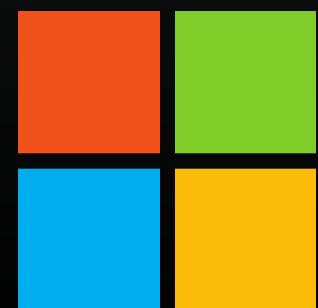


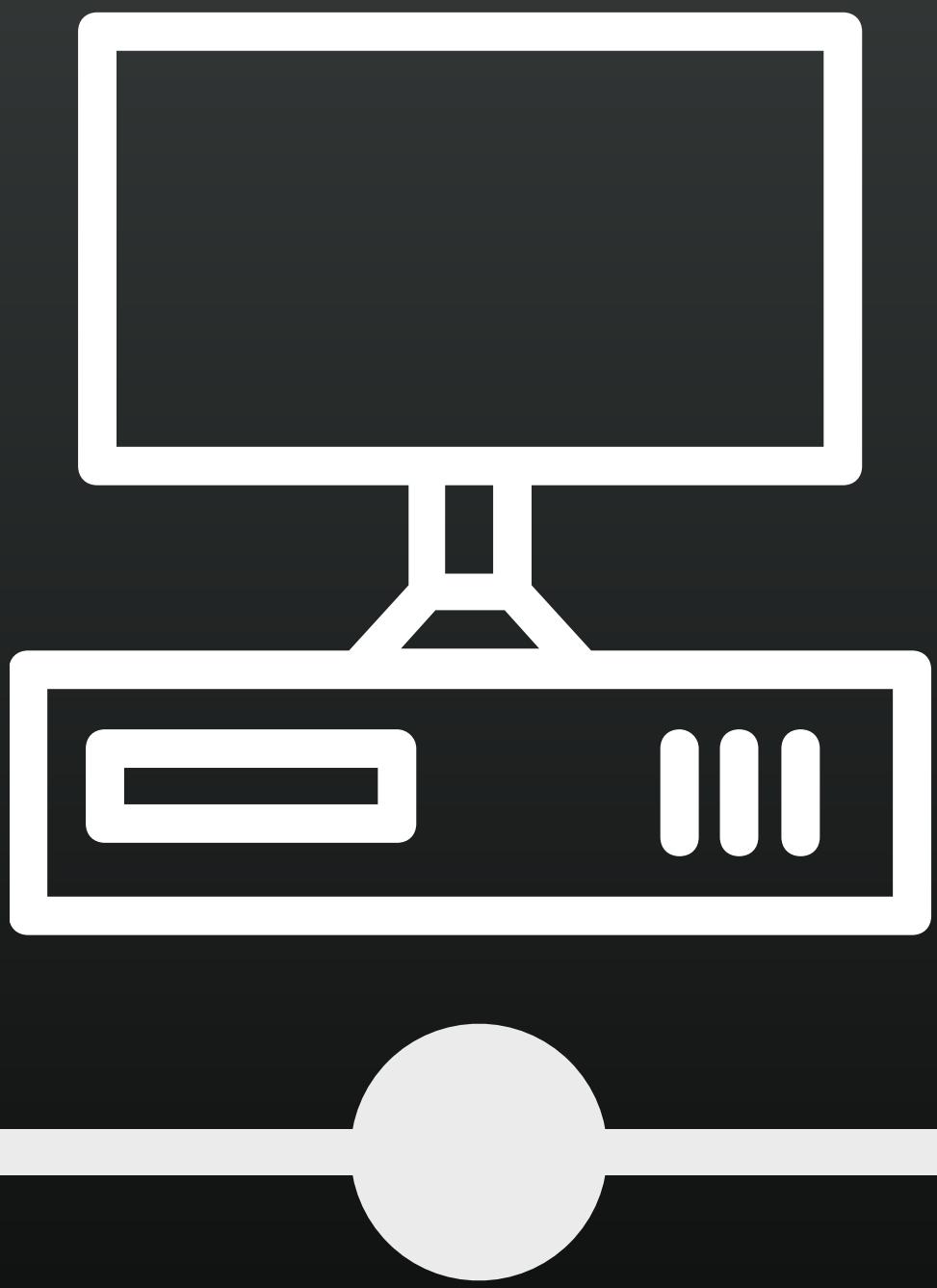
# Adapting to Reality



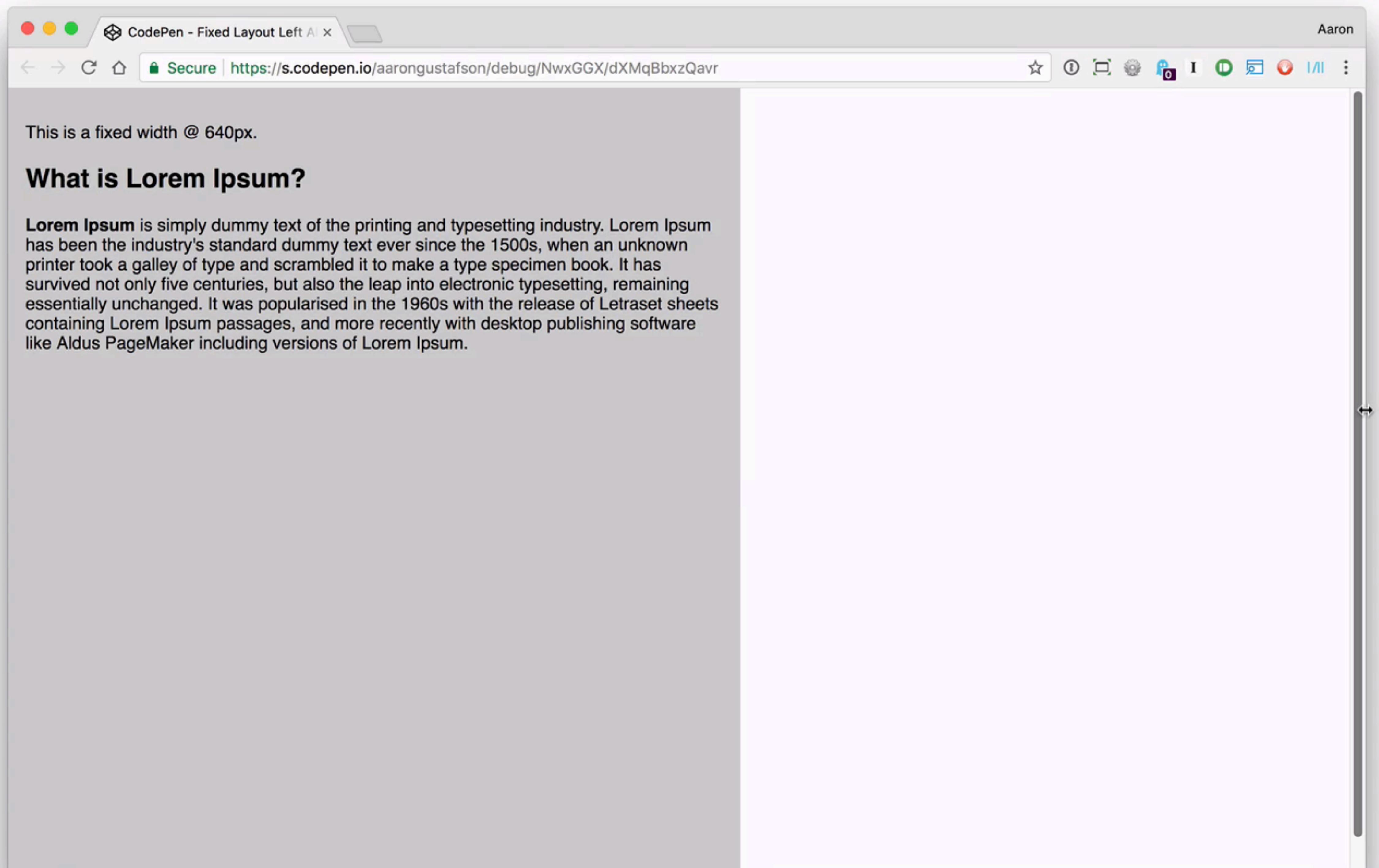
Aaron Gustafson  
@AaronGustafson  
[slideshare.net/AaronGustafson](http://slideshare.net/AaronGustafson)

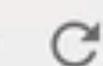
Web design &  
development is hard

# In the beginning...



640 × 480





This is a fixed width @ 640px.

## What is Lorem Ipsum?

**Lorem Ipsum** is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.



This is a fixed width at 640px centered.

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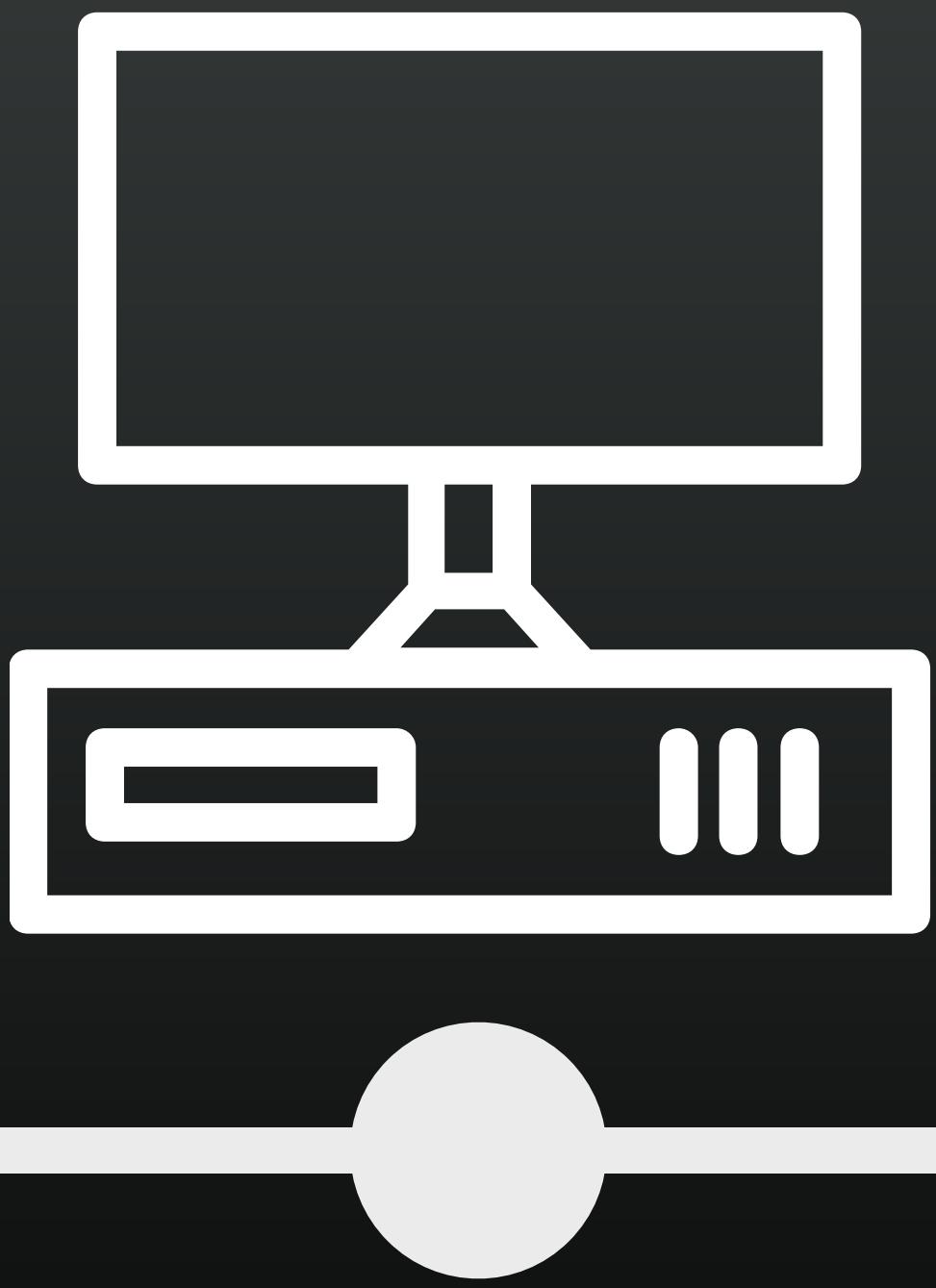


This is a fixed width at 640px centered.

## What is Lorem Ipsum?

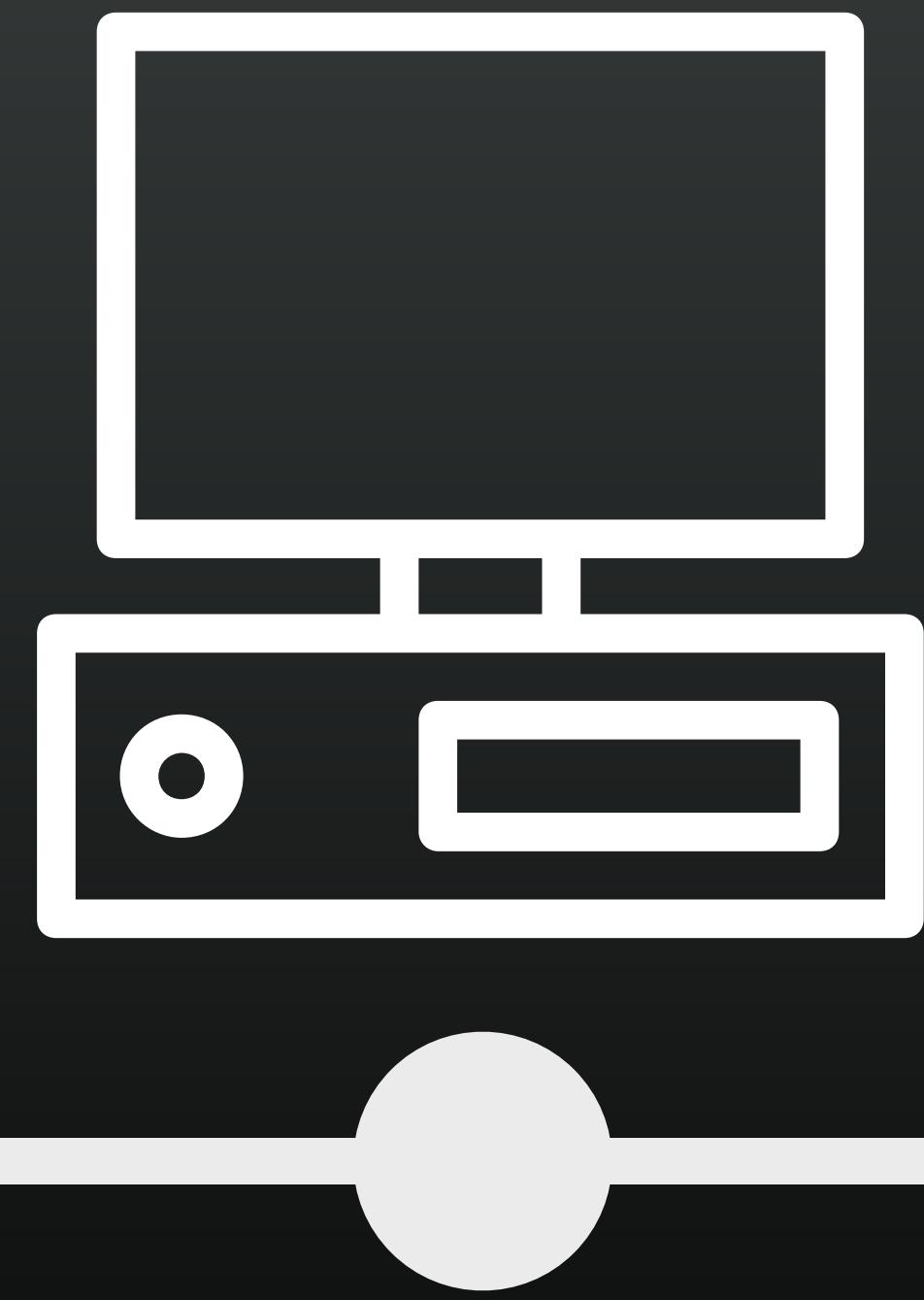
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# In the beginning...



640 × 480

Ok, we can go a little larger



800 × 600



This is a fixed width at 800px.

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This is a liquid width.

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This is a liquid width.

## What is Lorem Ipsum?

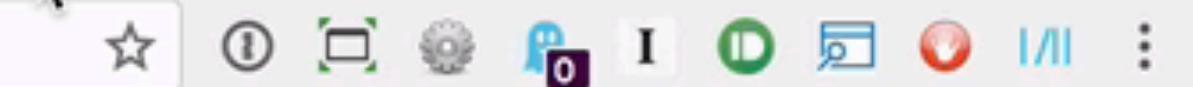
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← → C ◻Secure | https://s.codepen.io/aarongustafson/debug/XzXmXG/bZAQWyQXJveM

This is a fixed width.

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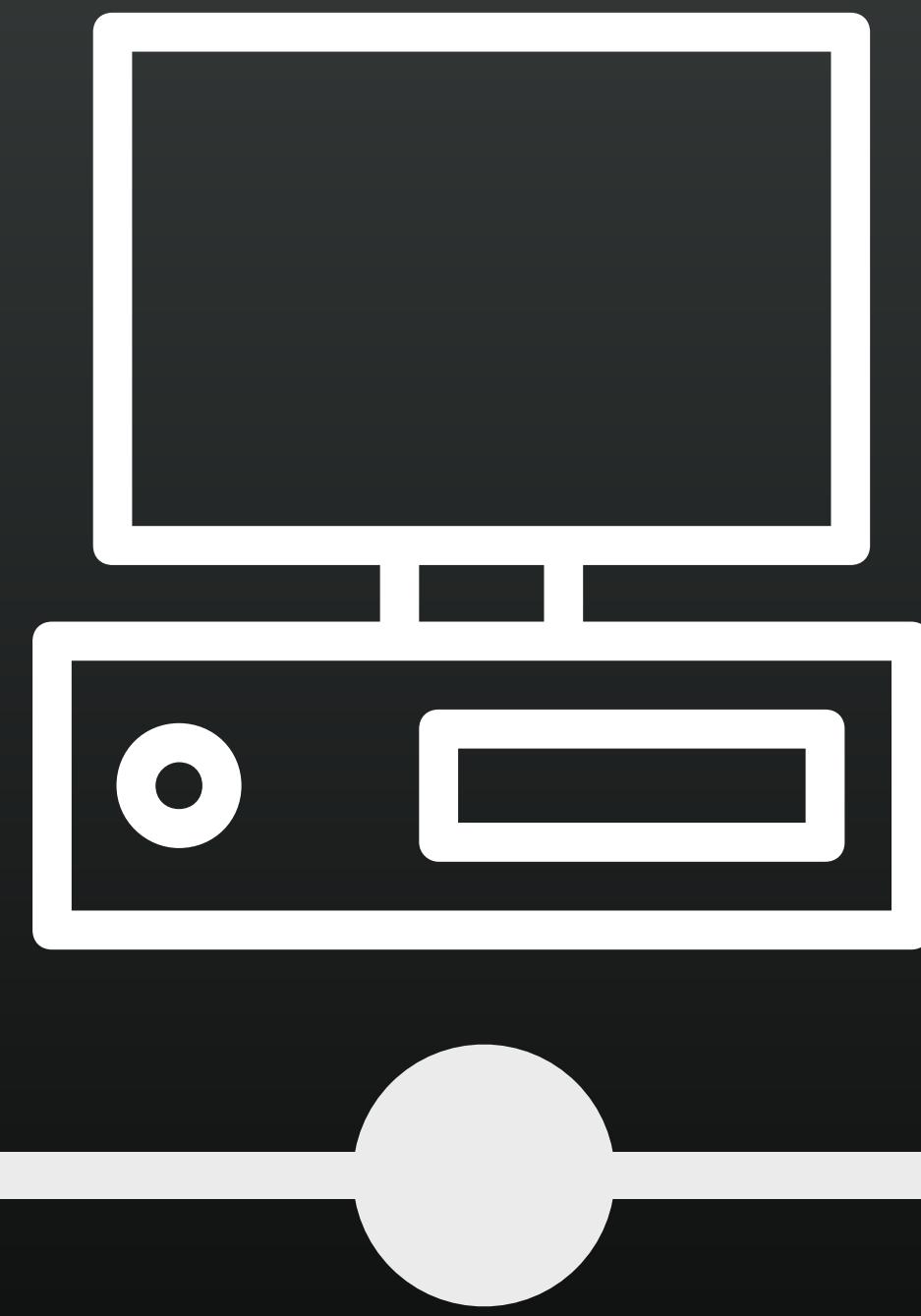
← → C ◻Secure | https://s.codepen.io/aarongustafson/debug/XzXmXG/bZAQWyQXJveM

This is a fixed width.

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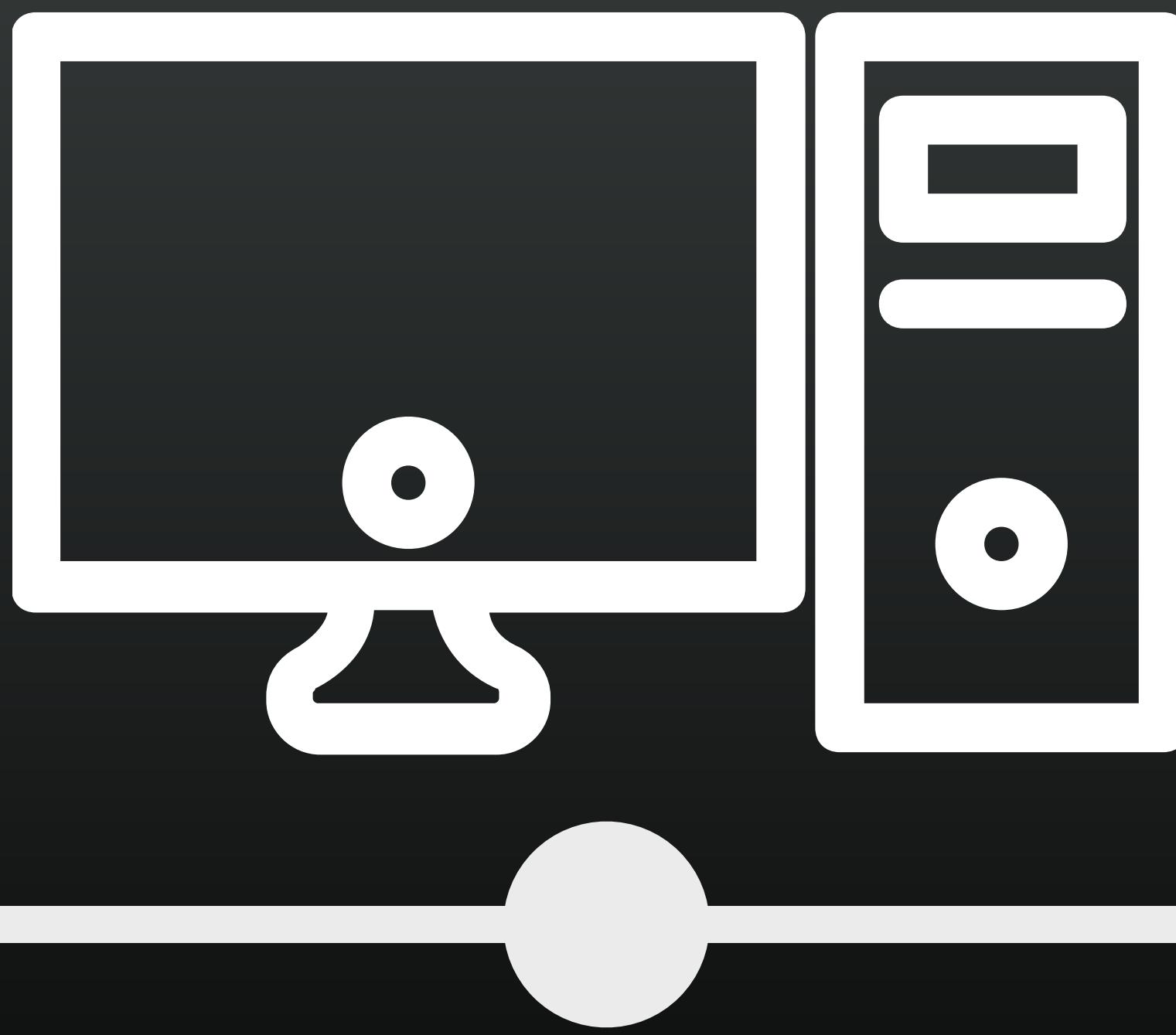
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Ok, we can go a little larger



800 × 600

Ok, a bit larger, but that's it



1024 × 768

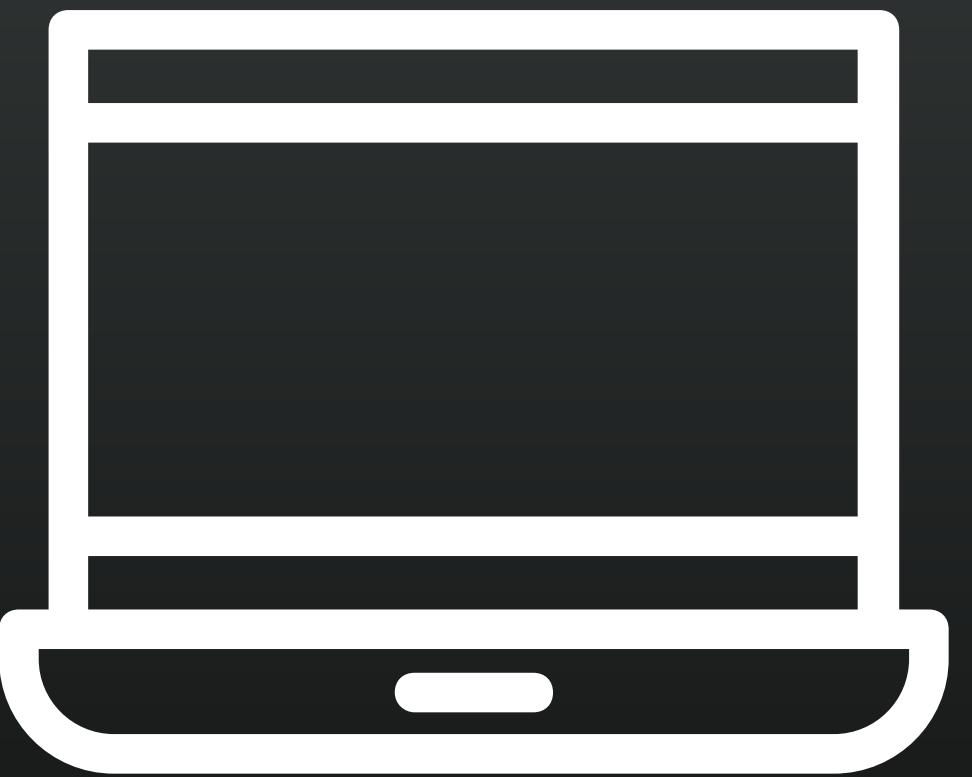
# Of course laptops...



