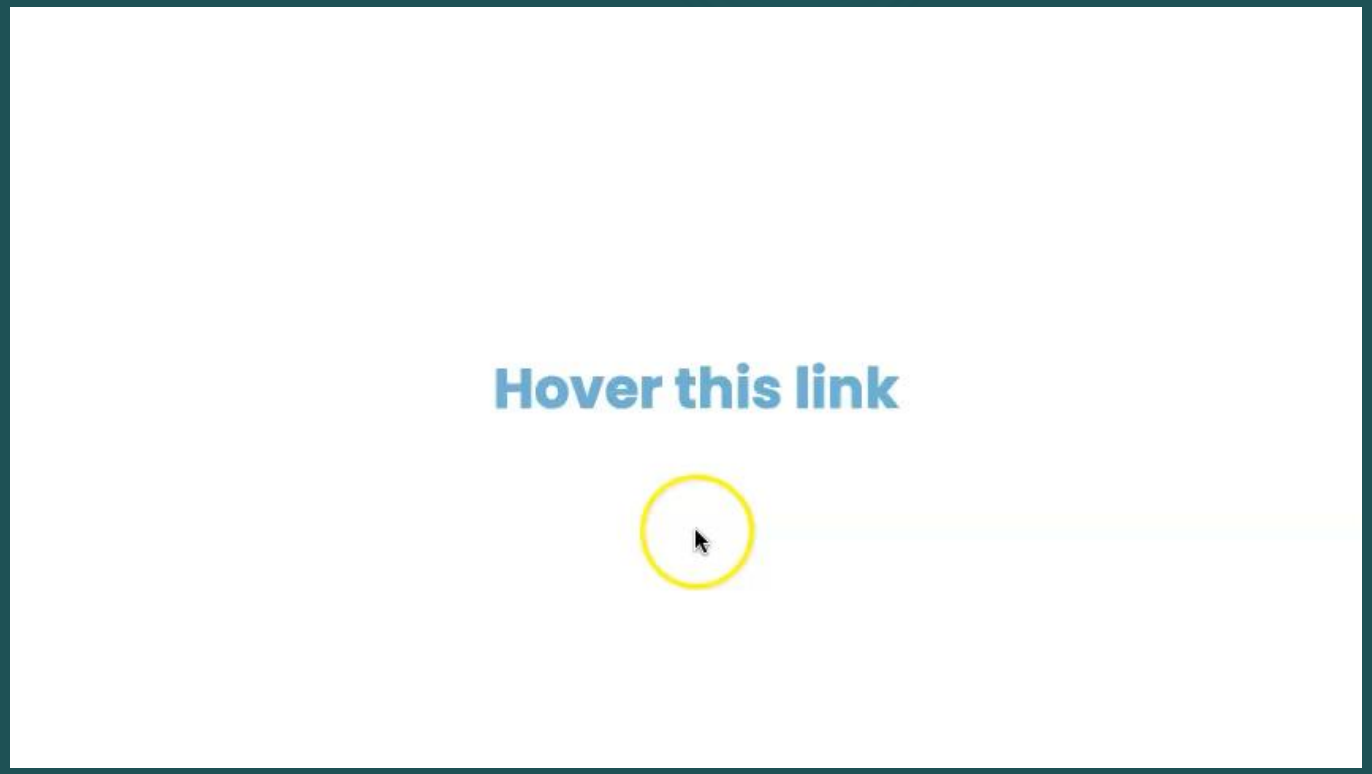
Go Beyond Color Alone



Add Motion to Grab Attention

- CSS transforms
- CSS transitions
- SVG animations

CSS Transition Example



https://codepen.io/team/css-tricks/pen/gOXMLLY

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If you already support the Libraries please accept our heartfelt appreciation. If you are not yet a supporter but are considering giving to the University Libraries, you might want to learn more on this website, consult our list of endowments, or go directly to the University's Way to Give website.

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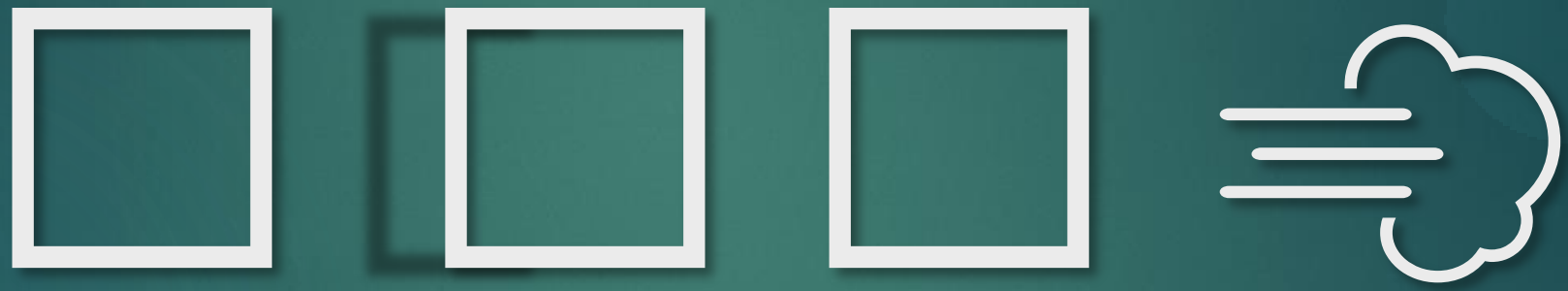
@UAlbanyLibs

Make your Site Easier To Use

- Use Semantic HTML and Familiar Layout Patterns
- Use Modern CSS and Make Your Site Flexible
- Say it Twice



Where do you even start . ?

