

# SCREEN TIME

USER INTERFACE 19



LUKE WROBLEWSKI

**LUKEW**  
IDEATION + DESIGN

IN 1952 AT...

# CORNING

---

900° CELSIUS



# GLASS

---

**7,000**  
LB/SQ. INCH



# 0317

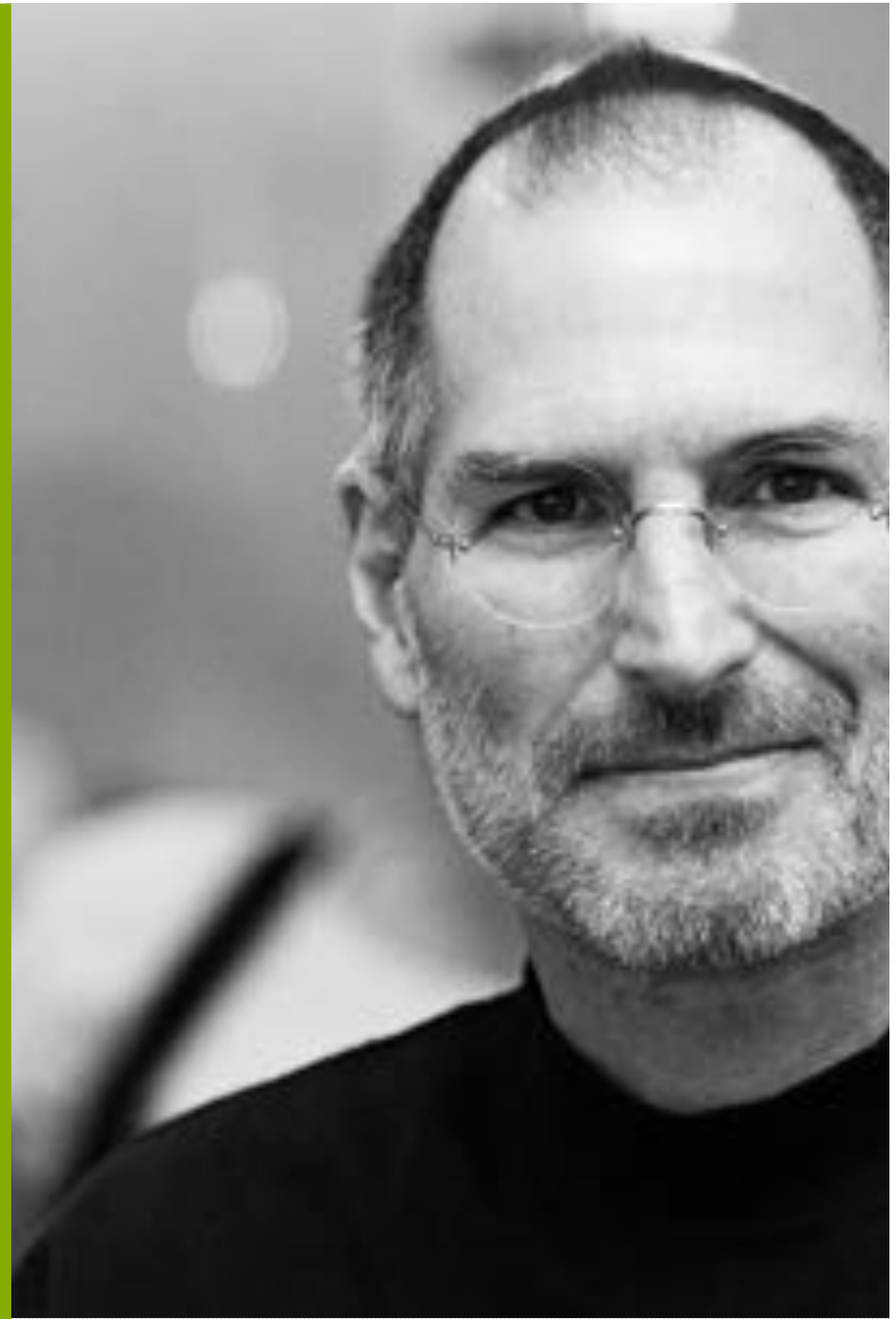
---

**100,000**  
LB/SQ. INCH





“Make millions of square feet of ultrathin, ultrastrong glass that doesn’t yet exist.”



# 7 FOOTBALL FIELDS





CORNING  
Gorilla® Glass

2013

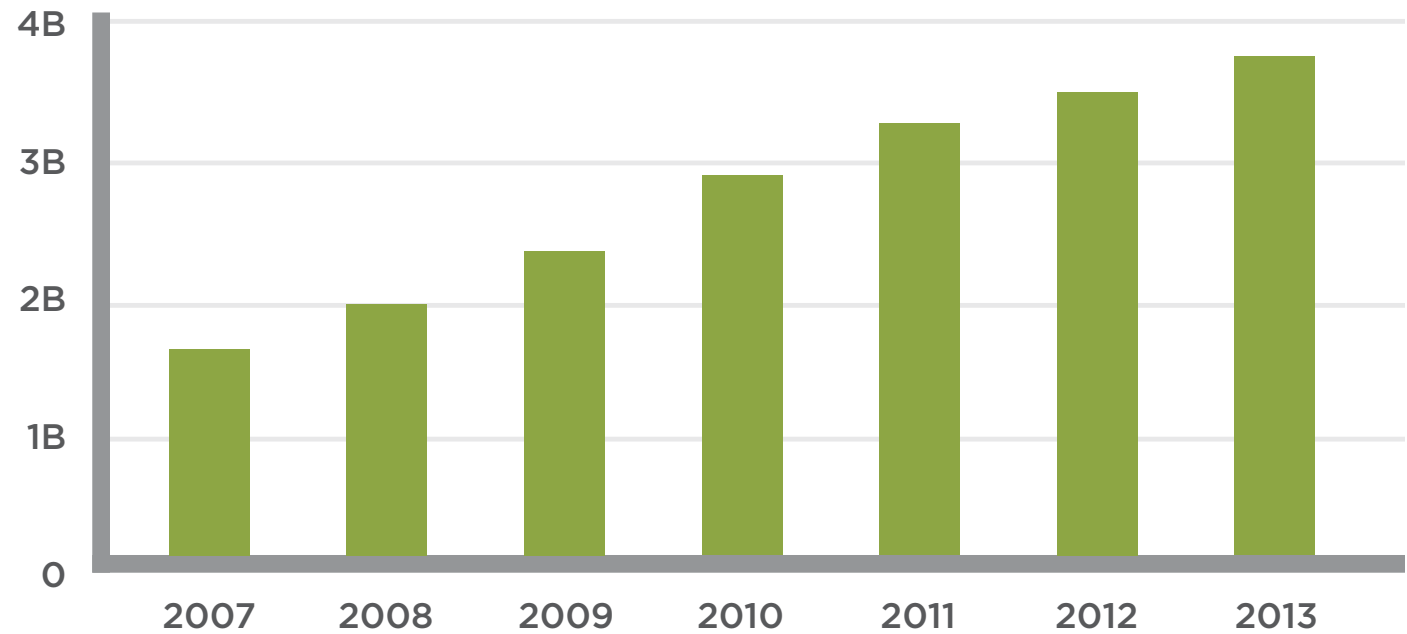
**1.5B** CONSUMER  
DEVICES

**2X** OVER NEXT  
FEW YEARS

CORNING  
Gorilla® Glass

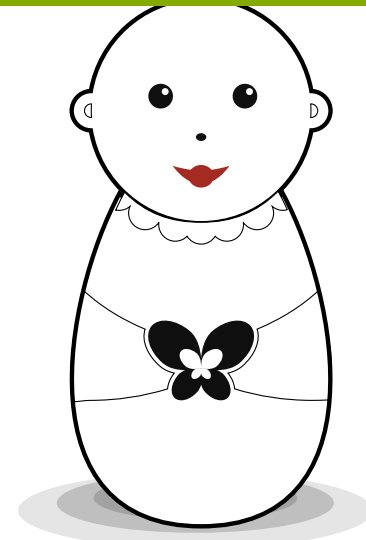
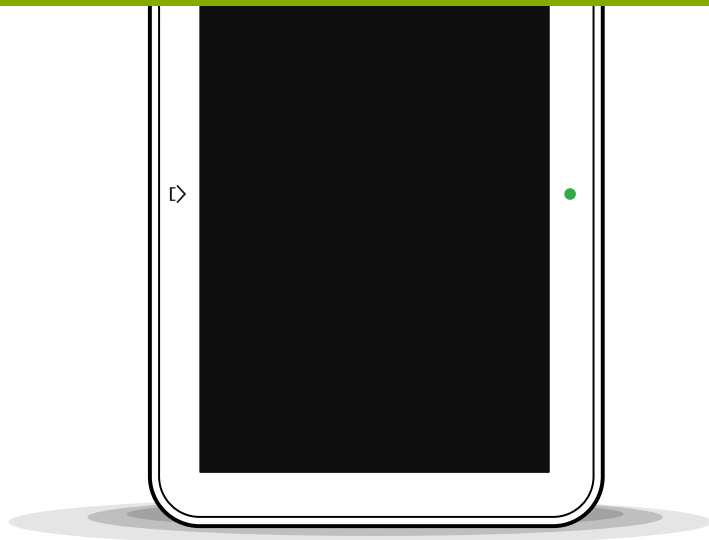


GLOBAL LCD SCREEN SALES (SQ. FEET)



“Half a square foot of LCD screen sold for every human on earth.”

IN JUST ONE YEAR



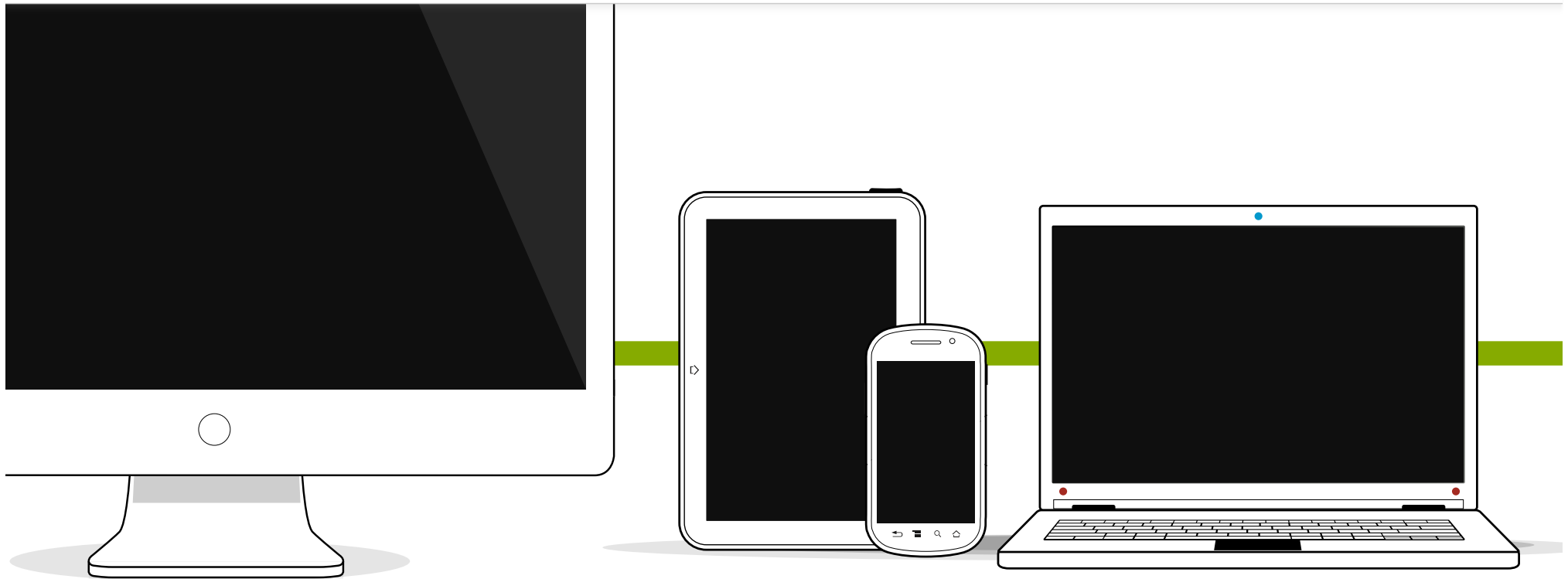
“We care about [the display] because we know that’s the window to the software.”

& the Internet!



IN A WORLD OF GLASS...

Online time is **screen time**.