$800 \times 600$



$1024 \times 600$

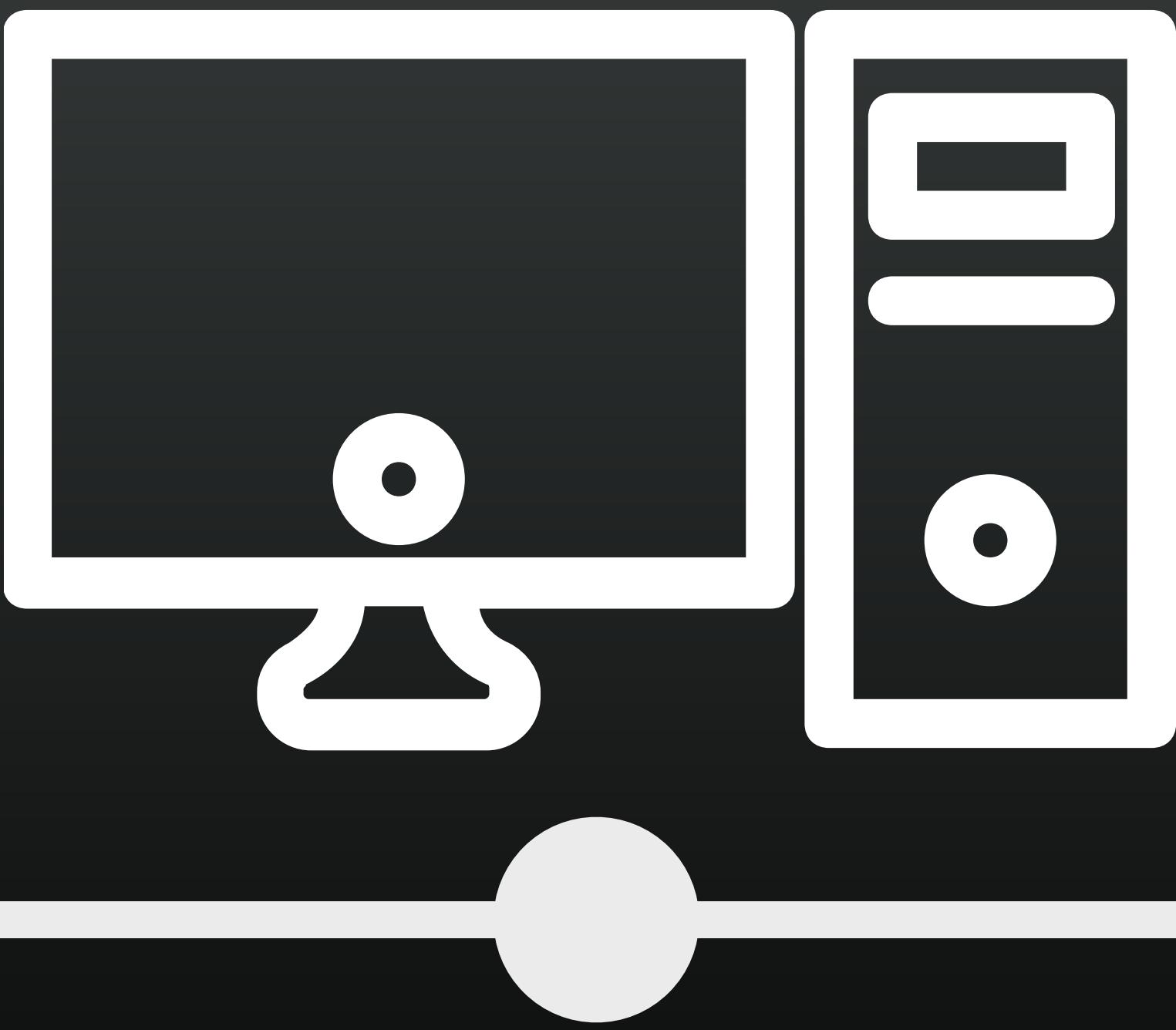


$1280 \times 800$



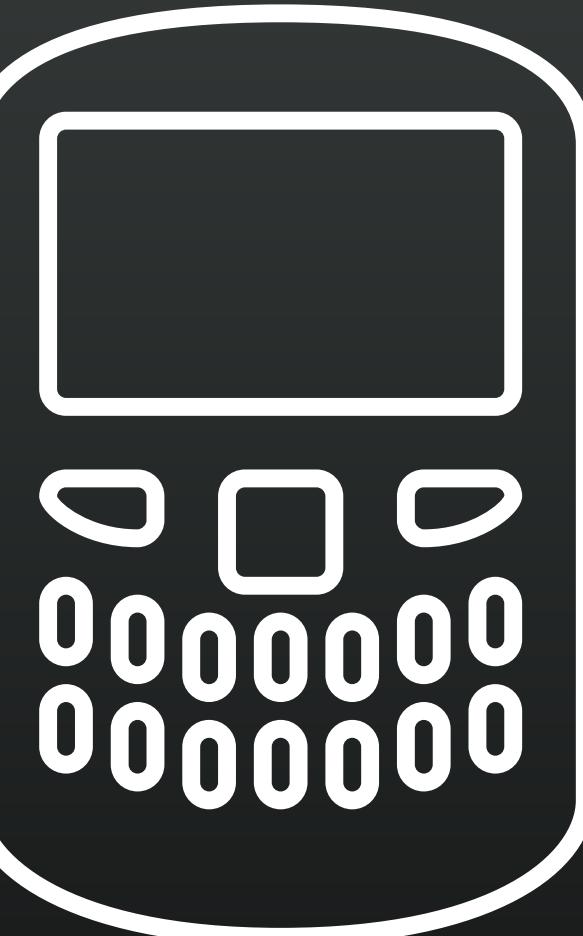
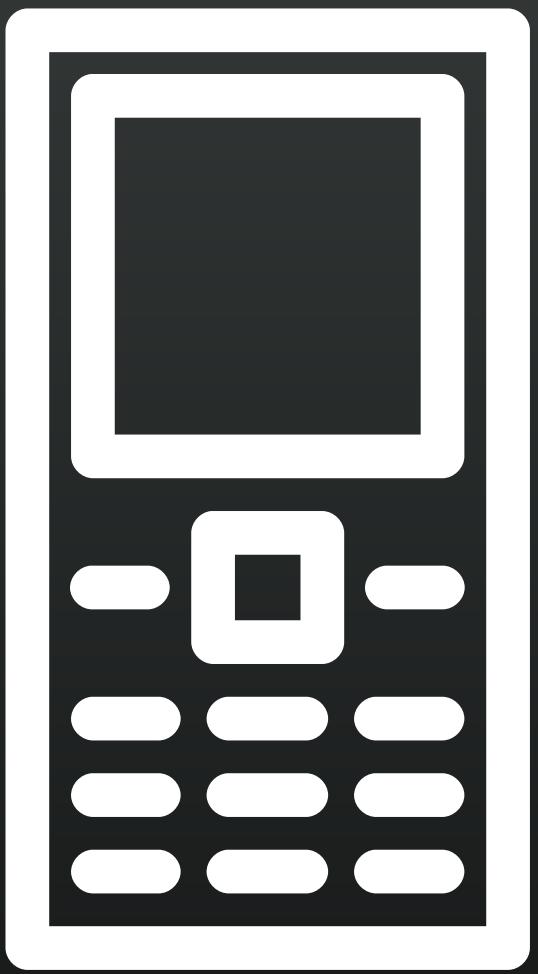
$1366 \times 768$

# The web's “happy place”



1024 × 768

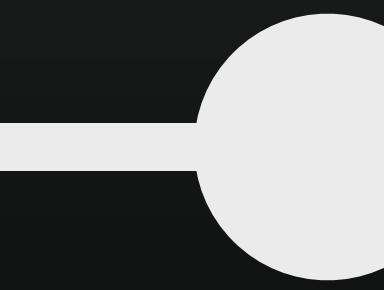
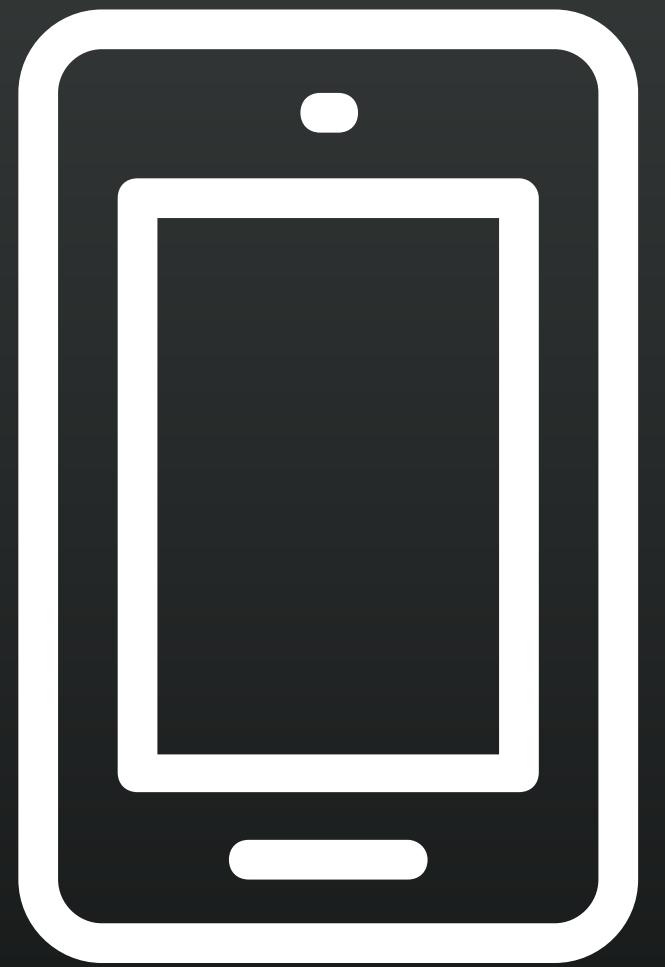
# We were ignoring mobile...



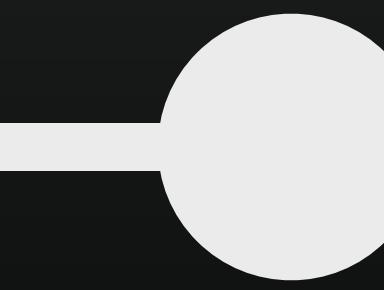
240 × 240

640 × 200

# Until this happened



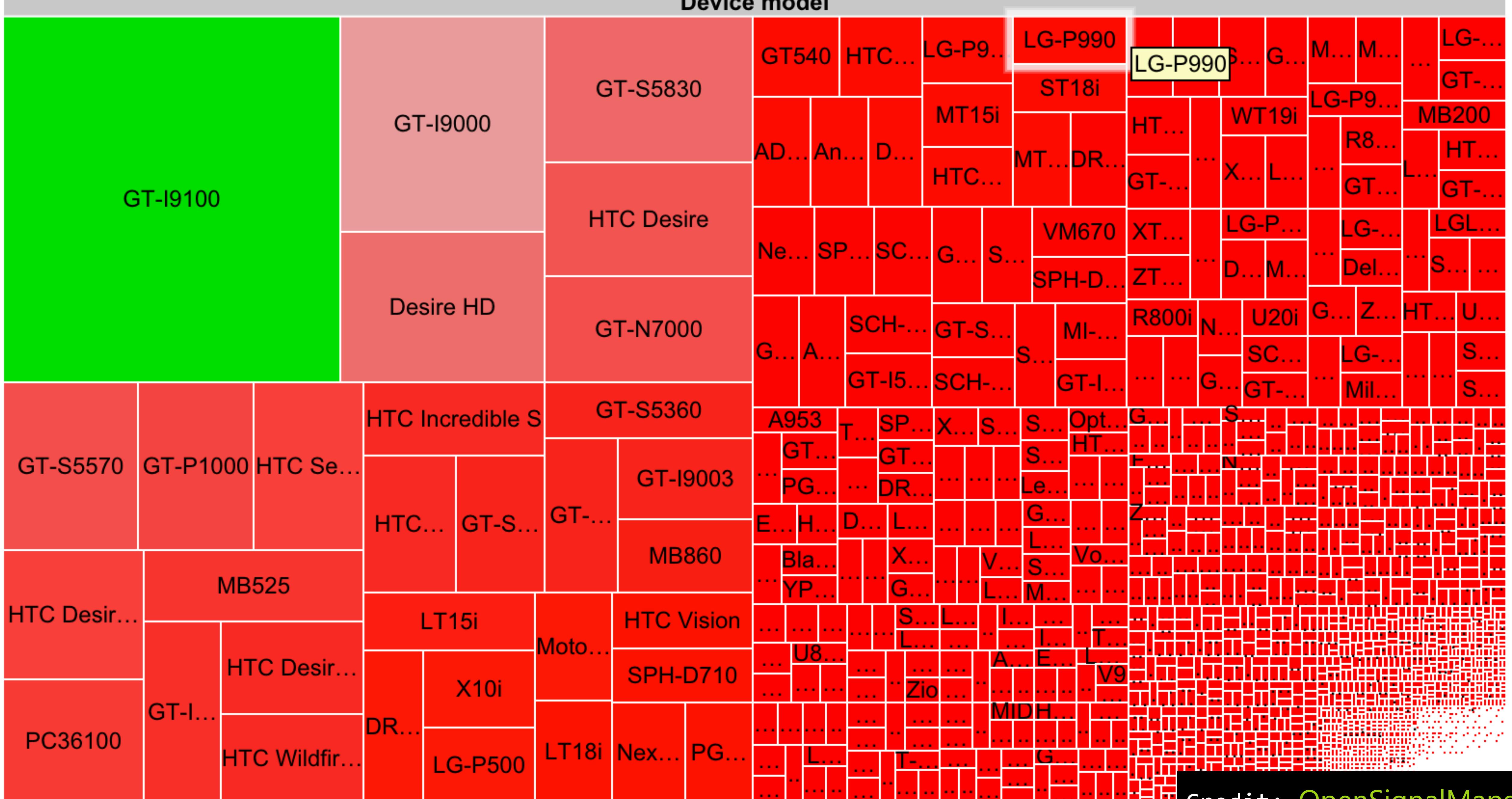
320 × 480

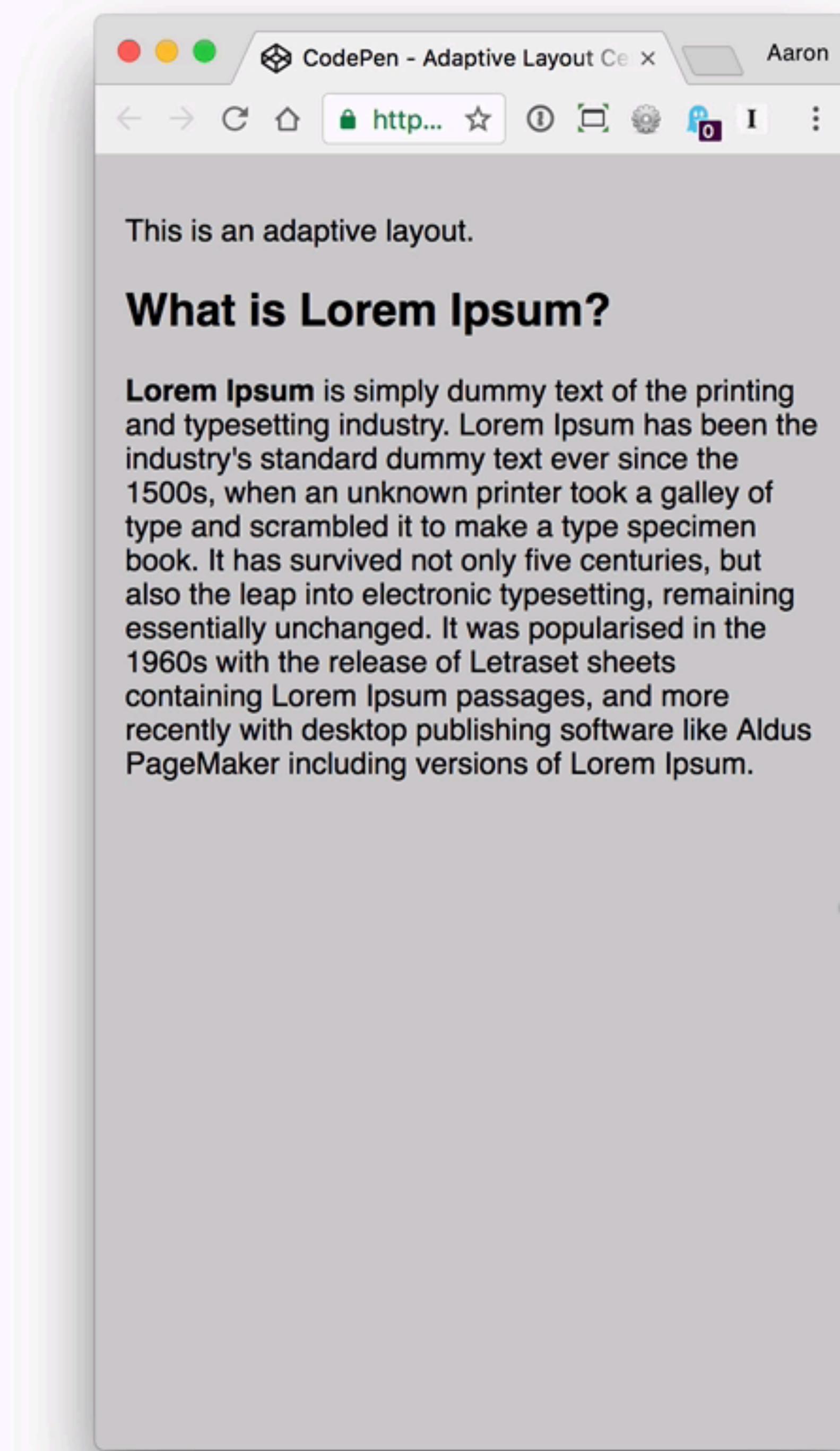


3840 × 2160

Don't even get me  
started on tablets

### Device model

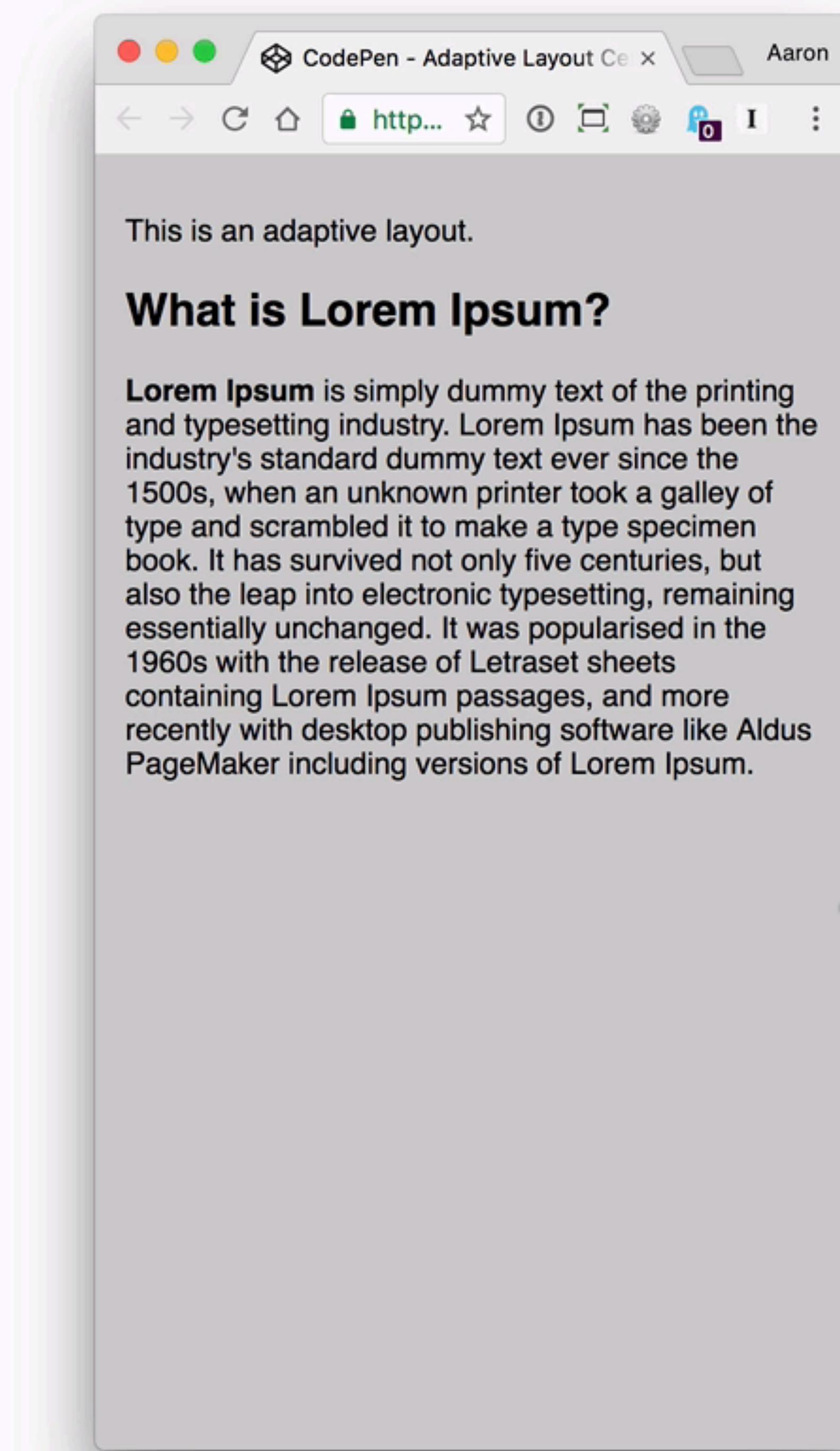




This is an adaptive layout.

