

6.1040: Software Studio

Expanding the Context: Value Sensitive Design

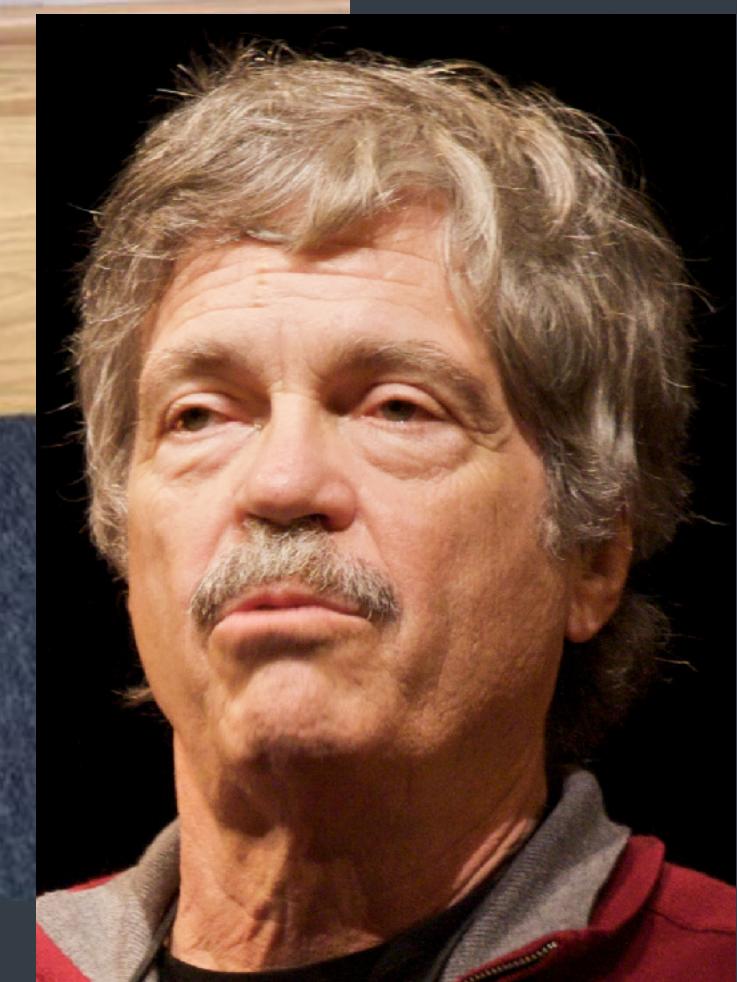
Arvind Satyanarayan & Daniel Jackson



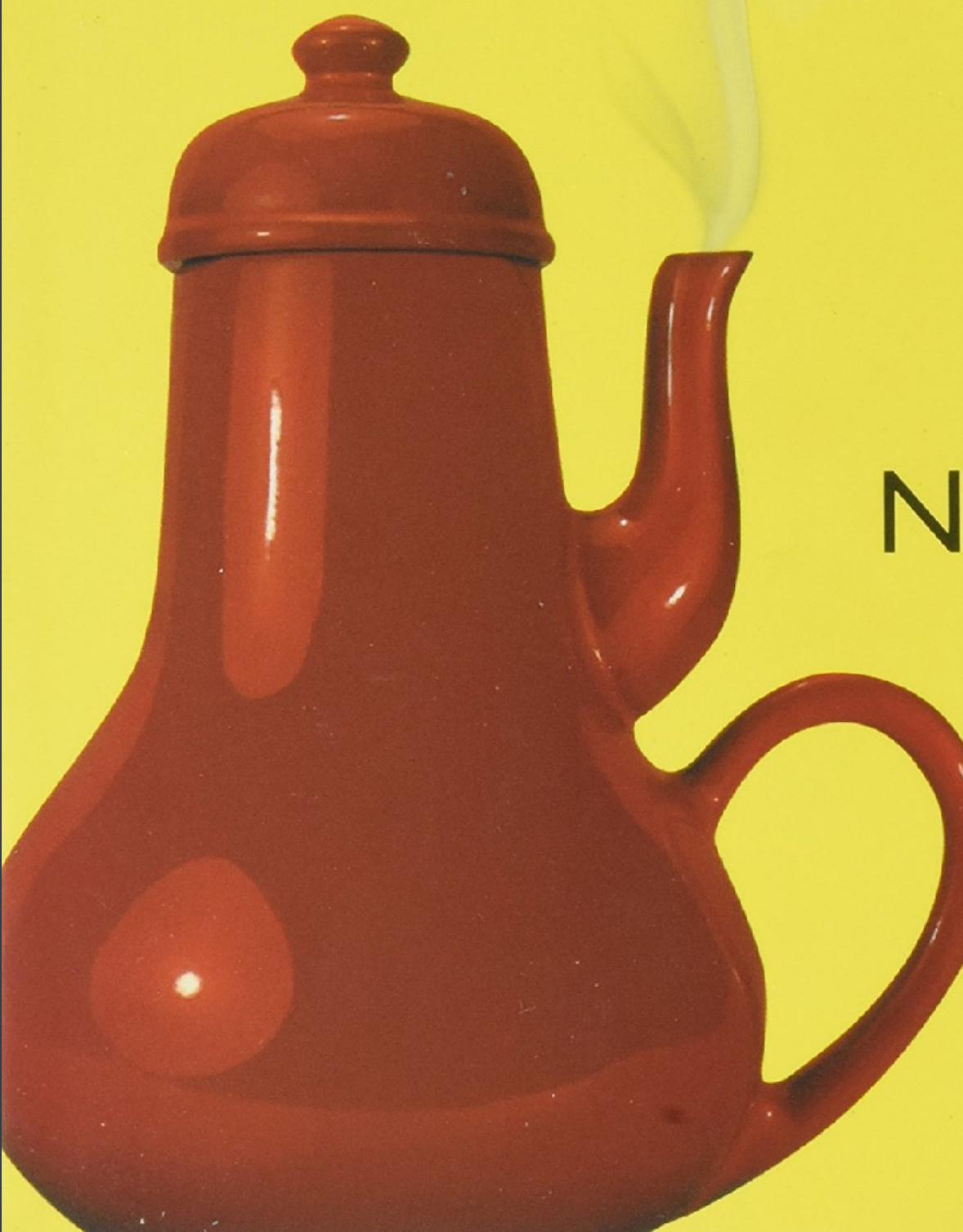
Poster by Alvy Brooks (@alvybrooks)



Photo from Sam Altman (@sama)



The DESIGN of EVERYDAY THINGS



DON
NORMAN

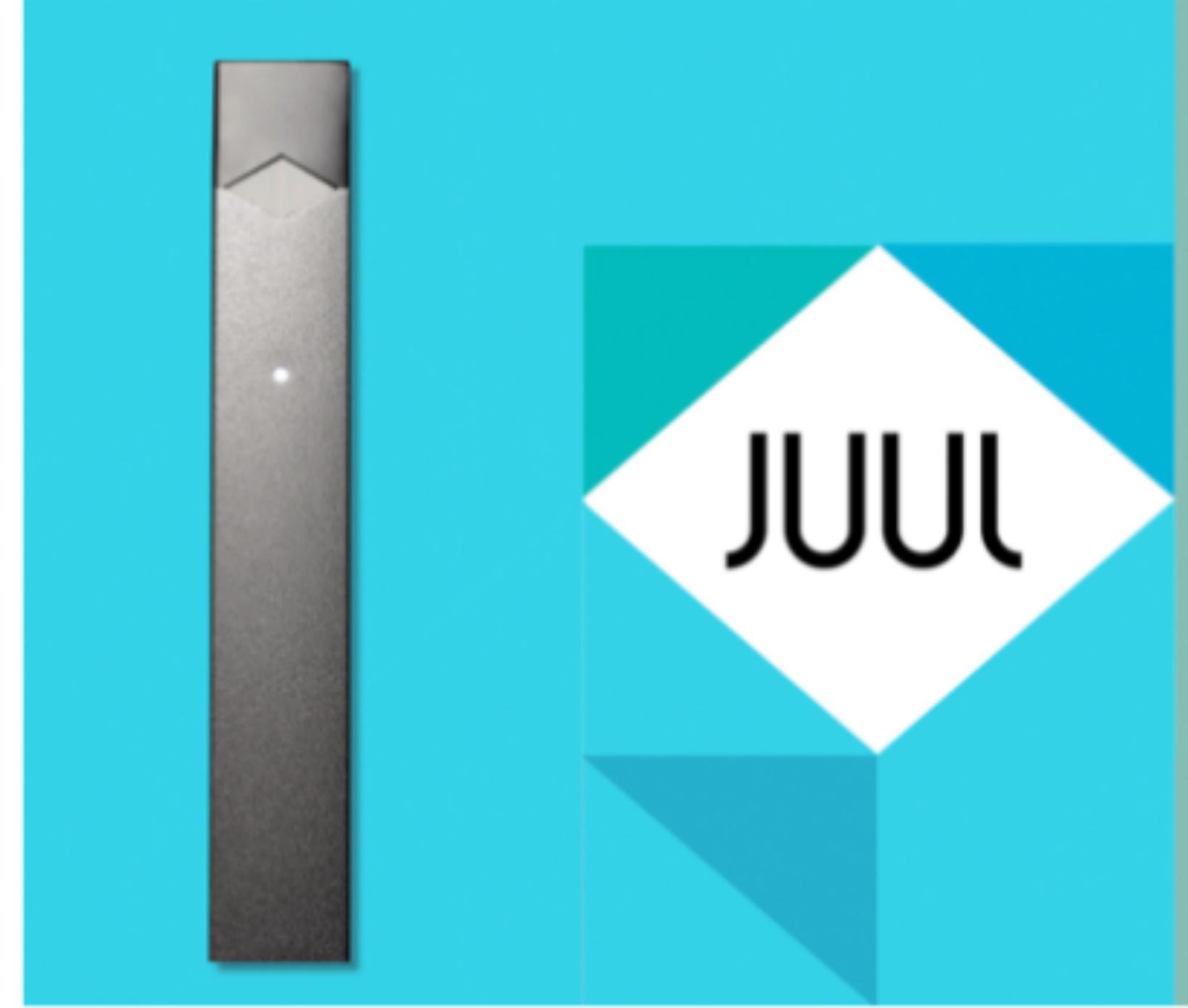


Designers are asked to figure out how to integrate technology into our everyday lives. Designers have to manage the interaction of technology and people. Good designers are quick learners, for today they might be asked to design a mobile application; tomorrow, to design a transportation system or a company's organizational structure. How can one person work across so many different domains? Because the fundamental principles of designing for people are the same across all domains. People are the same, and so the design principles are the same.

Designers are only one part of the complex chain of processes and different professions involved in producing a product. Although

SIX: Design Thinking 239

Photo from J. Nathan Matias (@natematias)



Brussels



Need finding / empathy building
is not enough

Value Sensitive Design

Designers often focus on the **immediate context of use**: how will a product be used by the person who purchases it?

Designers rarely have the time to **consider the long-term and indirect effects of their technologies**.



Value Sensitive Design: 4 Criteria

Stakeholders

Describes the range of effects both on the people who are in direct contact with the technology, as well as those who might not be direct users, but whose lives are nevertheless affected by various interactions around the technology.

Time

Consider the implications that will only emerge after the technology has moved through initial phases of novelty to later phases of appropriation and integration into society.

Pervasiveness

Systemic interactions that follow from the widespread adoption of an interactive technology.

Values

What do people consider important in life? E.g., autonomy, community, cooperation, democratization, environmental sustainability, fairness, dignity.

Value Sensitive Design: 4 Criteria

Stakeholders

Direct Stakeholders • Indirect Stakeholders • Non-targeted Use
Children • Variation in Abilities • Changing Hands • One Person, Many Roles

Time

The Long Now • Long-Term Health & Well-Being • Sustained Friendships
Work of the Future • Adaptation • Non-Use • Obsolescence • Reappropriation

Pervasiveness

Widespread Use • Diverse Geographies • Crossing National Boundaries
Accounting for Culture • Political Realities

Values

Elicit Stakeholder Values • Consider Key Values at Stake • Choose Desired Values
Evaluate User Experience of Values • Value Tensions • Perceptions of a Value