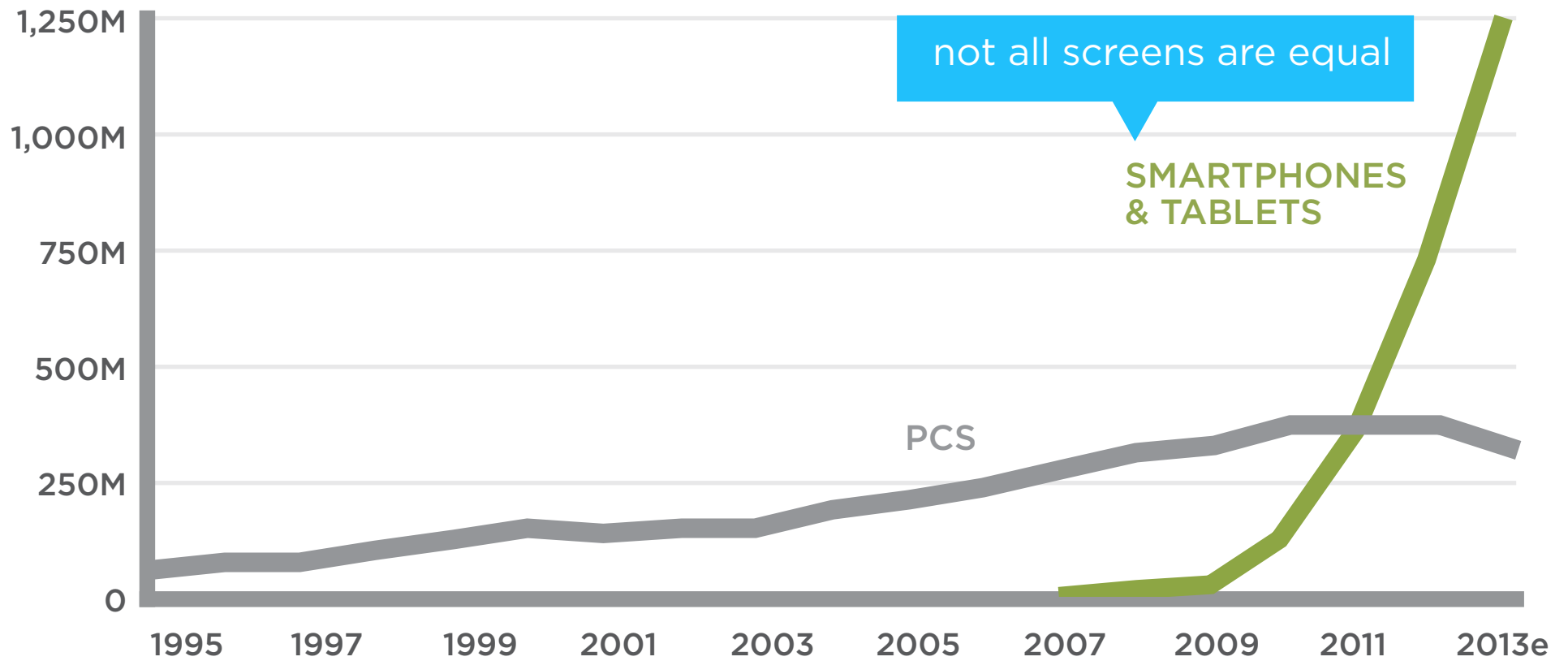
		Mode Browser									
		for portrait (on Fullscreen)		for landscape							
		Viewport	Non-constrained	Constrained	Constrained	Viewport	Non-constrained	Constrained	Constrained	Viewport	Non-constrained
		Device	Width	Height	Width	Device	Width	Height	Width	Device	Width
iOS v7.0	screen.width	320	320	320	320	320	320	320	320	320	320
	screen.availWidth	320	320	320	320	320	320	320	320	320	320
	window.innerWidth	320	320	320	320	320	320	320	320	320	320
	window.innerHeight	460	460	460	460	460	460	460	460	460	460
	document.body.clientWidth	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000
	document.body.offsetWidth	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000
	document.body.clientHeight	320	320	320	320	320	320	320	320	320	320
	document.body.offsetHeight	460	460	460	460	460	460	460	460	460	460
	screen.height	460	460	460	460	460	460	460	460	460	460
	screen.availHeight	460	460	460	460	460	460	460	460	460	460
	window.outerHeight	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460
	window.outerWidth	320	320	320	320	320	320	320	320	320	320
	document.body.clientWidth	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000
	document.body.offsetWidth	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000
	document.body.clientHeight	320	320	320	320	320	320	320	320	320	320
	document.body.offsetHeight	460	460	460	460	460	460	460	460	460	460

“Wow. Painful, on the whole.”

		Mode Browser									
		for portrait (on Fullscreen)		for landscape							
		Viewport	Non-constrained	Constrained	Constrained	Viewport	Non-constrained	Constrained	Constrained	Viewport	Non-constrained
		Device	Width	Height	Width	Device	Width	Height	Width	Device	Width
Android v4.0	screen.width	320	320	320	320	320	320	320	320	320	320
	screen.availWidth	320	320	320	320	320	320	320	320	320	320
	window.innerWidth	320	320	320	320	320	320	320	320	320	320
	window.innerHeight	460	460	460	460	460	460	460	460	460	460
	document.body.clientWidth	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000
	document.body.offsetWidth	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000
	document.body.clientHeight	320	320	320	320	320	320	320	320	320	320
	document.body.offsetHeight	460	460	460	460	460	460	460	460	460	460
	screen.height	460	460	460	460	460	460	460	460	460	460
	screen.availHeight	460	460	460	460	460	460	460	460	460	460
	window.outerHeight	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460	320px-460
	window.outerWidth	320	320	320	320	320	320	320	320	320	320
	document.body.clientWidth	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000
	document.body.offsetWidth	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000	~1000
	document.body.clientHeight	320	320	320	320	320	320	320	320	320	320
	document.body.offsetHeight	460	460	460	460	460	460	460	460	460	460



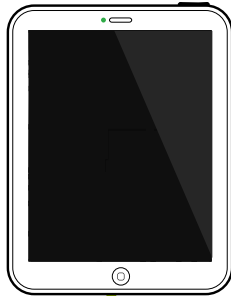
# Global Sales



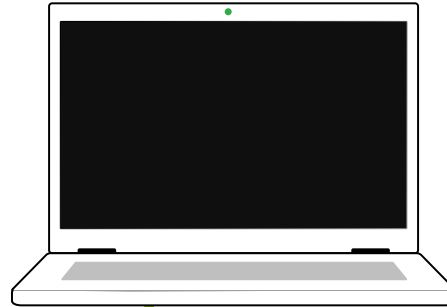
SMARTPHONE



TABLET



LAPTOP



DESKTOP



3"

5"

7"

9"

11"

13"

15"

17"

19"

21"

23"

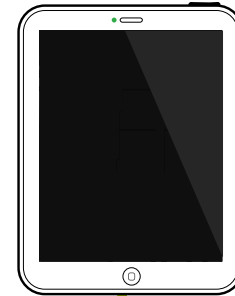
25"

27"

## SMARTPHONE



## TABLET



SMALL

MEDIUM

PHABLETS

SMALL

FULL SIZE

3"

5"

7"

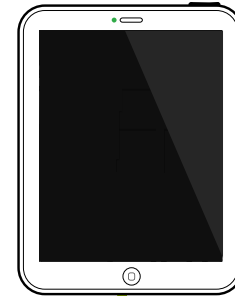
9"

11"

## SMARTPHONE



## TABLET



### Device Models

SMALL

MEDIUM

PHABLETS

SMALL

FULL SIZE

3"

5"

7"

9"

11"

16%

69%

2%

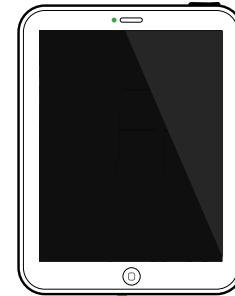
6%

7%

## SMARTPHONE



## TABLET



Active Users

SMALL

MEDIUM

PHABLETS

SMALL

FULL SIZE

3"

5"

7"

9"

11"

7%

72%

3%

5%

13%

## SMARTPHONE



Sessions

SMALL

MEDIUM

PHABLETS

3"

5"

11"

4%

76%

3%

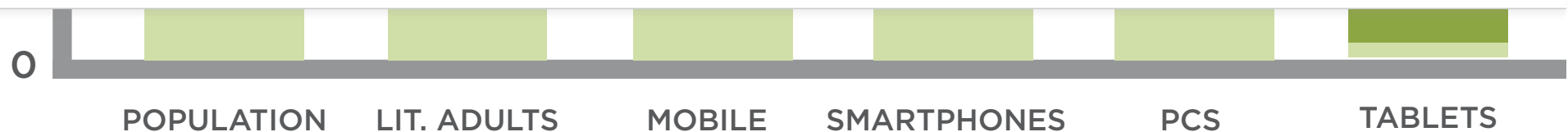


## 2017 Forecast



“Mobile is the first time the consumer tech industry has sold to every single person on earth.”

*This takes some adjustment.*





increasingly mobile

1. Know Your Screen
2. Output
3. Input
4. Posture





1. Know Your Screen
- 2. Output**
3. Input
4. Posture



SMARTPHONE



3"

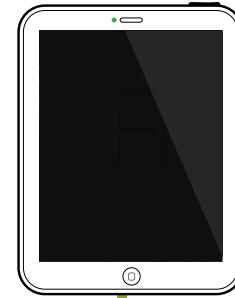
5"

7"

9"

11"

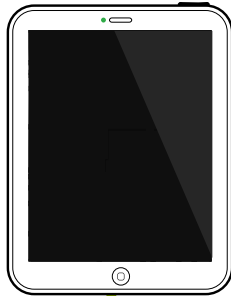
TABLET



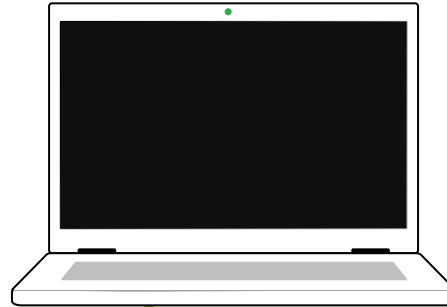
SMARTPHONE



TABLET



LAPTOP



DESKTOP



3"

5"

7"

9"

11"

13"

15"

17"

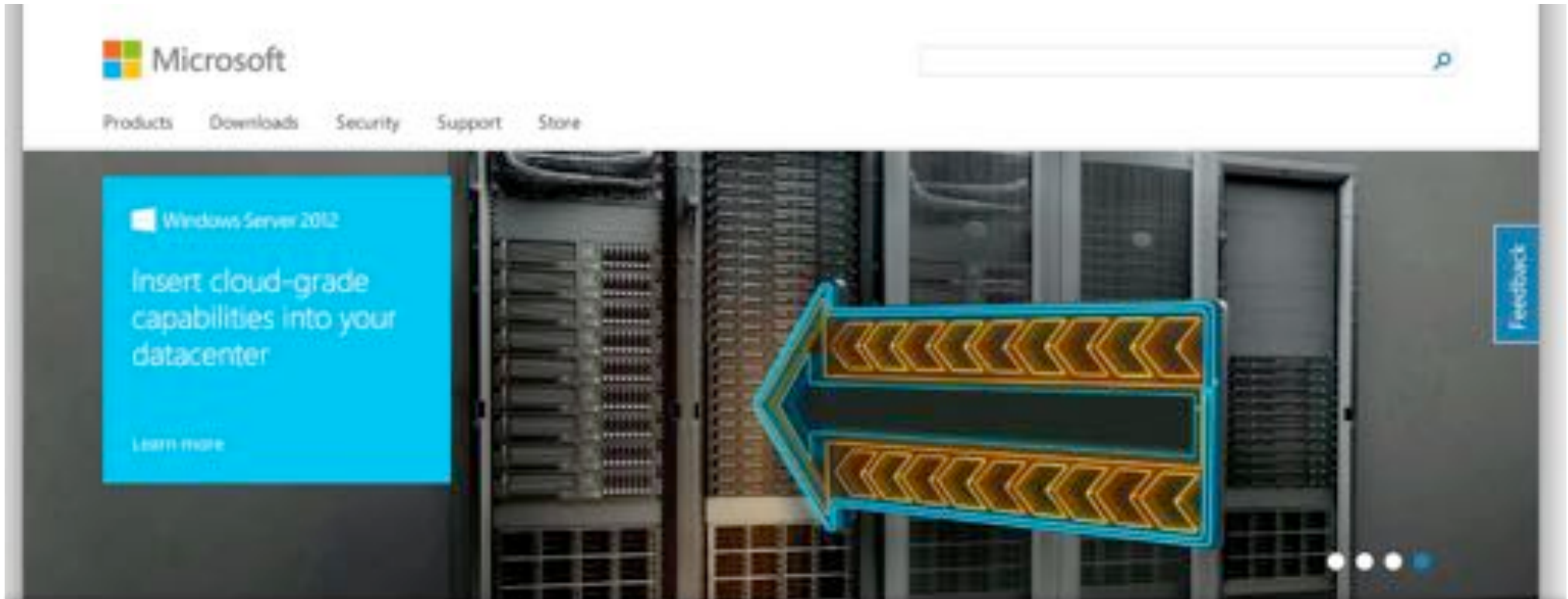
19"

21"

23"

25"