## What is Lorem Ipsum?

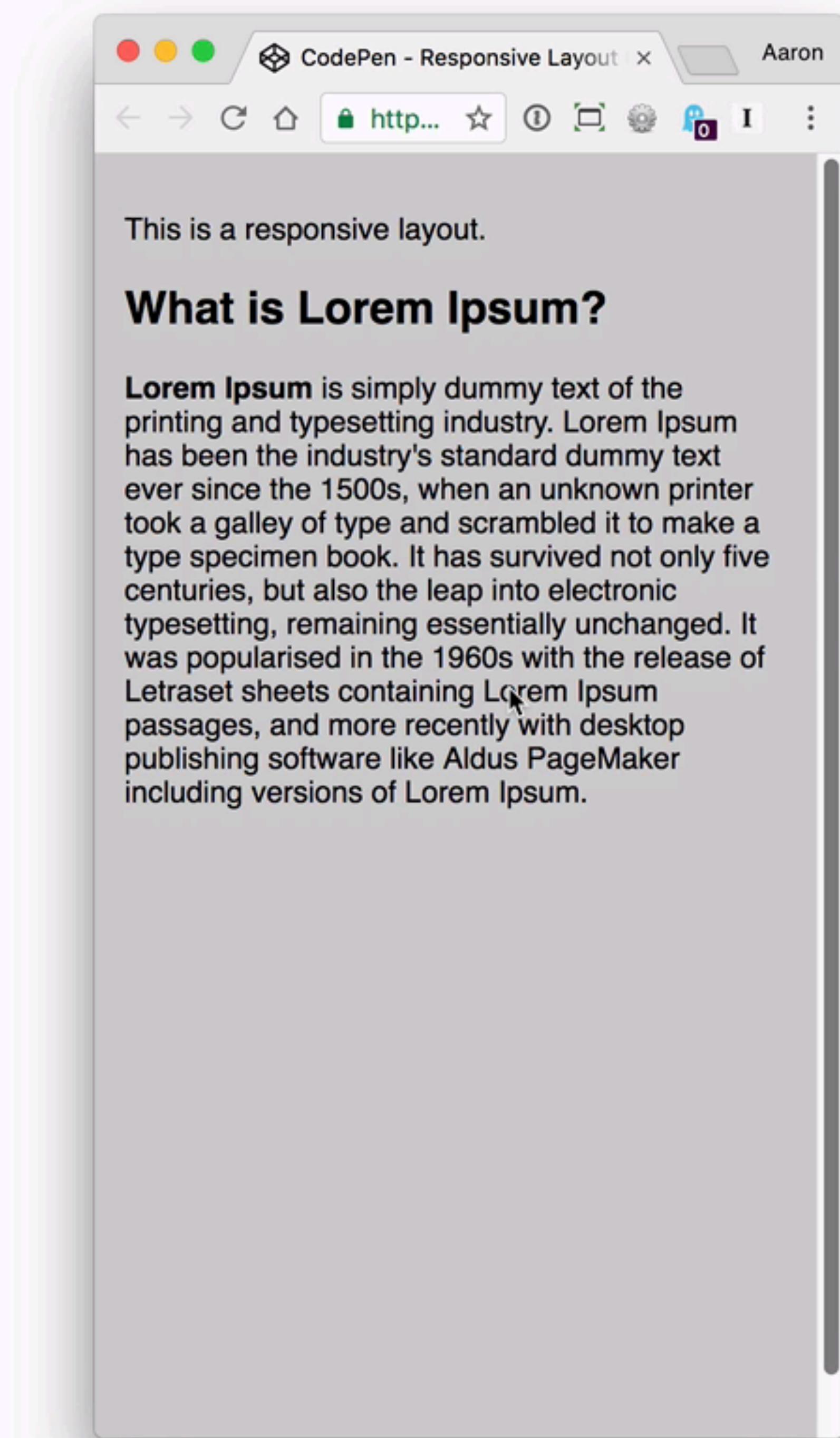
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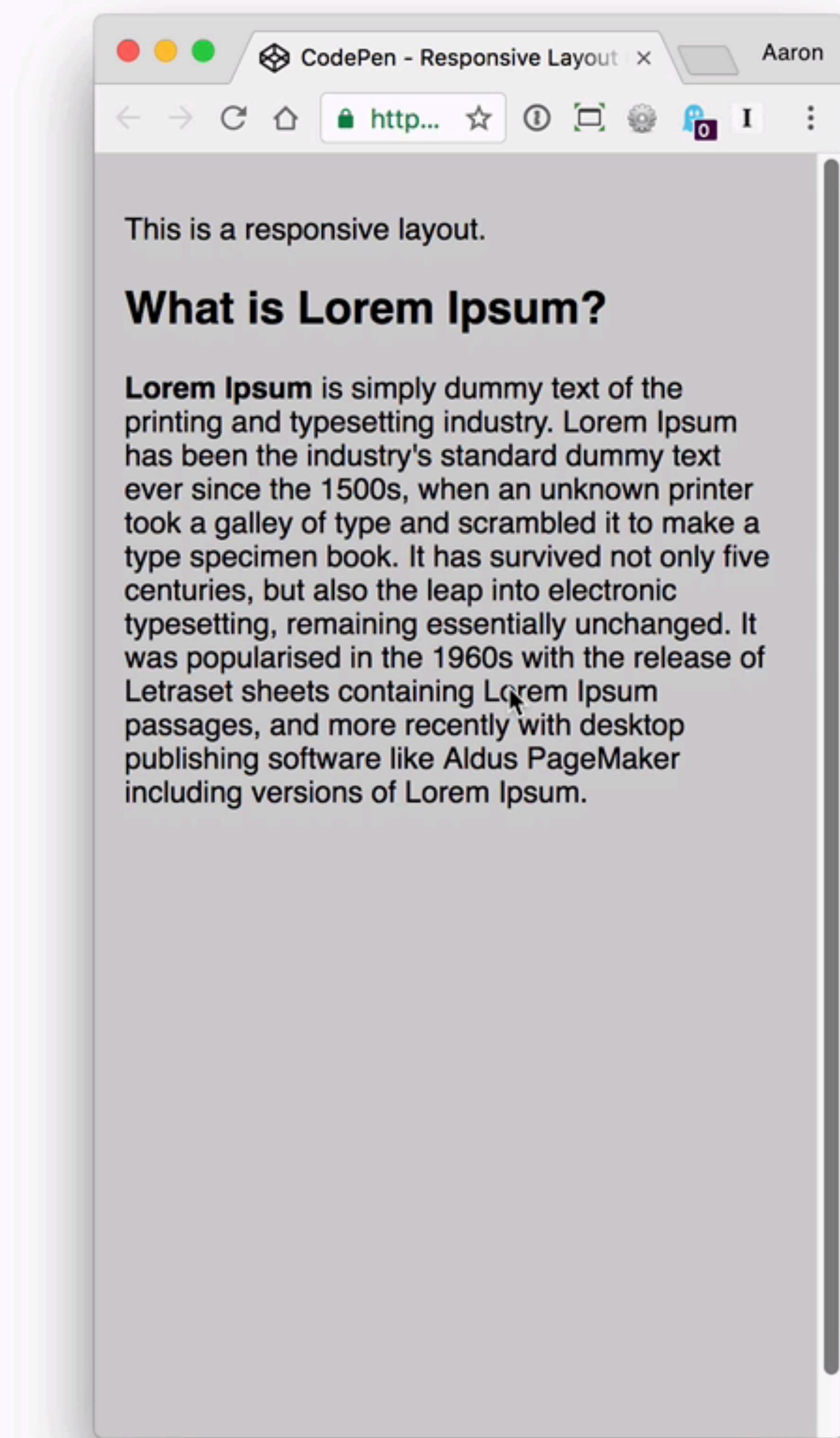


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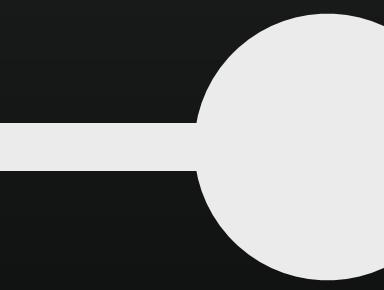
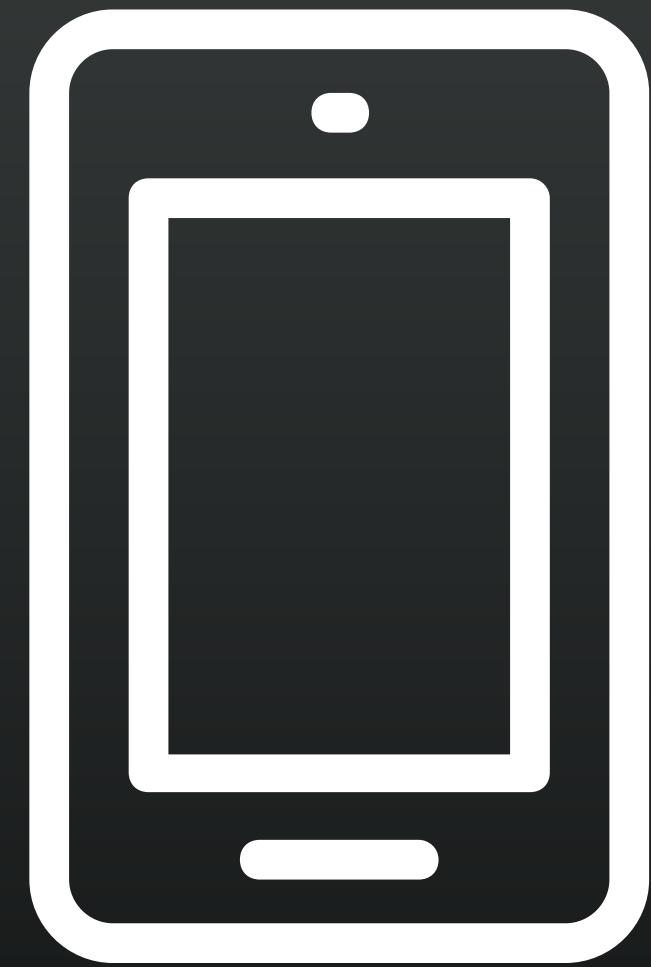
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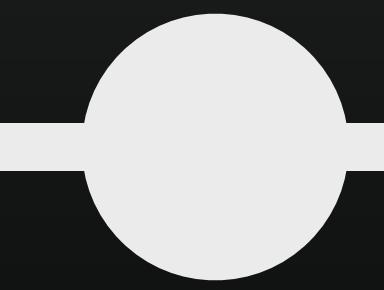




# Until this happened

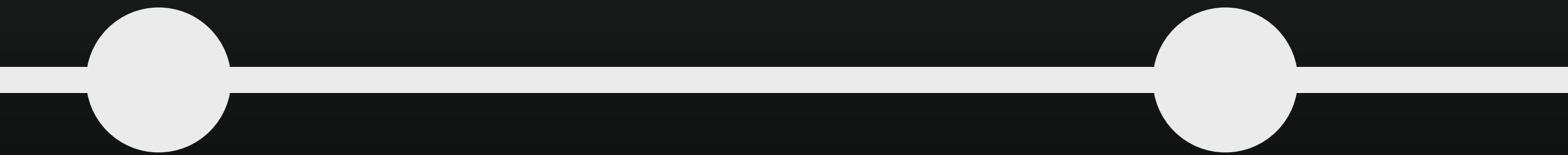


320 × 480



3840 × 2160

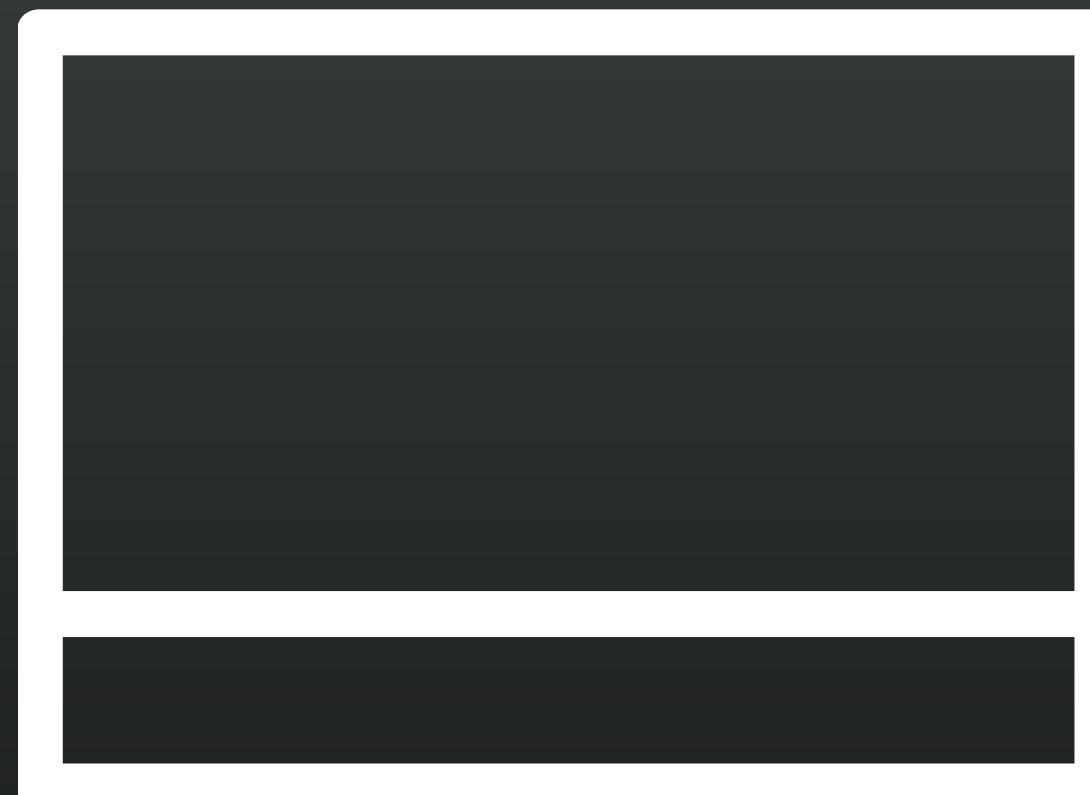
# Desktops today...



# Desktops today...



1920 × 1080



7680 × 4320

Chasing screen  
sizes is clearly a  
**fool's errand**

“ In the second quarter of 2008  
we detected 71 different  
screen resolutions among our  
visitors. In the first quarter of  
2014 we detected **1062**

— Jason Samuels  
IT Manager,  
National Council on Family Relations

*8 years ago!*

“

In the second quarter of 2008  
we detected 71 different  
screen resolutions among our  
visitors. In the first quarter of  
2014 we detected

**1062**

*One year after the iPhone*

— Jason Samuels  
IT Manager,  
National Council on Family Relations

Source

“ In 2008, 27 screen resolutions showed up with more than 10 visits, in 2014 that number was **200**

— Jason Samuels  
IT Manager,  
National Council on Family Relations

Chasing screen  
sizes is clearly a  
**fool's errand**

Designing for  
screens is hard

And then there's  
**everything else**

Your content can and will go  
**anywhere that's connected**



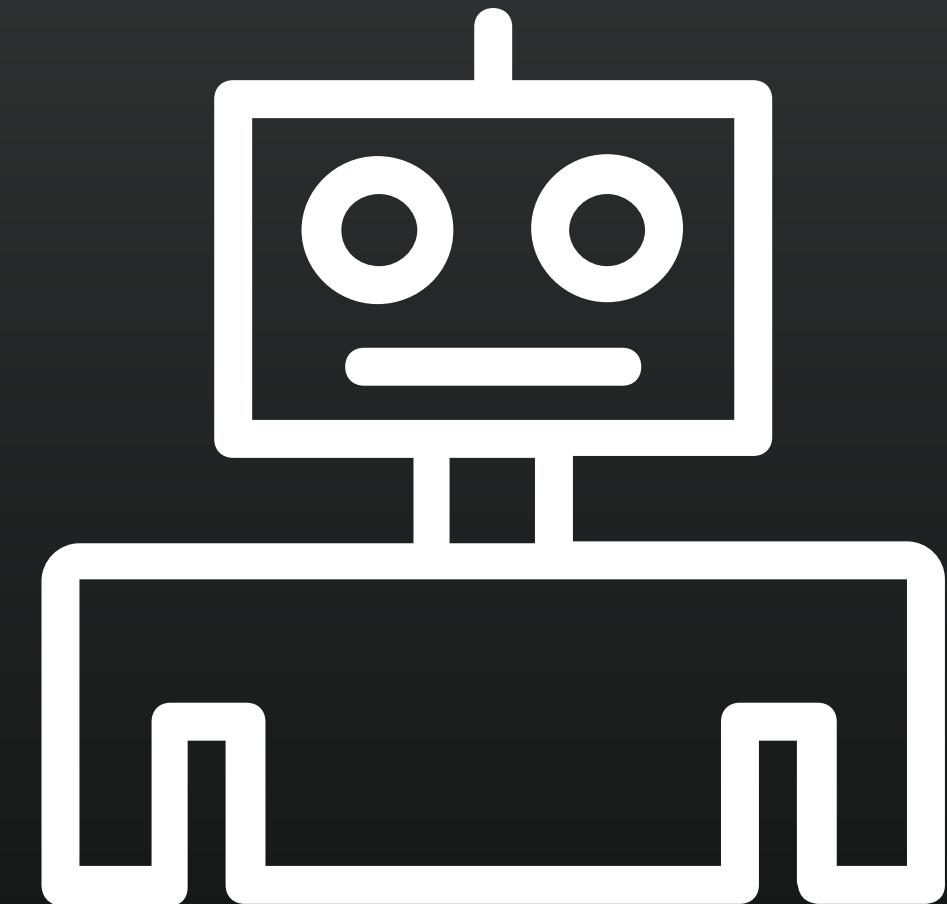
wearables



smart tvs

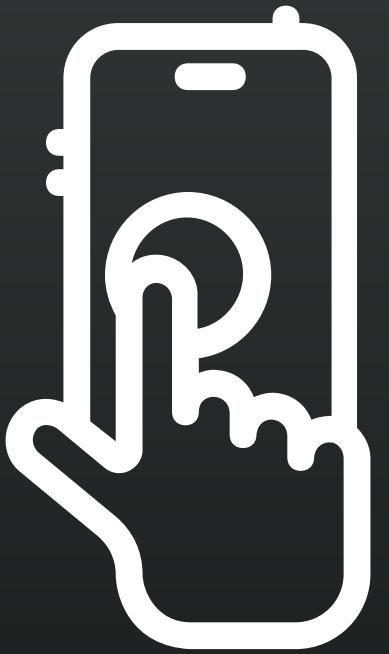


IoT



assistants

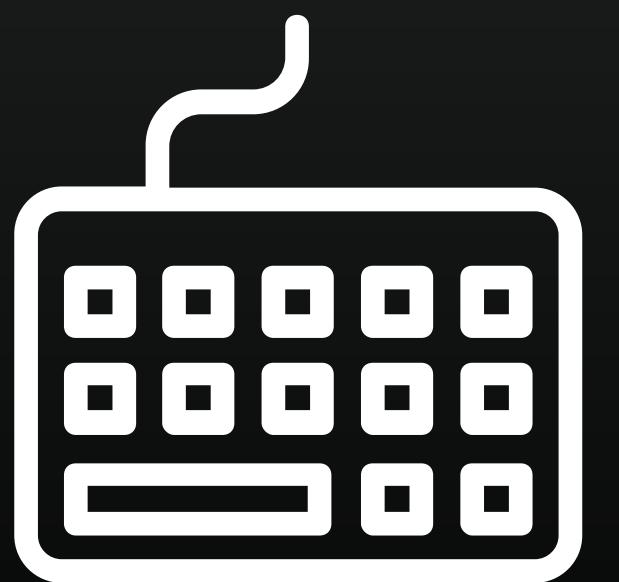
# Meaning users will need to interact in different ways



touch

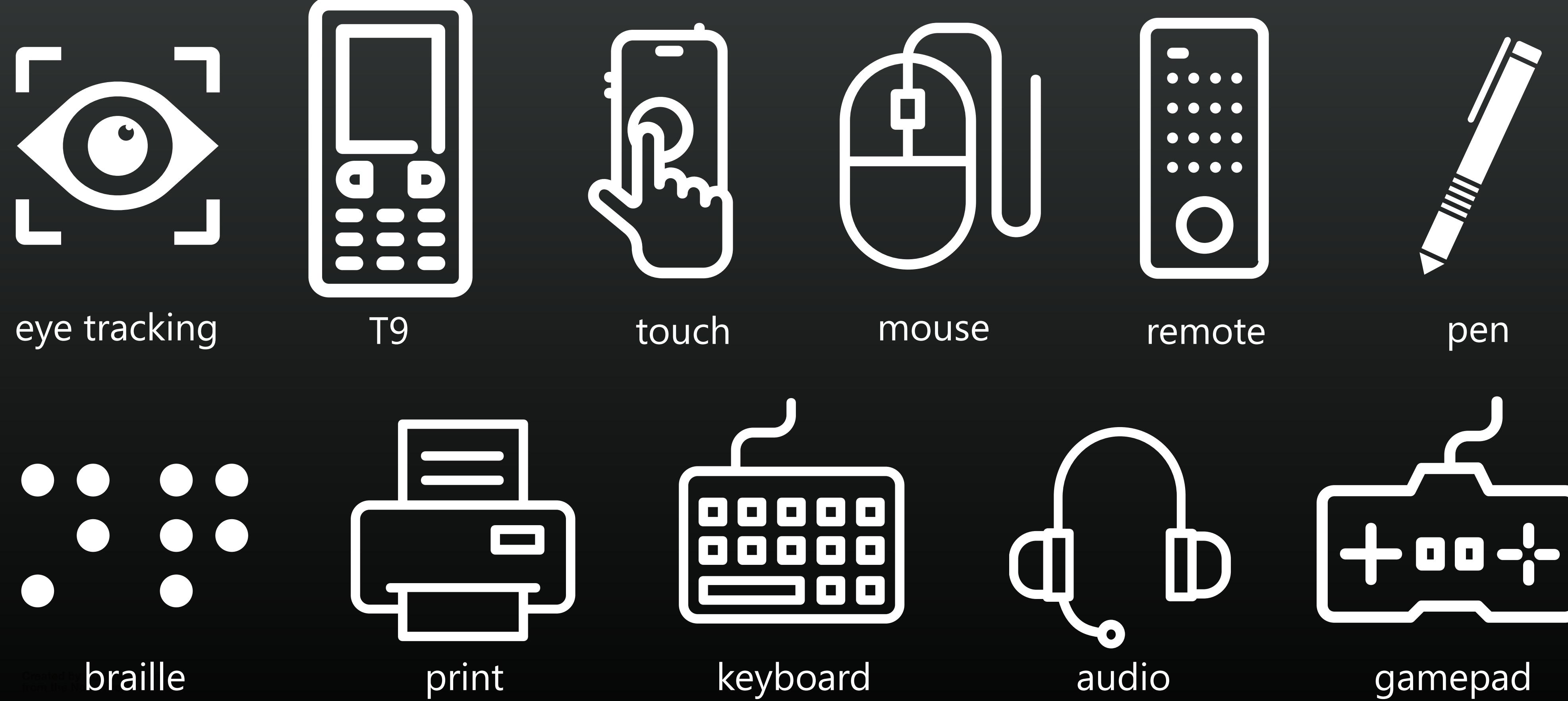


mouse

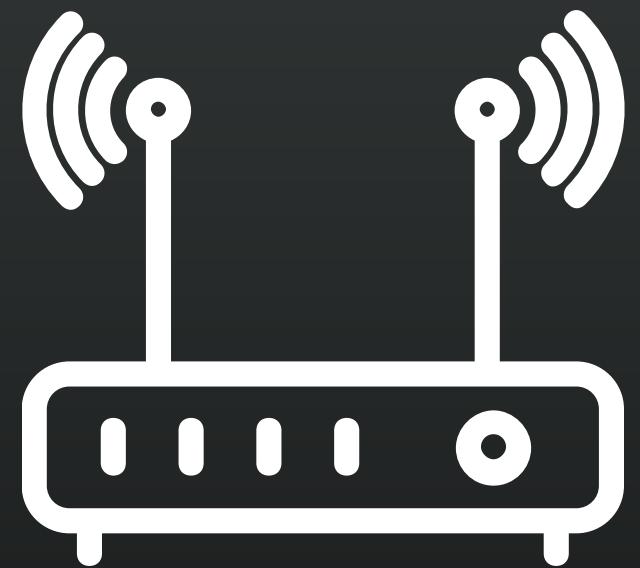


keyboard

# Meaning users will need to interact in different ways



# Over varied networks and in changing conditions



wifi



hardline



mobile



homes



buildings



cars



buses



trains

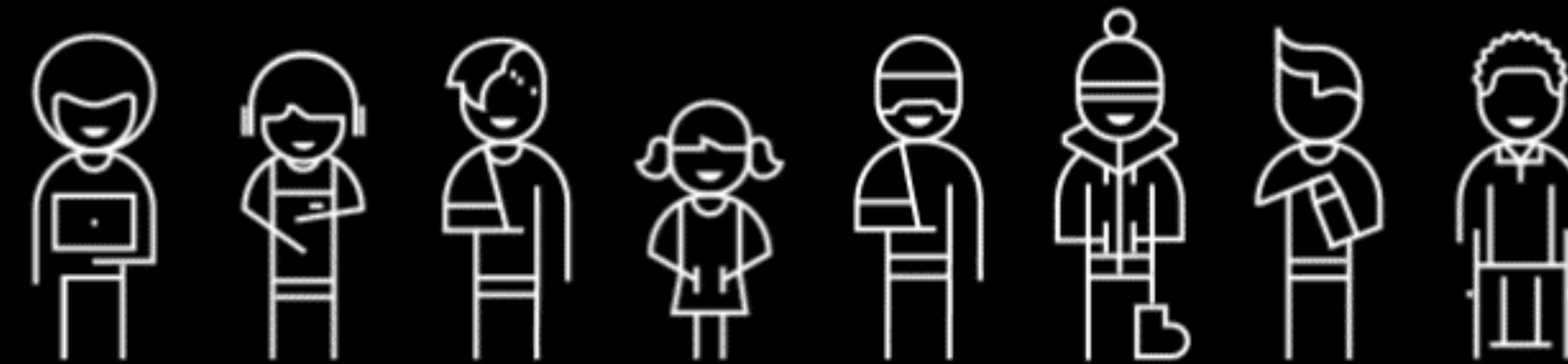


airplanes

And, ultimately, our users all  
have different needs too



And, ultimately, our users all  
have different needs too





Anyone notice I  
haven't even  
mentioned  
browsers?

Anyone notice I  
haven't even  
mentioned  
browsers?

;-)



So...

So...?