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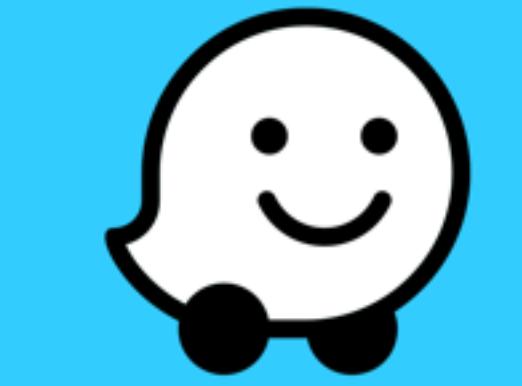
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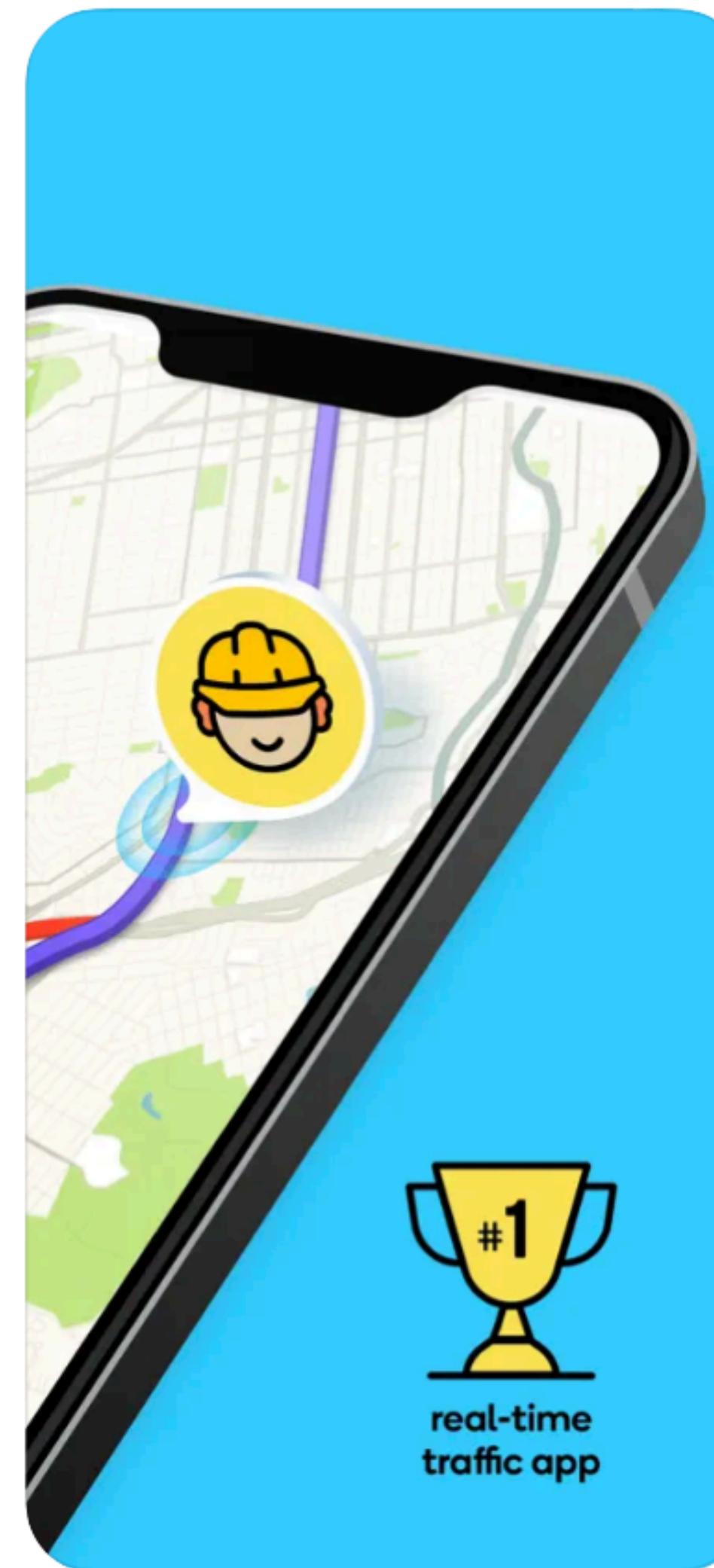
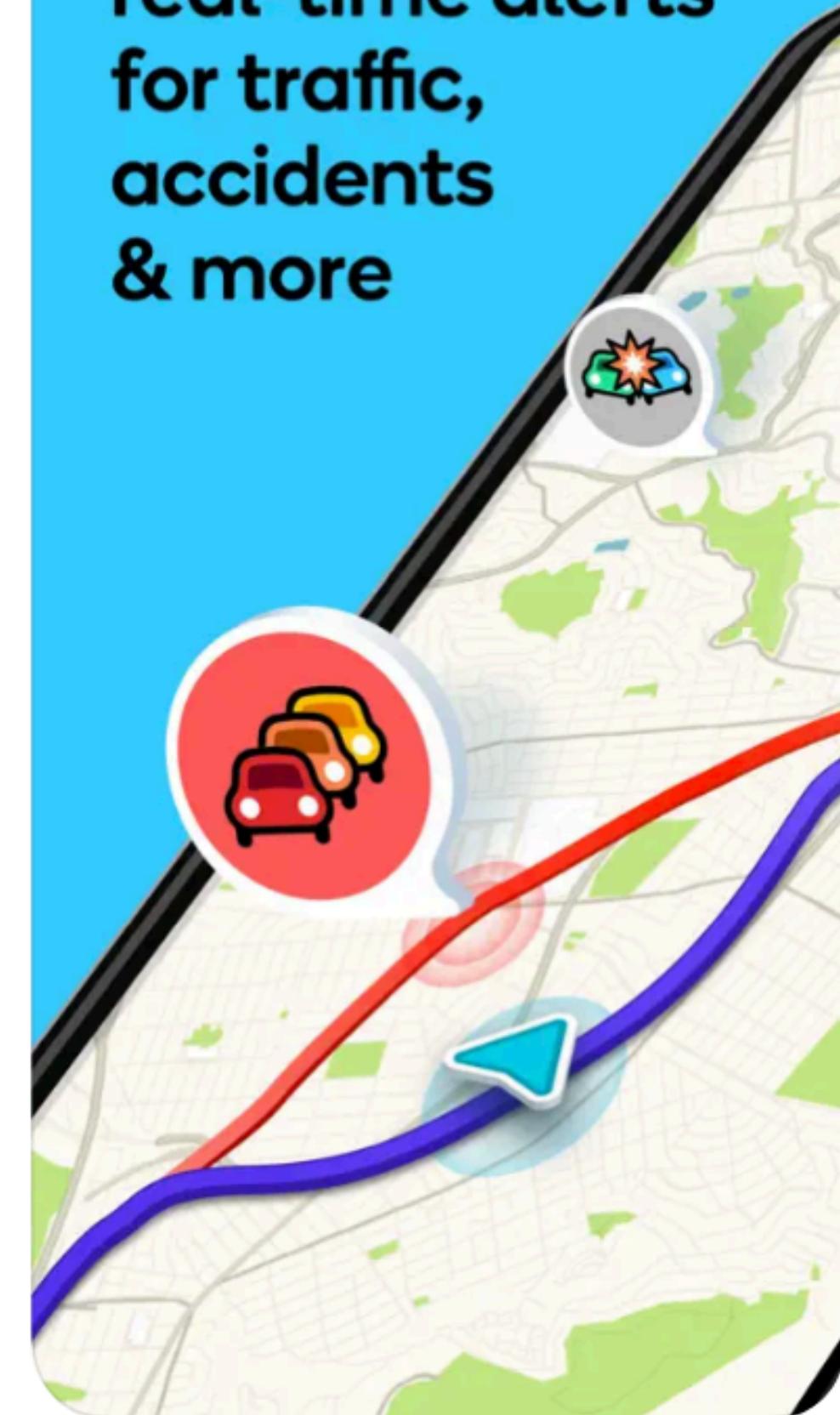
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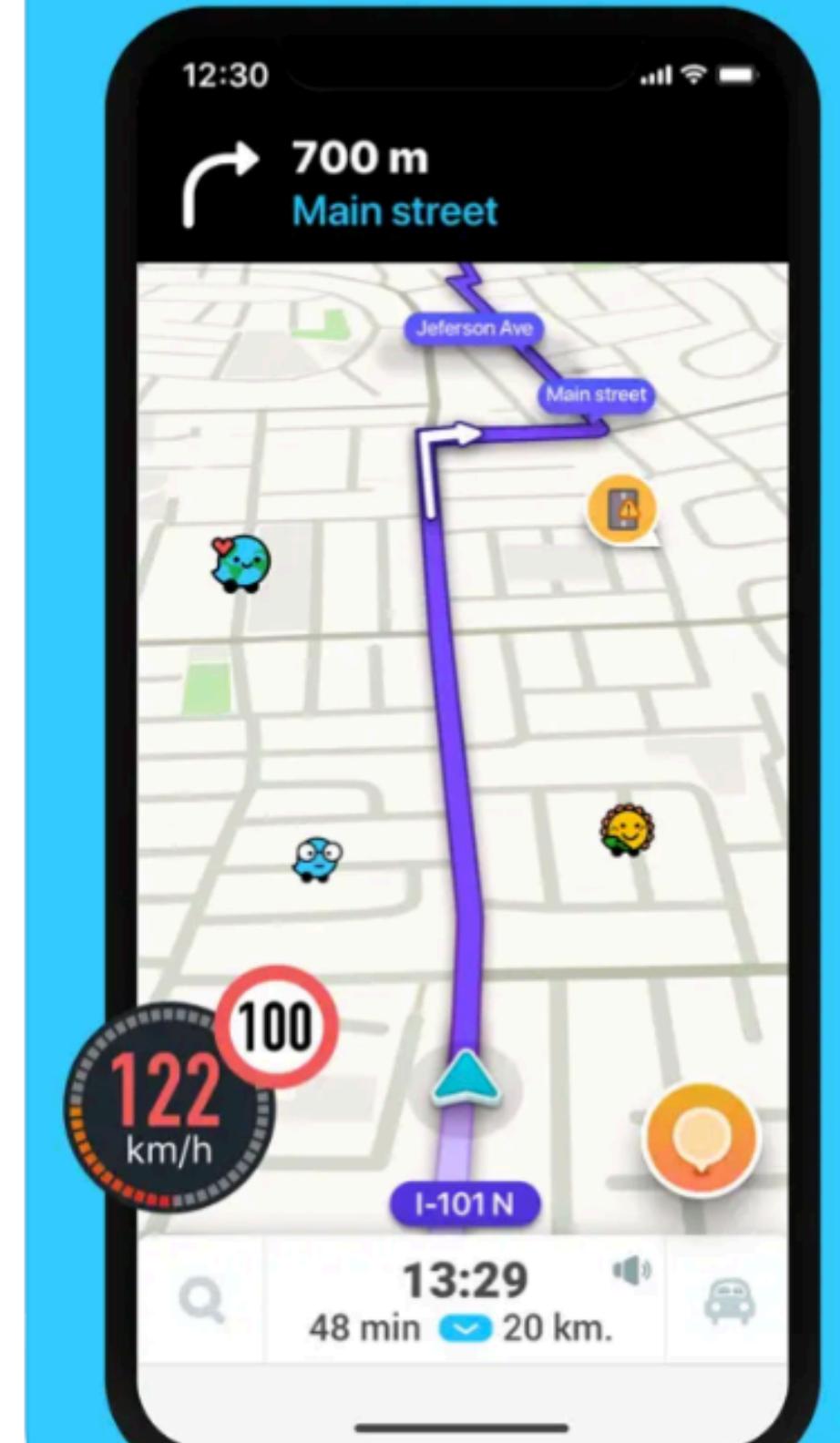
Indirect Stakeholders: The Waze Effect



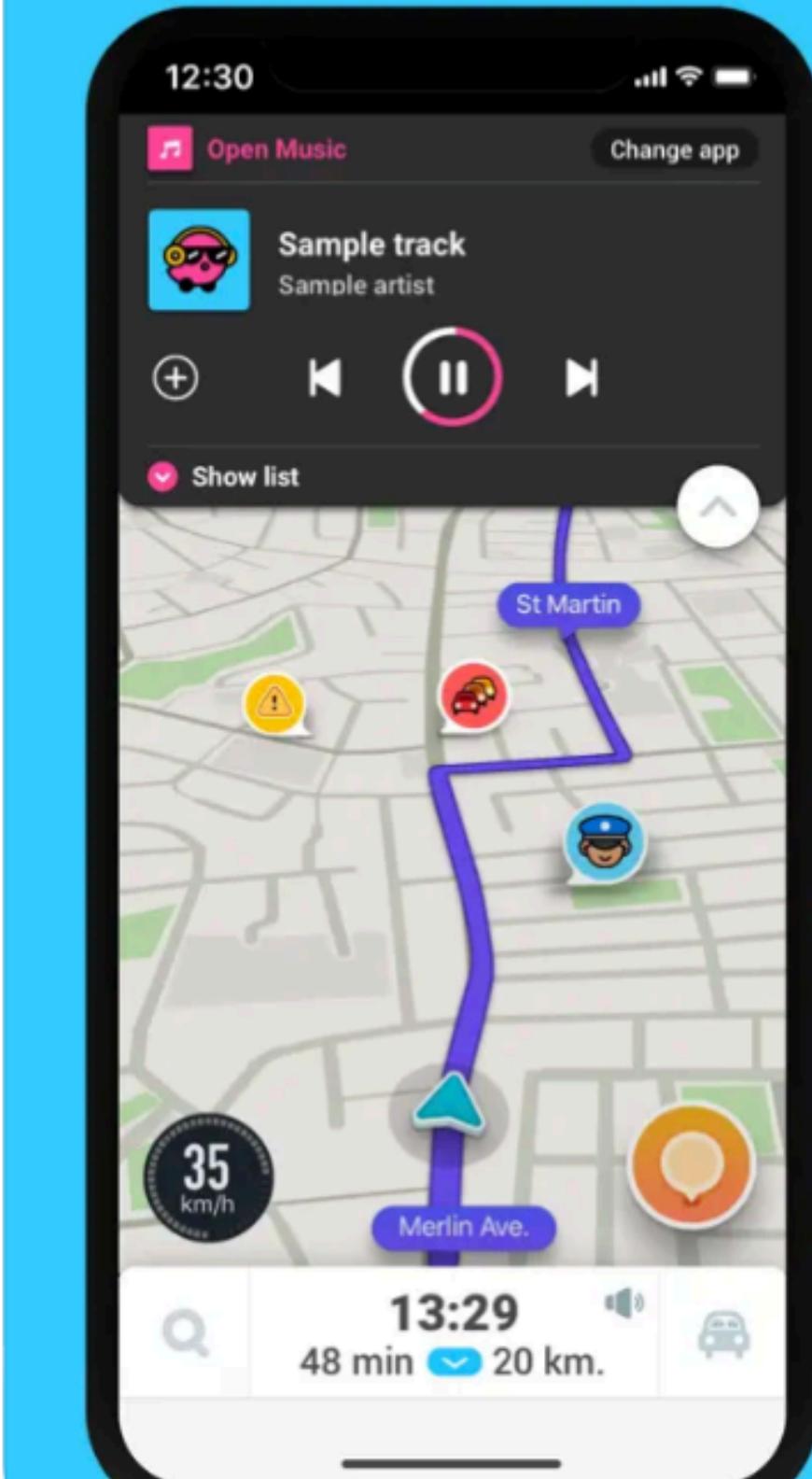
Get the best routes with real-time alerts for traffic, accidents & more



Avoid unnecessary speeding tickets



Listen to music, podcasts & more





CBS THIS
MORNING

WAZED AND CONFUSED
NJ TOWN TARGETS CONGESTION FROM NAVIGATION APPS



Indirect Stakeholders: The Waze Effect



WBZ-TV



Photo by Evelyn Hockstein for The Washington Post

Gail Barry of Medford says navigation apps have completely changed her neighborhood.

"The cars go whiz, whiz, whiz. It's like we are living on a highway. It's horrible."

Traffic on her residential street has gotten worse every year over the past couple of years.