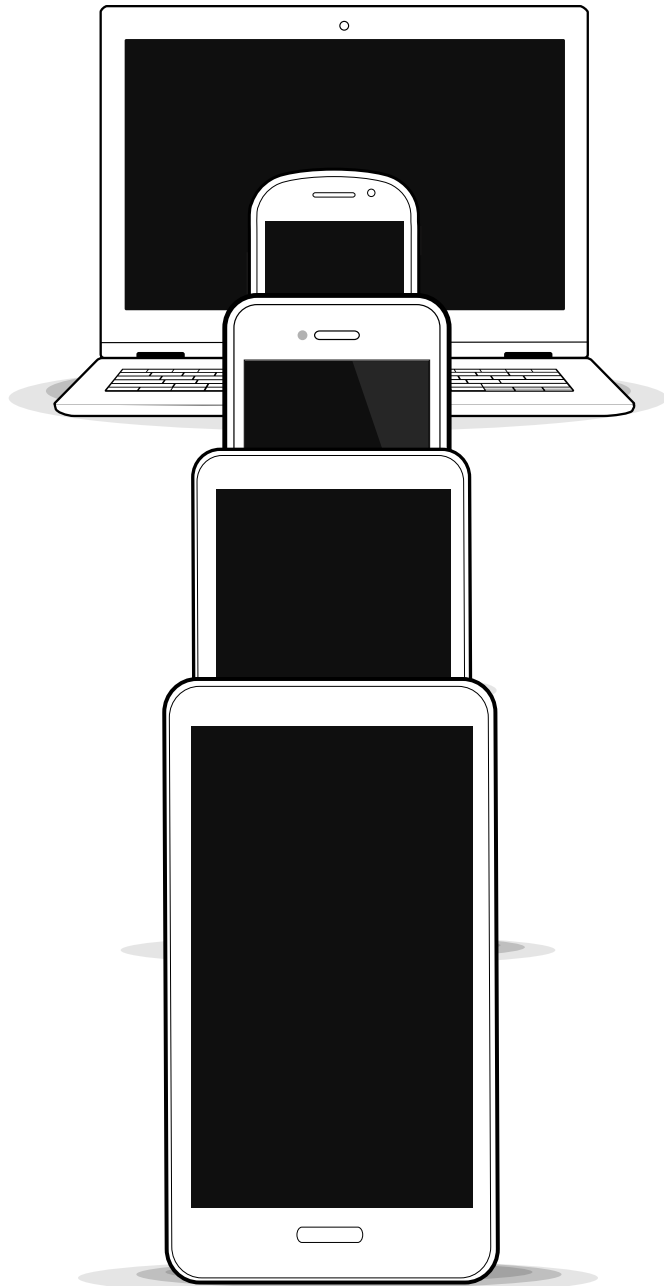
27"



```
@media screen and (min-width:70em) {  
  .BoxRight {  
    margin-left: 8em;  
  }  
}
```

“not just the size but the resolution, the clarity, [...] we care about all those.”





~2816 PIXELS/INCH

SMARTPHONE



5"

2,560 x 1,440

2,560 x 1,440

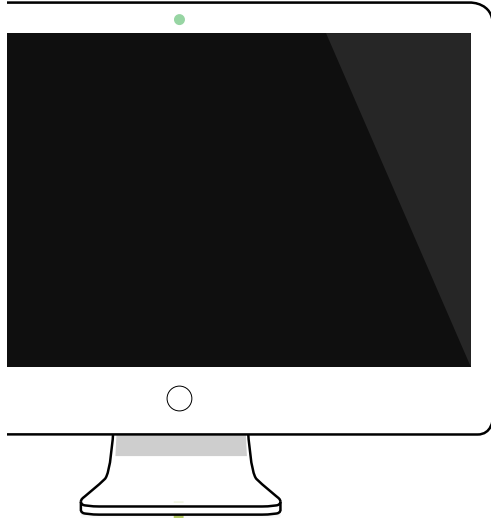
DESKTOP



27"



## DESKTOP



27"

ULTRA HD (4K)

3840 x 2160



28"

\$699

**SD**  
720 x 576

**HD**  
1280 x 720

**FULL HD**  
1920 x 1080

**ULTRA HD**  
3840 x 2160

**4K**  
4096 x 2160

“Mo’ pixels, mo’ problems.”



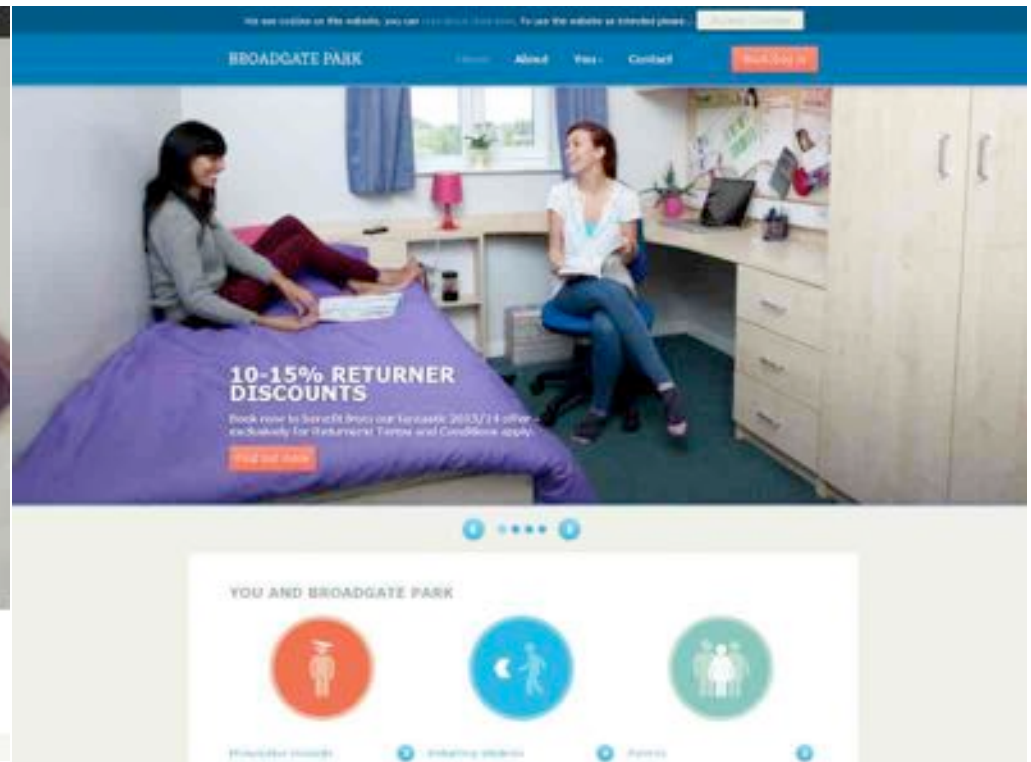




Pack is the beautiful new home for your dog online. We believe there's something magical about dogs and the people who love them. We're building something different just for you. Right now you can only join Pack by invitation only. Maybe you can see if anyone out there has one to give you!

Join the Pack community

Just a few of our favorite dogs



#### YOU AND BROADGATE PARK



It's estimated that 100,000 tonnes of ivory are sold each year.



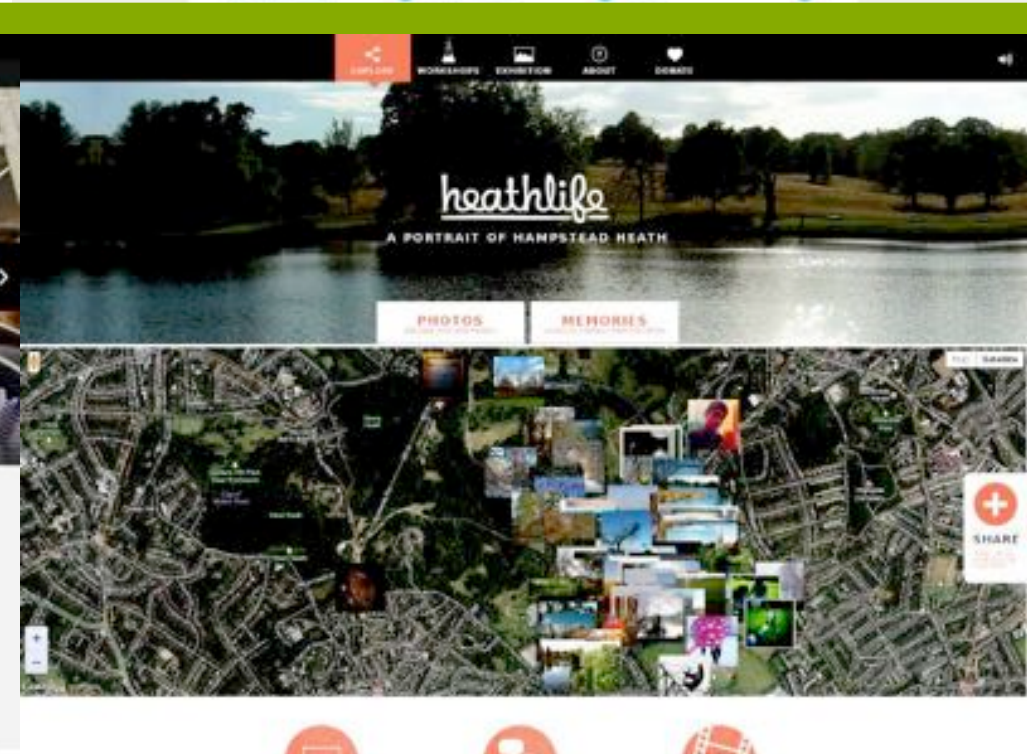
Just because it's a movie, it's not a game. It's a game. It's a game.



From the heart of the city, we can see the lights of the city.



It's not just a tiger, it's a tiger. It's a tiger. It's a tiger.



PHOTOS

MEMORIES



SHARE



1. Use CSS & web type whenever possible
2. Use SVG & icon fonts whenever applicable

resolution media query

```
@media only screen and (min-device-pixel-ratio: 1.5) {  
  .class {  
    background: url(img@2x.png);  
    background-size: 50%; }}
```



2160 x 3840

3840 x 2160

4:3

16:9

19:10

**SD**

720 x 576

**HD**

1280 x 720

**FULL HD**

1920 x 1080

**ULTRA HD**

3840 x 2160

**4K**

4096 x 2160





You**Tube**

NETFLIX

50%

North American  
downstream  
traffic



4:3

16:9

19:10

**SD**

720 x 576

**HD**

1280 x 720

**FULL HD**

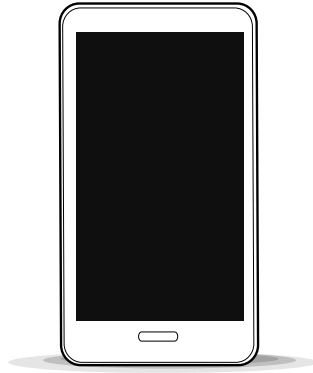
1920 x 1080

**ULTRA HD**

3840 x 2160

**4K**

4096 x 2160



IPHONE 5S  
GALAXY S4  
IPHONE 5C  
HTC ONE  
SONY XPERIA Z

top selling smartphones in US

4:3

16:9

19:10

**SD**

720 x 576

**HD**

1280 x 720

**FULL HD**

1920 x 1080

**4K**

4096 x 2160



"Simple is hard. Easy is harder. Usable is hardest." — Steve Jobs  
January, 2008



\$300 off UX  
Immersion.  
Use code  
UXIM2014.

ABOUT

WRITINGS

PRESENTATIONS

## New Layouts for the Multi-Device Web

by Luke Wroblewski

May 11, 2013

Most Web page layouts rely on design patterns created for laptop and desktop computers equipped with a mouse and keyboard. As the **variety of devices** being used to access the Web has grown, these patterns haven't been keeping up. Designing for today's Web means considering single-handed thumb use on smartphones, two handed touch interactions on tablets, mouse and keyboard input on traditional PCs, hybrid devices, and more. Web layouts have to evolve to support this new reality.

### The New Reality

As device diversity increases, so does the number of ways people interact with the Web. To understand the impact of a specific device on interaction design and layout, we can **look at three things**: output as mostly defined by a screen, the input types available, and common postures or modes of use (strongly influenced by input and output capabilities). For example, consider the modern smartphone.

Today's smartphones are defined by palm-sized screens (usually 3-5 inches diagonally) of varying pixel density, multi-touch input, and predominately one-thumb use with the device about a half arm's length away. **A recent study** of 1,333 people using smartphones on the street found that about 75% of smartphone use is one thumb. Web layouts need to **take this reality into account**.