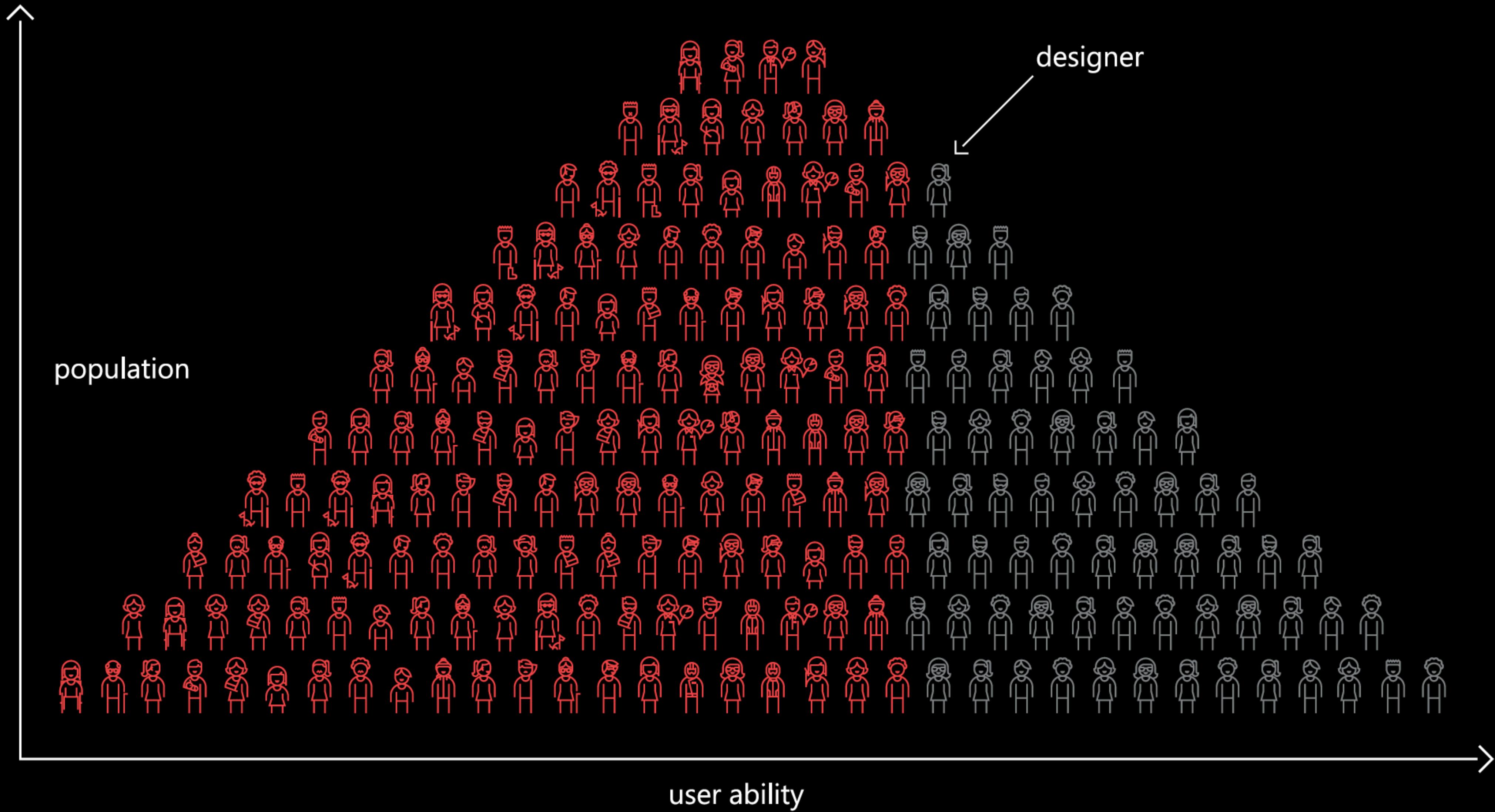
So...?

## REALITY CHECK

---

Nothing about our users' experiences of the web has ever been as homogenous as we imagined.

Treat your  
ideal scenario  
as an **edge case**



excluded

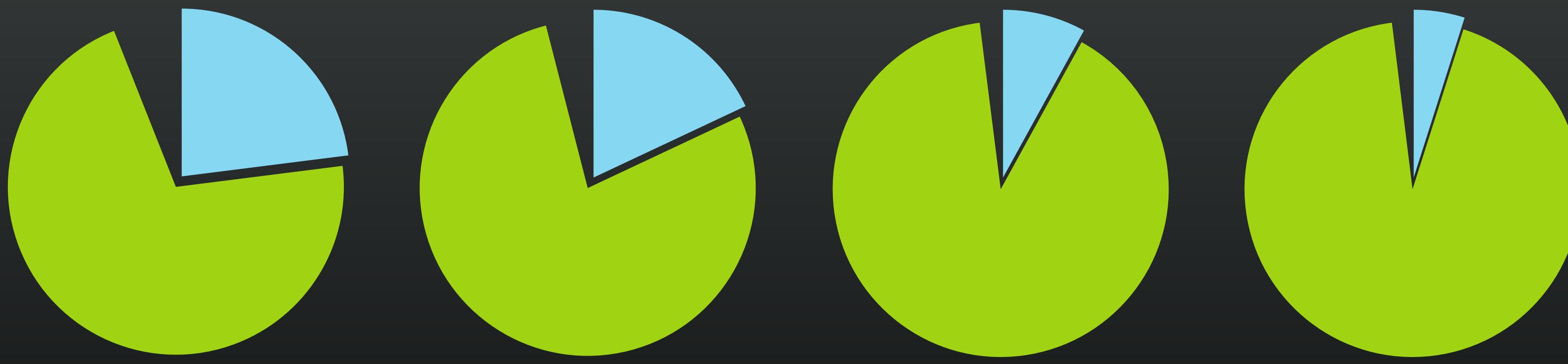


included





# U.S. Smartphone penetration



< \$30k  
**71%**

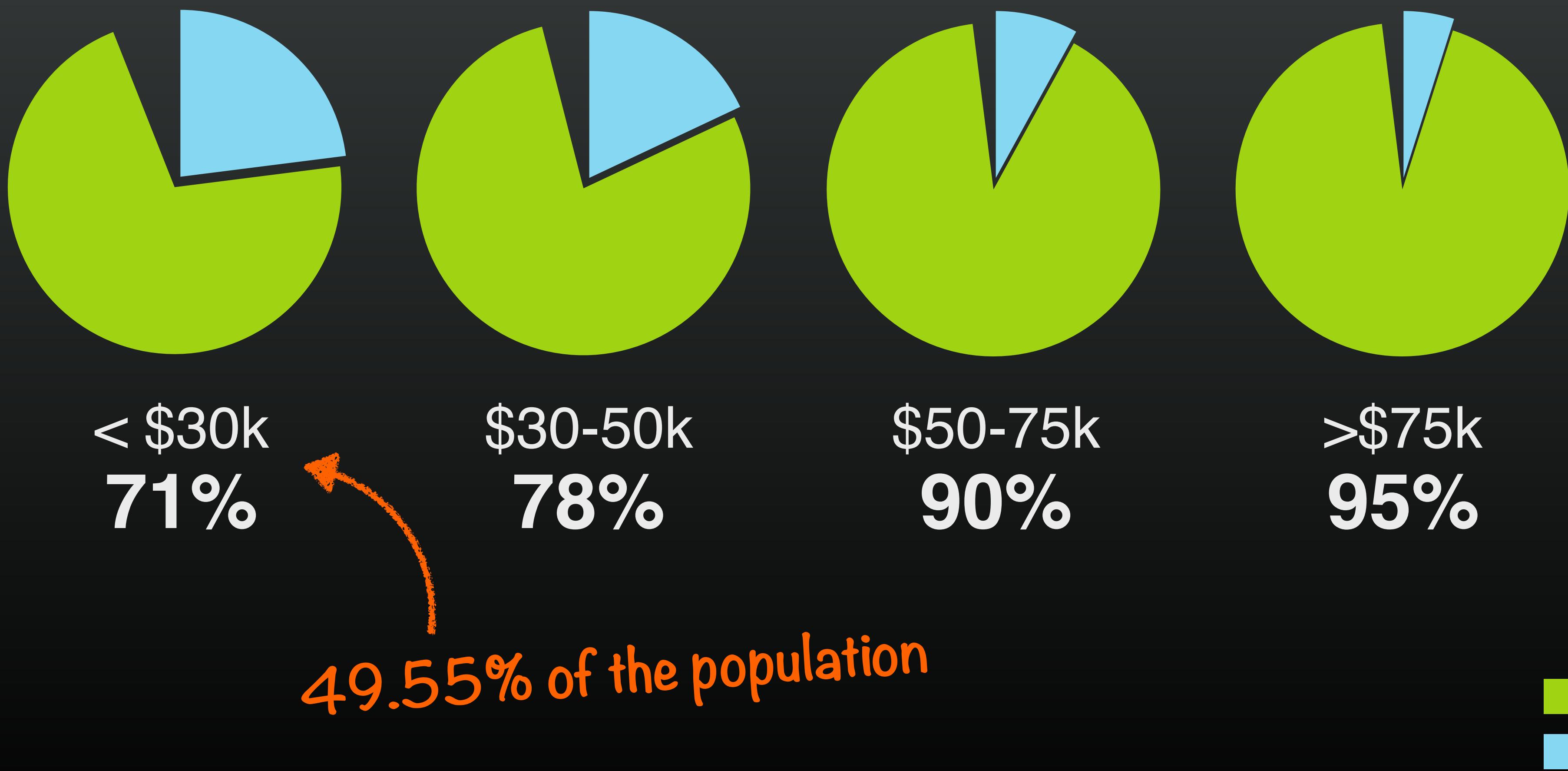
\$30-50k  
**78%**

\$50-75k  
**90%**

>\$75k  
**95%**

■ Smartphone  
■ Other

# U.S. Smartphone penetration



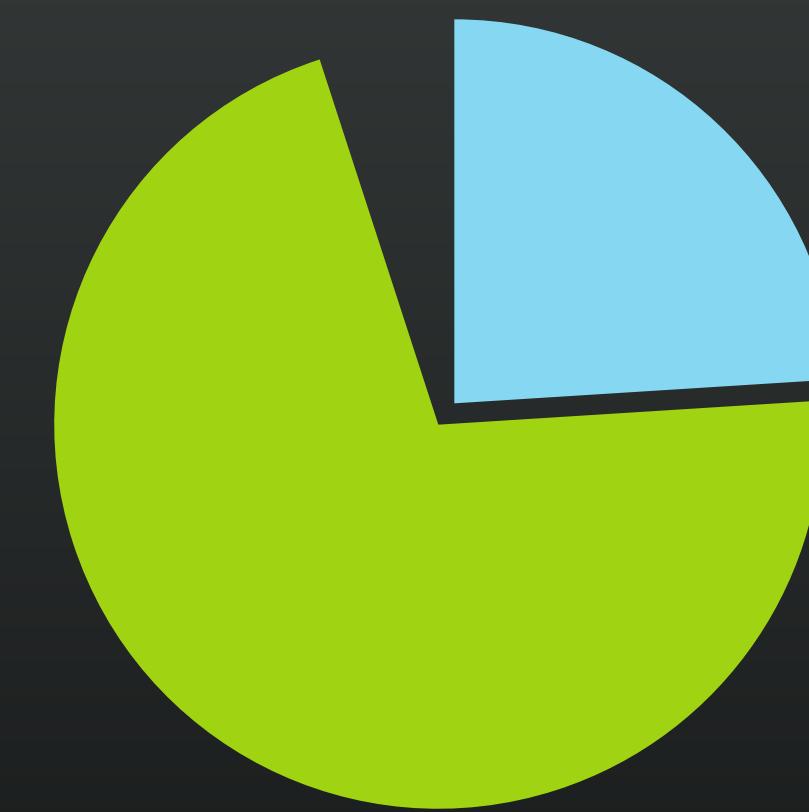
# U.S. Smartphone penetration



Urban  
83%



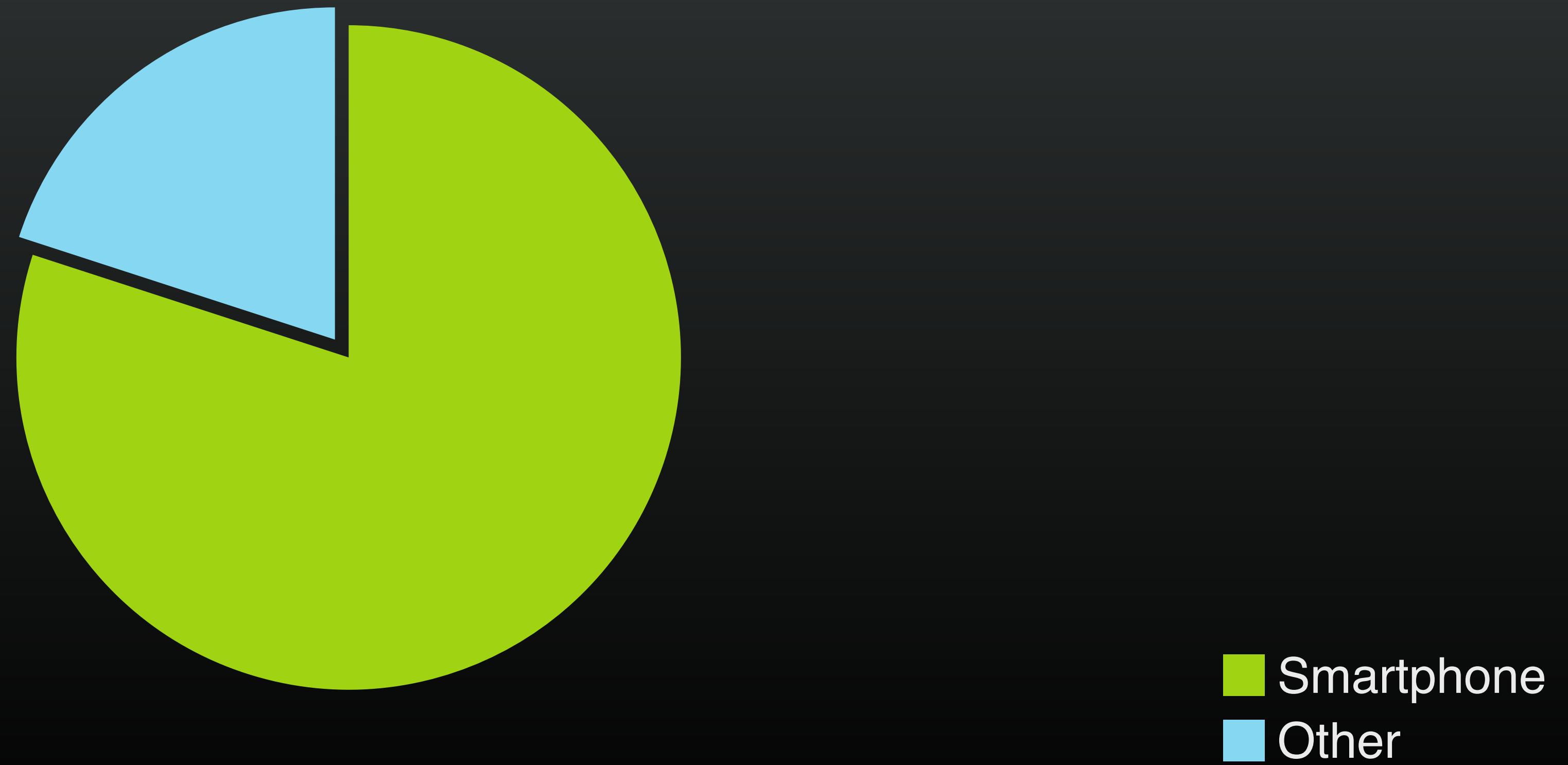
Suburban  
83%



Rural  
71%

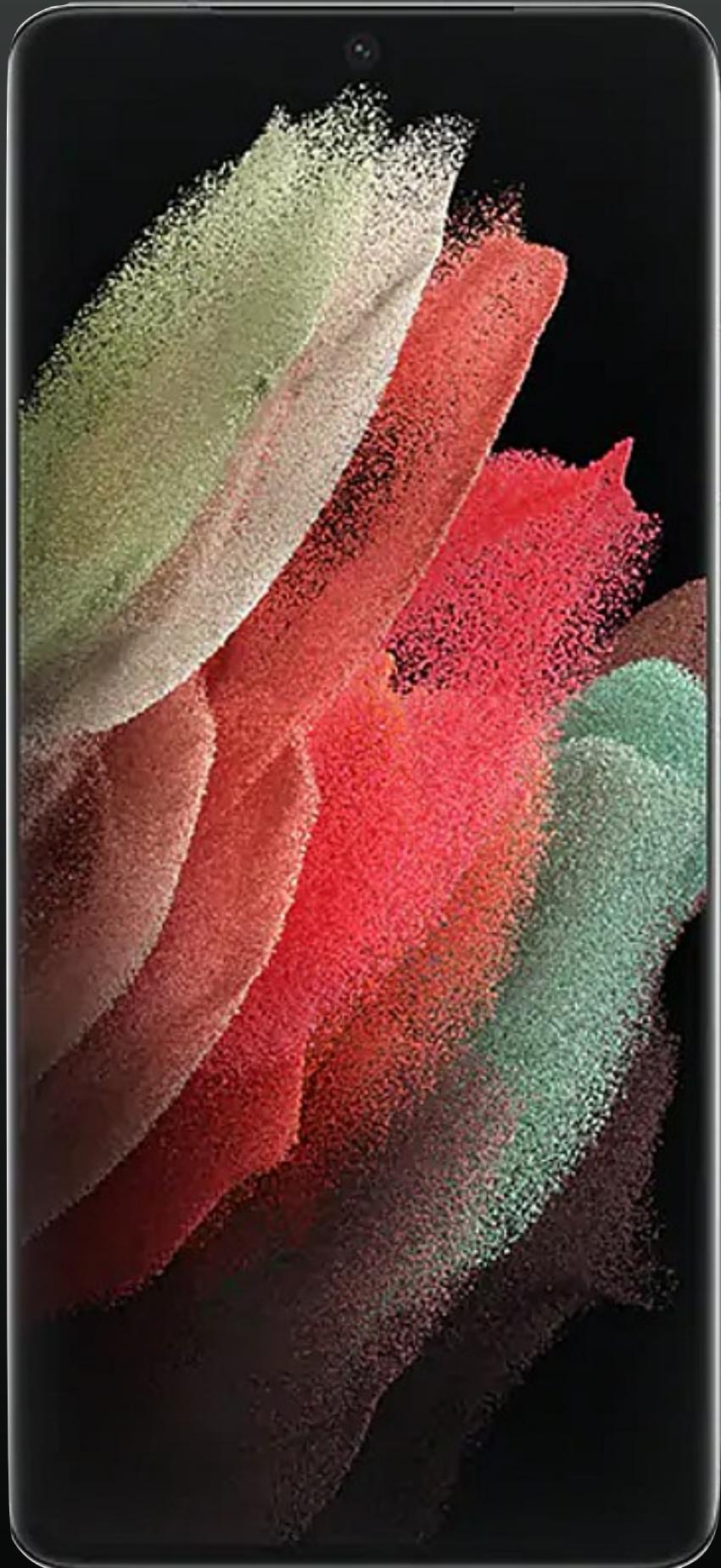
■ Smartphone  
■ Other

One in 5 U.S. adults is a  
smartphone-only Internet  
user.



# Not all smartphones are equal

# Not all smartphones are equal



## Galaxy S21 Ultra 5G

6.8" (3200 × 1440)

12 GB RAM

128 GB Storage

4 Cameras (10–108 MP)

2.8GHz (1) / 2.4GHZ (3) / 1.8GHZ (4)

Android 11

\$999

# Not all smartphones are equal



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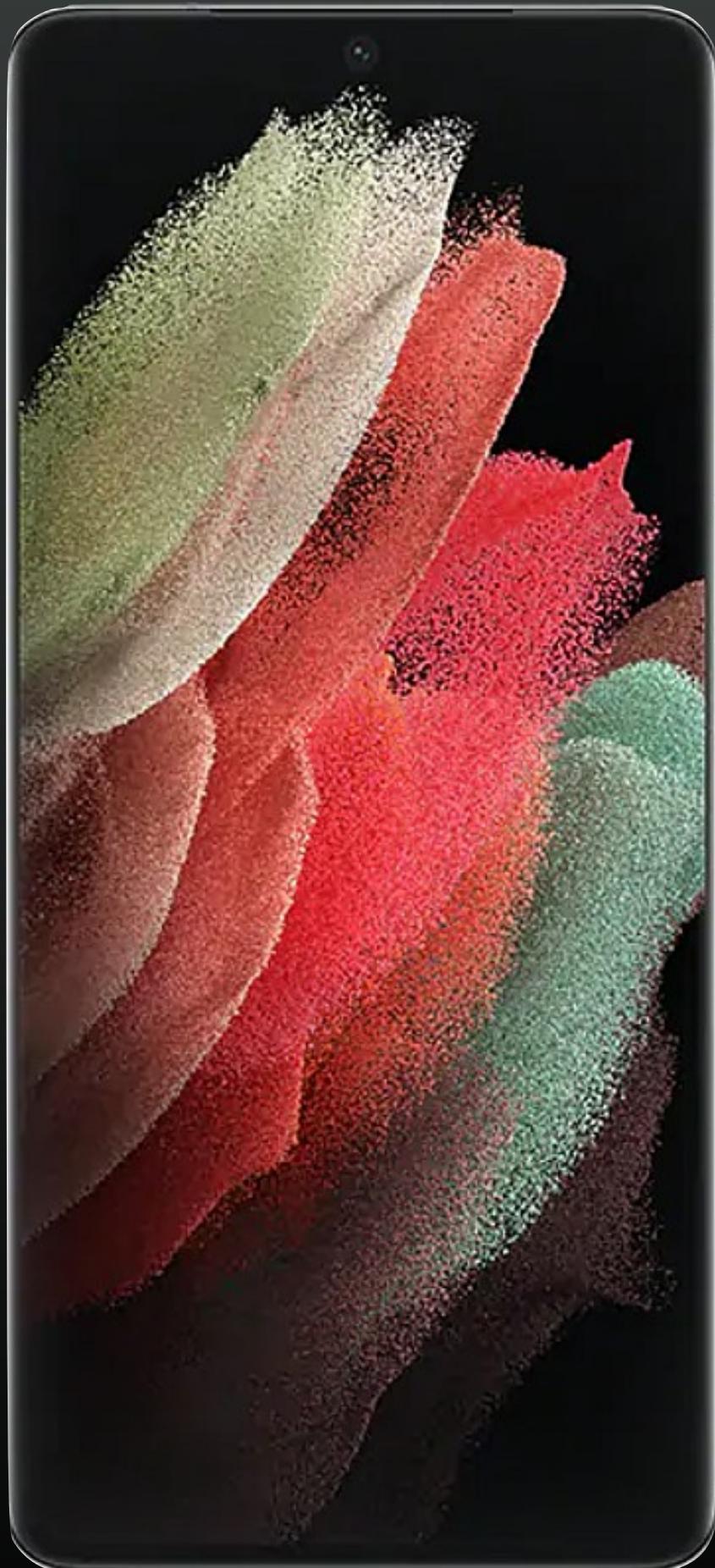
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Android 11  
\$999

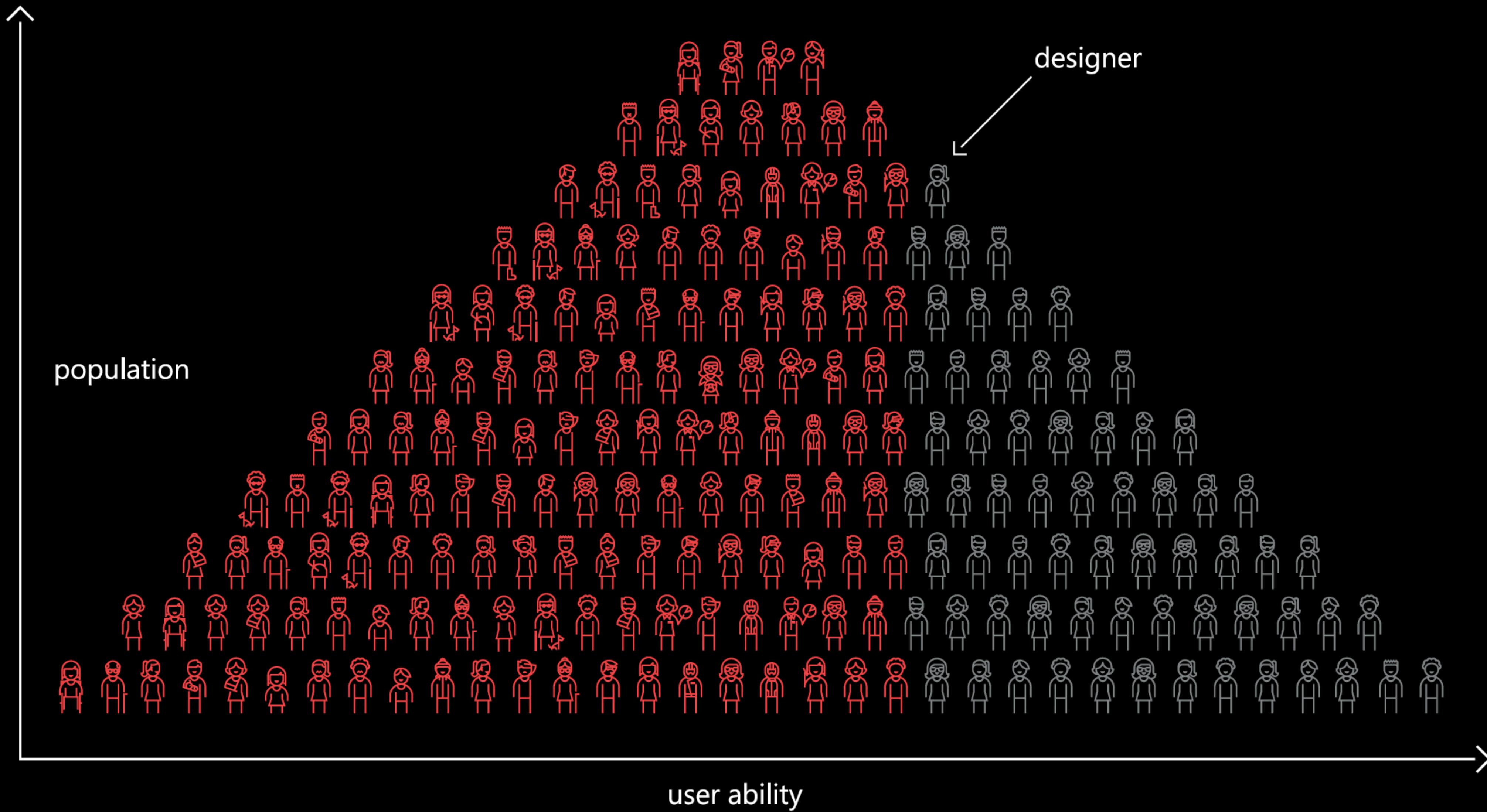
## BLU Studio Mini

5.5" (1440 × 720)  
2 GB RAM  
32 GB Storage  
13 MP Camera  
1.6 GHz Octo-core  
Android 9  
\$79