<https://www.cbsnews.com/boston/news/iteam-waze-google-maps-traffic-navigation-apps-commuters/>

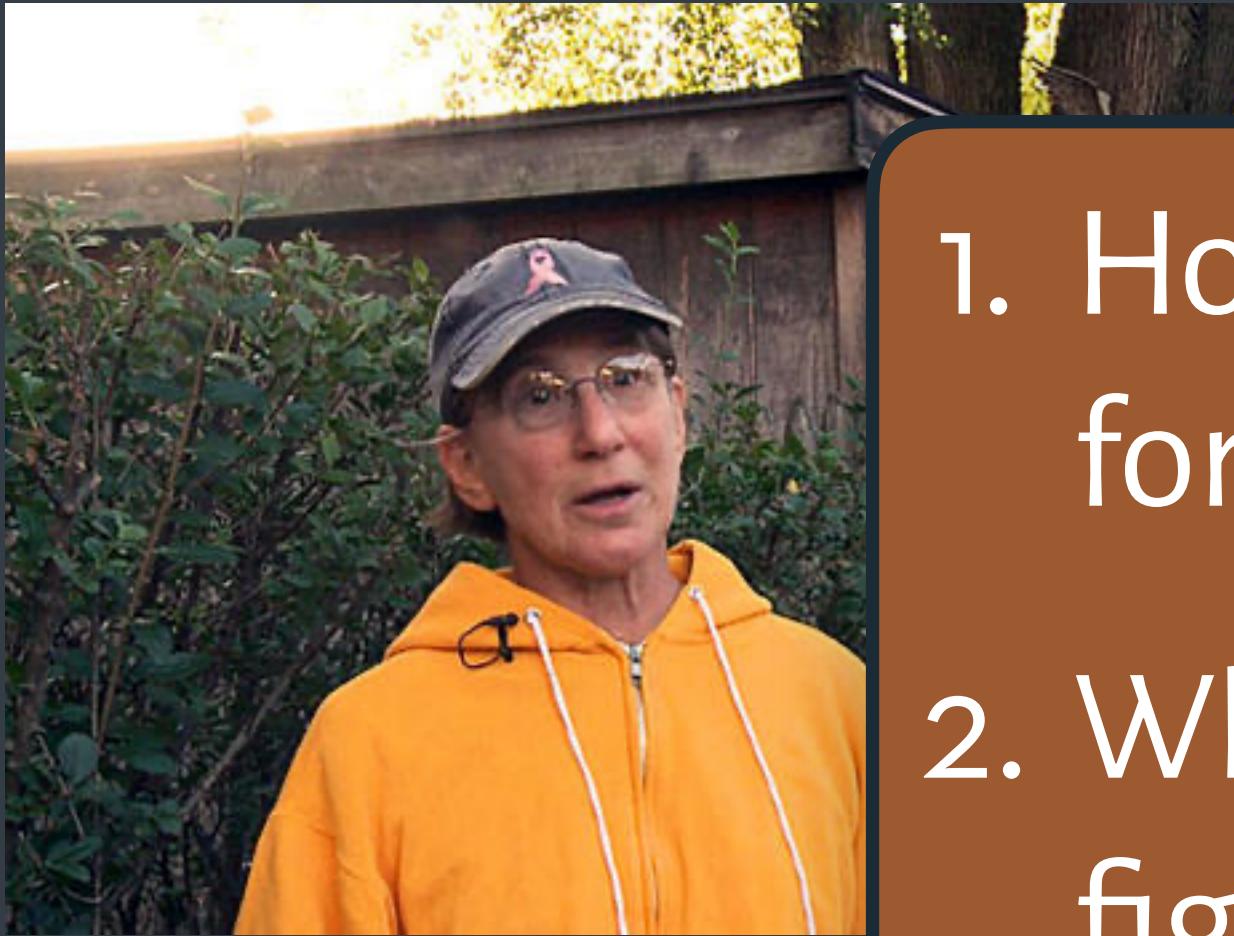
Tim Connor lives on a quiet residential street in Takoma Park, Maryland.

One afternoon, Connor counted a vehicle every two seconds on a street with a single lane available between parked cars.

One morning, neighbors awoke to a cacophony of honks and went out to find a backup dozens of cars deep, two drivers in the middle about to come to blows.

https://www.washingtonpost.com/local/traffic-weary-homeowners-and-waze-are-at-war-again-guess-whos-winning/2016/06/05/c466df46-299d-11e6-b989-4e5479715b54_story.html

Indirect Stakeholders: The Waze Effect



WBZ-TV



Photo by Evelyn Hockstein for The Washington Post

Gail Barry of Medford says navigation apps have completely changed her

1. How might Waze update its design to account for its indirect stakeholders?
2. What could the indirect stakeholders do to fight back?

**~30s: Think individually.
~3 mins: Discuss in Pairs.**

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t's horrible."

ver the past couple

: Maryland.

on a street with a

Indirect Stakeholders: The Waze Effect



DAVID E. RYU
COUNCILMEMBER, FOURTH DISTRICT

April 17, 2018

City Attorney Mike Feuer
Office of the Los Angeles City Attorney
James K. Hahn City Hall East
200 North Main Street, 8th Floor
Los Angeles, CA 90012

Dear City Attorney,

I am writing you today to urge your office to explore filing suit against Waze, owned by Google LLC, a subsidiary of Alphabet, for creating a dangerous condition in the public right of way. After numerous attempts to reach a resolution with Waze for the threats to public safety and infrastructure caused by their mobile technology, it has become clear that any and all legal options should be considered.

Wayfinding technology such as Waze has grown increasingly popular with drivers. In 2015, Waze reported that it had about 2 million users in Greater Los Angeles, one of the app's most popular locations. This new kind of wayfinding technology promises users a faster commute by giving real-time traffic updates and alternate routes to traditional arteries. To achieve this, it can wreak undue havoc on traffic plans, residential communities, and the safety of the residents of Los Angeles. Ironically, many of these "short cuts", end up causing more traffic in a race-to-the-bottom effort to cut travel times by using small cut-through streets, leading drivers to make unsafe turns and often unpermitted traffic directions.

Indirect Stakeholders: The Waze Effect



"All roads are the public domain and therefore the right of everyone to use [...] In that sense, Waze redistributes traffic to create a better traffic situation for everyone."

– Uri Levine, Waze Co-Founder

Variation in Human Ability: Designing for Accessibility

Medical (or deficit) model of disability: disability is something "wrong" with a person's body or mind (i.e., they are "suffering" and need to be "cured").

Criticized for seeing impairment as most important part of the person, and that they're helpless to do anything about it.

Promotes *technosolutionism*.



Liz Jackson

@elizejackson

...

Disability Dongle: A well intended elegant, yet useless solution to a problem we never knew we had. Disability Dongles are most often conceived of and created in design schools and at IDEO.

3:49 PM · Mar 26, 2019 · Twitter Web Client

90 Retweets

17 Quote Tweets

366 Likes



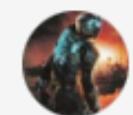
Mashable @mashable

...

These students just blew minds with their wheelchair prototype

5 Most Amazing Futuristic Transport Inventions Available Now 2017 Concept

2.4K views • 4 years ago



Insane Gadgets





Manual chairs are far too expensive for those that need them to afford, so who knows how anyone who isn't a billionaire is supposed to afford these glorified (and ugly) segways?

2

2

6

↑

...



If it takes my HMO six weeks to approve new tires for my manual wheelchair, there isn't a chance in hell that they're approving one of these 'fancy' chairs

1

1

10

↑

...



I'd for sure fall out going up backwards. My core strength to hold myself upright is rubbish, no way I'd be able to do that. Also, going upstairs backwards in a crowd seems like it would be.... challenging at best

2

↑

3

↑

...



"What's the market price, what's the lifespan of the rubberized tracks, what's the maintenance model, what's the functionality of the chair if it stops working suddenly, what's the charge-cycle of the batteries, what's the lifespan of the batteries?"

"But it looks cool!"

0

1

5

↑

...



019
Looks expensive. A simple ramp would be accessible to people who cannot afford this kind of tech as well as those with other mobility restrictions.

1

1

6

↑

...

Variation in Human Ability: Designing for Accessibility

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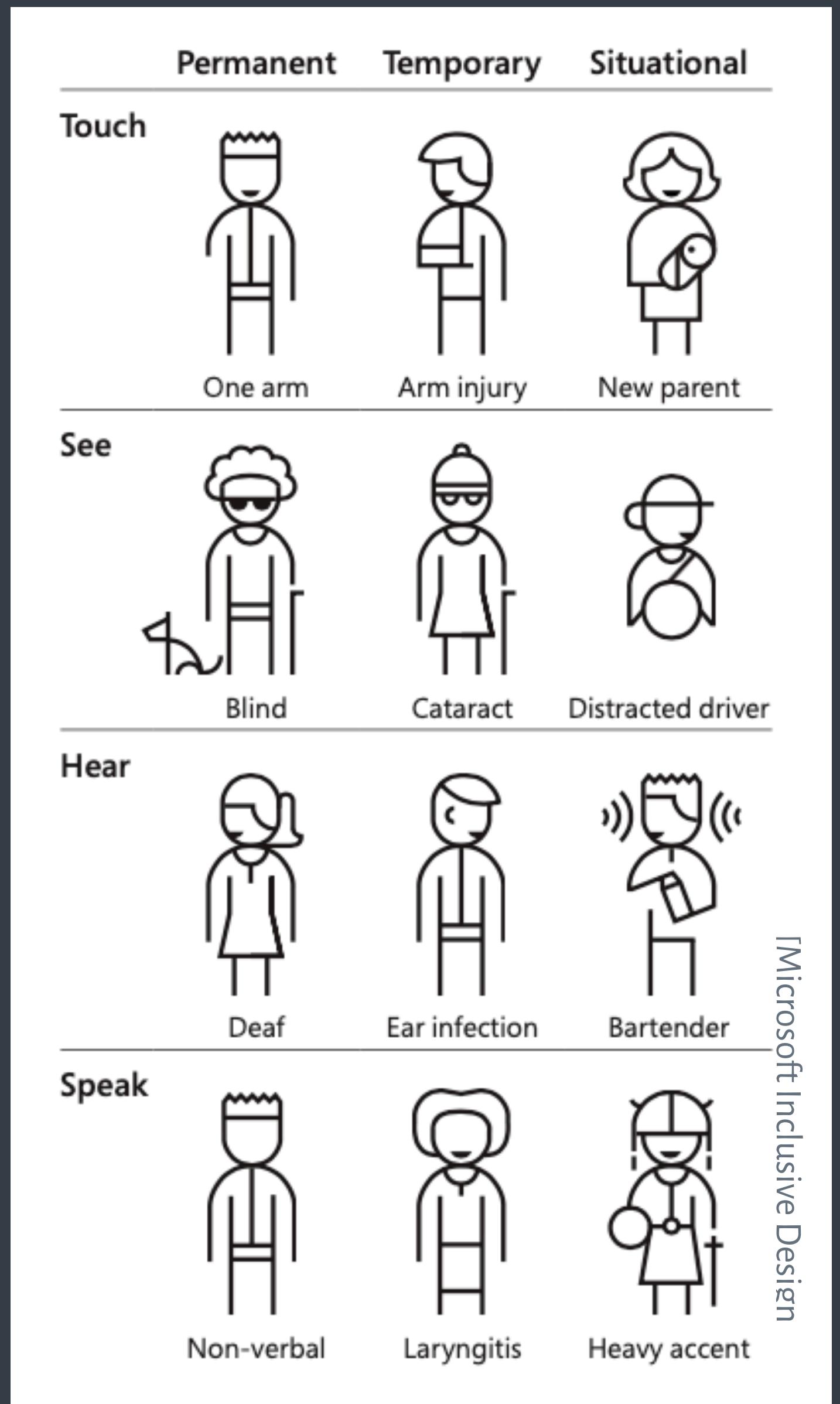
Variation in Human Ability: Designing for Accessibility