Possible Upgrades

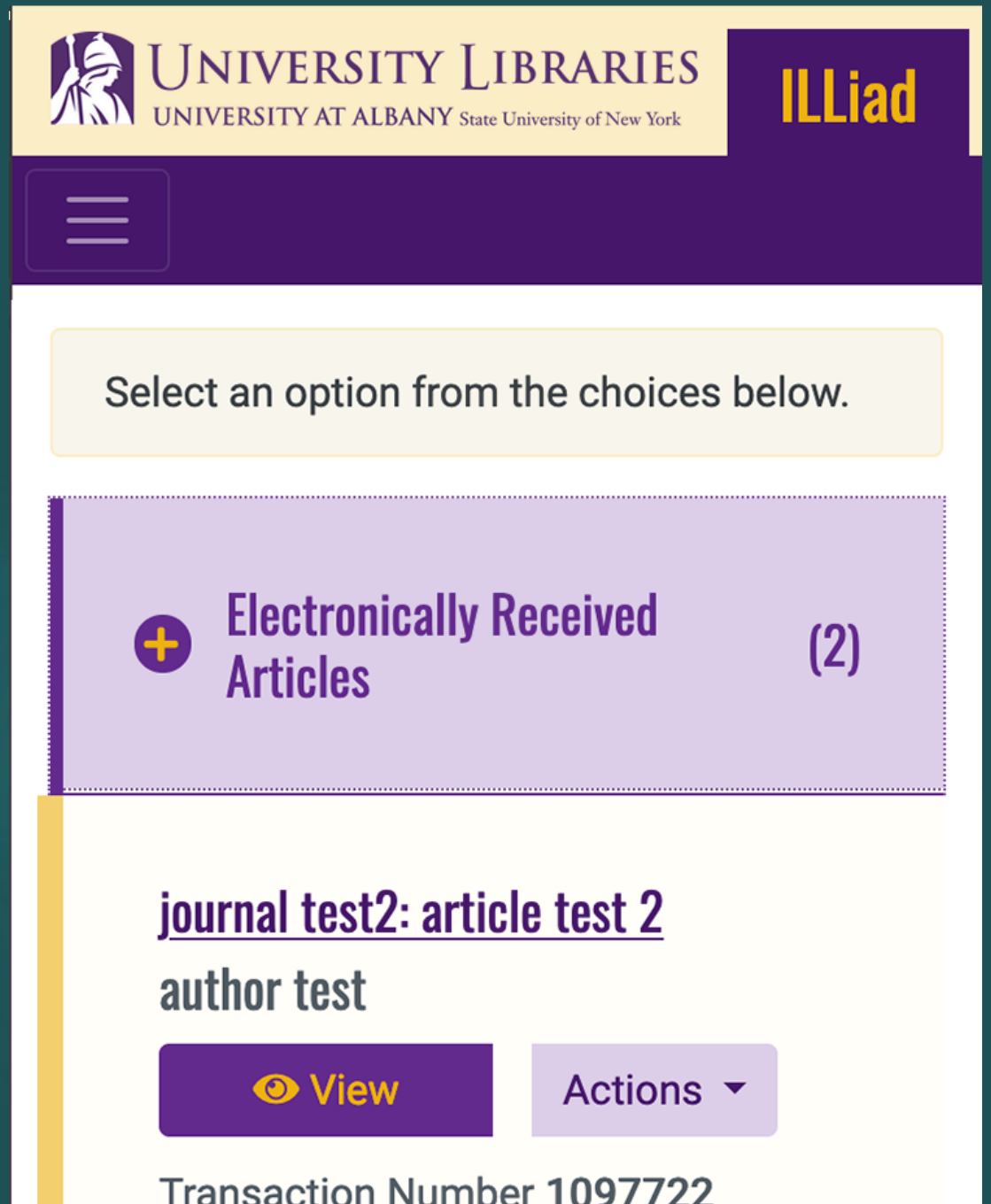
- Convert a Page Layout to CSS Grid and Math
- Convert Type and Spacing to Flexible Units
- Add preference queries
- Migrate from media queries to container queries