In the 2017 survey, Smartphone users  
making < \$30k/yr experienced app errors  
**52% of the time**



excluded



included

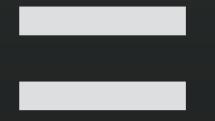




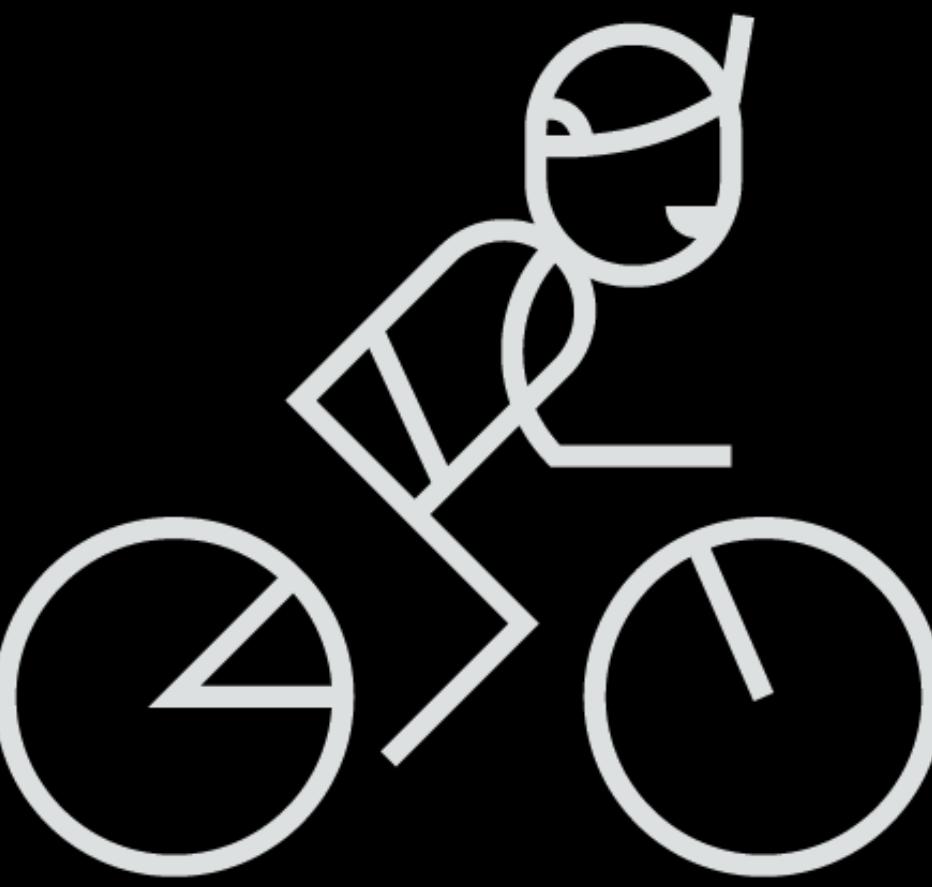
Photo Credit: Dylan Passmore



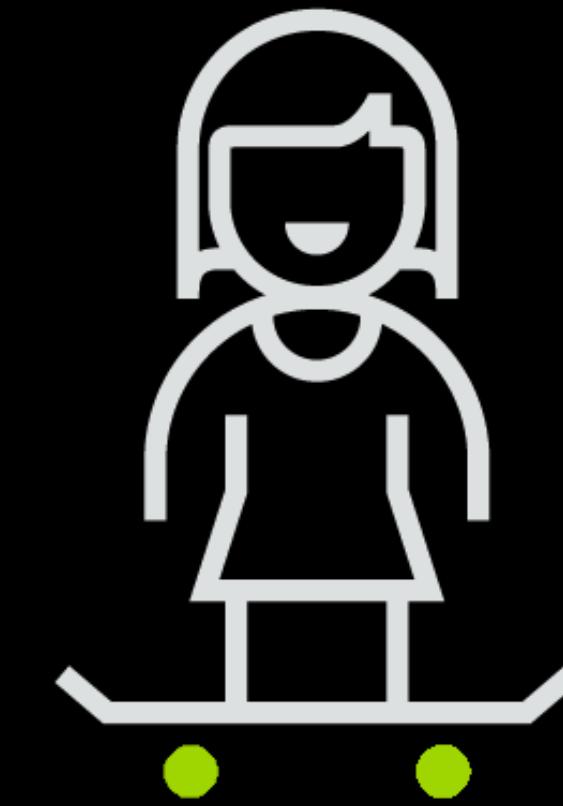
wheelchairs



strollers

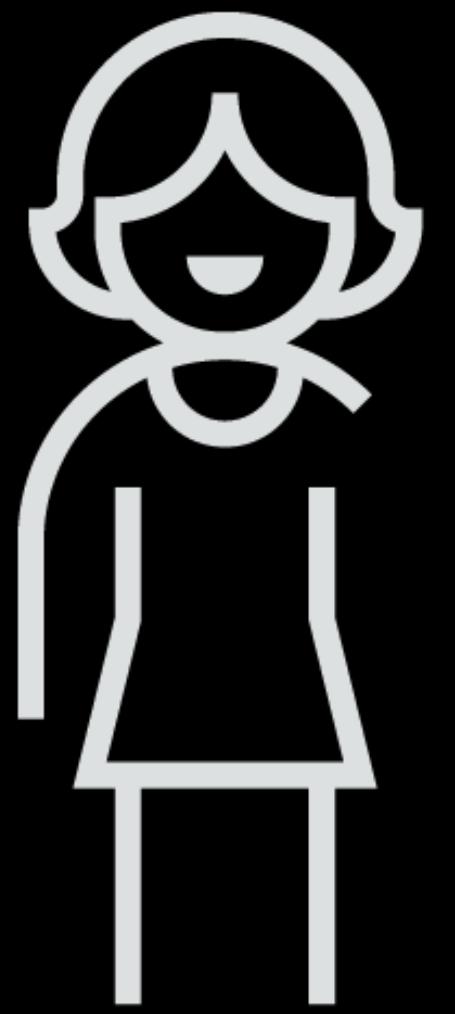


bicycles



skateboards

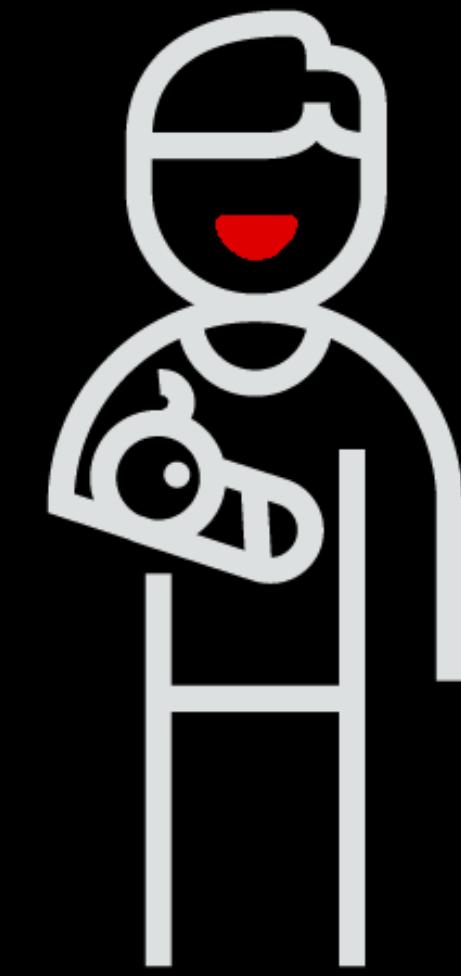




one arm



arm injury

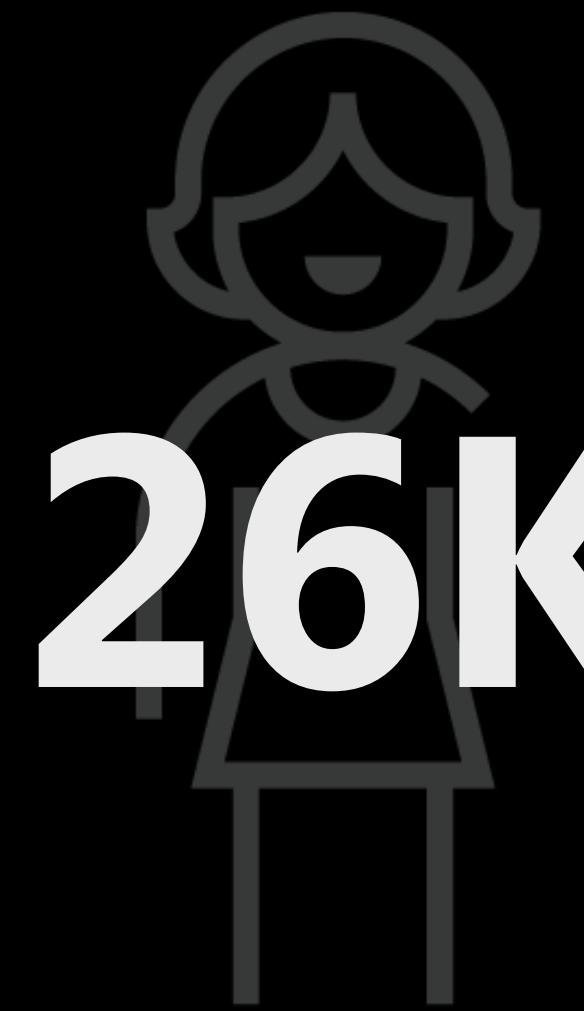


new parent

permanent



situational



26K

one arm



arm injury

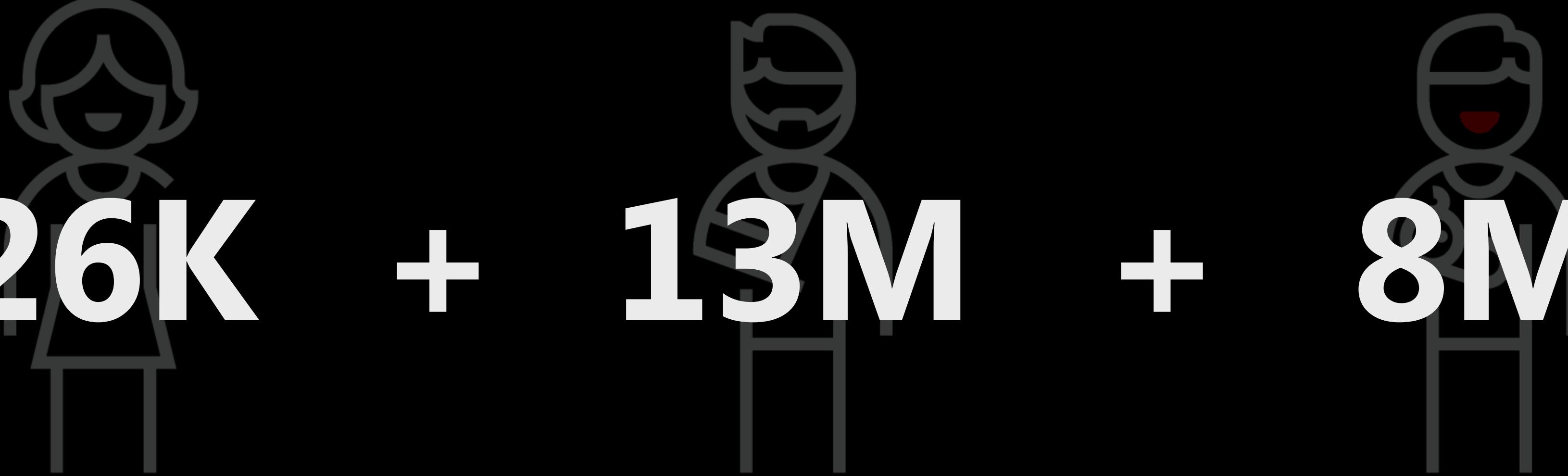


new parent

permanent



situational



**26K + 13M + 8M**

one arm

arm injury

new parent

permanent



situational

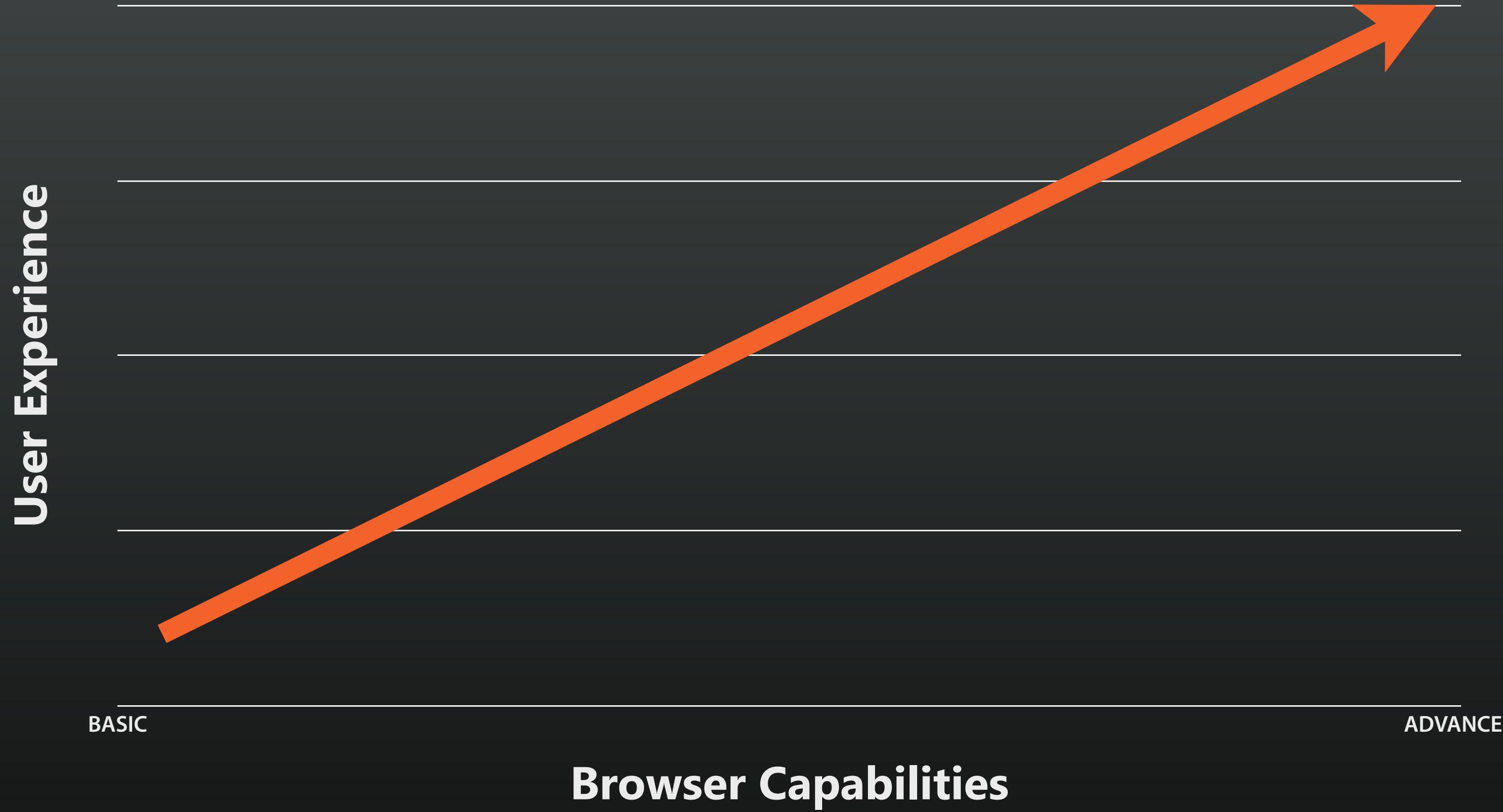
# 21 Million People

So how can we make  
our interfaces work  
**for everyone?**

Approach your job  
with an open mind  
and empathy for  
your users.

We try stuff,  
make mistakes,  
& learn from them

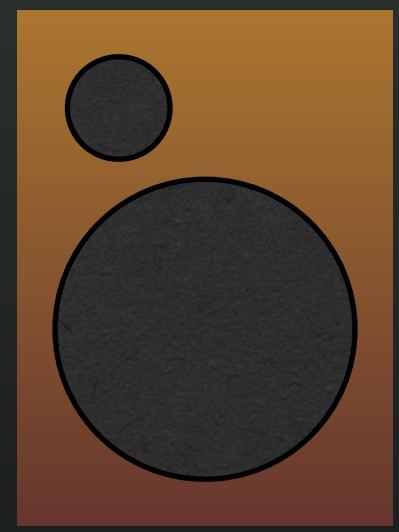
# Progressive Enhancement

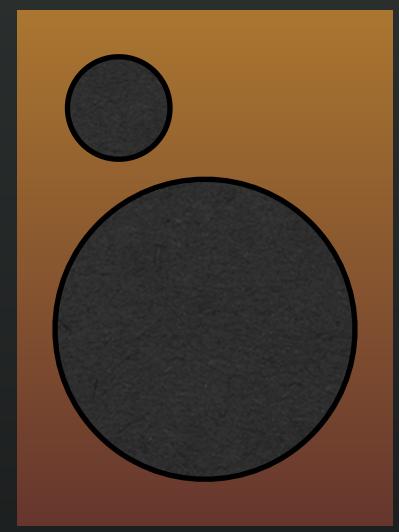


*I like an escalator because  
an escalator can never break,  
it can only become stairs.*

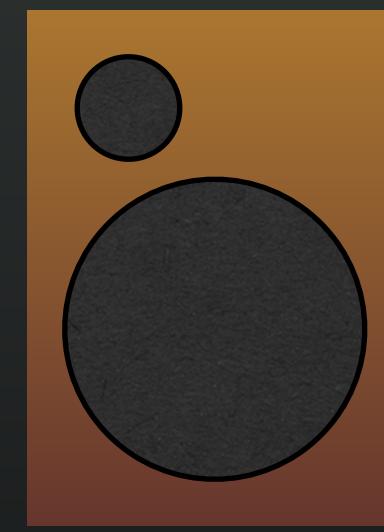
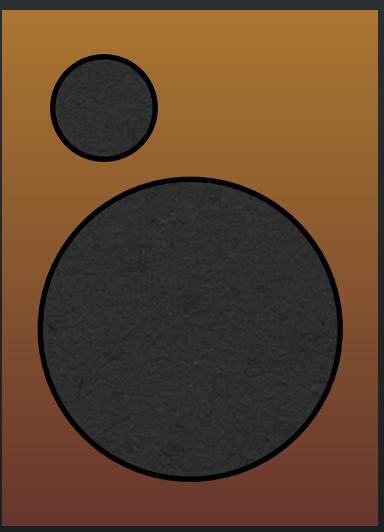
— Mitch Hedberg

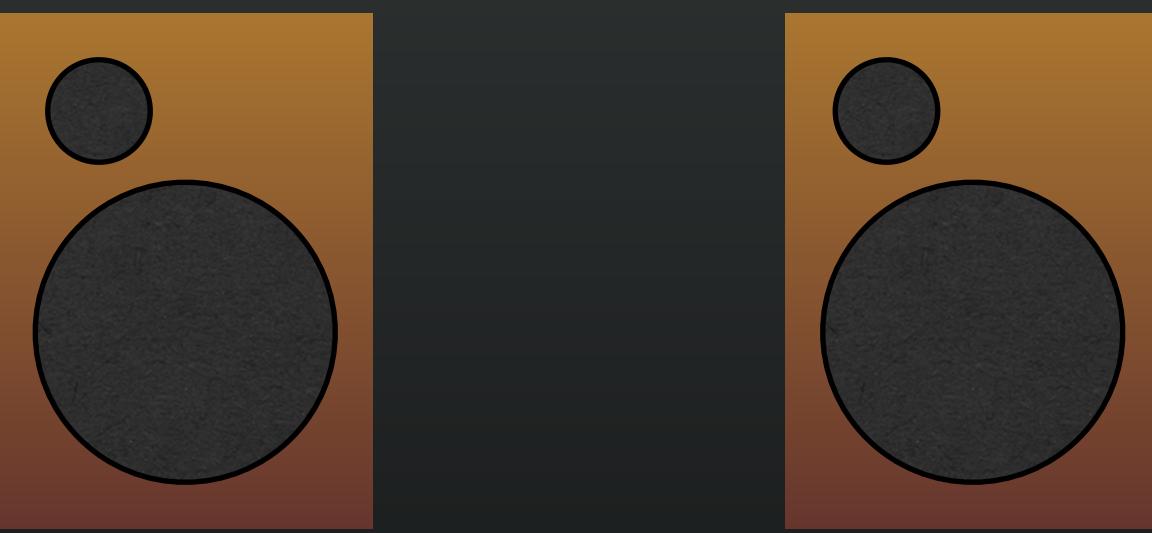




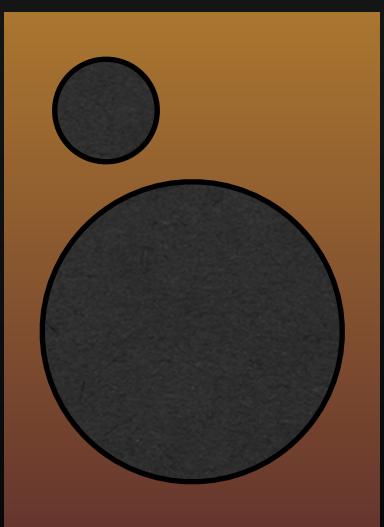
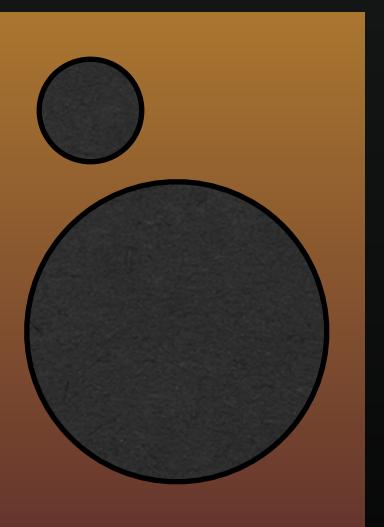
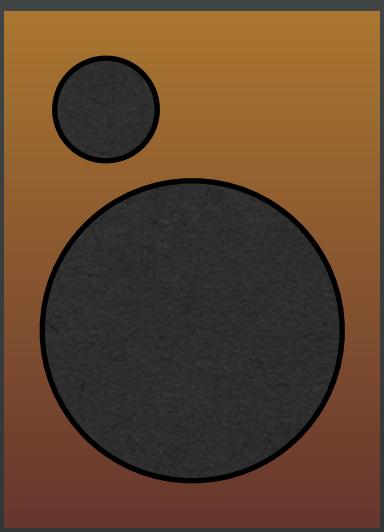
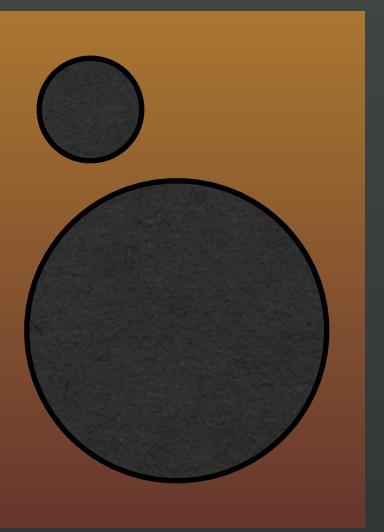


Mono

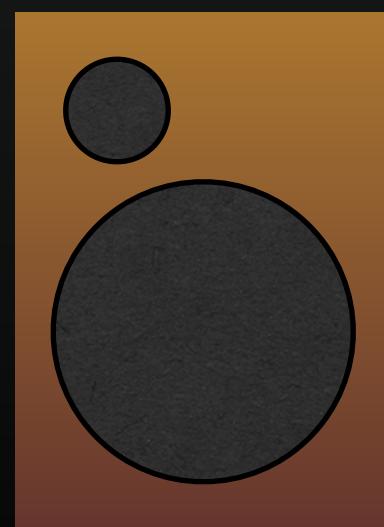
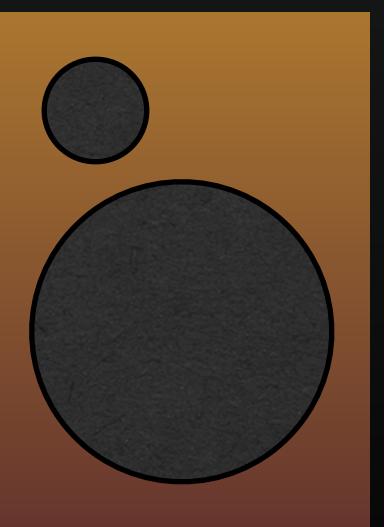
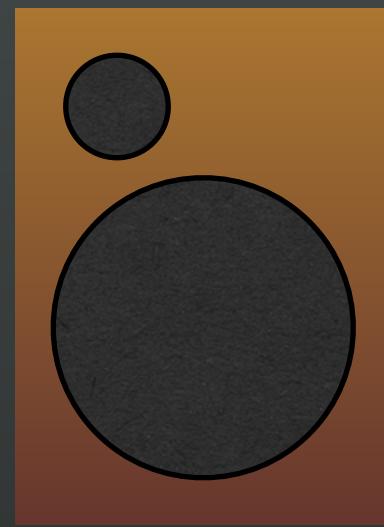
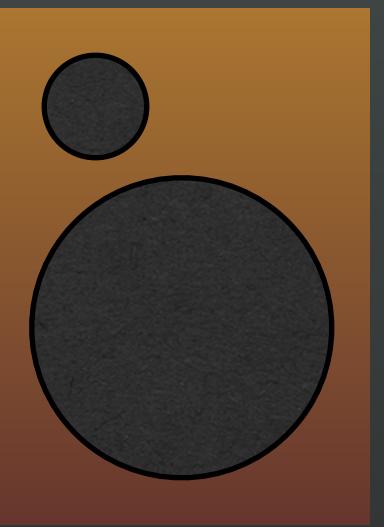