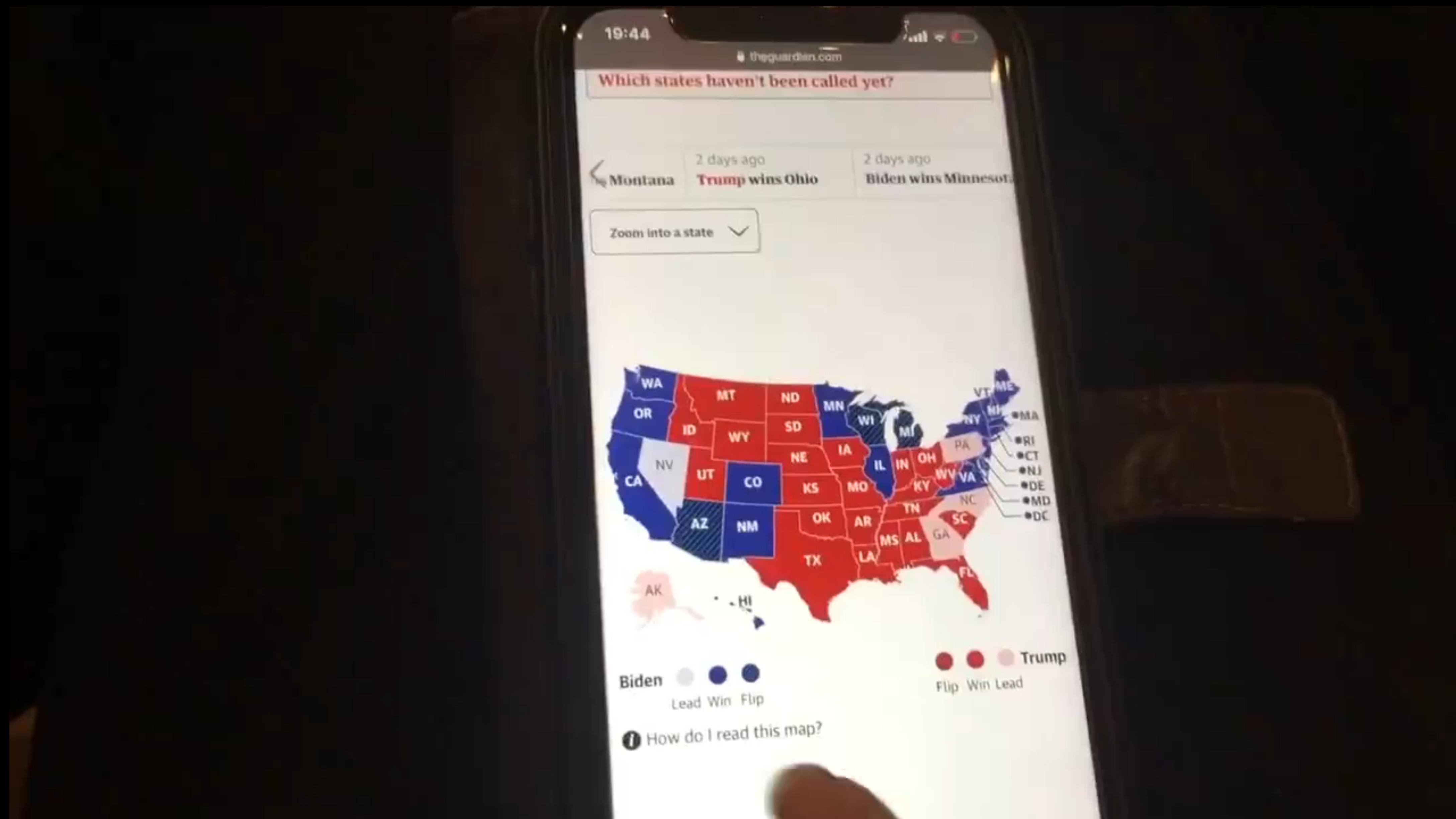
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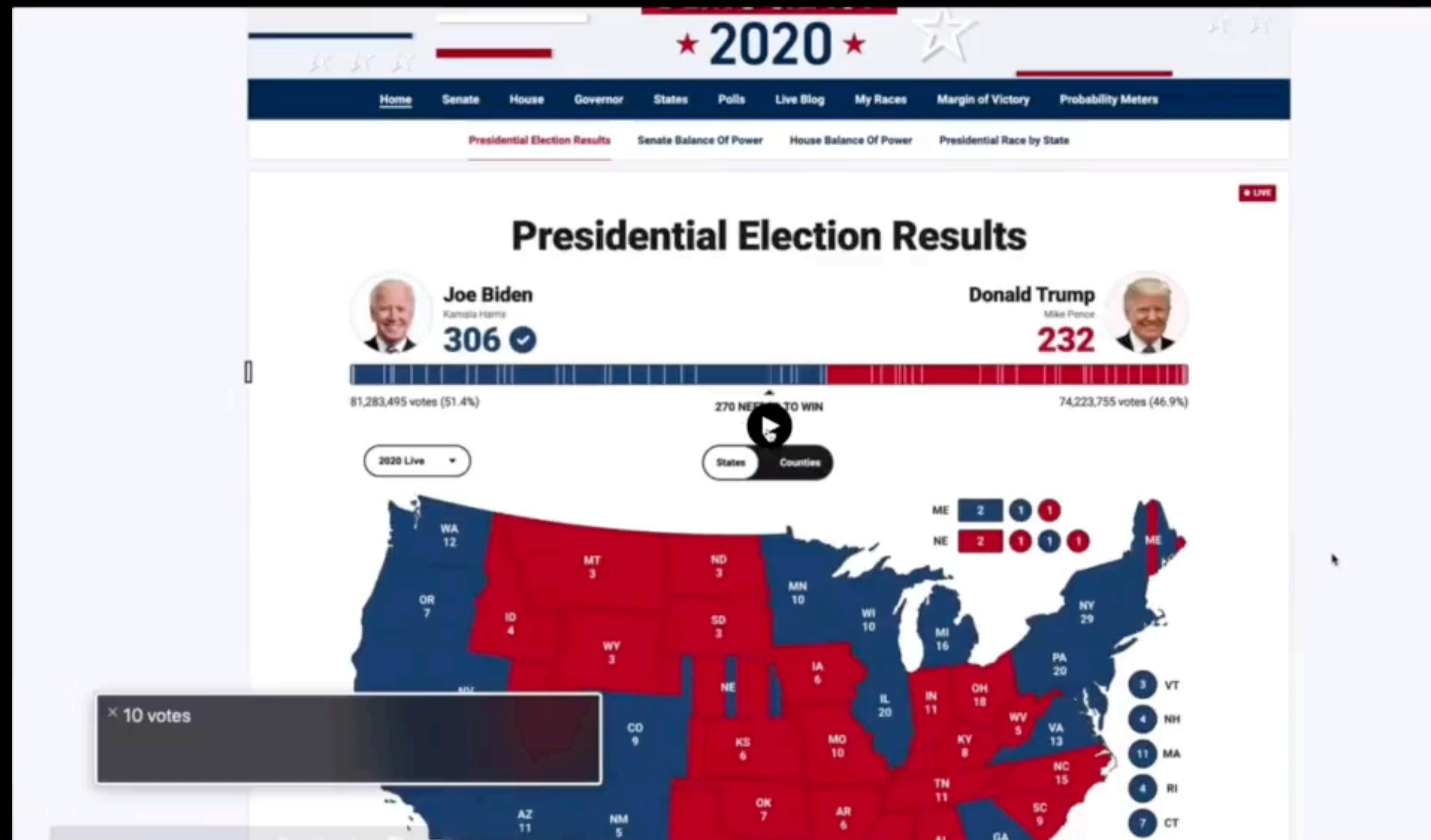
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Promotes *technosolutionism*.

Social model of disability: people with impairments are being disabled by society's choices and attitudes. They are not having their needs met.

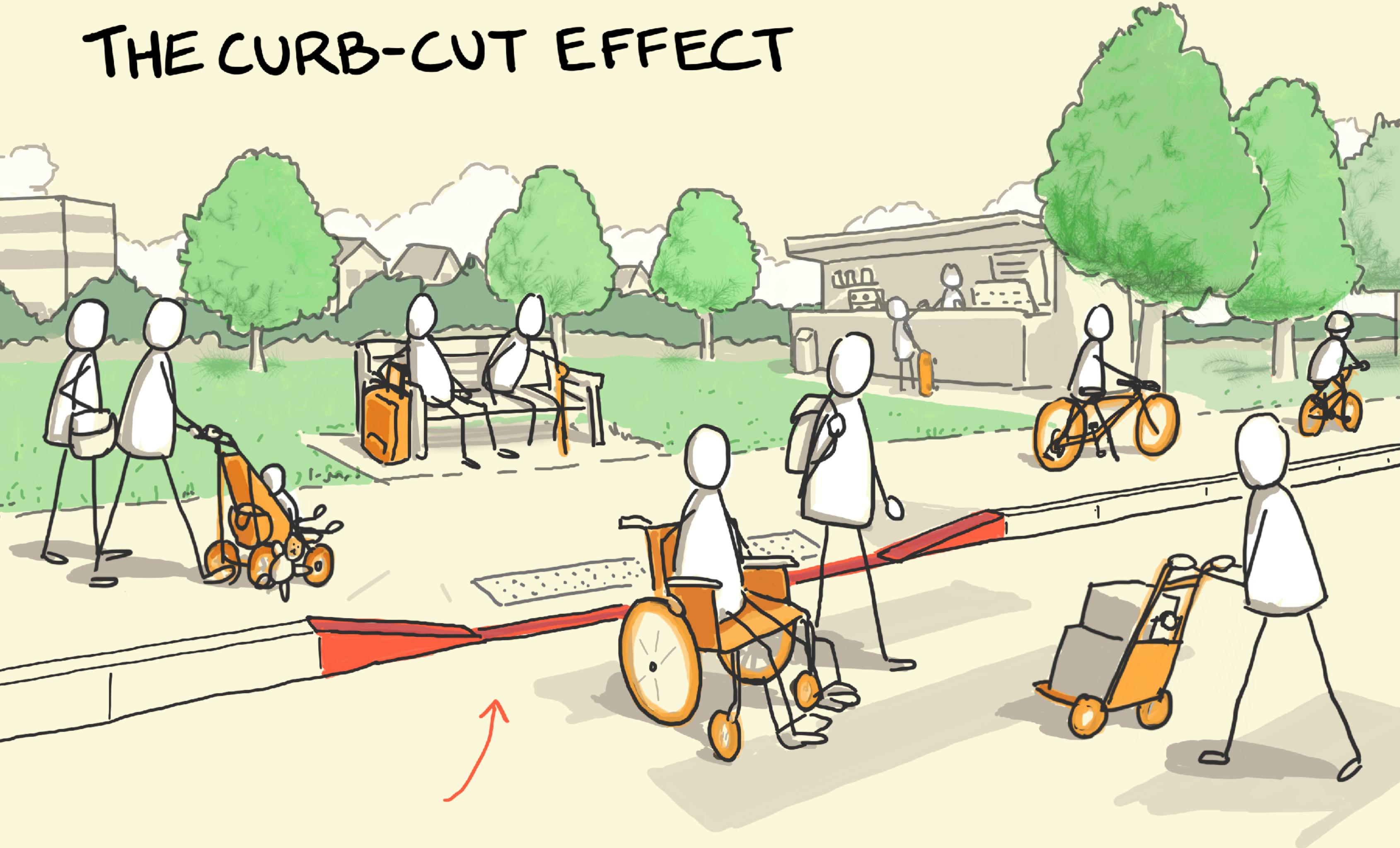








THE CURB-CUT EFFECT



WHEN WE DESIGN
FOR DISABILITIES

... WE MAKE THINGS
BETTER FOR EVERYONE

Value Sensitive Design: 4 Criteria

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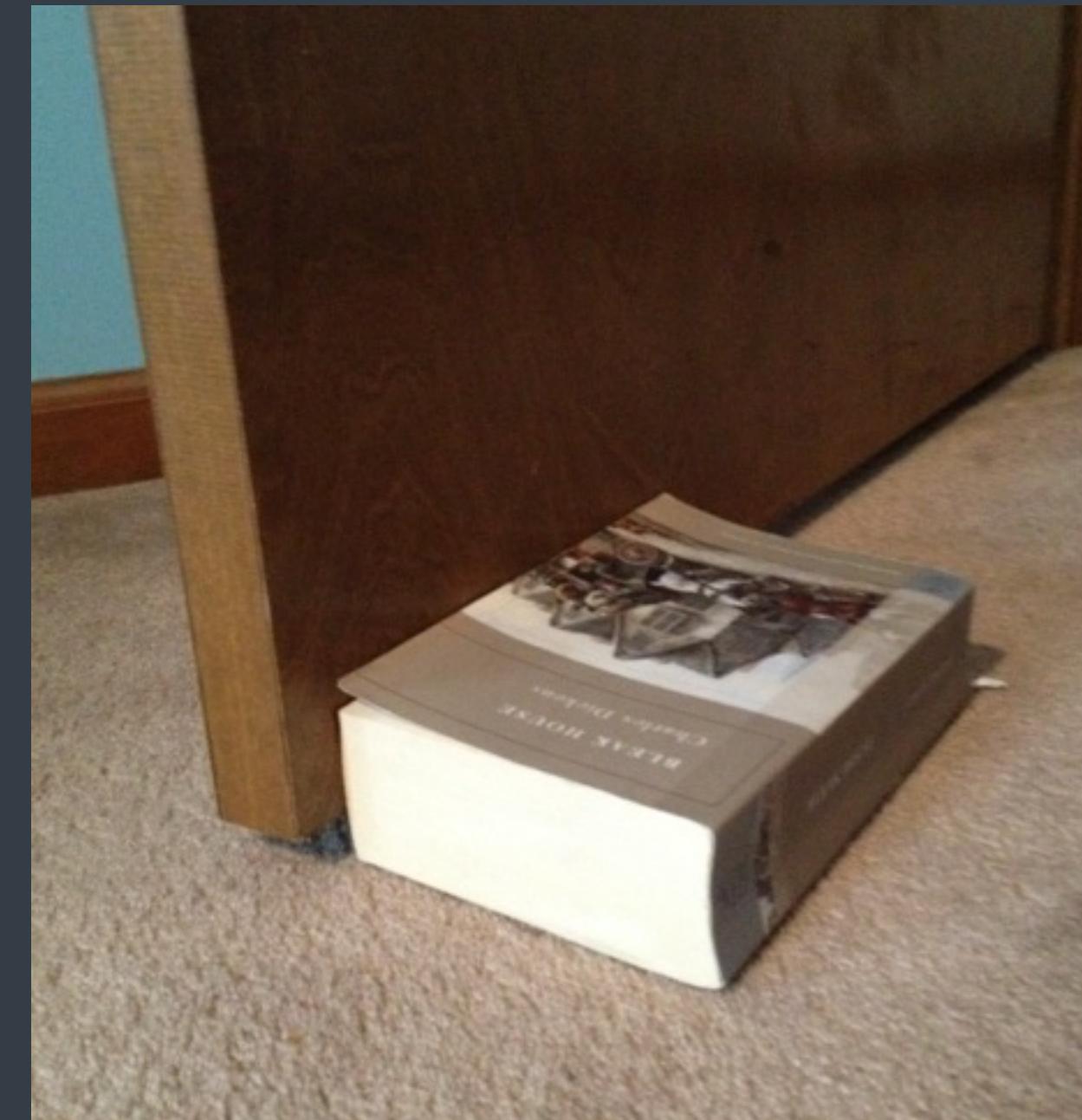
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Reappropriation



Photo by Clément Gault



Reappropriation: Malleable Software

Budget.xlsx - Excel

Fitrianingrum.

File Home Insert Draw Page Layout Formulas Data Review View Developer Help

Cut Copy Format Painter Paste Clipboard

Font Alignment Number Styles Cells Editing Ideas Sensitivity

Calibri 10 A A Wrap Text General \$ % , 0 0 Conditional Formatting Merge & Center Format as Table Cell Styles Insert Delete Format AutoSum Fill Sort & Filter Ideas Clear Ideas Sensitivity

R6

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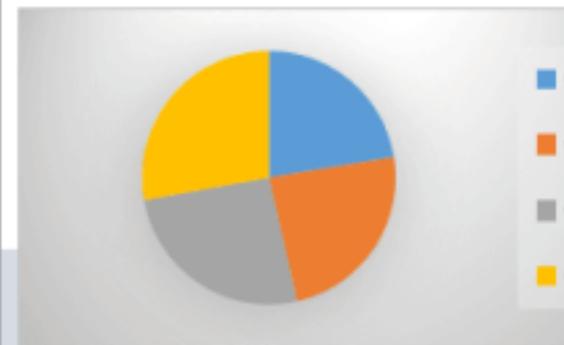
24

Budget - 2021

	\$ 414,283	JAN	FEB	MAR	Q1	APR	MAY	JUN	Q2	JUL	AUG	SEP	Q3	OCT	NOV	DEC	Q4	TOTAL
Gross Revenue																		
Sales	\$ 137,000	\$ 138,370	\$ 139,750	\$ 415,120	\$ 143,940	\$ 148,260	\$ 152,710	\$ 444,910	\$ 155,760	\$ 158,880	\$ 162,060	\$ 476,700	\$ 166,920	\$ 171,930	\$ 177,090	\$ 515,940	\$ 1,852,670	
Shipping	25,875	26,130	26,390	78,395	27,180	28,000	28,840	84,020	29,420	30,010	30,610	90,040	31,530	32,480	33,450	97,460	349,915	
Total	162,875	164,500	166,140	493,515	171,120	176,260	181,550	528,930	185,180	188,890	192,670	566,740	198,450	204,410	210,540	613,400	2,202,585	
Cost of Goods Sold																		
Goods	\$ 78,600	\$ 79,390	\$ 80,180	\$ 238,170	\$ 82,590	\$ 85,070	\$ 87,620	\$ 255,280	\$ 89,370	\$ 91,160	\$ 92,980	\$ 273,510	\$ 95,770	\$ 98,640	\$ 101,600	\$ 296,010	\$ 1,062,970	
Freight	1,350	1,360	1,370	4,080	1,410	1,450	1,490	4,350	1,520	1,550	1,580	4,650	1,630	1,680	1,730	5,040	18,120	
Miscellaneous	650	660	670	1,980	690	710	730	2,130	740	750	770	2,260	790	810	830	2,430	8,800	
Total	80,600	81,410	82,220	244,230	84,690	87,230	89,840	261,760	91,630	93,460	95,330	280,420	98,190	101,130	104,160	303,480	1,089,890	
Gross Profit	82,275	83,090	83,920	249,285	86,430	89,030	91,710	267,170	93,550	95,430	97,340	286,320	100,260	103,280	106,380	309,920	1,112,695	
Expenses																		
Rent	2,250	2,270	2,290	6,810	2,360	2,430	2,500	7,290	2,550	2,600	2,650	7,800	2,730	2,810	2,890	8,430	30,330	
Office Supplies	700	710	720	2,130	740	760	780	2,280	800	820	840	2,460	870	900	930	2,700	9,570	
Salaries	24,000	24,240	24,480	72,720	25,210	25,970	26,750	77,930	27,290	27,840	28,400	83,530	29,250	30,130	31,030	90,410	324,590	
Taxes	1,200	1,210	1,220	3,630	1,260	1,300	1,340	3,900	1,370	1,400	1,430	4,200	1,470	1,510	1,560	4,540	16,270	
Electricity	225	230	230	685	240	250	260	750	270	280	290	840	300	310	320	930	3,205	
Training	620	620	640	1,990	660	680	700	2,040	710	720	730	2,160	750	770	790	2,210	9,400	