## New Layouts for the Multi-Device Web

by Luke Stroblweil

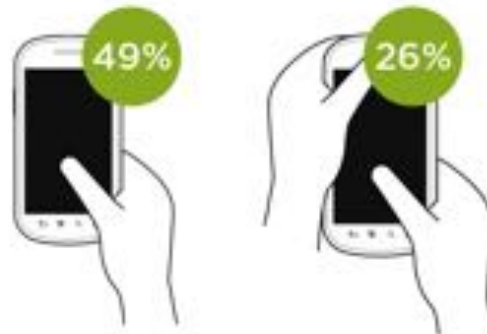
May 13, 2013

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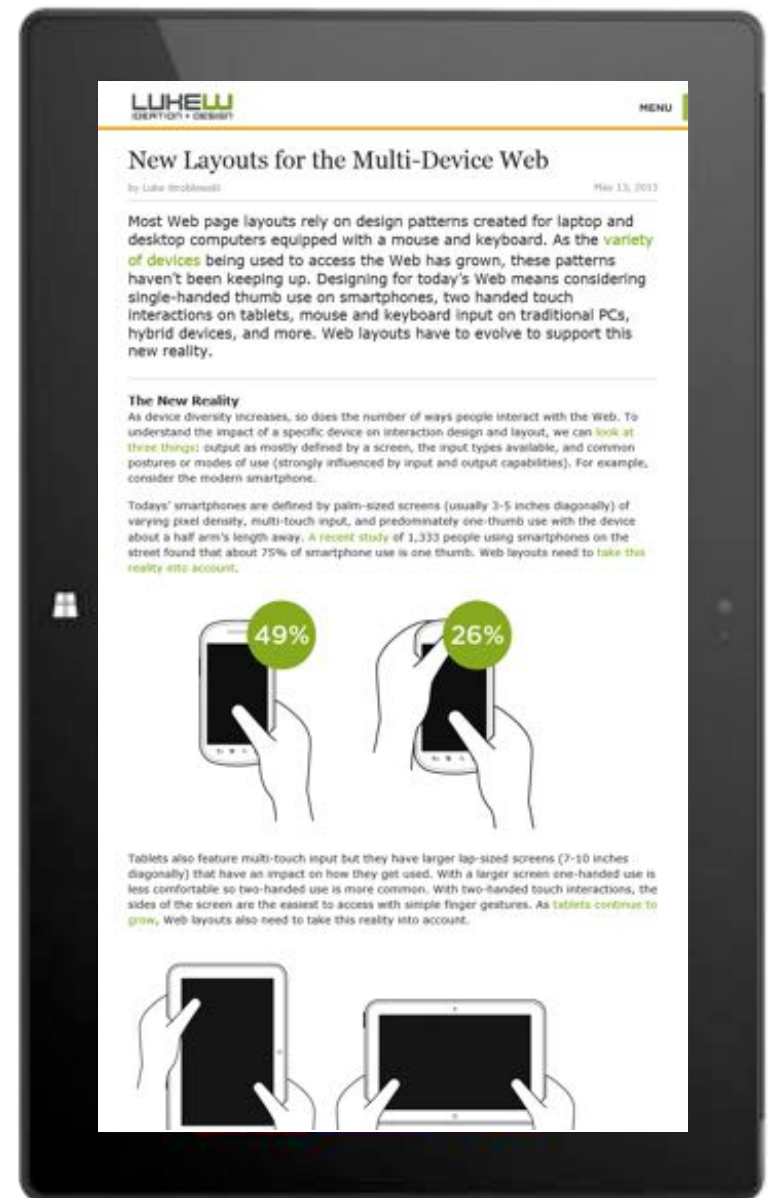


Tablets also feature multi-touch input but they have larger lap-sized screens (7-10 inches diagonally) that have an impact on how they get used. With a larger screen one-handed use is less comfortable so two-handed use is more common. With two-handed touch interactions, the sides of the screen are the easiest to access with simple finger gestures. As **tablets continue to grow**, Web layouts also need to take this reality into account.

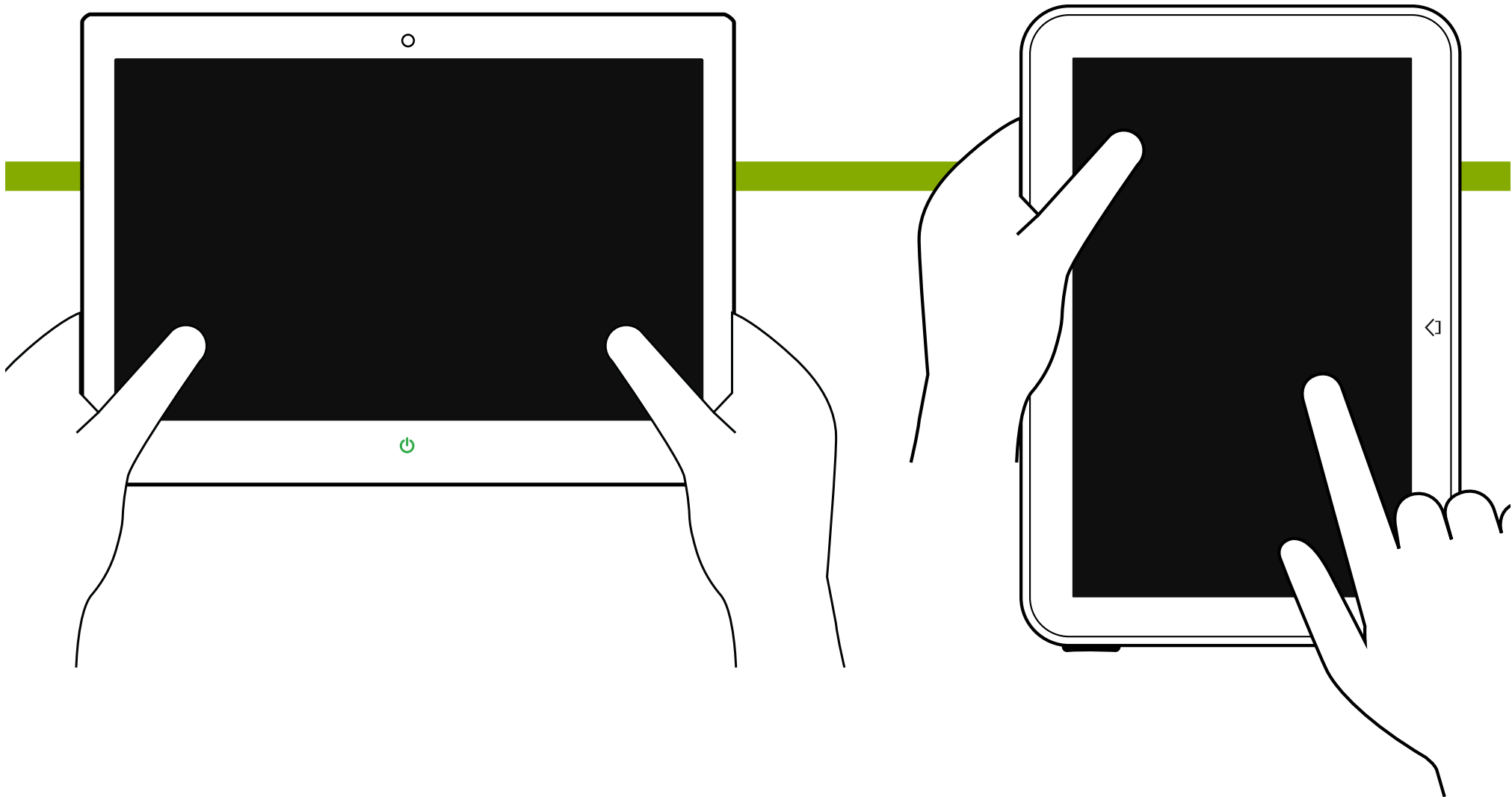




1366 × 768



768 x 1366

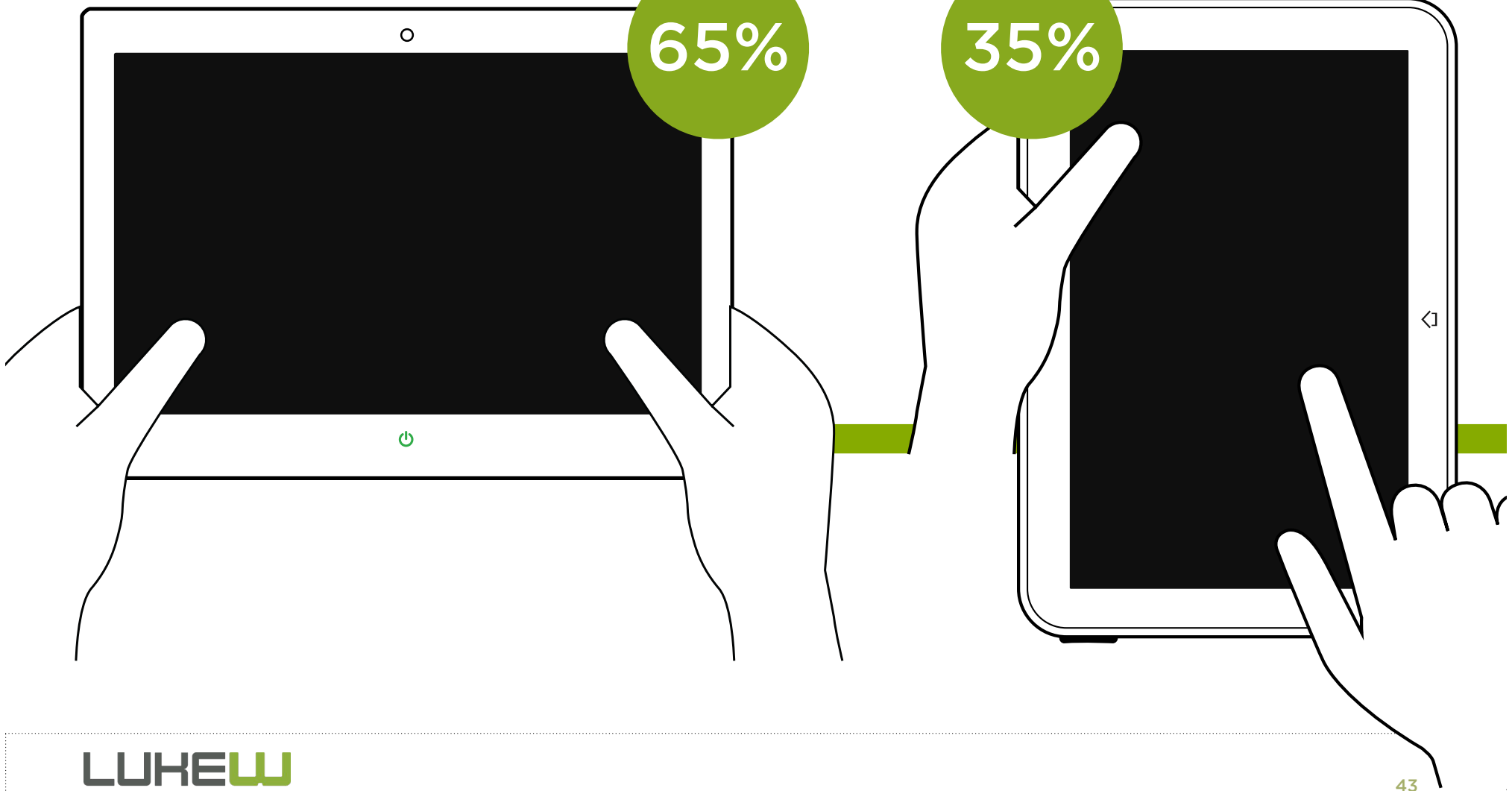


Horizontal (landscape)

Vertical (portrait)

65%

35%





@media screen and (min-width: 75em) and (min-height: 30em)

vertical media query

copy at widths above 900px would be my final answer, but I decided to drop in one more increase last week:

```
media screen and (min-width: 1234px) and (min-height: 768px) {  
  body {font-size: 137.5%;}  
}
```

This bumps body copy up to 22px for those bold enough to view the site at least 1234px wide. Why 1234px? Just because that's where, with all % values for widths & container padding, my site hits its max-width.

What's with the vertical media query? I used min-height to target screens that are wide enough to trigger the change, but not tall enough for it to make sense. As an example, my wife has an 11" MacBook Air that has a screen resolution of 1366px X 768px. With the menu bar & browser window, the screen is not tall enough to trigger that final bump up in font-size unless you enter into full screen browsing, which to me is a good thing.

But maybe vertical media queries could do much more than this. For projects where the fold \*gasp\* is a concern, per-

<http://j.mp/1eRrrWn>





Articles

Notes

Info

Search

“[increase font size] on screens that are wide enough but not tall enough for it to make sense.”

I've been tinkering with the font-size and the media queries that trigger width-based changes for this site regularly over the past month. I thought that maxing out at **20px for body copy at widths above 900px** would be my final answer, but I decided to drop in one more increase last week:



## THE STATAMICIST

*your unofficial guide to the world of Statamic*

ARTICLES

TIPS

INTERVIEWS

ADD-ONS

SHOWCASES

ABOUT

## v1.5 Sneak Peek 5: Other Features

AN ARTICLE · JAN 26, 2013 · by FRED LEBLANC

In this fifth and final installment for upcoming updates, we take a look at a couple of other features that found their way into the new version.

READ →

## v1.5 Sneak Peek 4: New & Improved Fieldtypes

AN ARTICLE · JAN 24, 2013 · by FRED LEBLANC

In this fourth of our five installments, we look at the new and improved fieldtypes coming in the update, including: color, location, suggest, file, and grid.

READ →

## v1.5 Sneak Peek 3: Add-On Architecture

AN ARTICLE · JAN 23, 2013 · by FRED LEBLANC

### ON THE STATAMICIST

*The Statamicist* is a look into the world of Statamic — both in code & through its community.