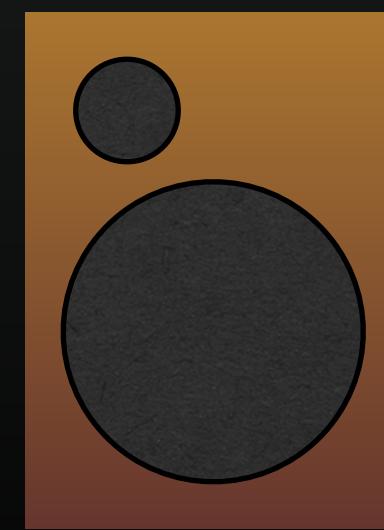
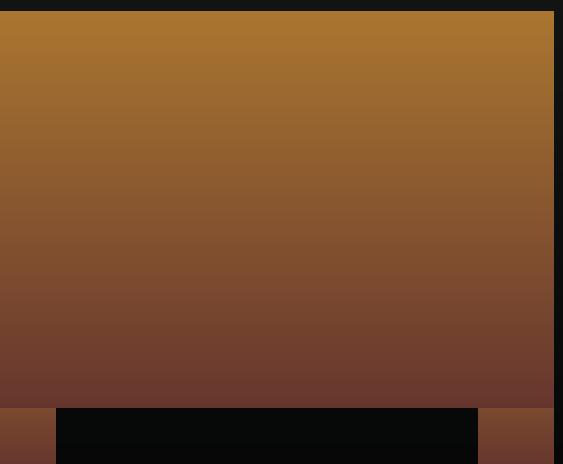
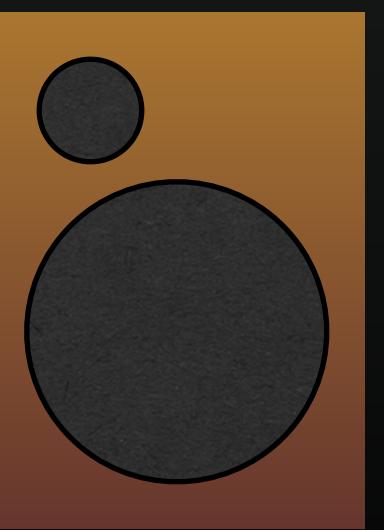
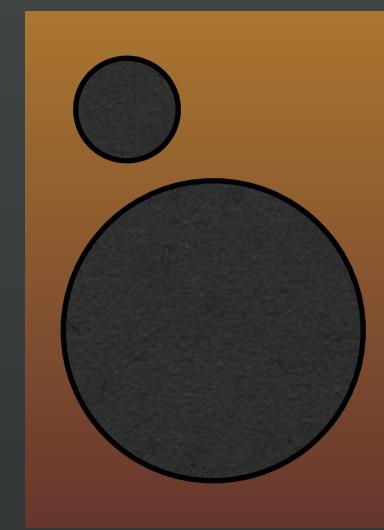
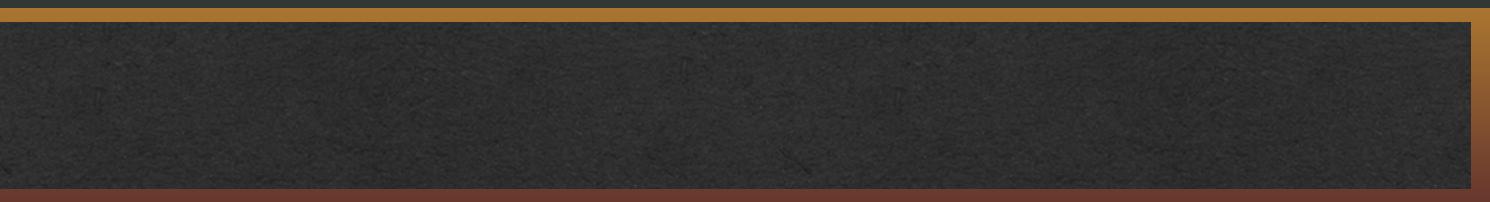
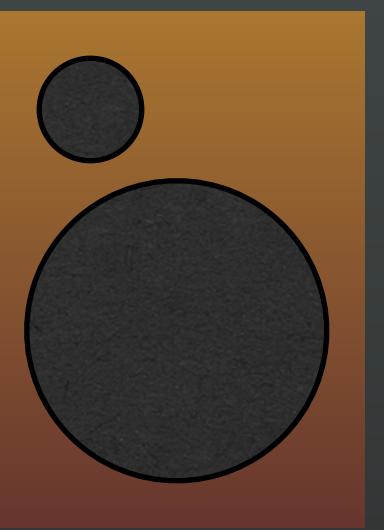


**Stereo**

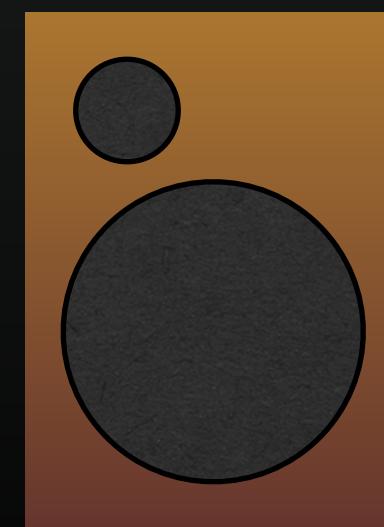
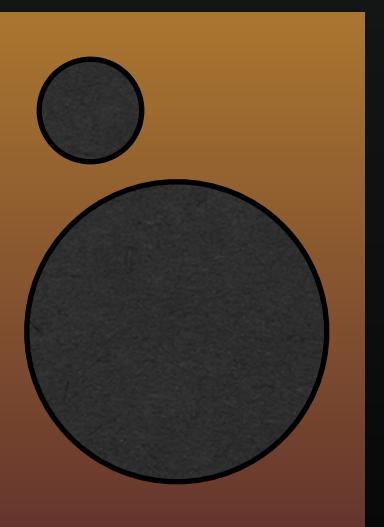
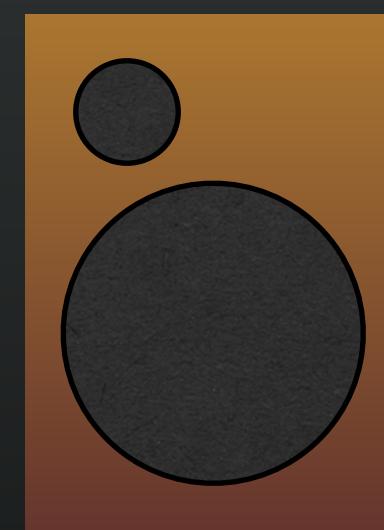
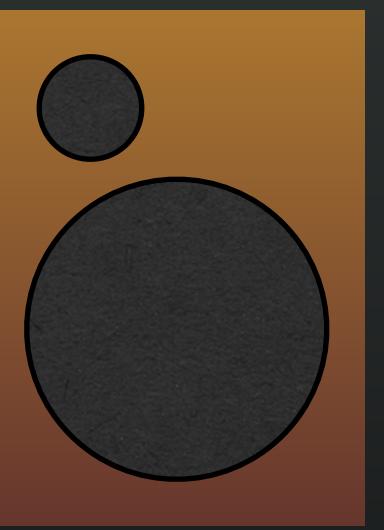
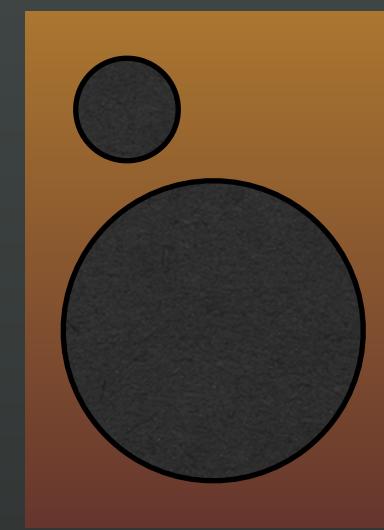
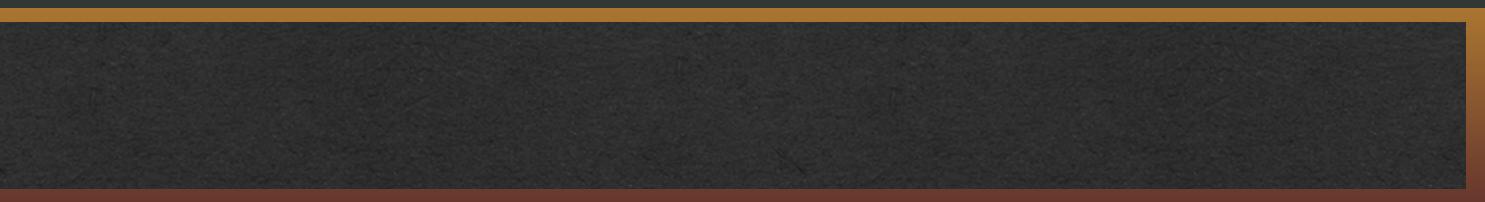
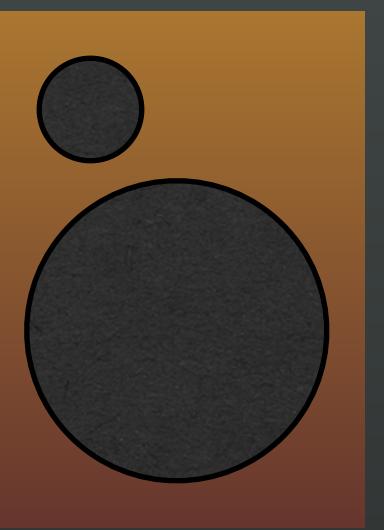


# Surround Sound

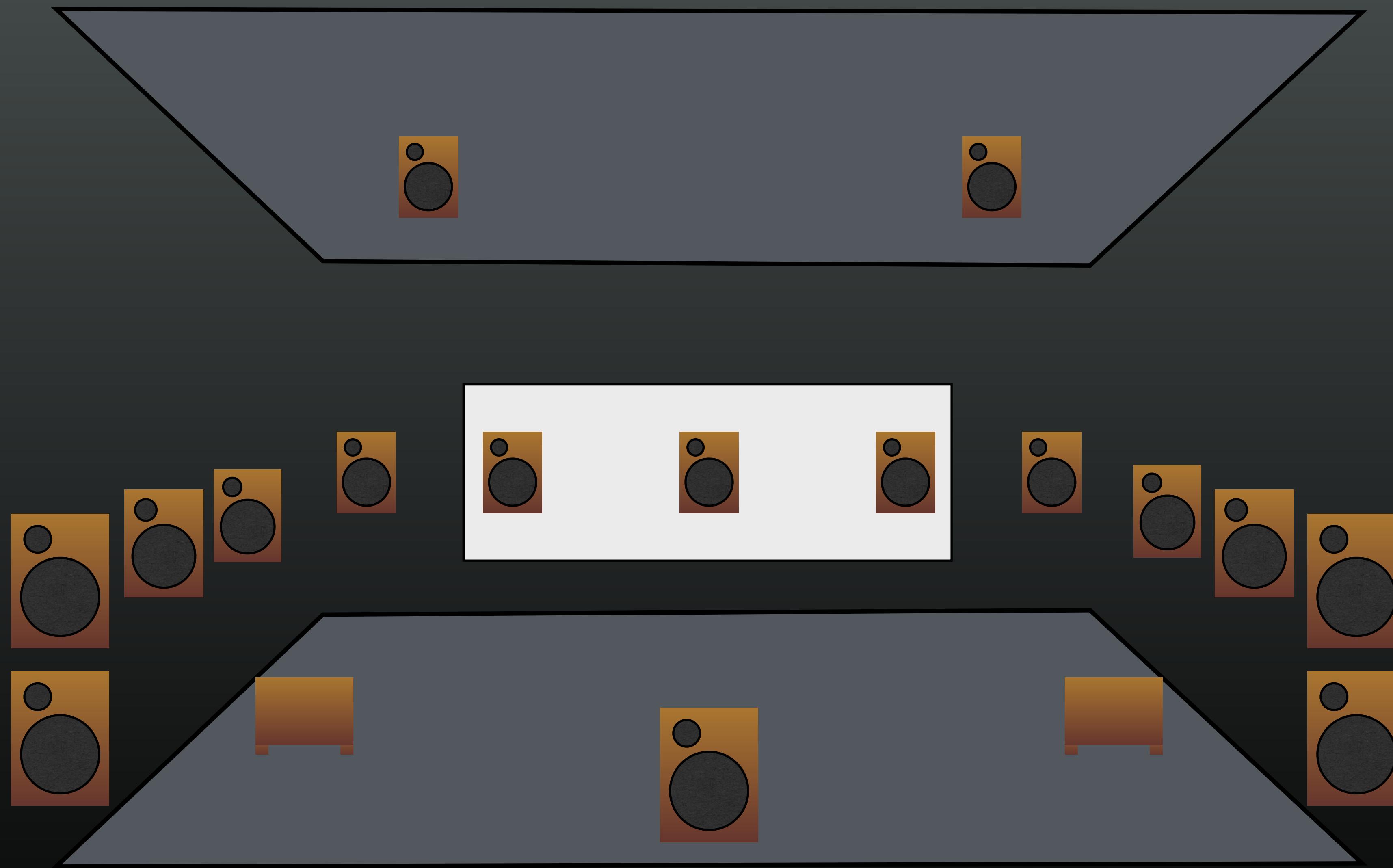


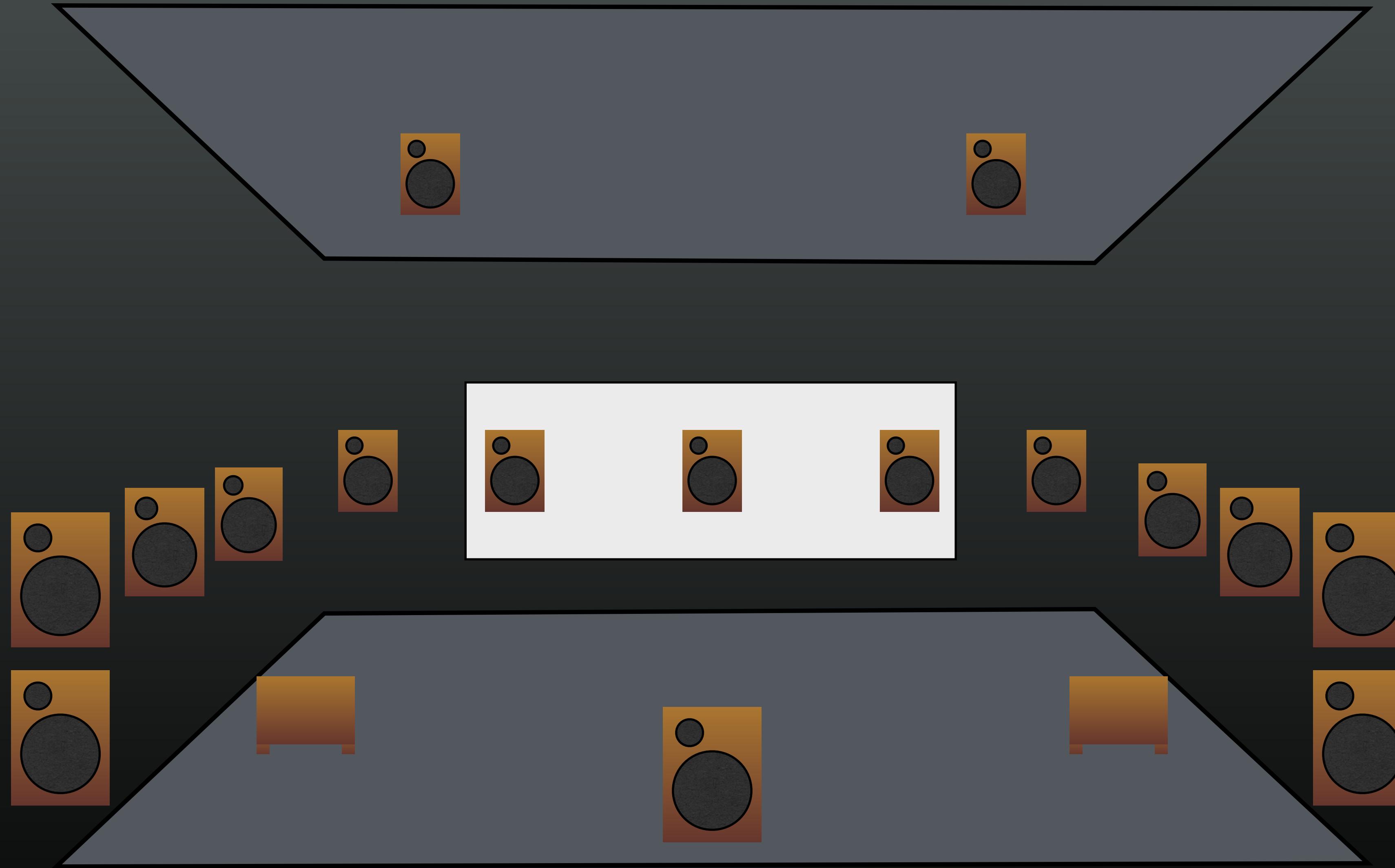


# 5.1 Channel Surround

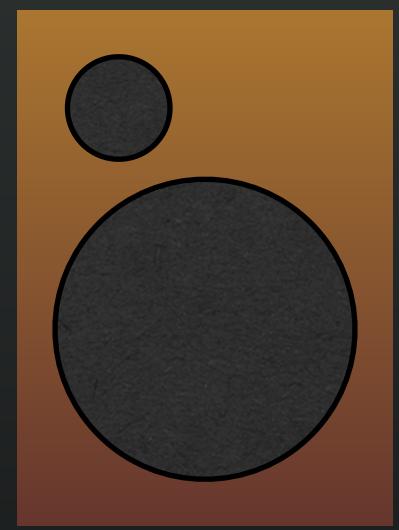


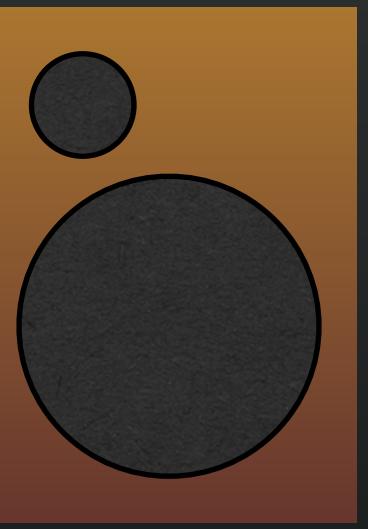
# 7.1 Channel Surround



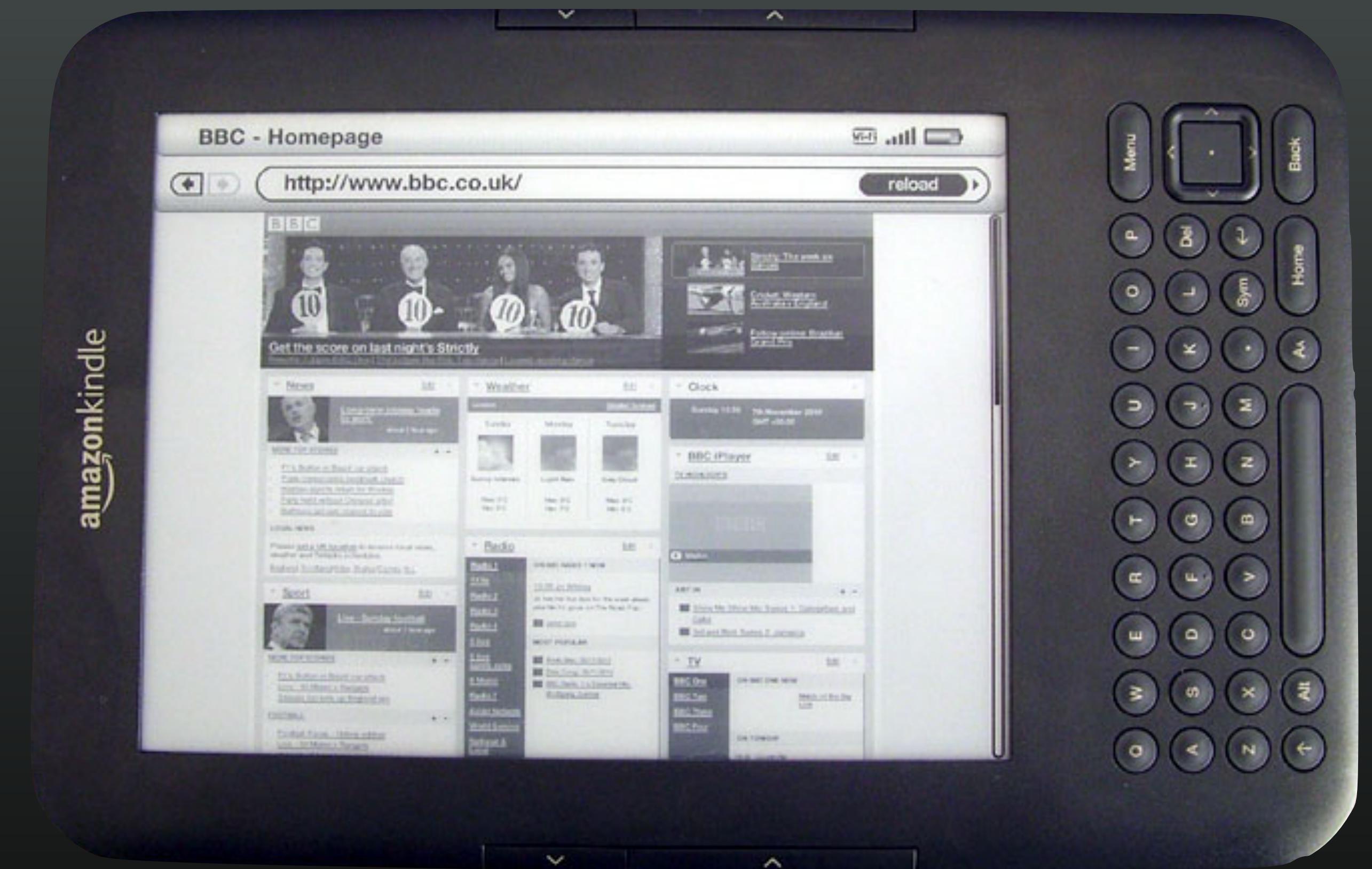


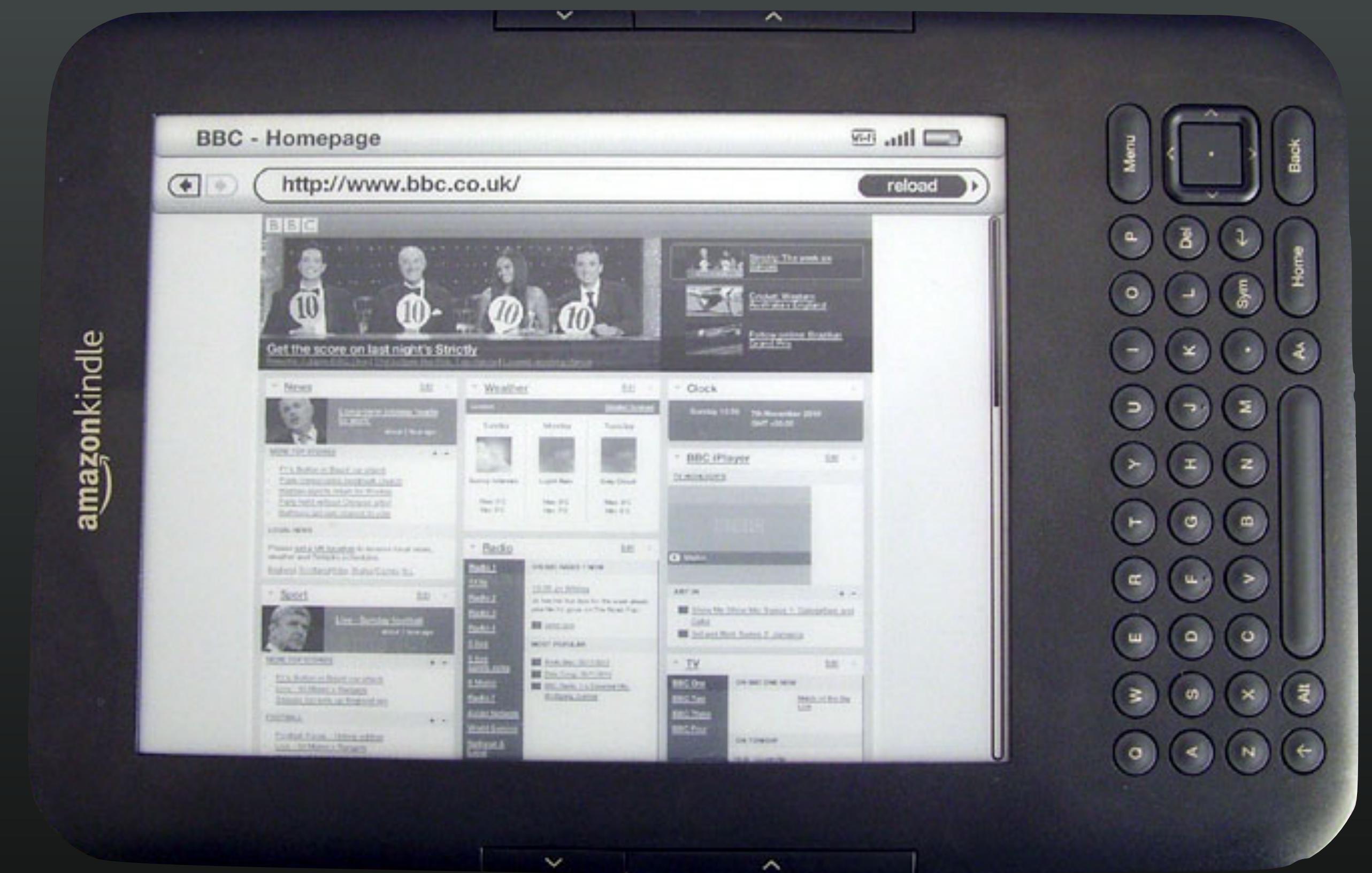
# 16.2 Channel Surround





**Sometimes it's  
all you need**





Kindle 3 = Free global data



# Graceful Degradation

# Modern Browsers

Older Browsers

# Modern Browsers



Older Browsers

# Modern Browsers



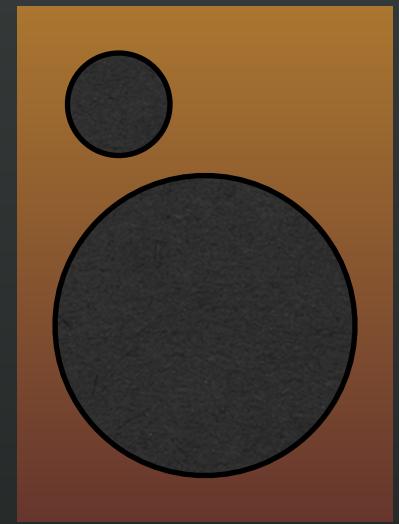


**Andrew Wight**  
@AndrewUX

Progressive enhancement is an escalator that becomes stairs.  
Graceful degradation is building a lift then having to add  
stairs.