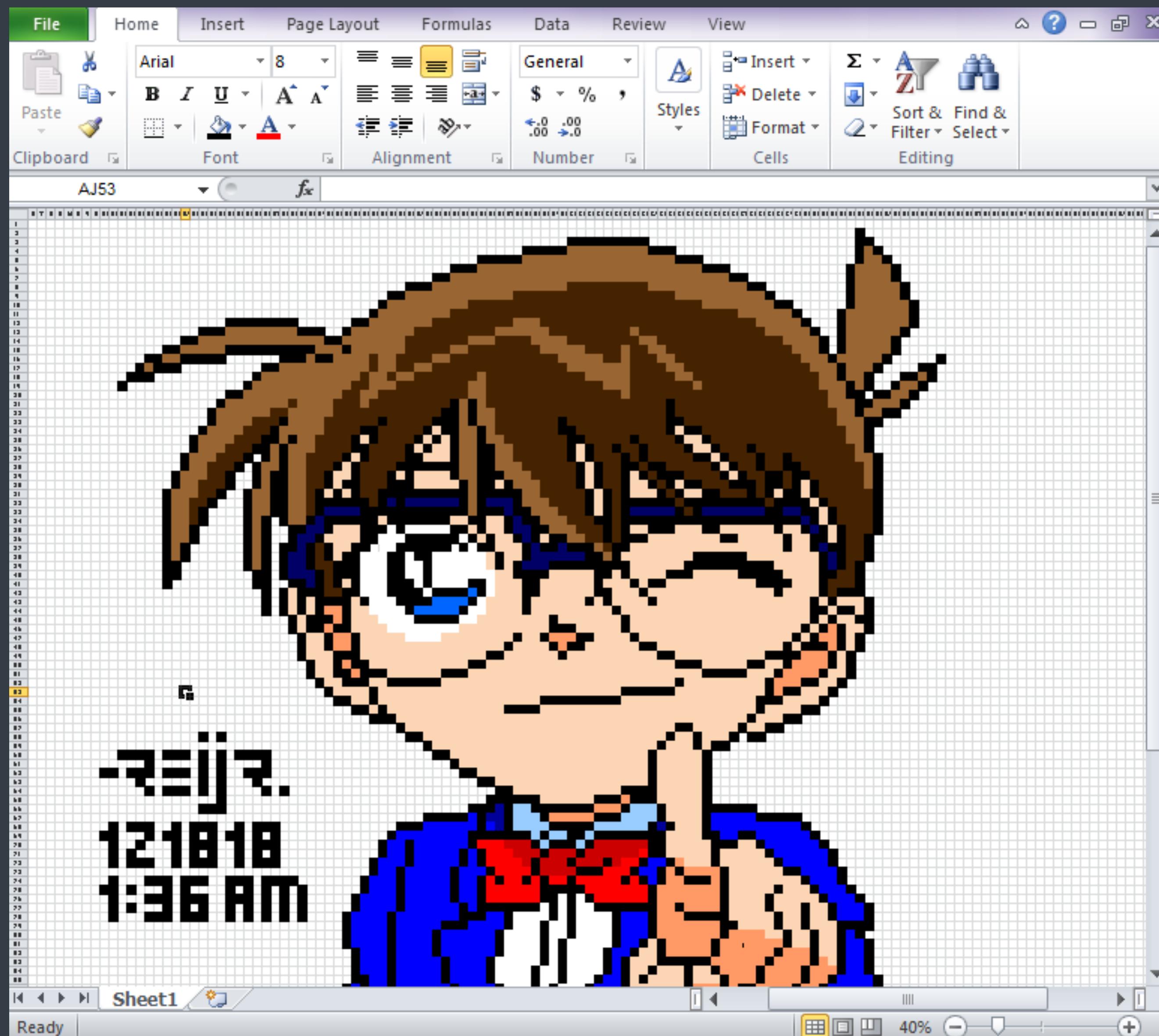
Sheet1

110%



Legend: Q1 (Blue), Q2 (Orange), Q3 (Grey), Q4 (Yellow)

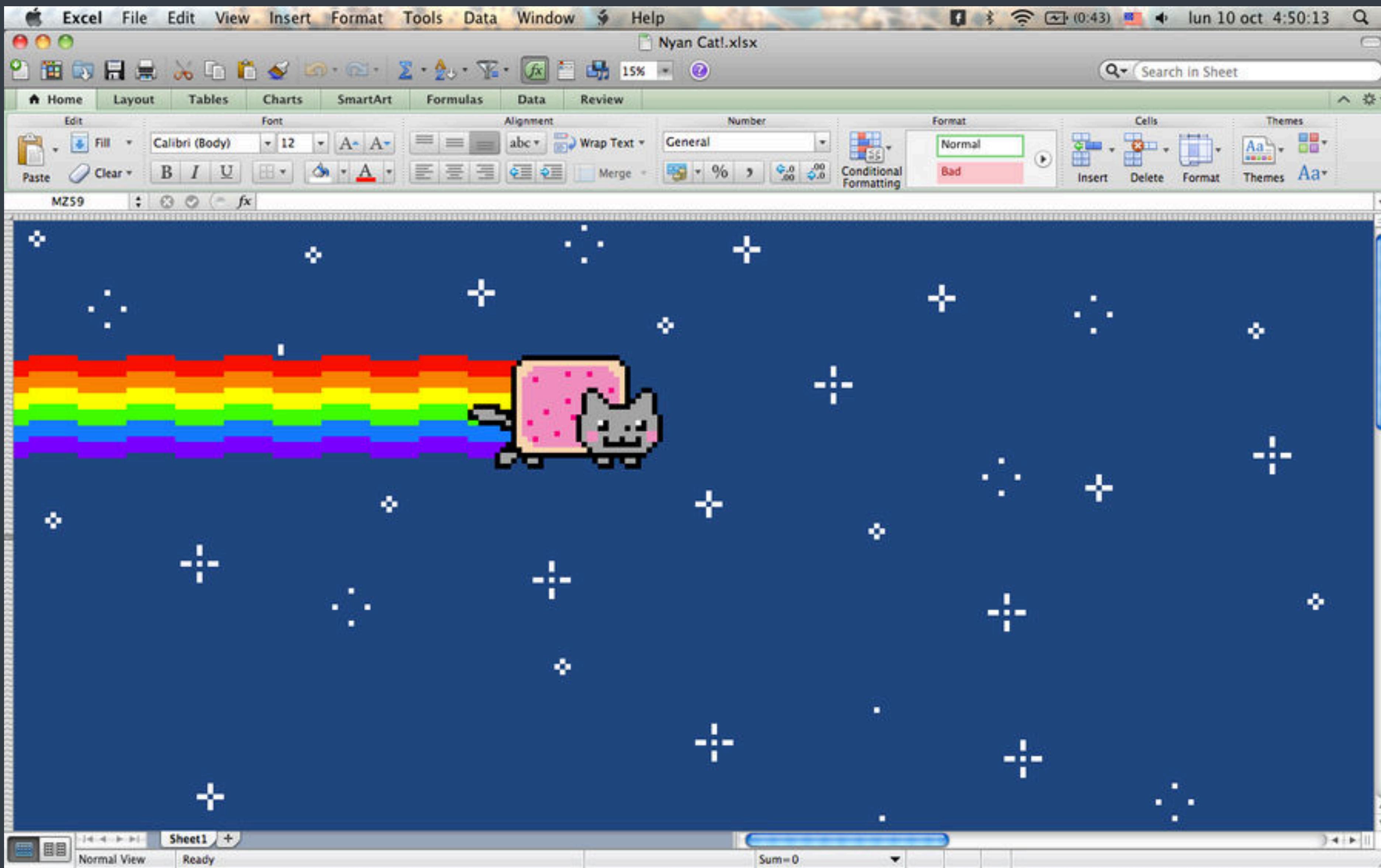
Reappropriation: Malleable Software



Pixel art by [reijr](#).

Curated by [Maggie Appleton](#)

Reappropriation: Malleable Software



Pixel art by [Oscarito7](#).
Curated by [Maggie Appleton](#)

Reappropriation: Malleable Software

[Template] 5E D&D Character Sheet (Tintagel) v2.92

File Edit View Insert Format Data Tools Extensions Help

View only

A1

Character Name: John Doe | Level: 1 | Race: Human | Gender: | Alignment: | Deity: 

Size: | Hair: | Eyes: | Height: | Weight: | Age: | Background:

CORE INFORMATION

ABILITY SCORES

STR	16	+3
DEX	10	+0
CON	13	+1
INT	12	+1
WIS	8	-1
CHA	14	+2

SAVING THROWS

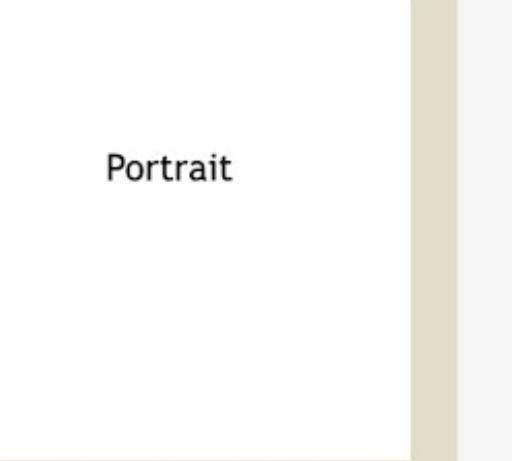
STR	+3		
DEX	+2	•	
CON	+1		
INT	+3	•	
WIS	-1		
CHA	+2		

CLASSES

Class Name	Lvl	Hit Dice	Con	HP
Cleric	1	1d8	1	8
Total:	1			9

XP: 0 | Init: +0

Move: 30 | Enc: 20 | Other Modes

Portrait: 

SKILLS

Roll	Skill	Prof	Adv
+0	Acrobatics (Dex)		
-1	Animal Handling (Wis)		
+1	Arcana (Int)		
+3	Athletics (Str)		
+2	Deception (Cha)		
+1	History (Int)		
-1	Insight (Wis)		
+2	Intimidation (Cha)		
+1	Investigation (Int)		

COMBAT

Hit Points: 9 / 9 | AC: 10

Downtime: or other metric | Hit Dice: 1d8+1 (x1) | Death Saves: Success:  Failure: 

Armor Worn: None | No shield

Type	AC	Dex	DA	Wt.
L	10	+0		0
Misc 1	Misc 2			
Total:	10	+0		0

Ammunition: Arrows

Weapon & Spells | Hit | #Atk | Damage | Rng | Type | Notes

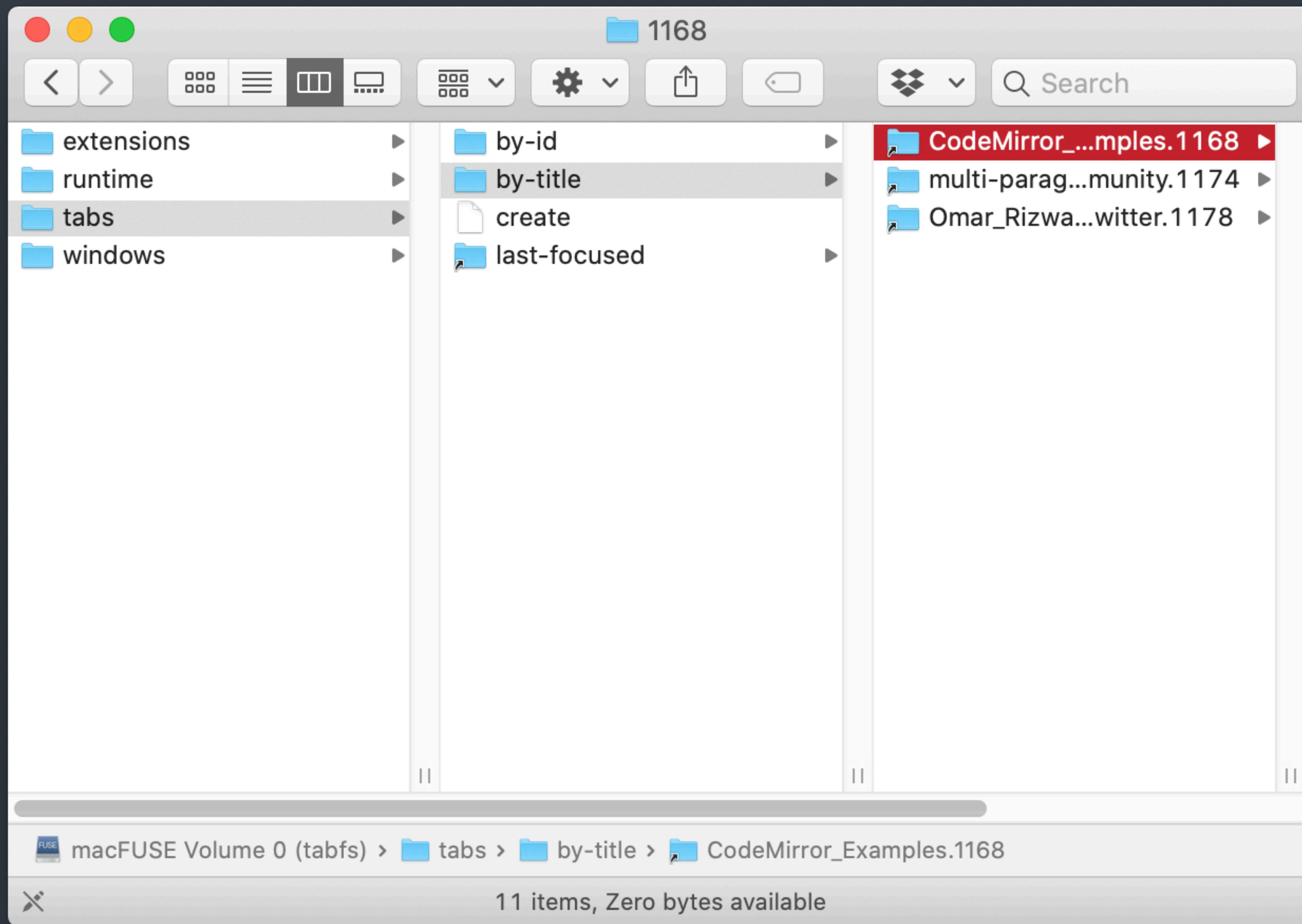
README | Front | Back | Spell Sheet | Master Spell List | Variations