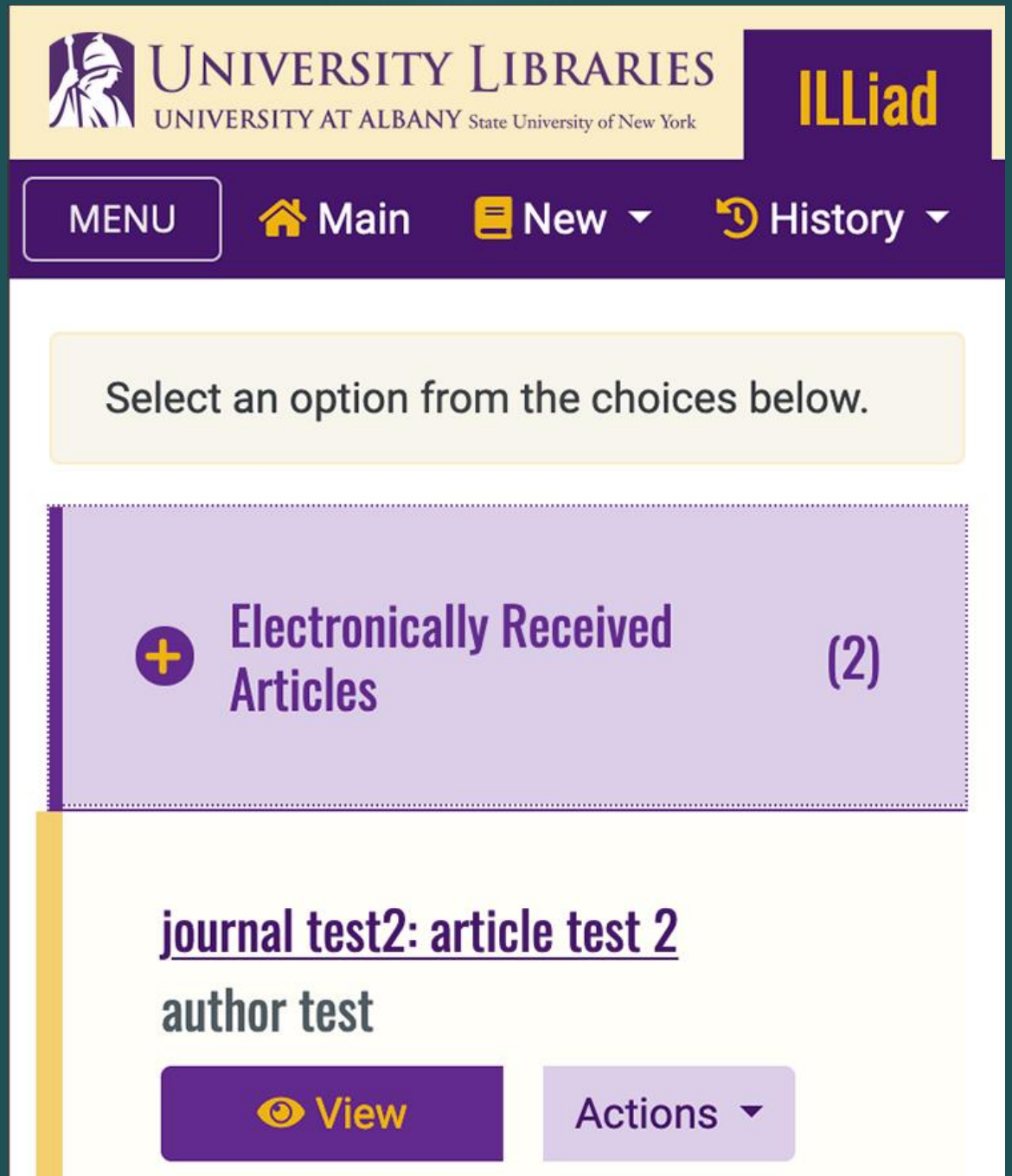
- Clean up your headings
- Add texts to icons/icons to text
- Add transform/transition where only changed color before

- Improve “micro-interactions” like navigation switches

START HERE!

VARIATIONS	VISITORS	CONVERSIONS	CONVERSION RATE	IMPROVEMENT
MENU	12,660	347	2.7% (±0,28%)	+12.9%
☰ MENU	12,900	331	2.6% (±0,27%)	+5.7%
☰	12,684	308	2.4% (±0,27%)	---
MENU	13,017	246	1.9% (±0,23%)	-22.2%


UNIVERSITY LIBRARIES
UNIVERSITY AT ALBANY State University of New York
ILLiad
Select an option from the choices below.
Electronically Received Articles (2)
journal test2: article test 2
author test
View
Actions
Transaction Number 1097722


UNIVERSITY LIBRARIES
UNIVERSITY AT ALBANY State University of New York
ILLiad
MENU
Main
New
History
Select an option from the choices below.
Electronically Received Articles (2)
journal test2: article test 2
author test
View
Actions

No-hamburger Mobile Nav Toggle

https://codepen.io/alyssapanetta/pen/OJwWvVX

- Make sure your burger is in a button
- Remove the icon, add the word “Menu”
- Add a little CSS

Add SVG Animation

https://codepen.io/alyssapanetta/pen/wvxKVOr

Recap

- Using the web with a cognitive disability
- Cognitive load
- Reducing cognitive load in our web designs

THANK YOU!

Resources:

https://github.com/alyssapanetta/cognitive-ease

https://github.com/alyssapanetta/developing-a-disability/

apanetta@albany.edu

library.albany.edu

@springbroken : Twitter

@alyssa@drupal.community : Mastadon

.alyssa

deartalula.com