14 May 12

 Reply  Retweet  Favorite



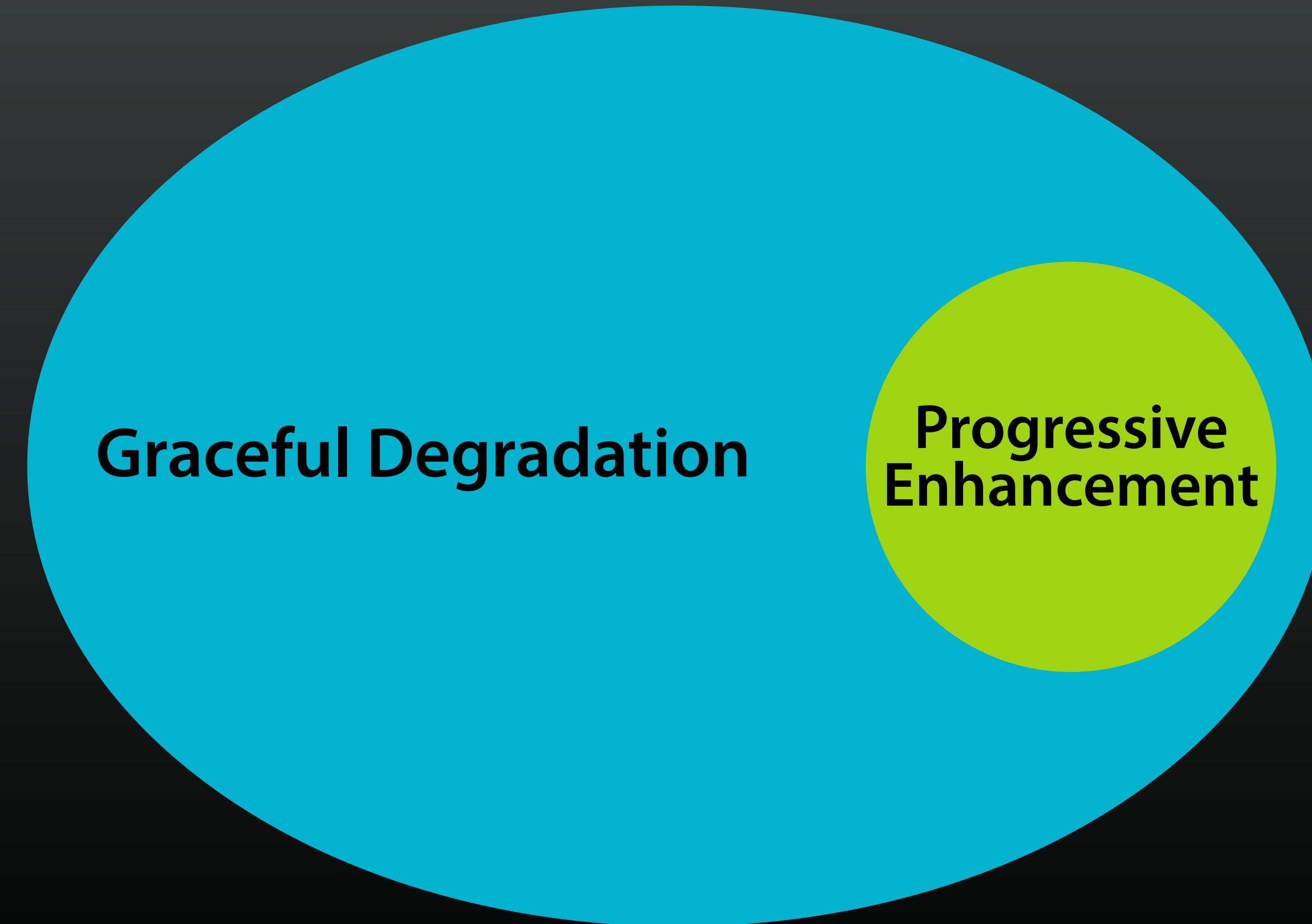


I'm sorry,  
you need  
more channels



**YOU MUST BE THIS TALL  
TO RIDE WITH AN ADULT**

# They're actually related





Technological  
restrictions

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# Sky's internet service mistakenly blocks web-critical plugin

Sky blocked jQuery, a plugin crucial to the operation of many of the internet's biggest websites, after wrongly classifying it as malware on Sunday night

Alex Hern

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theguardian.com, Tuesday 28 January 2014 07.51 EST

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Parts of the web were broken after a crucial plugin was mistakenly blocked.  
Photograph: Culture RM/Alamy

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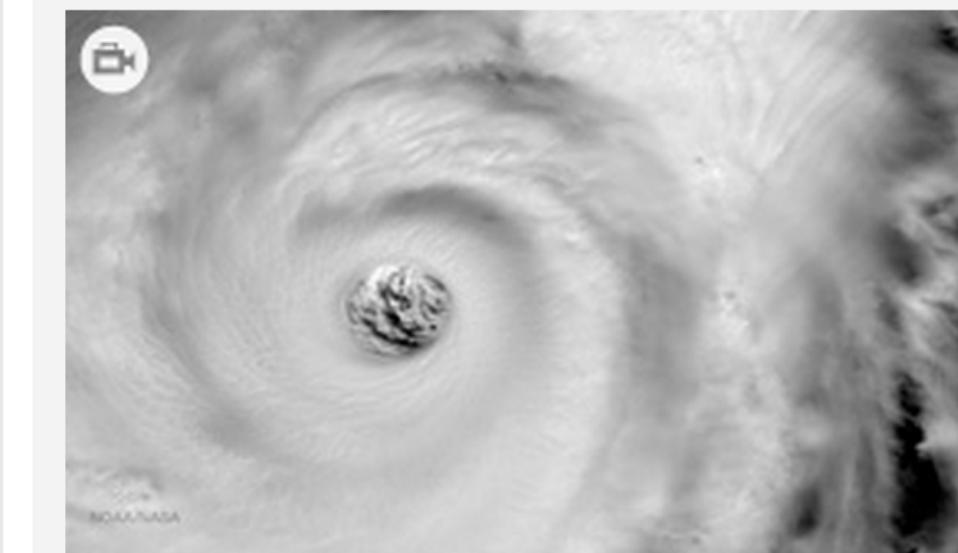
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BSkyB signs new five-year deal for exclusive rights to HBO TV catalogue  
Broadcaster struck

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### Japan's Typhoon Vongfong seen from International Space Station - video

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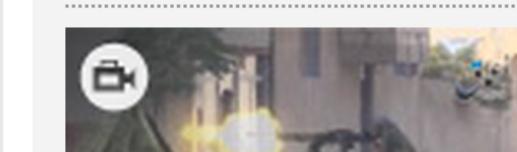
### Ukrainian Darth Vader makes election run

Who knew Star Wars villain Darth Vader was in fact a Ukrainian Cossack at heart?



### Robotic suit helps explore ancient wreck

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Video posted on social

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The Washington Post

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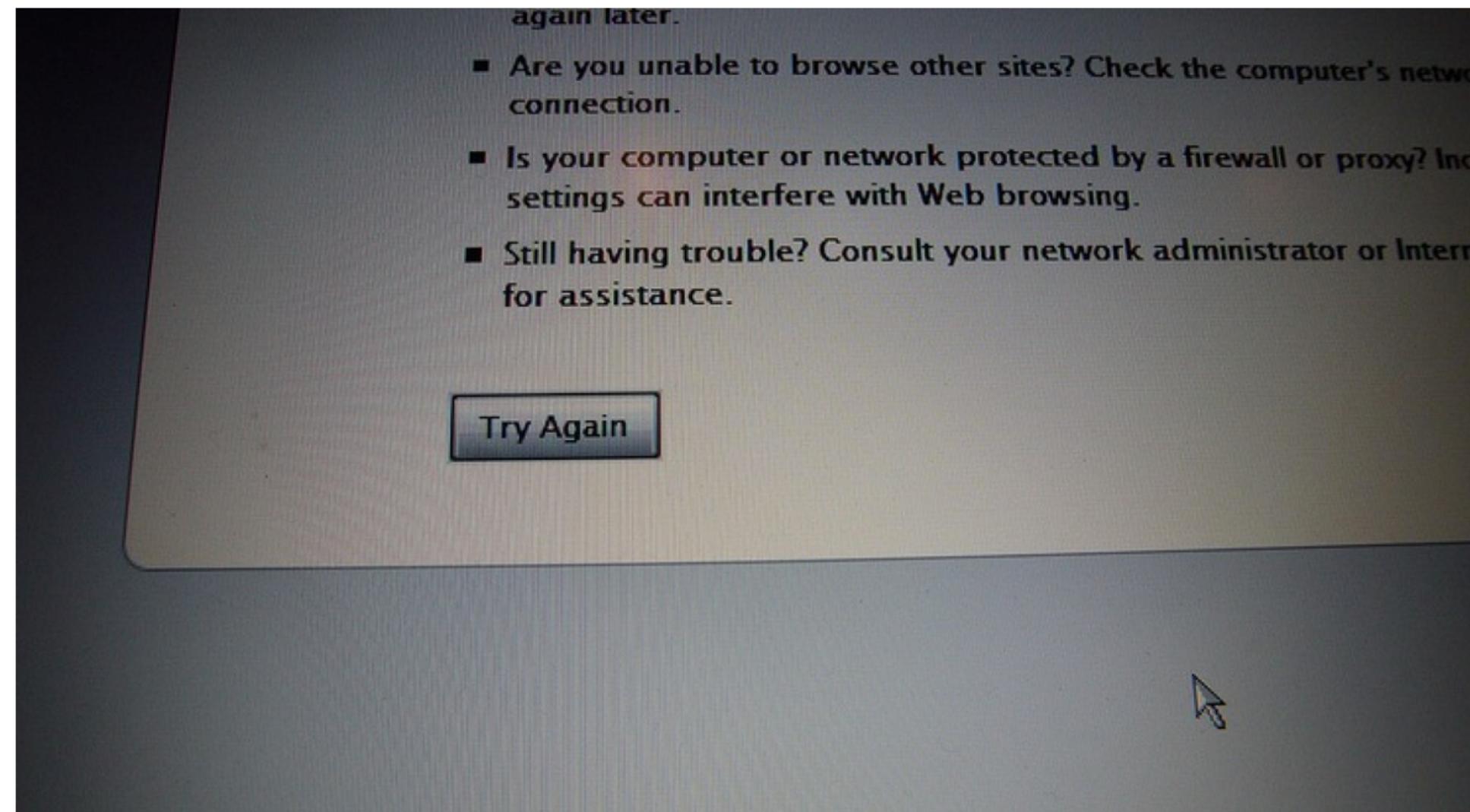
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The Switch

# FCC to Marriott: No, you can't force your customers onto terrible hotel WiFi



By Brian Fung October 3



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# Aw, Snap!

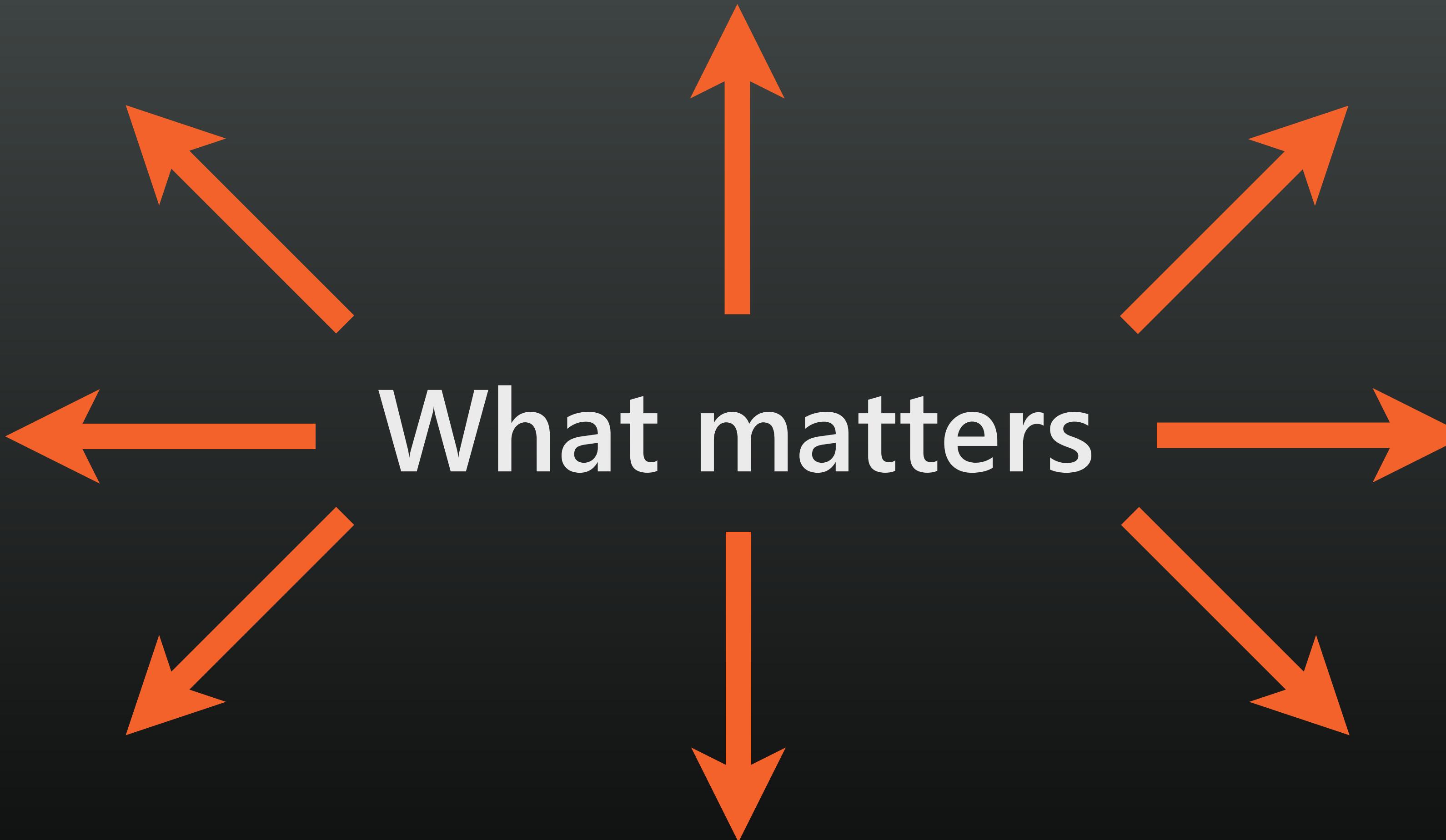
Google Chrome ran out of memory while trying to display this webpage.

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# What matters

What matters



“Mobile first”

It's all about process

# Step by step

1. Focus on what matters.

# Step by step

1. Focus on what matters.



● GOVERNMENT

Obamacare sign-ups begin; cost-sharing reduction still available

By CHLOÉ MORRISON

# Step by step

1. Focus on what matters.

*The essential nugget*



● GOVERNMENT

Obamacare sign-ups begin; cost-sharing reduction still available

By CHLOÉ MORRISON

# Step by step

2. Write it out, then read it back.

# Step by step

2. Write it out, then read it back.

**How does this photo make you feel?**

- Embarrassing
- Upsetting
- Saddening
- Bad Photo
- Other

# Step by step

2. Write it out, then read it back.

**How does this photo make you feel?**

- Embarrassing
- Upsetting
- Saddening
- Bad Photo
- Other

# Step by step

2. Write it out, then read it back.

**How does this photo make you feel?**

- Embarrassing
- Upsetting
- Saddening
- Bad Photo
- Other it's embarrassing

# Step by step

2. Write it out, then read it back.

Please describe the photo

- It's embarrassing
- It's a bad photo of me
- It makes me sad

# Step by step

3. Look for semantics that support 1 & 2.

# Step by step

3. Look for semantics that support 1 & 2.



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# Step by step

3. Look for semantics that support 1 & 2.



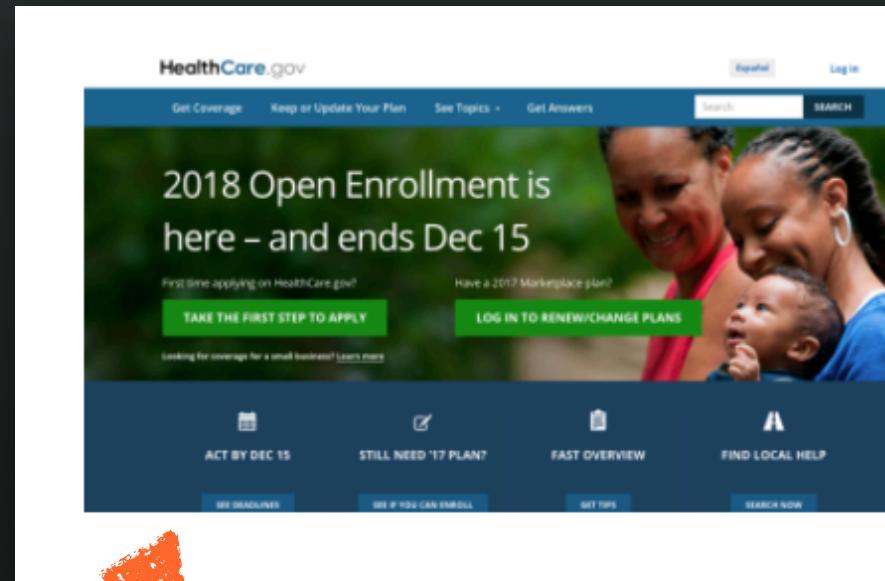
# Step by step

3. Look for semantics that support 1 & 2.

.h-entry (feed)

a (also rel-tag)

heading (also .p-name)  
a (also .u-url)



img (also .u-photo)

• GOVERNMENT

Obamacare sign-ups begin; cost-sharing reduction still available

By CHLOÉ MORRISON

paragraph  
a  
(also .p-author  
& .h-card)



# Step by step

4. Think about how design can improve comprehension.



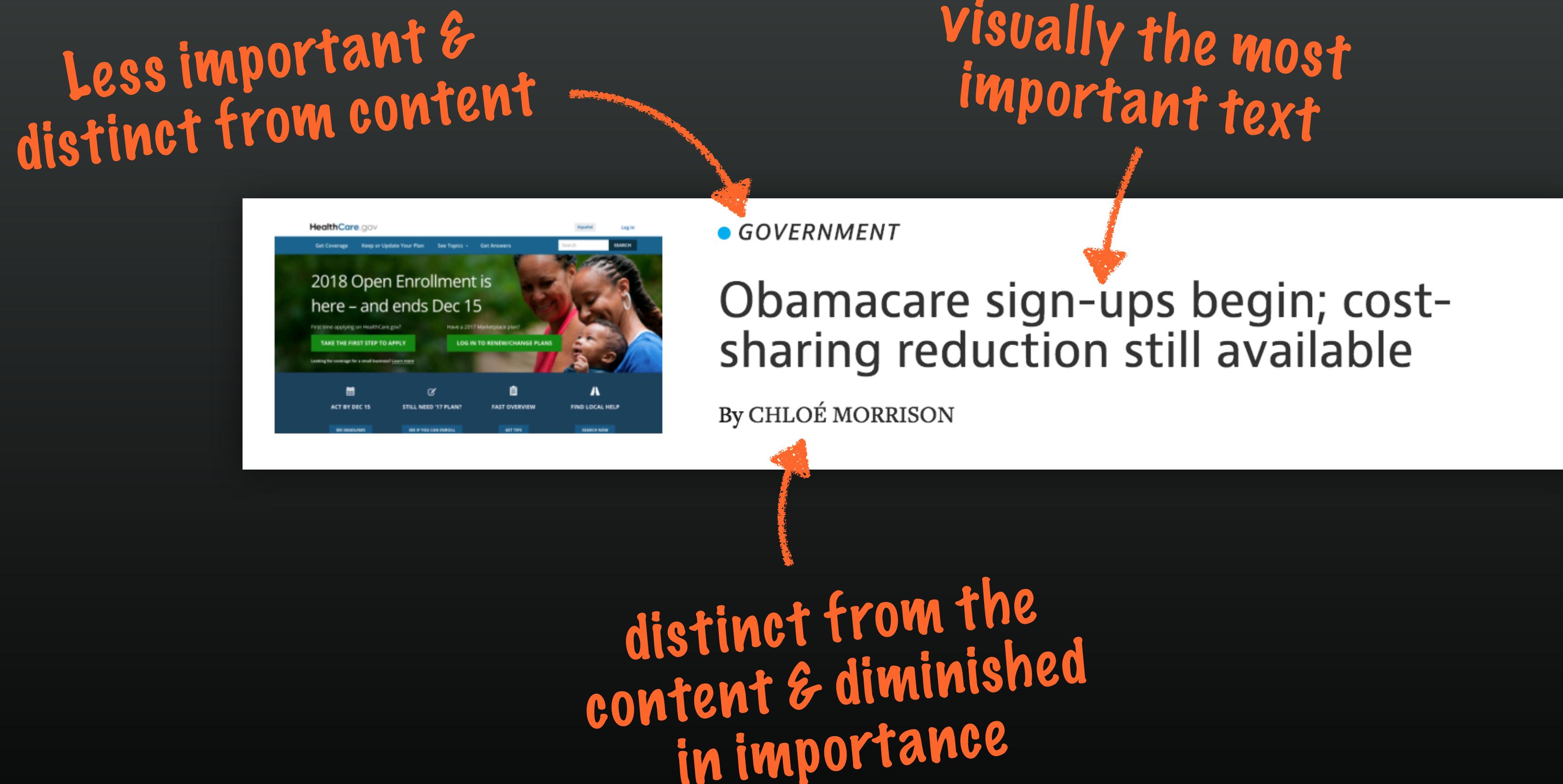
● GOVERNMENT

Obamacare sign-ups begin; cost-sharing reduction still available

By CHLOÉ MORRISON

# Step by step

4. Think about how design can improve comprehension.

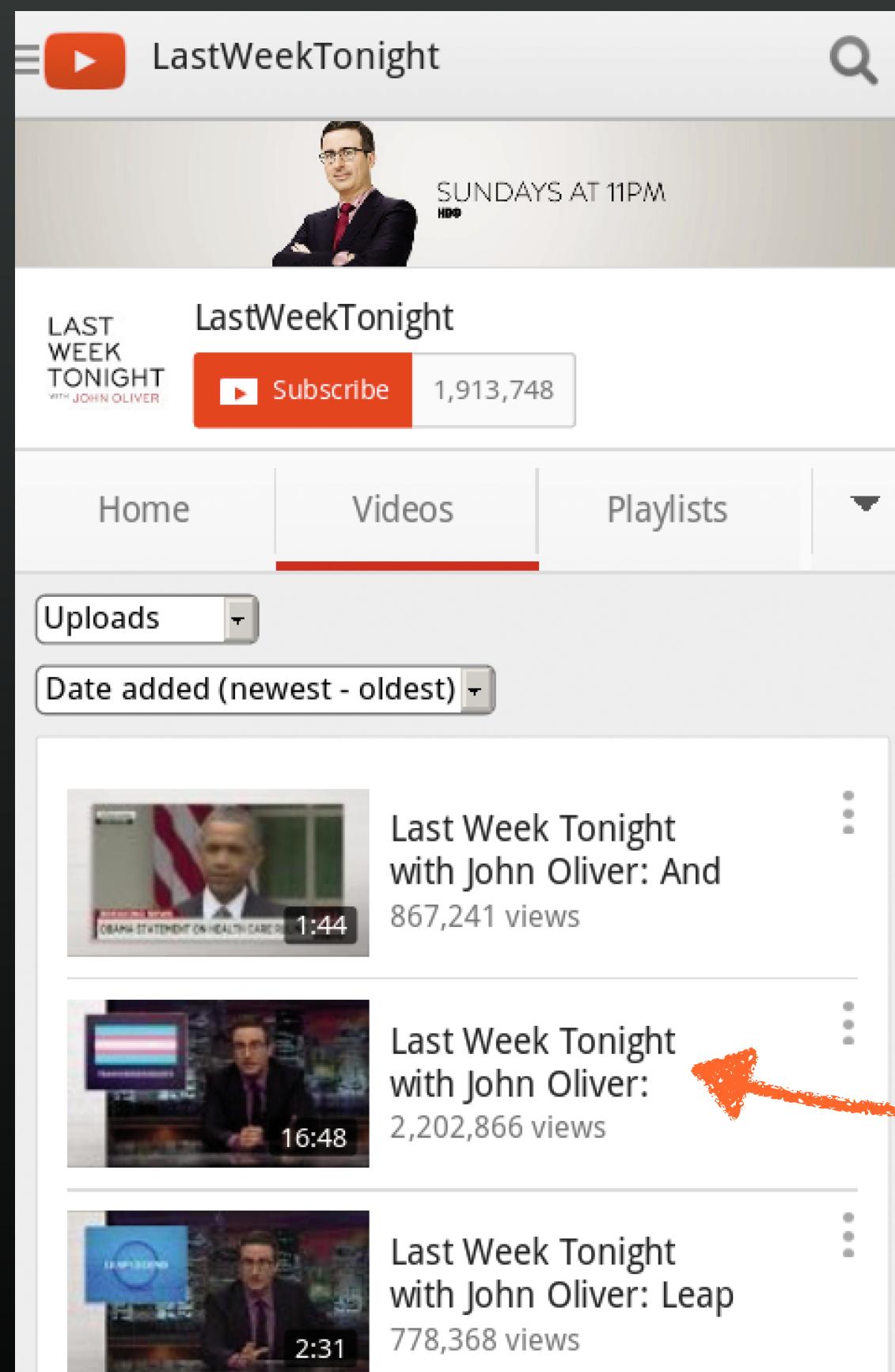


# Step by step

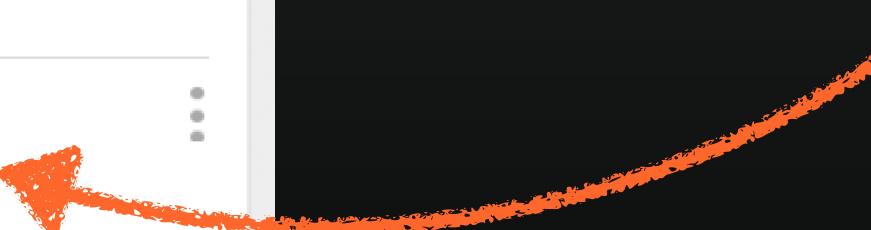
5. Consider how your design choices impact the reading experience.