Curated by Maggie Appleton

Reappropriation: Malleable Software

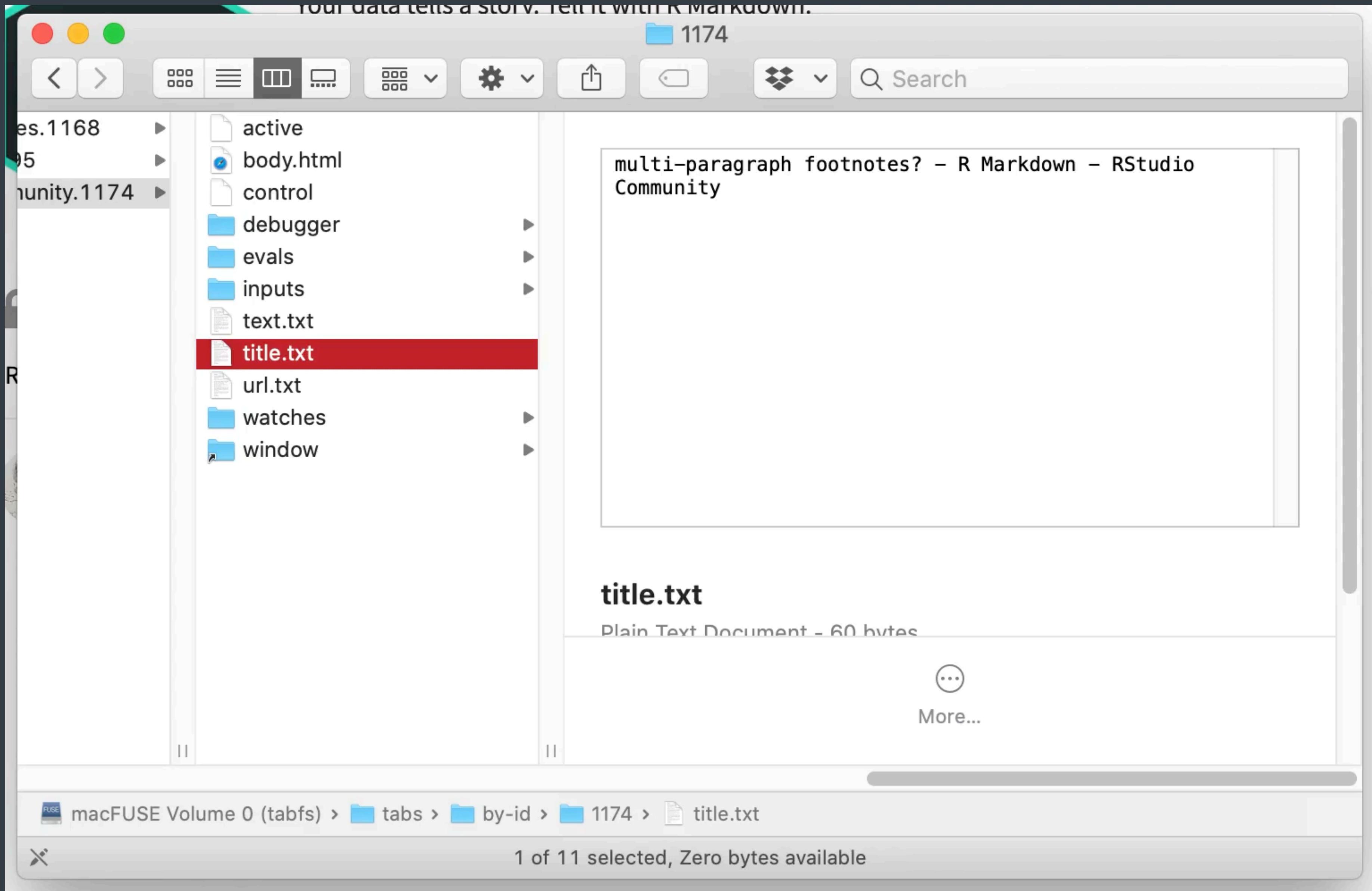


Reappropriation: TabFS by Omar Rizwan



<https://omar.website/tabfs/>

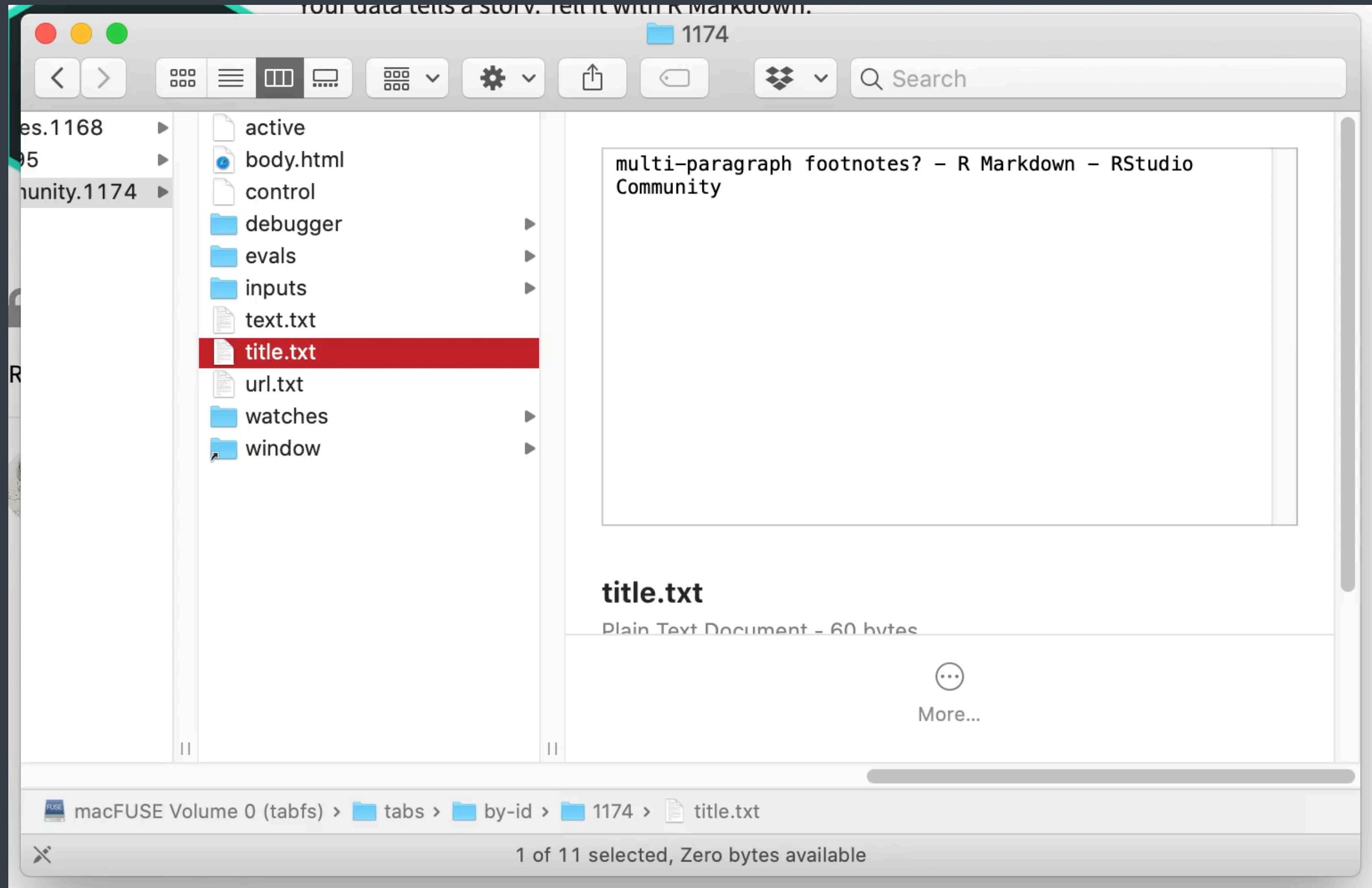
Reappropriation: TabFS by Omar Rizwan



What can you envision doing now that tabs are just files and folders?

~30s: Think individually.
~3 mins: Pair Discussion.

Reappropriation: TabFS by Omar Rizwan

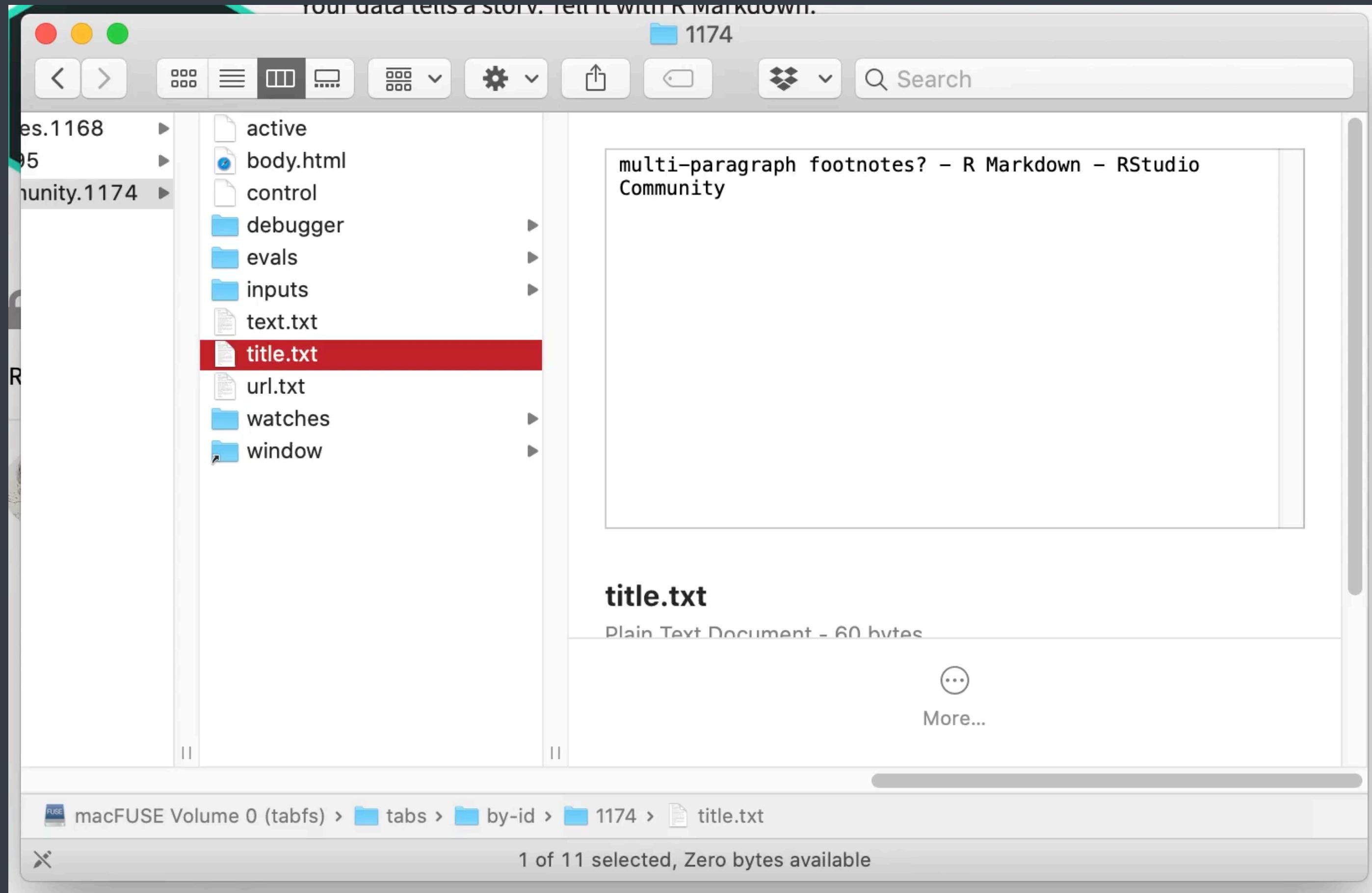


<https://omarwebsite/tabfs/>

List titles of all open tabs:

```
$ cat mnt/tabs/by-id/*/title.txt
GitHub
Home / Twitter
61040 Discourse
```