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### LET'S BE FRIENDS

 [@statamicist](#)

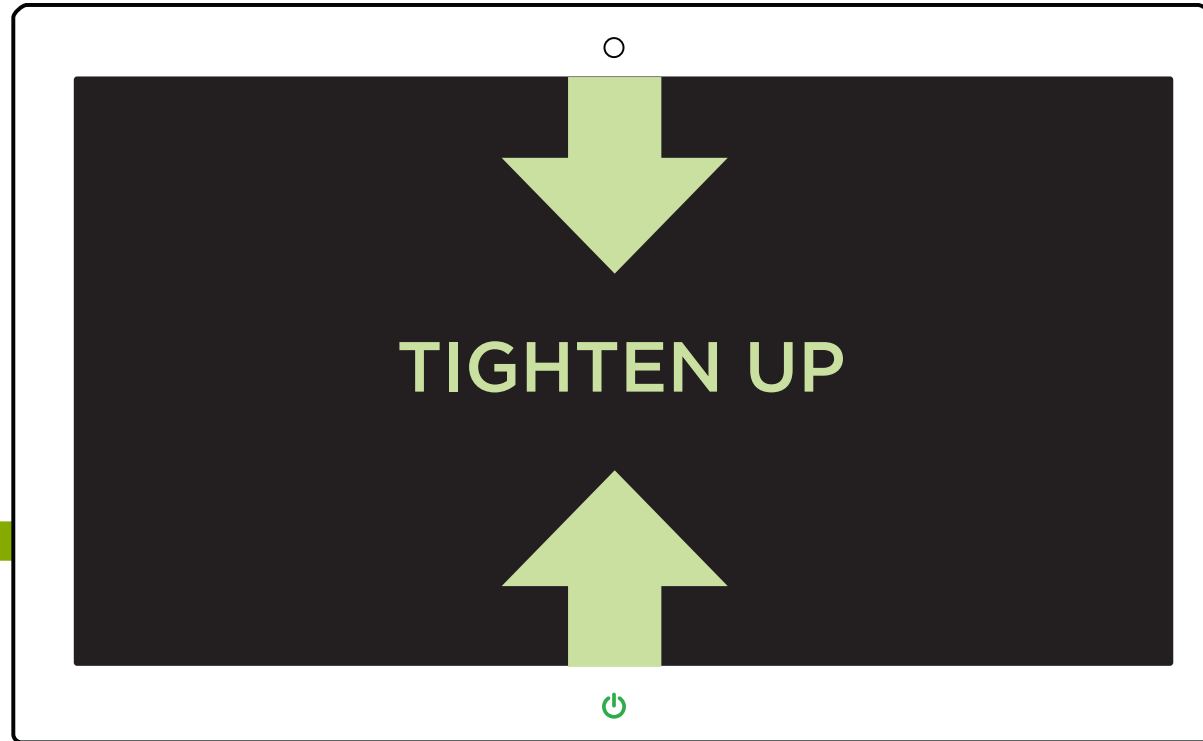
### GET STATAMIC

Visit the [official site](#) to buy a license, read documentation, and more.

VISIT STATAMIC →

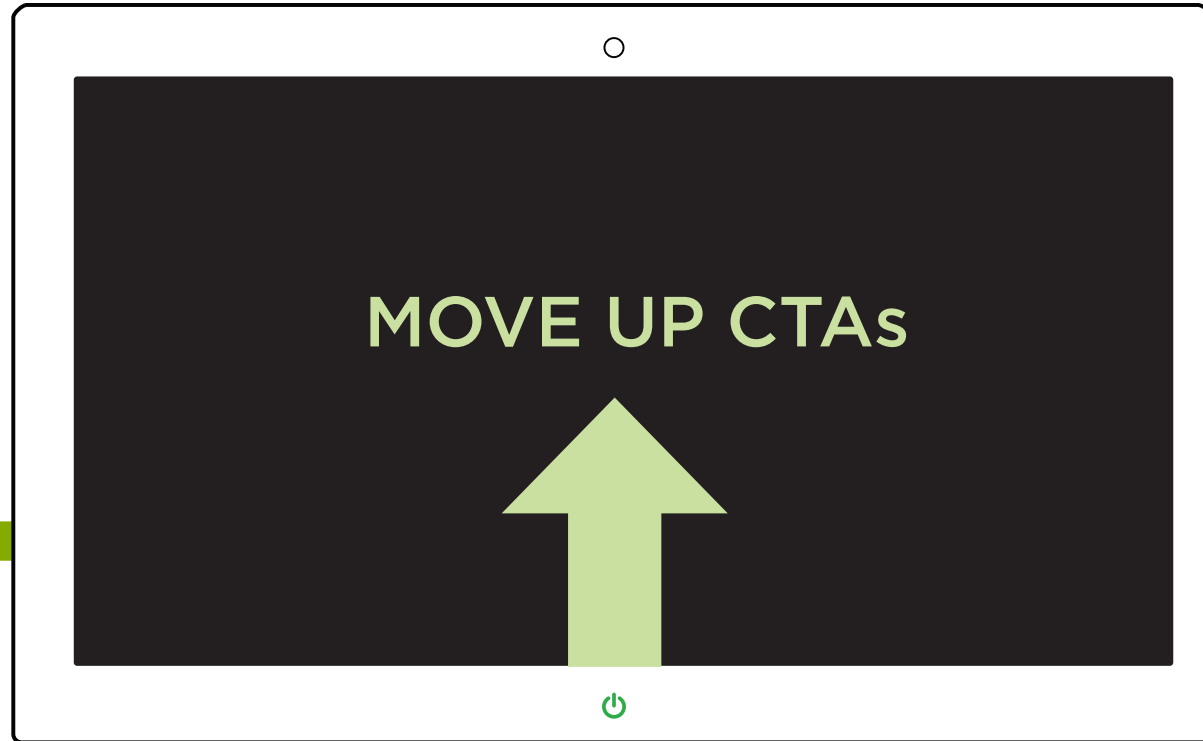
WIDE

SHORT



WIDE

SHORT



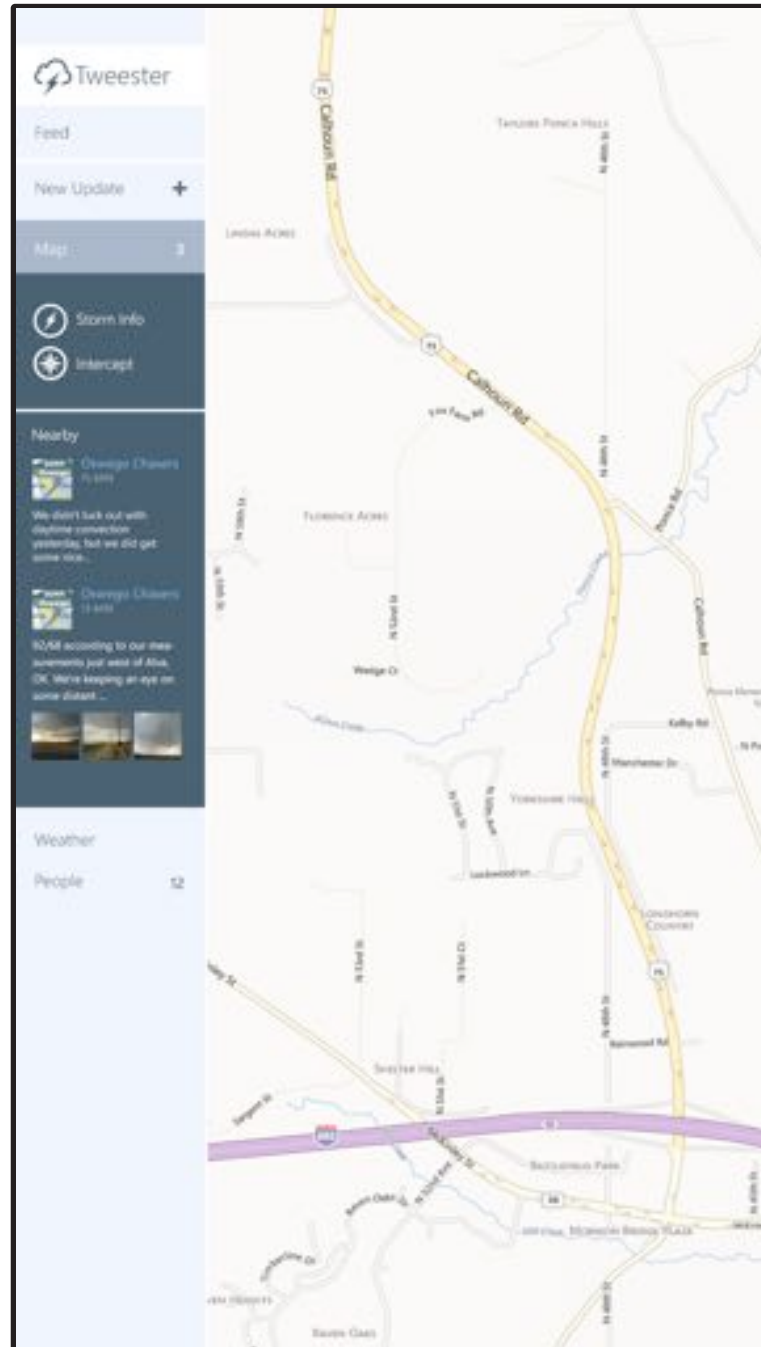


minimal content area

excess menu space

rearrange menus

maximize content



menu access



consistent UI

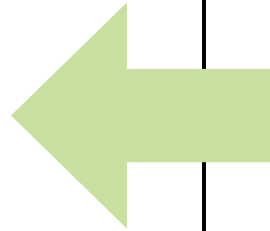


menu access



horizontal orientation

NARROW

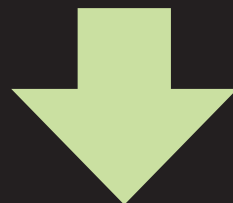


OFF CANVAS

TALL



REPOSITION





# OUTPUT

---

1. Trend toward high resolution
2. Trend toward widescreen aspect ratios
3. Media queries know about more than width



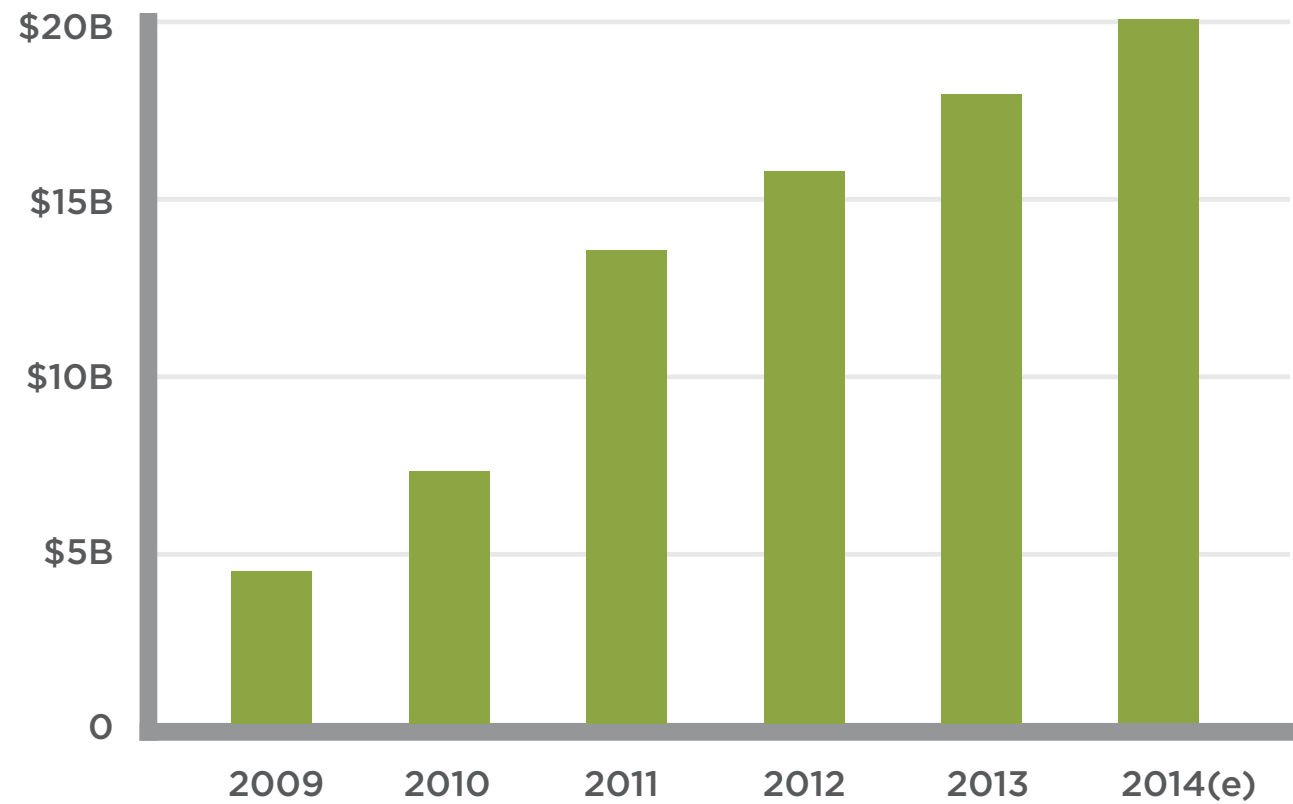
1. Know Your Screen
2. Output
- 3. Input**
4. Posture



“Any piece of glass you can't touch and interact with will feel broken.”