# Step by step

5. Consider how your design choices impact the reading experience.

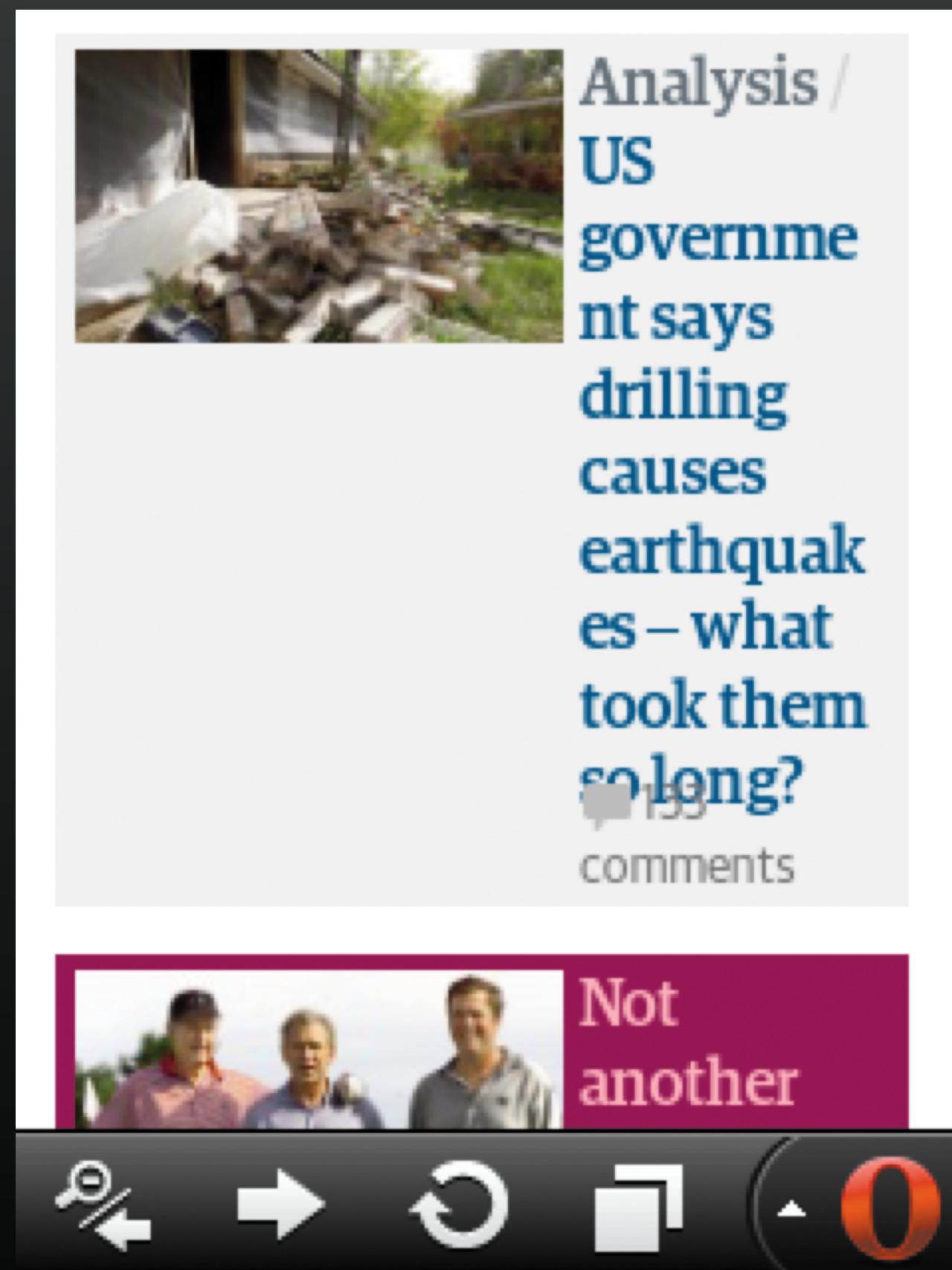


Can't tell what the  
episode is called



# Step by step

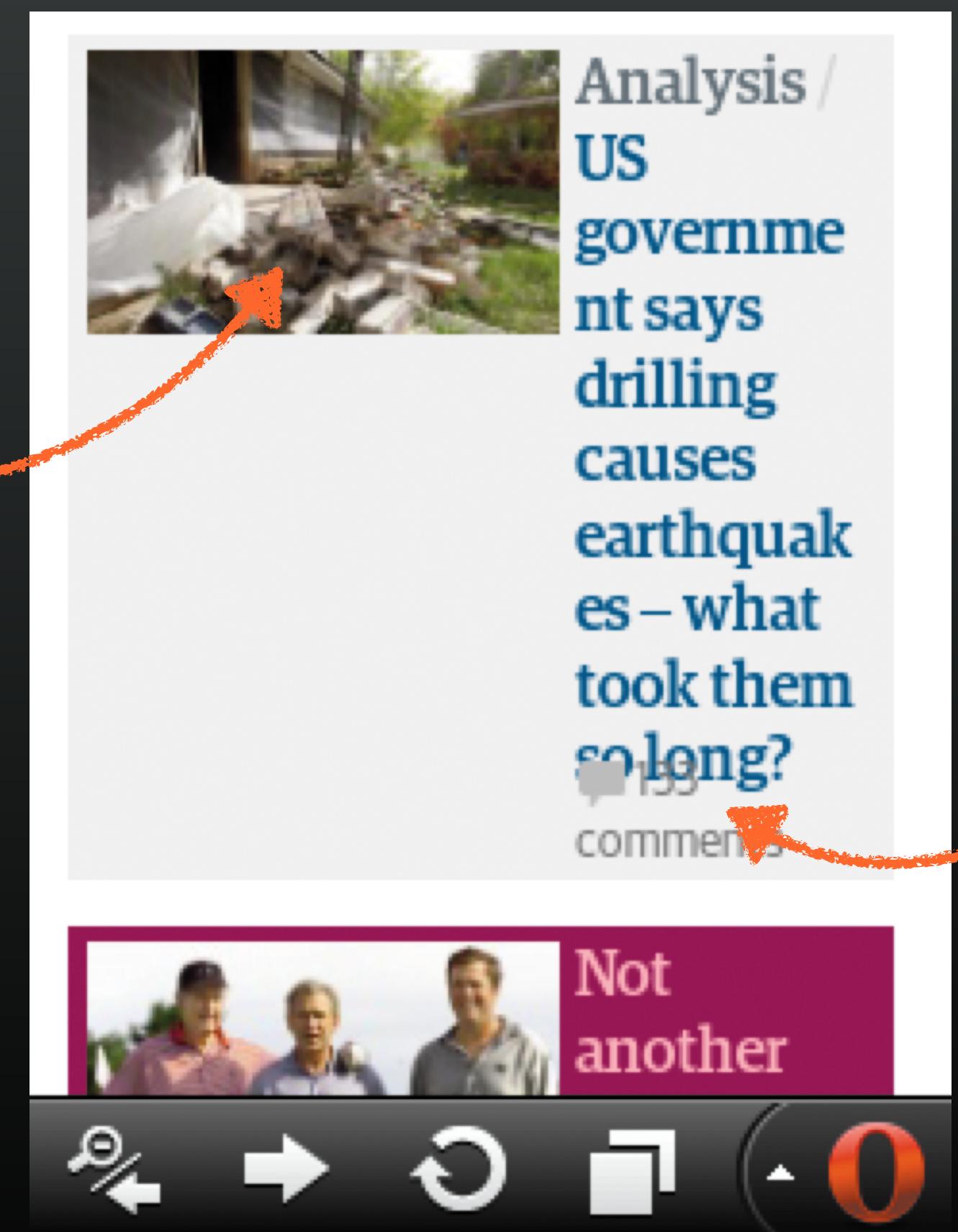
5. Consider how your design choices impact the reading experience.



# Step by step

5. Consider how your design choices impact the reading experience.

Floated images crush the  
text on small screens

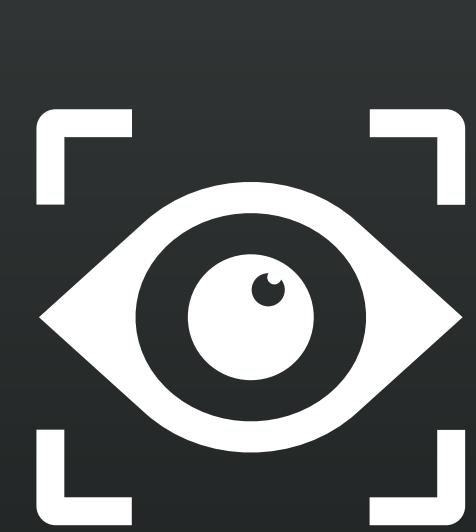


# Step by step

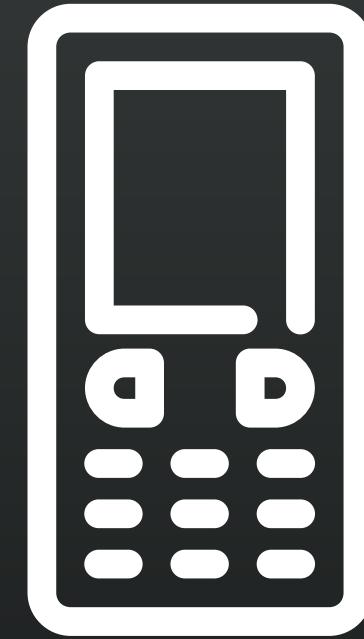
6. Think about the many different ways folks might interact.

# Step by step

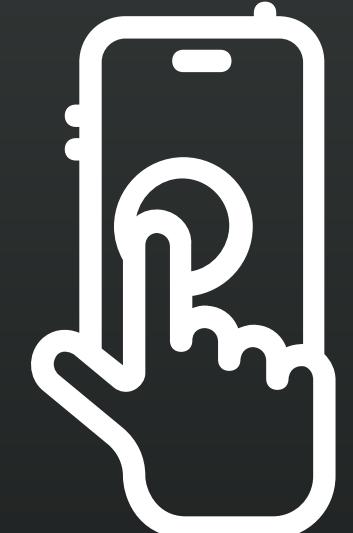
6. Think about the many different ways folks might interact.



eye tracking



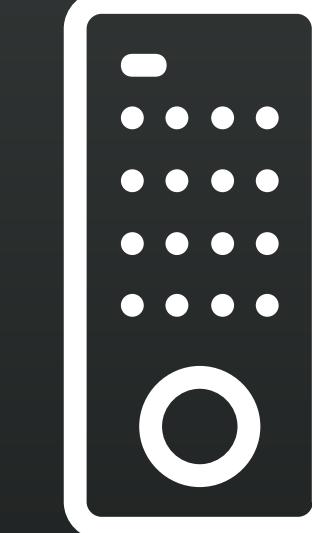
T9



touch



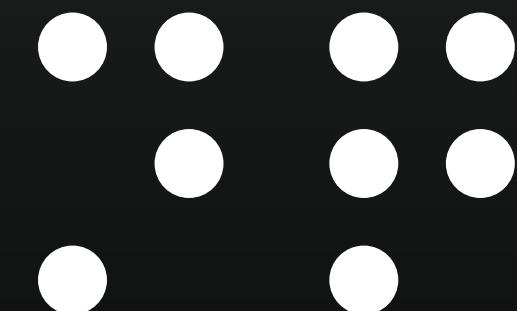
mouse



remote



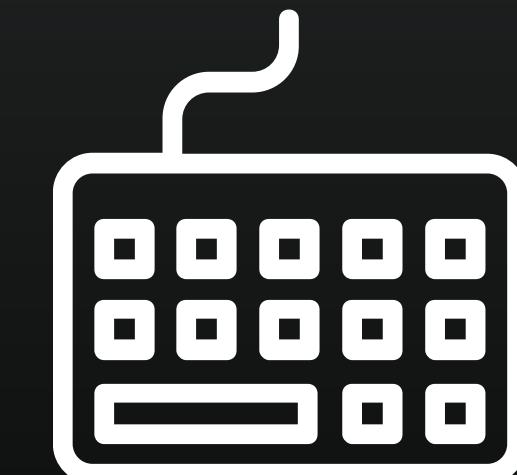
pen



braille



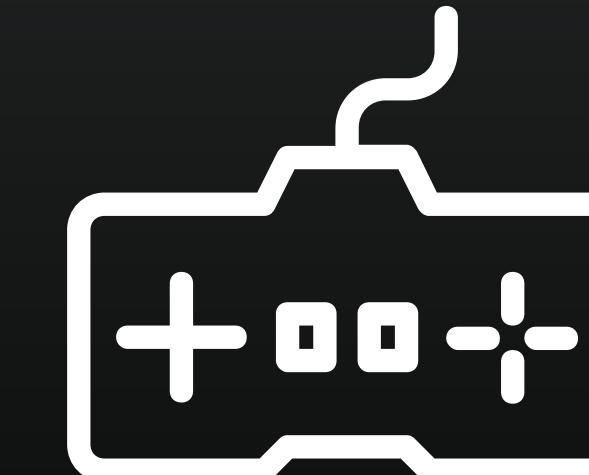
print



keyboard



audio



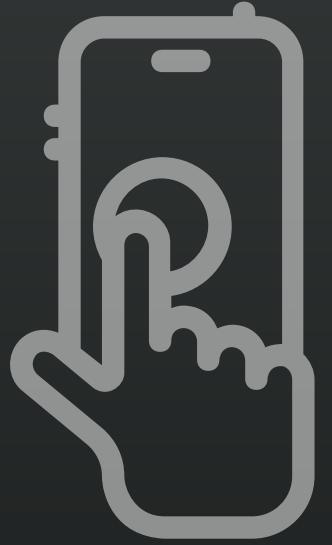
gamepad

# Step by step

6. Think about the many different ways folks might interact.



eye tracking



touch



mouse

Hover?

# Step by step

6. Think about the many different ways folks might interact.



eye tracking



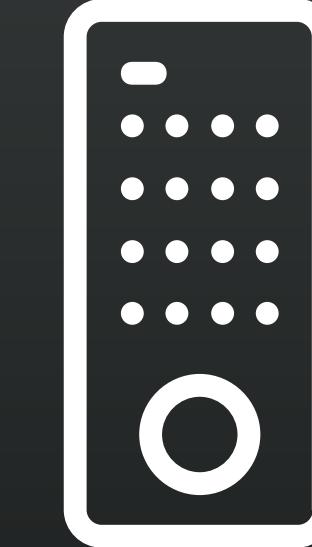
T9



touch



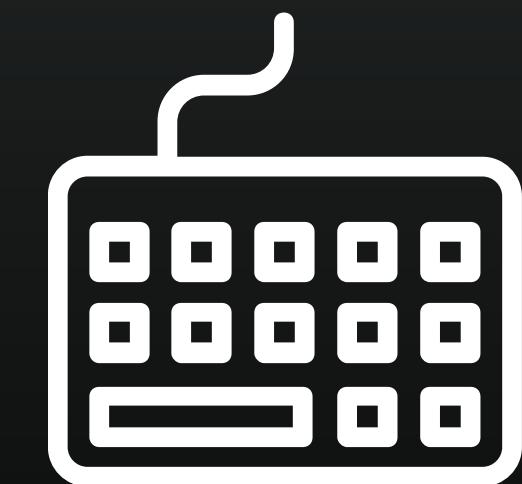
mouse



remote



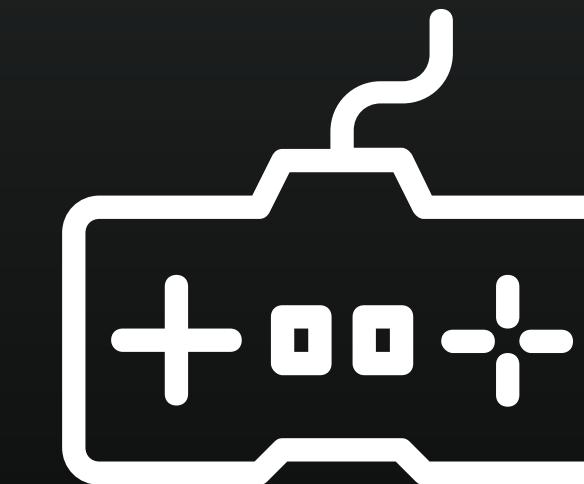
pen



keyboard



audio

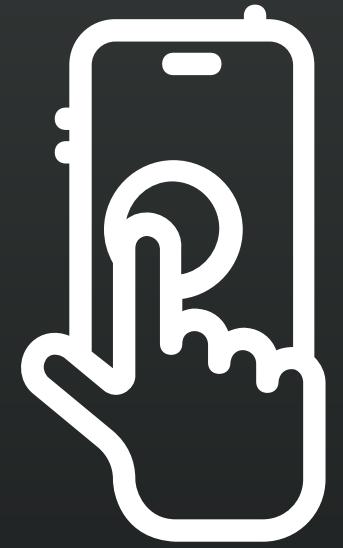


gamepad

Focus & target?

# Step by step

6. Think about the many different ways folks might interact.



touch



mouse

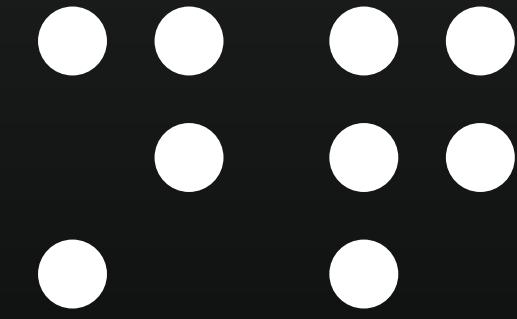


pen

Gestures?

# Step by step

6. Think about the many different ways folks might interact.



braille



print



audio

Text expansions?

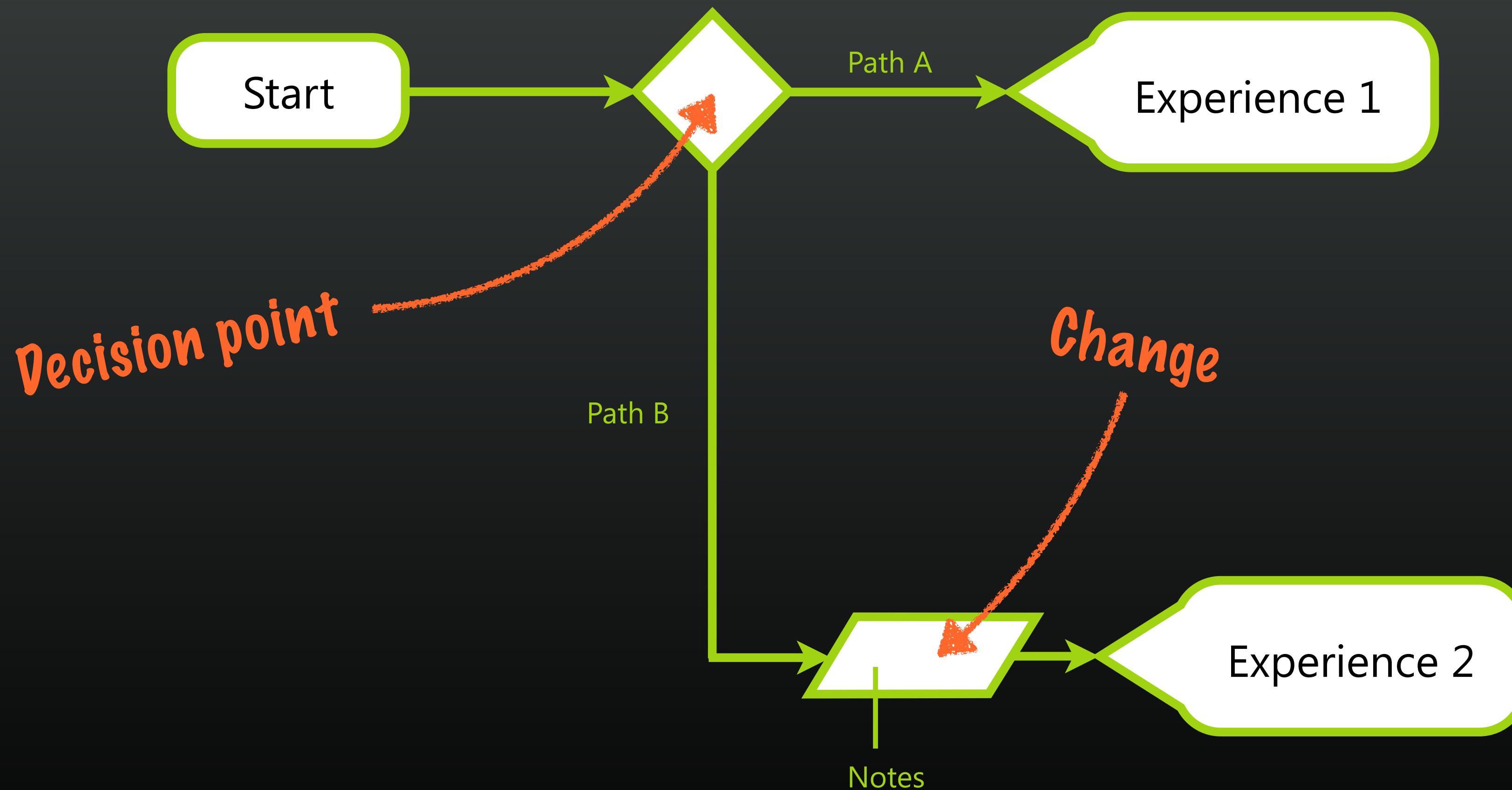
Created by  
from the N

# Step by step

7. Map the potential experiences.

# Step by step

7. Map the potential experiences.



# Step by step

1. Focus on what matters.
2. Write it out, then read it back.
3. Look for semantics that support 1 & 2.
4. Think about how design can improve comprehension.
5. Consider how your design choices impact the reading experience.
6. Think about the many different ways folks might interact.
7. Map the potential experiences.

# Step by step

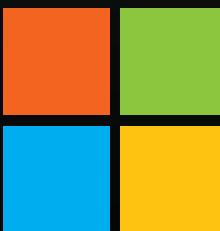
1. Focus on what matters.
2. Write it out, then read it back.
3. Look for semantics that support 1 & 2.
4. Think about how design can improve comprehension.
5. Consider how your design choices impact the reading experience.
6. Think about the many different ways folks might interact.
7. Map the potential experiences.
8. Iterate.

# Thank you!

@AaronGustafson

aaron-gustafson.com

noti.st/AaronGustafson



Microsoft