Reappropriation: TabFS by Omar Rizwan

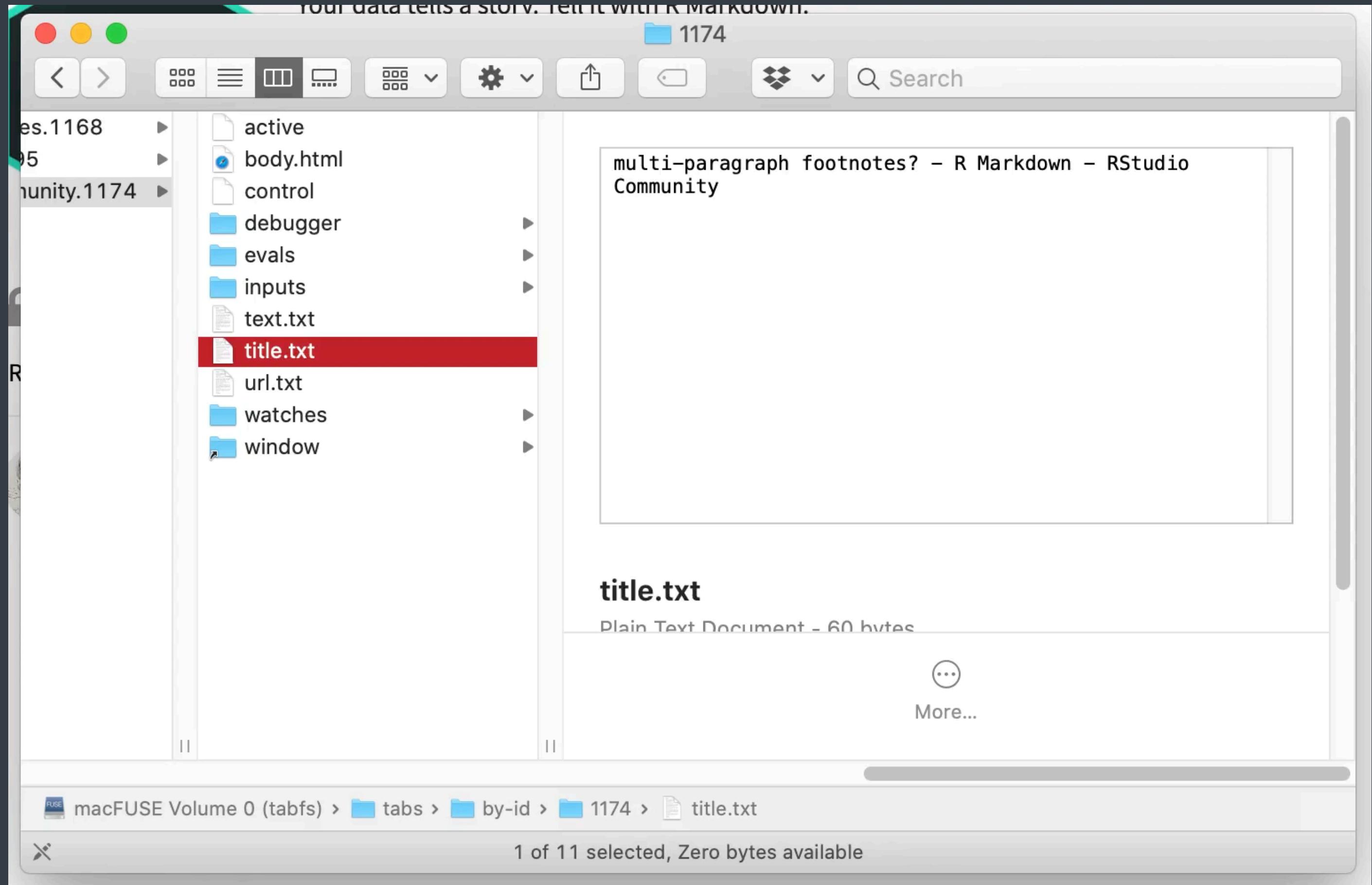


Close all Stack Overflow tabs:

```
$ rm mnt/tabs/by-title/*Stack_Overflow*
```

<https://omarwebsite/tabfs/>

Reappropriation: TabFS by Omar Rizwan



Live edit body.html in your favourite code editor

<https://omarwebsite/tabfs/>

Choosing Not to Use



San Francisco Bans Facial Recognition Technology

Give this article 360

By [Kate Conger](#), [Richard Fausset](#) and [Serge F. Kovaleski](#)

May 14, 2019

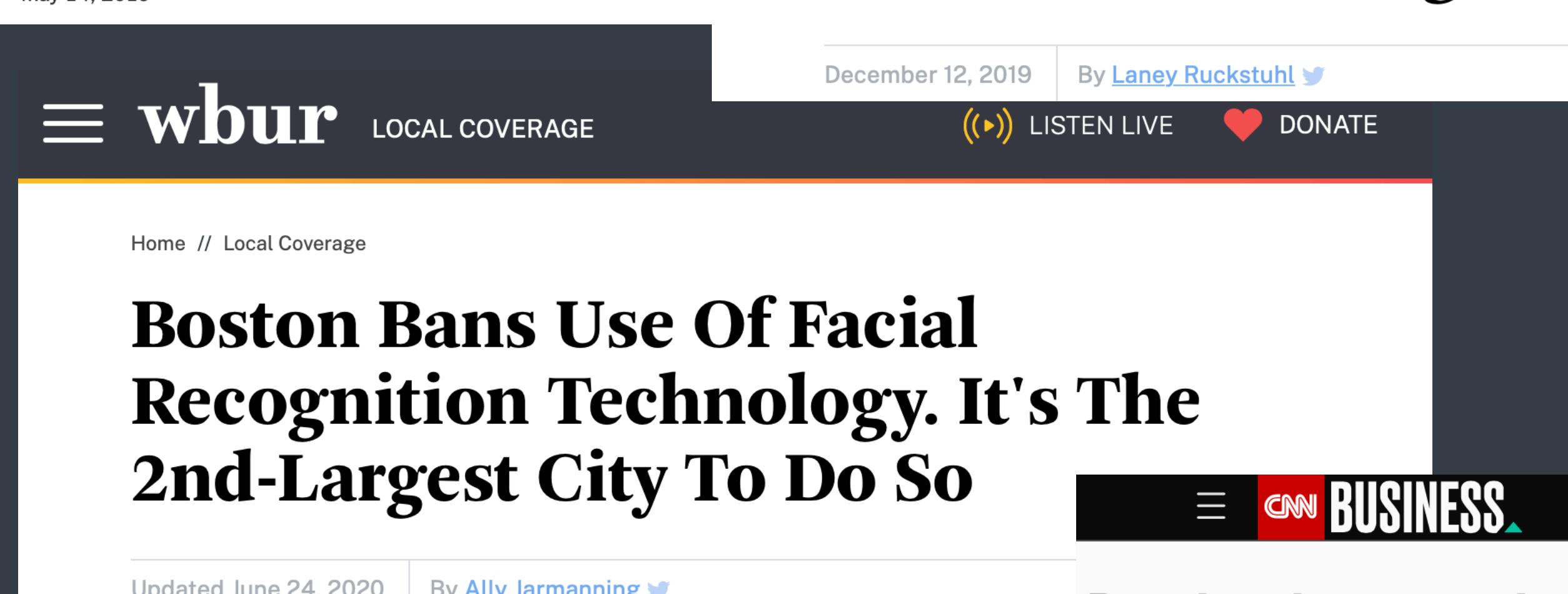


Home // Local Coverage

Boston Bans Use Of Facial Recognition Technology. It's The 2nd-Largest City To Do So

Updated June 24, 2020

By [Ally Jarmanning](#)



By [Rachel Metz](#), CNN Business

Updated 8:06 PM ET, Wed September 9, 2020



73°
Madison, WI

≡ First Alert Weather Navigating School NBC15 Investigates Coronavirus News

Madison Common Council passes ordinance banning facial recognition technology

LISTEN LIVE DONATE



LOCAL COVERAGE

Home // Local Coverage

Brookline Passes Ban On Municipal Use Of Facial Recognition Tech

December 12, 2019

By [Laney Ruckstuhl](#)

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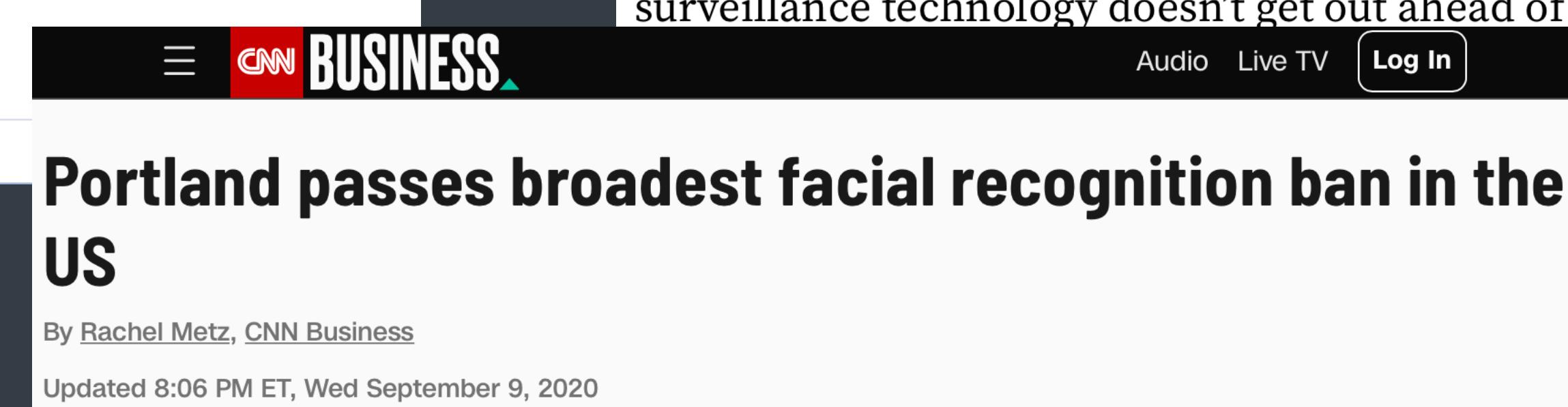


Cambridge becomes the largest Massachusetts city to ban facial recognition

"Massachusetts cities and towns are stepping up to ensure that face surveillance technology doesn't get out ahead of our basic rights."

Audio Live TV

Log In



By [Rachel Metz](#), CNN Business

Updated 8:06 PM ET, Wed September 9, 2020

Choosing Not to Use: Face Recognition



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Resisting the Menace of Face Recognition

BY [ADAM SCHWARTZ](#) | OCTOBER 26, 2021

ESPAÑOL

Face recognition technology is a special menace to privacy, racial justice, free expression, and information security. Our faces are unique identifiers, and most of us expose them everywhere we go. And unlike our passwords and identification numbers, we can't get a new face. So, governments and businesses, often working in partnership, are increasingly using our faces to track our whereabouts, activities, and associations.

Choosing Not to Use: Face Recognition

facebook Search Home Profile Account ▾

Who's in These Photos?

The photos you uploaded were grouped automatically so you can quickly label and notify friends in these pictures. (Friends can always untag themselves.)

A screenshot of a Facebook interface titled "Who's in These Photos?". It shows several photos with faces detected and labeled. Below each photo is a small profile picture and a name: AJ [REDACTED] X, Jennifer [REDACTED] X, Jamie [REDACTED] X. At the bottom, there are three more photos with the same layout. Below these photos are three buttons labeled "Who is this?". At the bottom left is a blue button labeled "Skip Tagging Friends". At the bottom right is a blue button labeled "Save Tags". A status bar at the bottom right says "Chat (Offline)".

Skip Tagging Friends Save Tags Chat (Offline)

Choosing Not to Use: Face Recognition

General
Security and Login

Privacy
Timeline and Taggi...
Blocking
Language

Face Recognition

Notifications
Mobile
Public Posts

Apps
Ads
Payments
Support Inbox
Videos

Face Recognition Settings

To recognize whether you're in a photo or video our system compares it with your profile picture, and photos and videos that you're tagged in. This lets us know when you're in other photos and videos so we can create better experiences. [Learn more.](#)

Face Recognition	Do you want Facebook to be able to recognize you in photos and videos?	No	Edit

But lots of open design questions:

- Does this setting control whether or not "face templates" are computed? Or only how they're used (e.g., automatic suggestions)?
- When should a "face template" be computed? When a photo is uploaded? Someone is tagged? Some agrees to be tagged?
- If permission is revoked, should old "face templates" be deleted?

Choosing Not to Use: Face Recognition

The New York Times

Facebook to Pay \$550 Million to Settle Facial Recognition Suit

It was another black mark on the privacy record of the social network, which also reported its quarterly earnings.

By [Natasha Singer](#) and [Mike Isaac](#)
Jan. 29, 2020

 Meta [Who We Are](#) [What We Build](#) [Our Actions](#) [Our Community](#)

 [Back to Newsroom](#)

Facebook

An Update On Our Use of Face Recognition

November 2, 2021
By Jerome Pesenti, VP of Artificial Intelligence

- We're shutting down the Face Recognition system on Facebook. People who've opted in will no longer be automatically recognized in photos and videos and we will delete more than a billion people's individual facial recognition templates.
- This change will also impact Automatic Alt Text (AAT), which creates image descriptions for blind and visually-impaired people. After this change, AAT descriptions will no longer include the names of people recognized in photos but will function normally otherwise.
- We need to weigh the positive use cases for facial recognition against growing societal concerns, especially as regulators have yet to provide clear rules.

Value Sensitive Design: 4 Criteria

Stakeholders

Direct Stakeholders • **Indirect Stakeholders** • Non-targeted Use
Children • **Variation in Abilities** • Changing Hands • One Person, Many Roles

Time

The Long Now • Long-Term Health & Well-Being • Sustained Friendships
Work of the Future • Adaptation • **Non-Use** • Obsolescence • **Reappropriation**

Pervasiveness

Widespread Use • Diverse Geographies • Crossing National Boundaries
Accounting for Culture • Political Realities

Values

Elicit Stakeholder Values • Consider Key Values at Stake • Choose Desired Values
Evaluate User Experience of Values • **Value Tensions** • Perceptions of a Value

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Widespread Use: Text Autocomplete



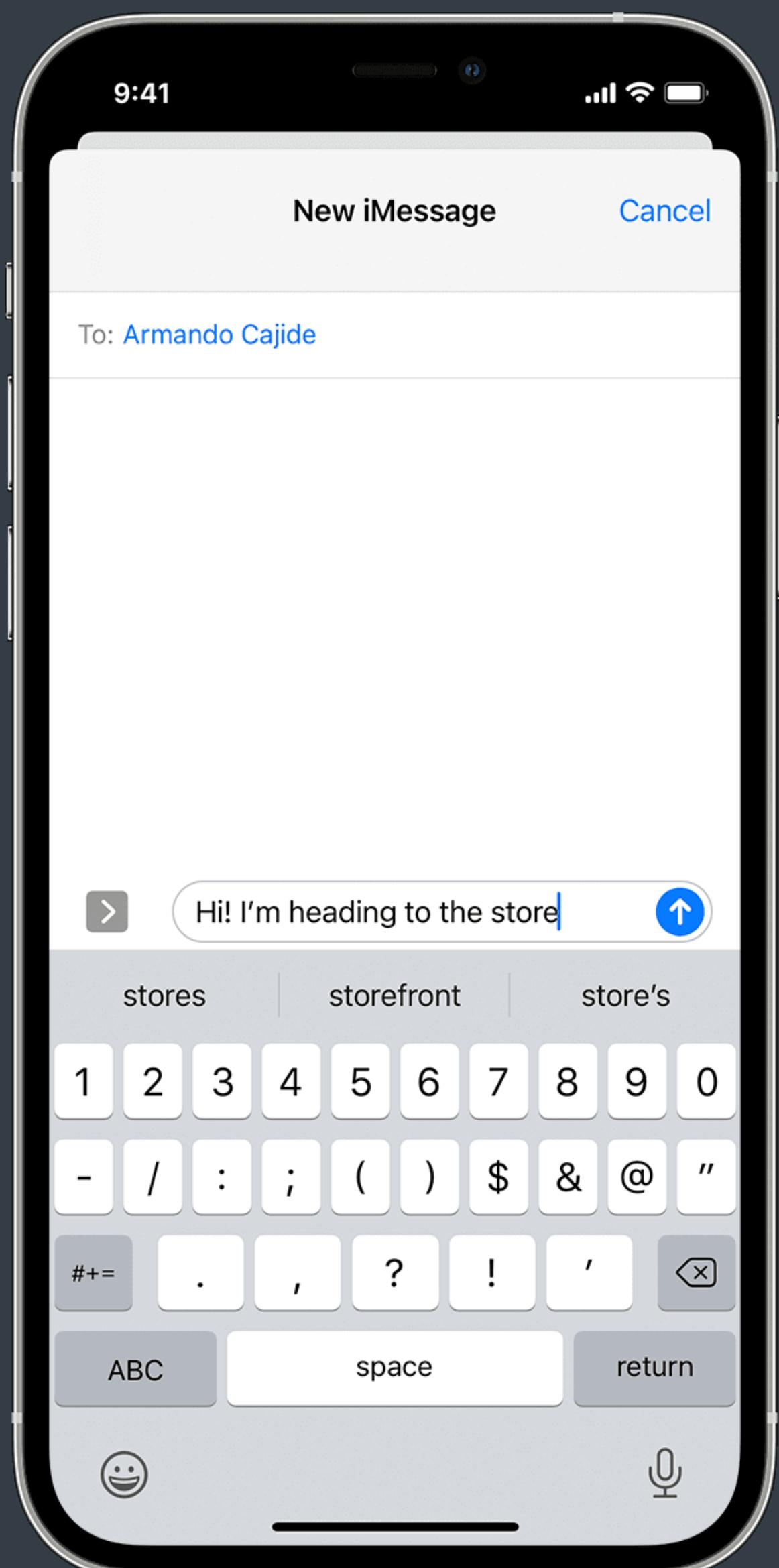
By The Digital Owl.