## TOUCH SCREEN REVENUE



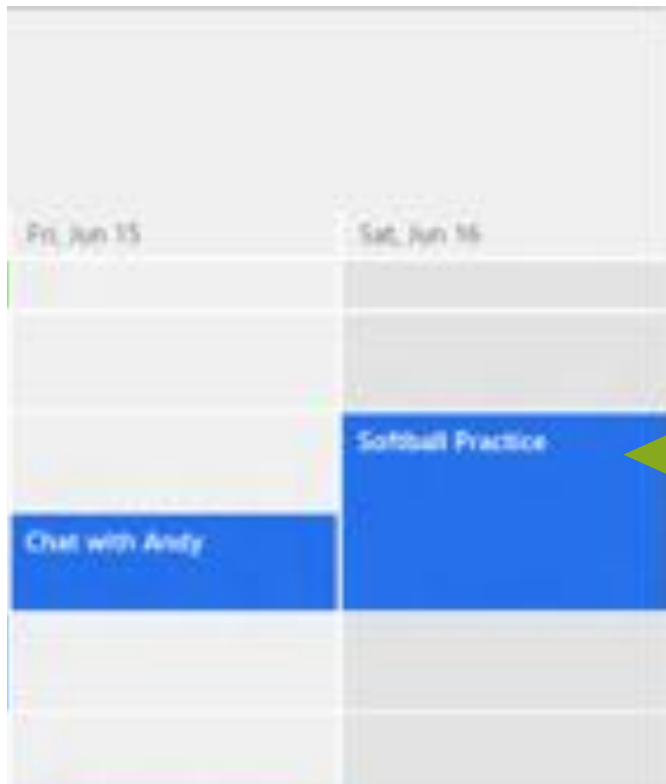
FRONT CAMERA  
GYROSCOPE  
VOICE  
MAGNETOMETER  
GPS  
MICROPHONE  
ACCELEROMETER  
CAMERA  
BLUETOOTH LE





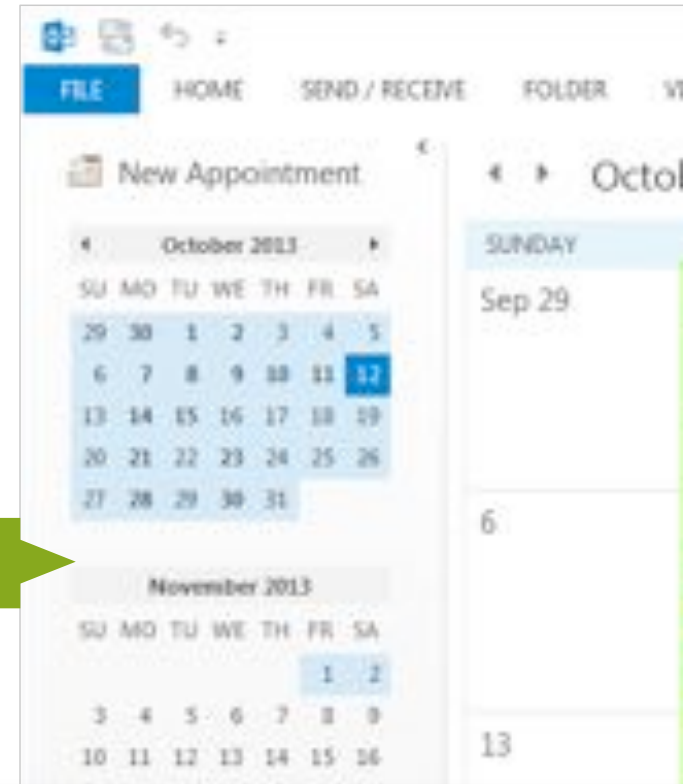




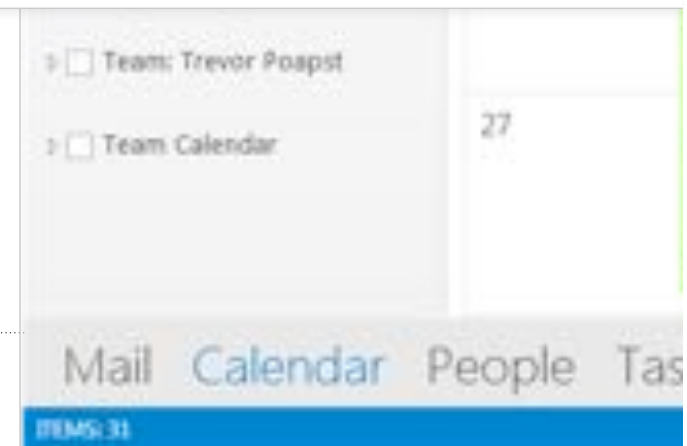


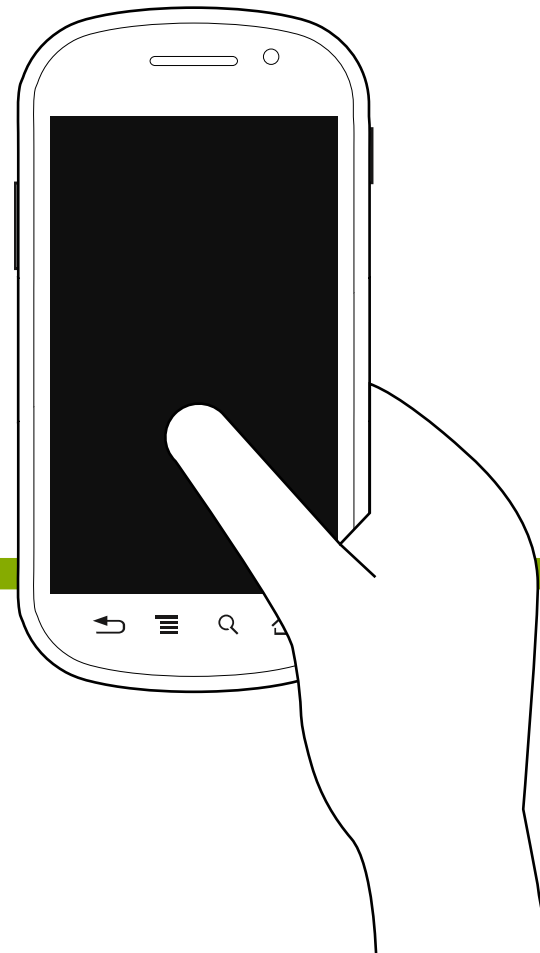
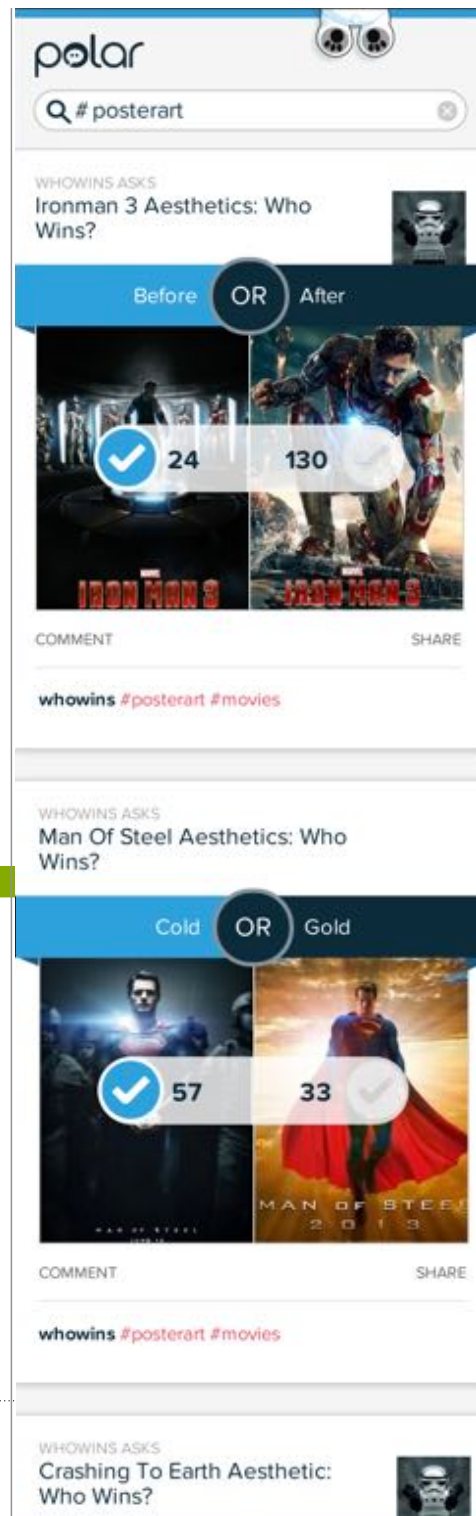
multi-touch UI

cursor & keyboard UI



“Can’t we just detect input type & change the interface?”







REVIEWED: 4/14/13

## Ironman 3 Aesthetics: Who Wins?

Before

OR

After



23

130



COMMENT

SHARE

reHowins #jordanart #ironman3

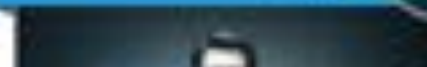
REVIEWED: 4/14/13

## Man Of Steel Aesthetics: Who Wins?

Cold

OR

Gold

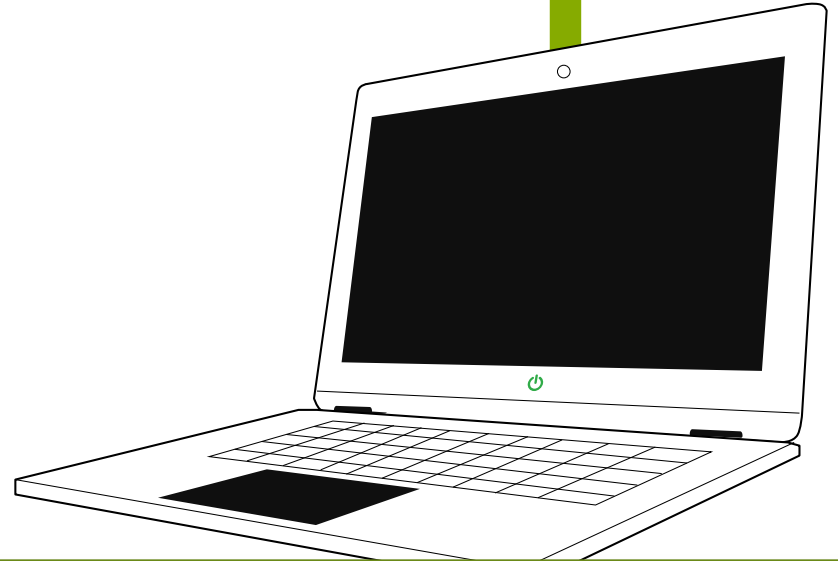


do you have touch capabilities?

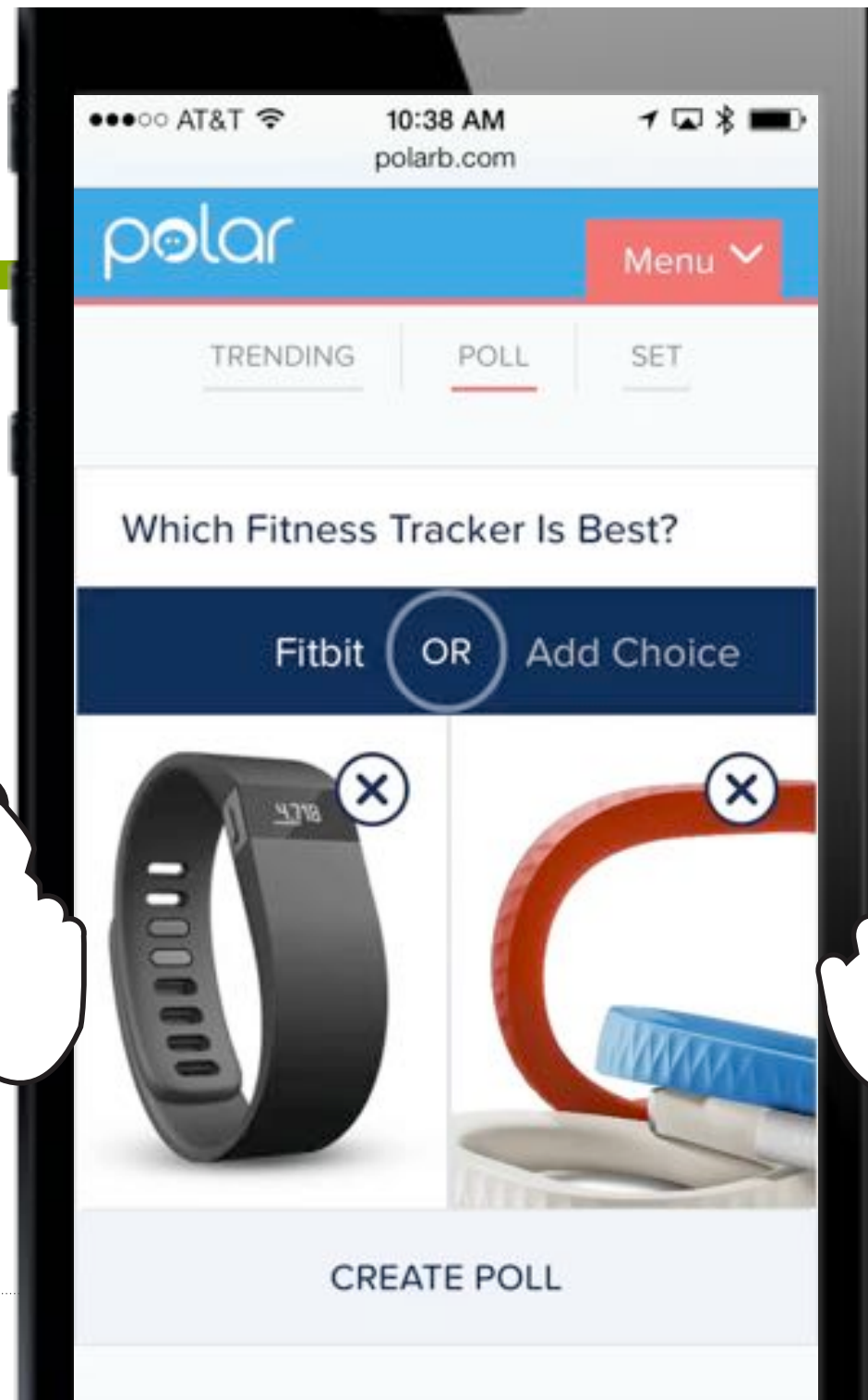
“Don’t attempt to switch between touch and mouse - just support both.”

- MacBook Pro
- iPhone 5
- Xcode iPhone5 simulator
- Win8 Touchscreen PC with keyboard (IE10 browser)
- Win7 PC with keyboard (IE9 browser)
- Win7 PC with keyboard (Chrome browser)
- Win7 PC with keyboard (Firefox browser)
- Kindle Fire (old, Android 2.x, modded)
- Microsoft Surface/Explorer 10 (with keyboard attached)
- Win8 Touchscreen PC with keyboard (latest Chrome browser)
- Win8 Touchscreen PC with keyboard (latest Firefox browser, 18)
- Droid4 with qwerty physical keyboard out (default browser)
- Asus Transformer with dockable keyboard (default browser)
- Microsoft Surface/Explorer 10 (with NO keyboard attached)
- Samsung Series 7 Tab/Explorer 10 (with NO keyboard attached)

- There's not a great way to do this in browsers today
- We need a general solution (e.g. navigator.hardware object)



“downplay the keyboard shortcuts when screen size is smaller & ~~touch is present.~~”



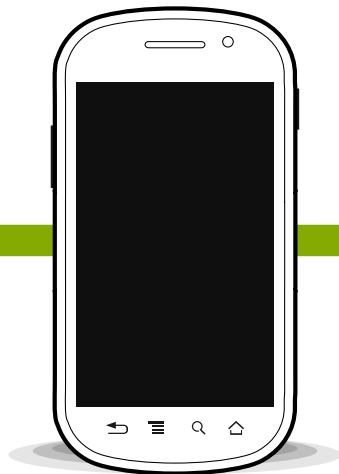




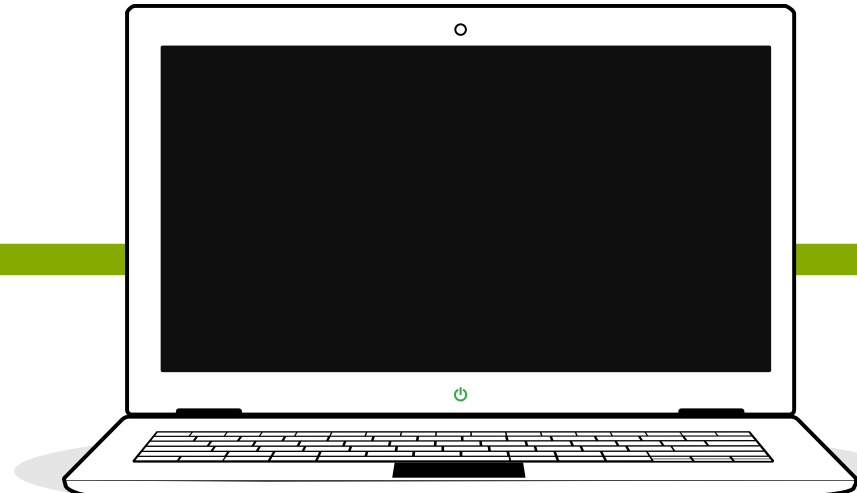


# Screen size is a poor proxy for input.

Multi-touch



Cursor & Keyboard





## MEDIA QUERIES LEVEL 4

---

```
@media (pointer:coarse) {  
  input[type="checkbox"] {  
    min-width: 30px;  
    min-height: 40px;  
  }  
}
```

# INPUT

---

1. Support **all** the inputs
2. Communicate what's possible
3. Screen size is a poor proxy but it's all we got *for now...*



1. Know Your Screen
2. Output
3. Input
- 4. Posture**

how people interact  
with output & input



“One of Netflix’s mathematicians is known as 10-Foot User Interface Guy.”

## Viewing Distance

“There’s also Two-Foot Guy, who deals with laptops, and 18-Inch Guy for tablets.”



## Lots of Screens

44%	LAPTOP/PC
23%	SMARTPHONE
17%	SMART TV
16%	PC TO TV
15%	TABLET
15%	BLU-RAY PLAYER
13%	WII
12%	PS3
10%	XBOX 360
500	MORE SKUS



## POSTURE

83% 10 FT.

44% 2 FT.

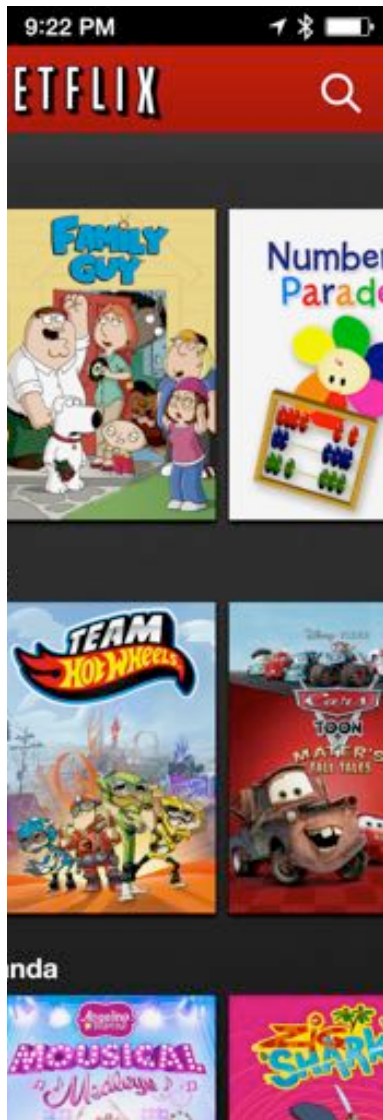
23% 1 FT.

15% 1.5 FT.

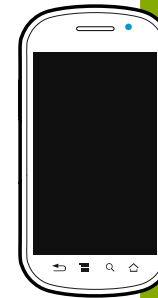




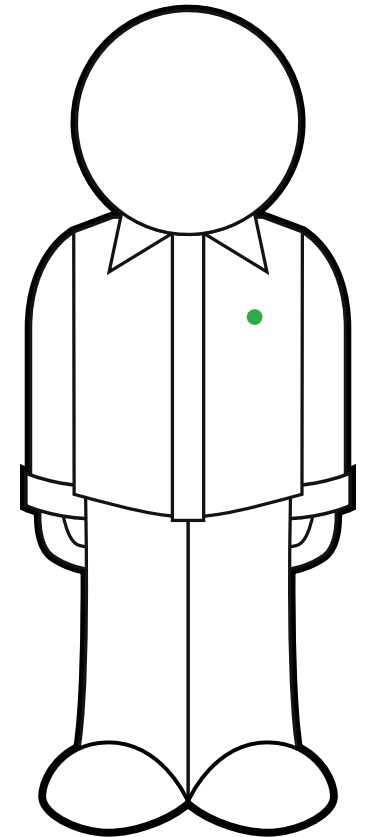


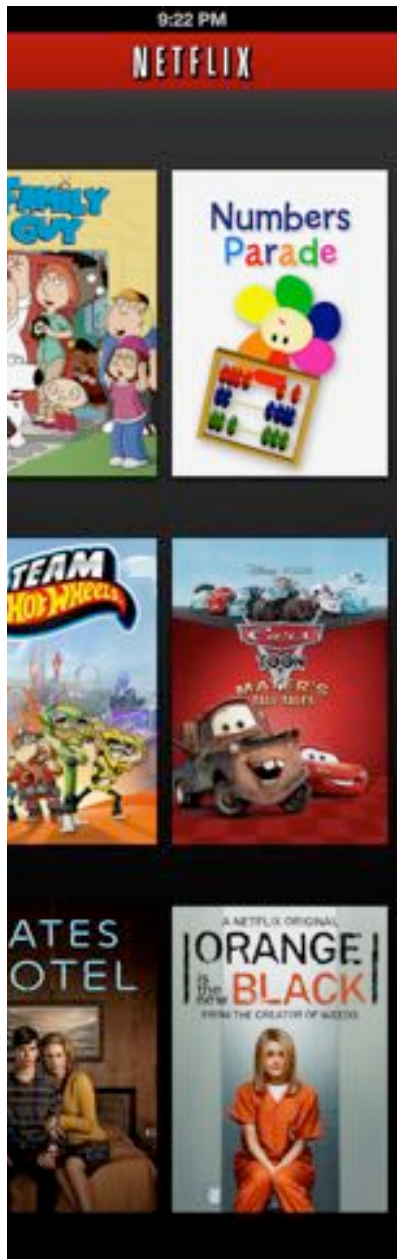


1"

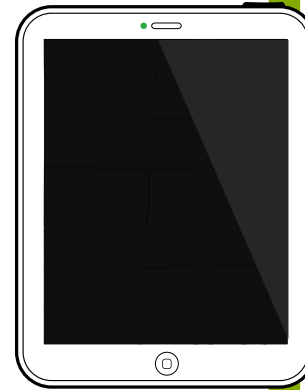


12"

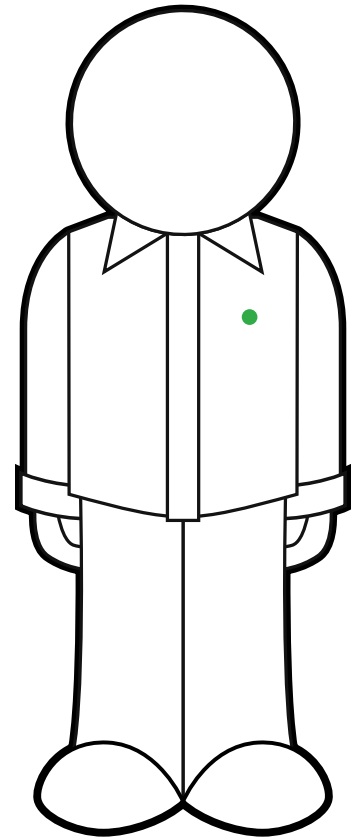


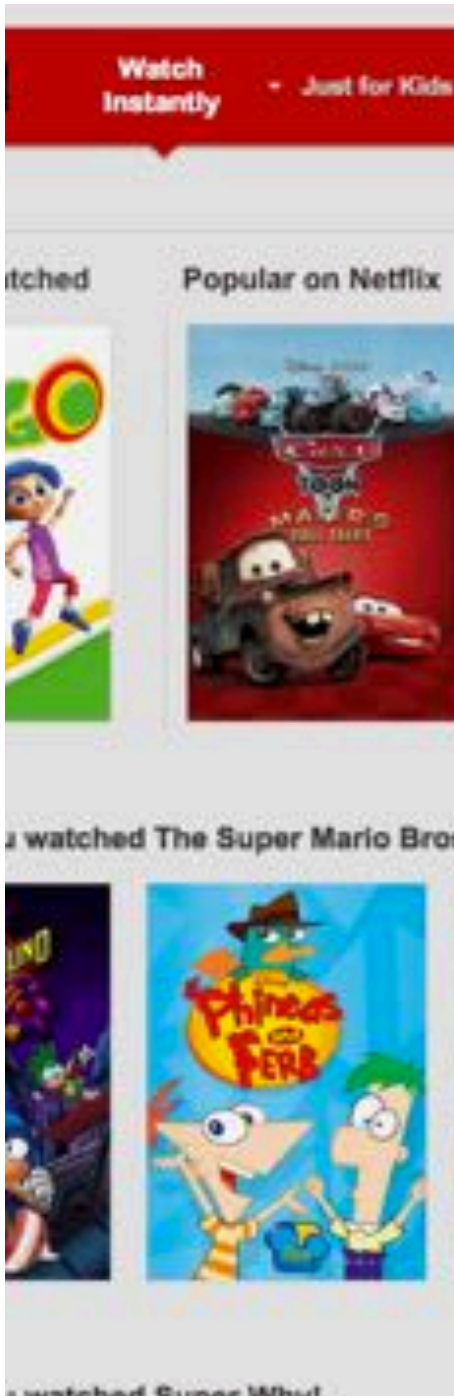


1.75"