By smial (talk) at English Wikipedia.



From Engadget

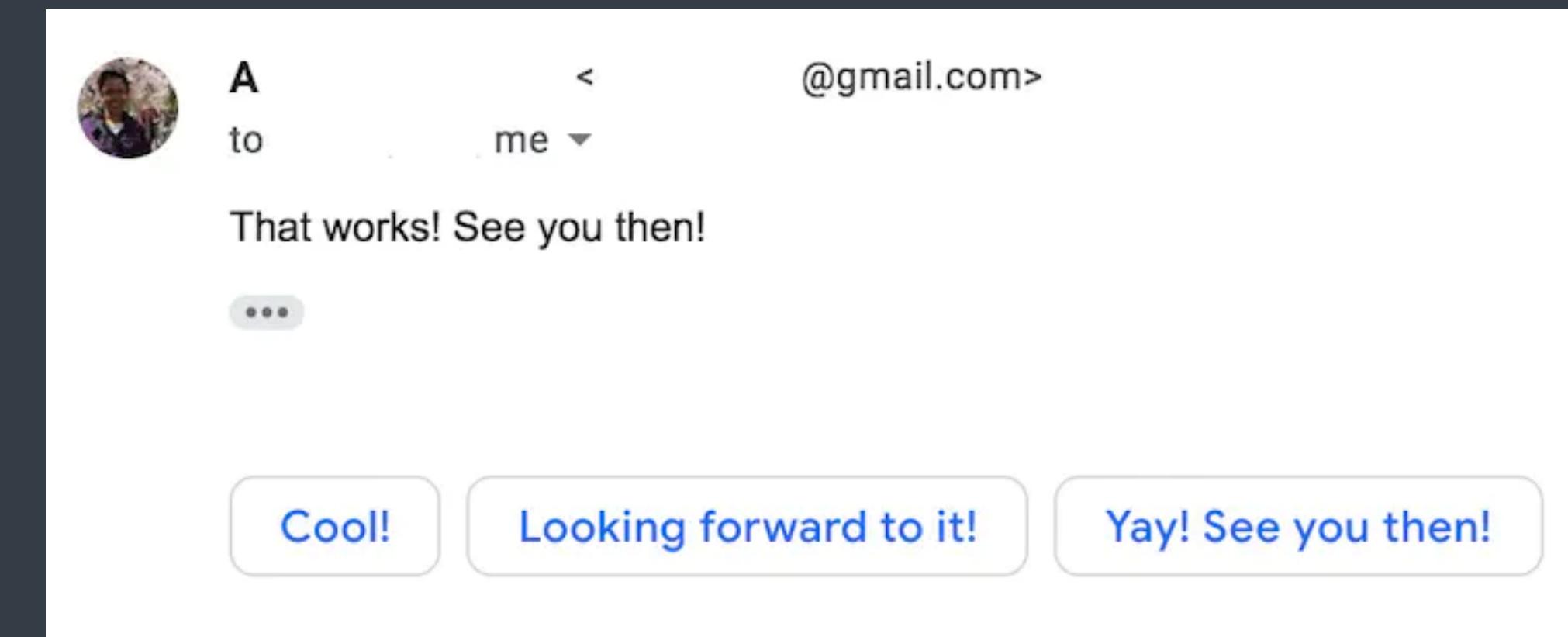
Predictive Text



Smart Compose

A screenshot of the Gmail inbox. The "Inbox" tab is selected. A compose window is open, showing the subject "Taco Tuesday" and the recipient "Jacqueline Bruzek". The inbox list shows various emails from contacts like Salt Kulla, Brianna, John, Luis, Daniel Vickery, Nick Kortendick, Tim Greer, Karen, Meredith, James, Anissa, Song Chi, Cameron, Tyler, Dylan, and Mizra Sato. The bottom of the screen shows the Gmail interface with a "Send" button and other controls.

Smart Reply



Widespread Use: Text Autocomplete



← Tweet

Gmail ✅
@gmail

To all the characters out there 🧑‍🤝‍🧑, Smart Compose saves Gmail users from typing over 2 billion characters every week. Learn more in Sundar Pichai's Founders' letter → goo.gle/2x3FdIZ

Smart Compose helps save users from typing over 2B characters each week

GIF

1:11 PM · Jun 20, 2019 · Sprinklr

22 Retweets 4 Quote Tweets 114 Likes

Paradox:

- Making it easier to send emails → increases overall number of emails people send!
- Making it easier to send emails → changes social norms/expectations → pressure to be responsive

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Software is *not neutral*

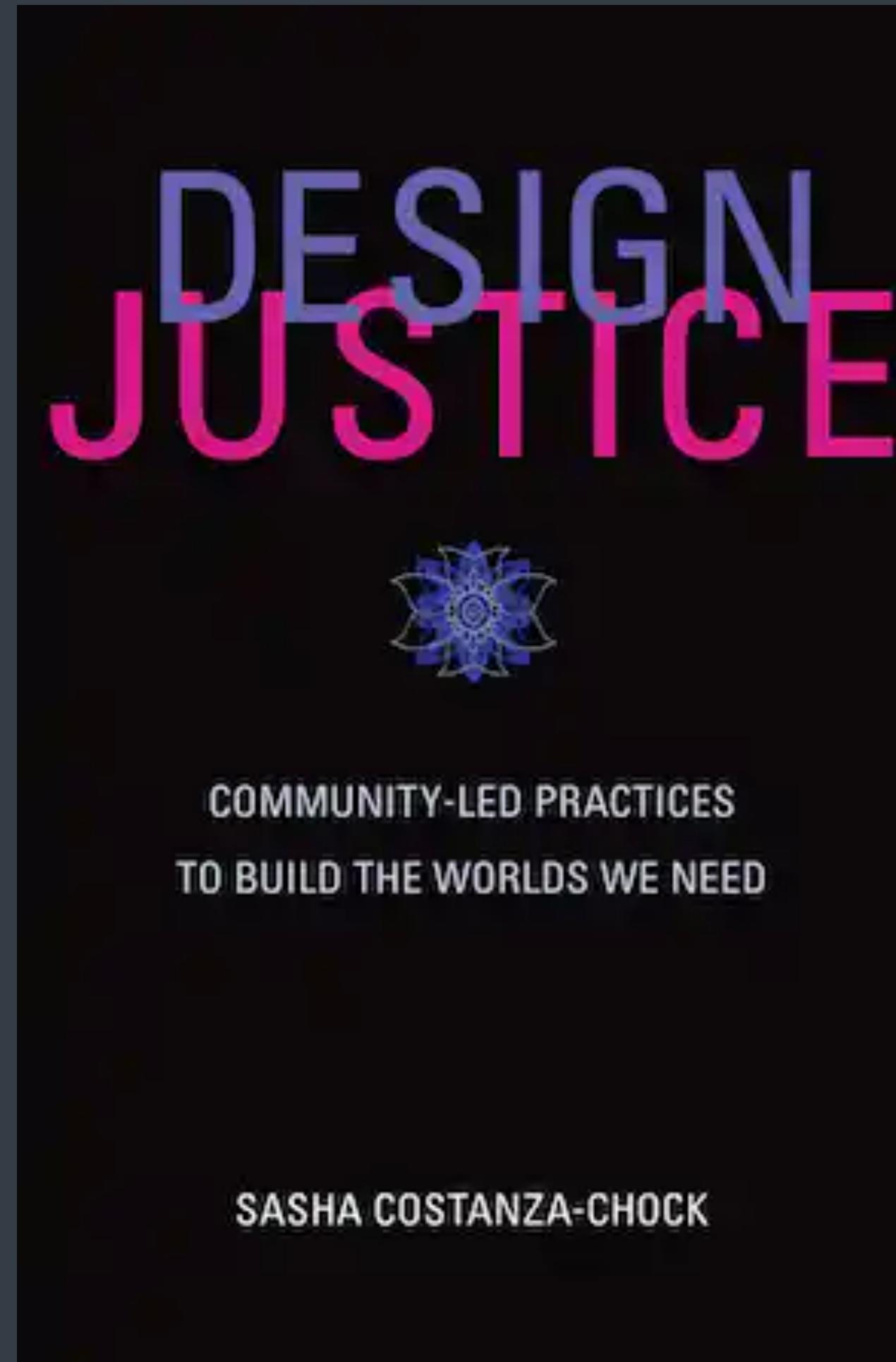
Software is *not neutral*

Developing software involves a series of **design choices and tradeoffs**, large and small.

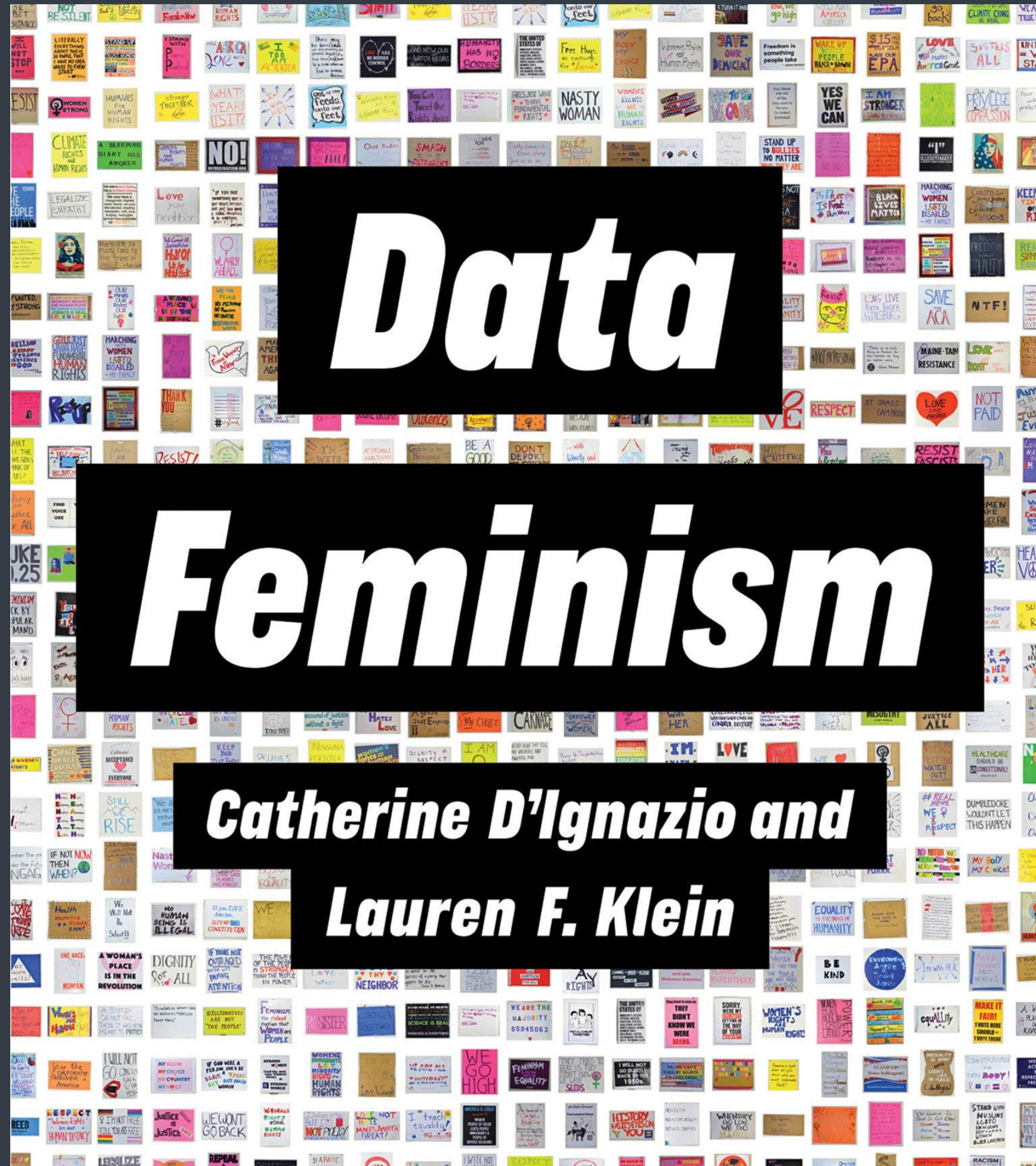
Each design decision is **implicitly encoding your values and priorities**.

Through adoption, those values are then **applied at scale**.

Those design choices then begin to **shape our values**.



<https://designjustice.mitpress.mit.edu>



<https://data-feminism.mitpress.mit.edu>



Fill Out Your MUD Cards

<http://tiny.cc/61040-fa22-mud>

Give us Feedback

<http://tiny.cc/61040-fa22-feedback>

RSVP to Reading Group

<http://tiny.cc/61040-fa22-pizza>