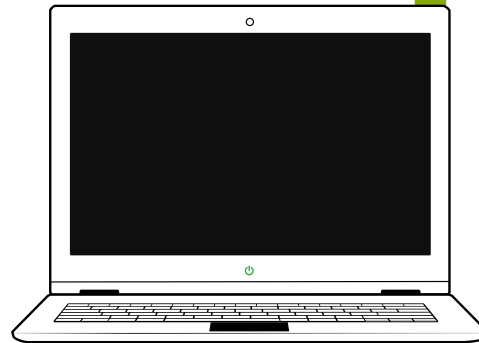


18"

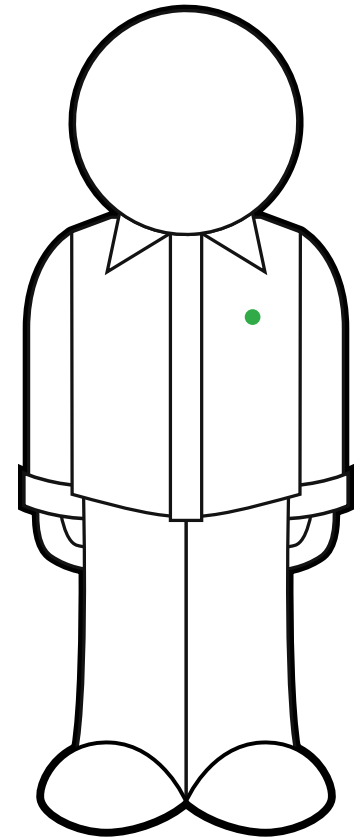




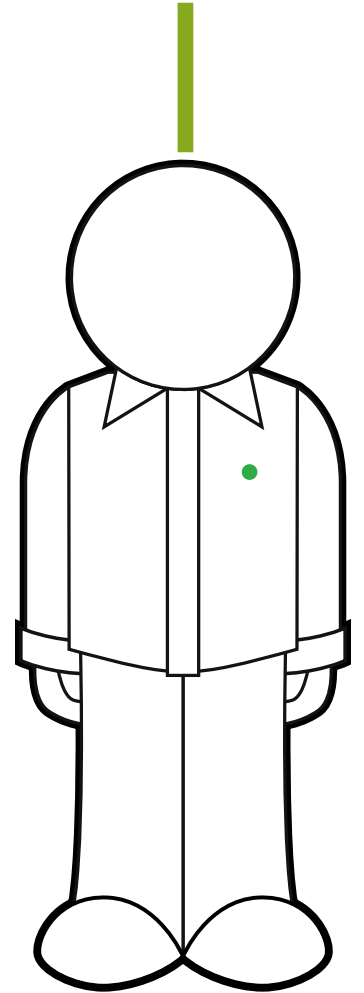
2.25"



24"



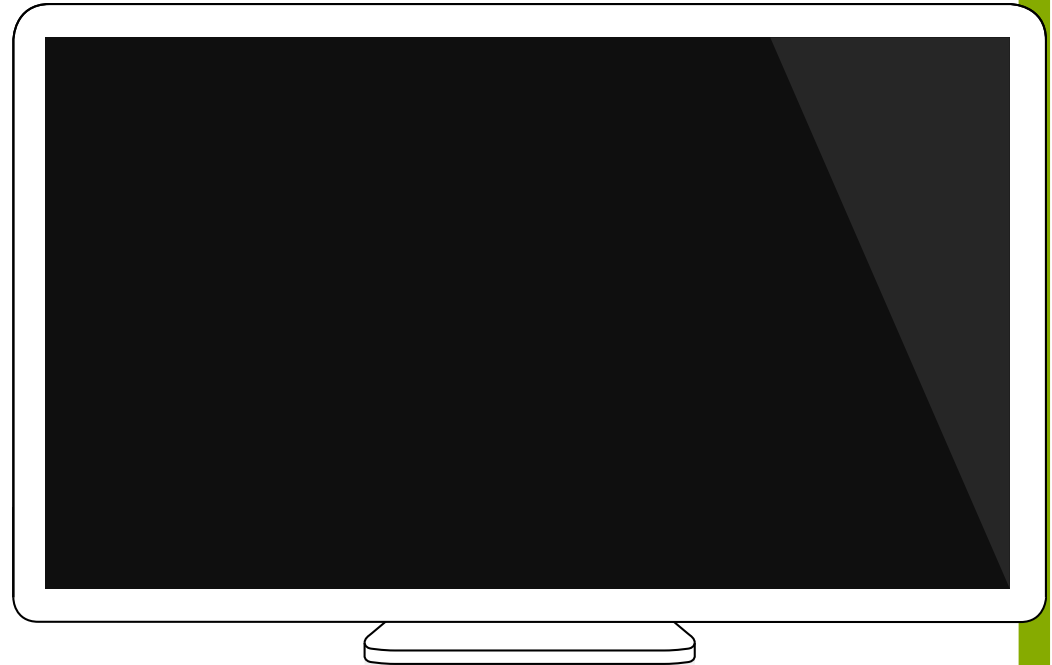
10'



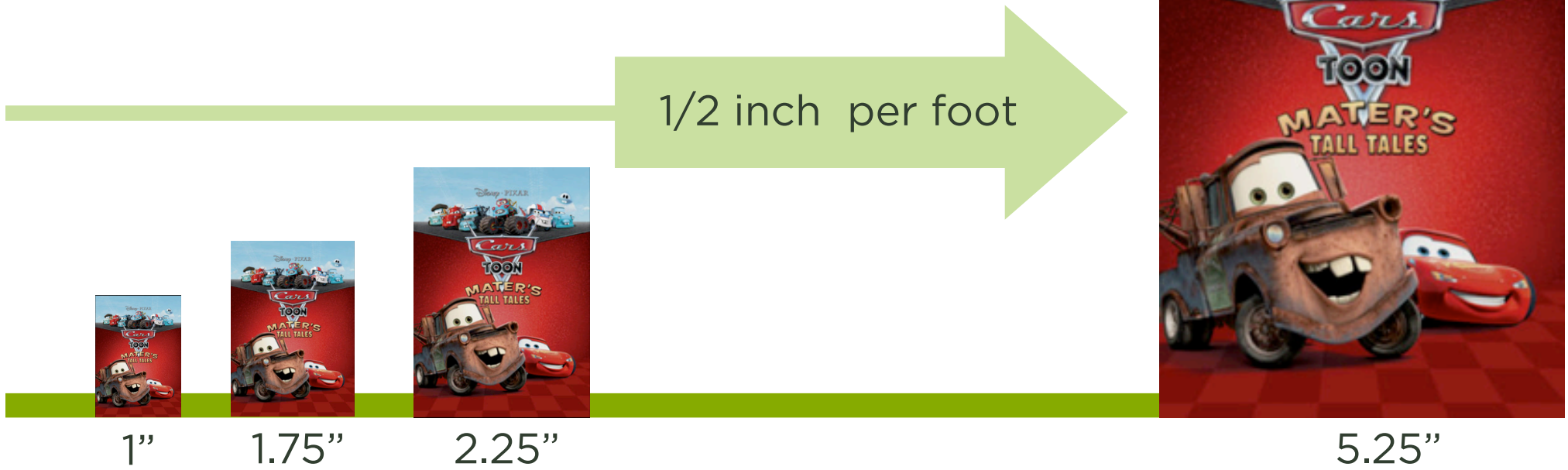
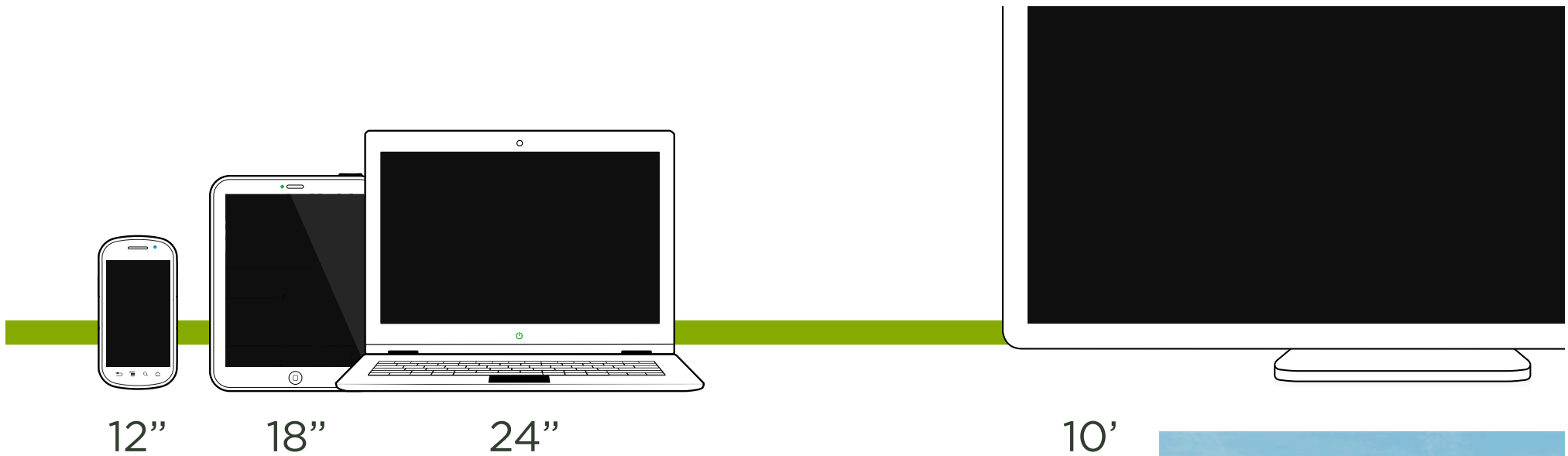


5.25"

Hart

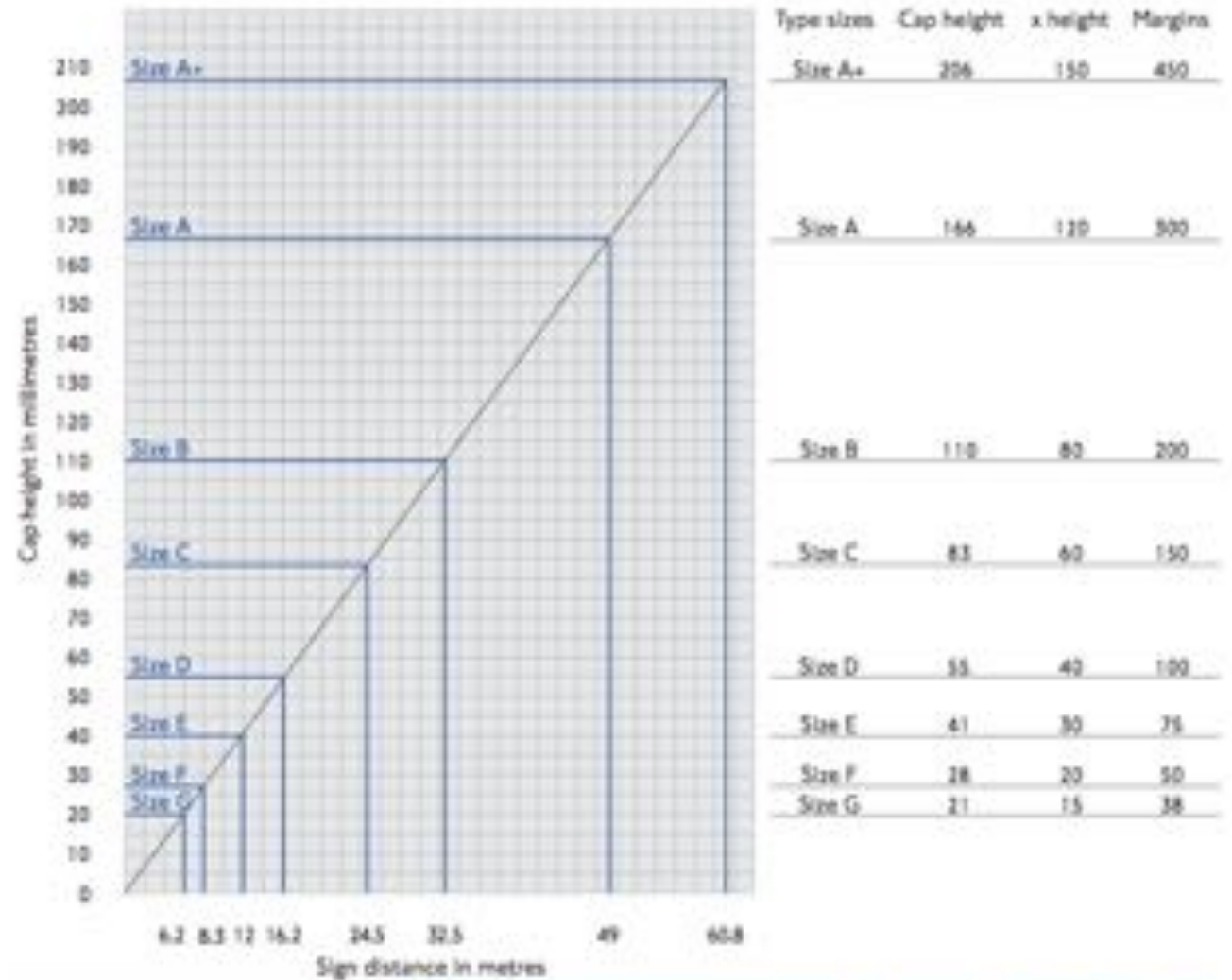




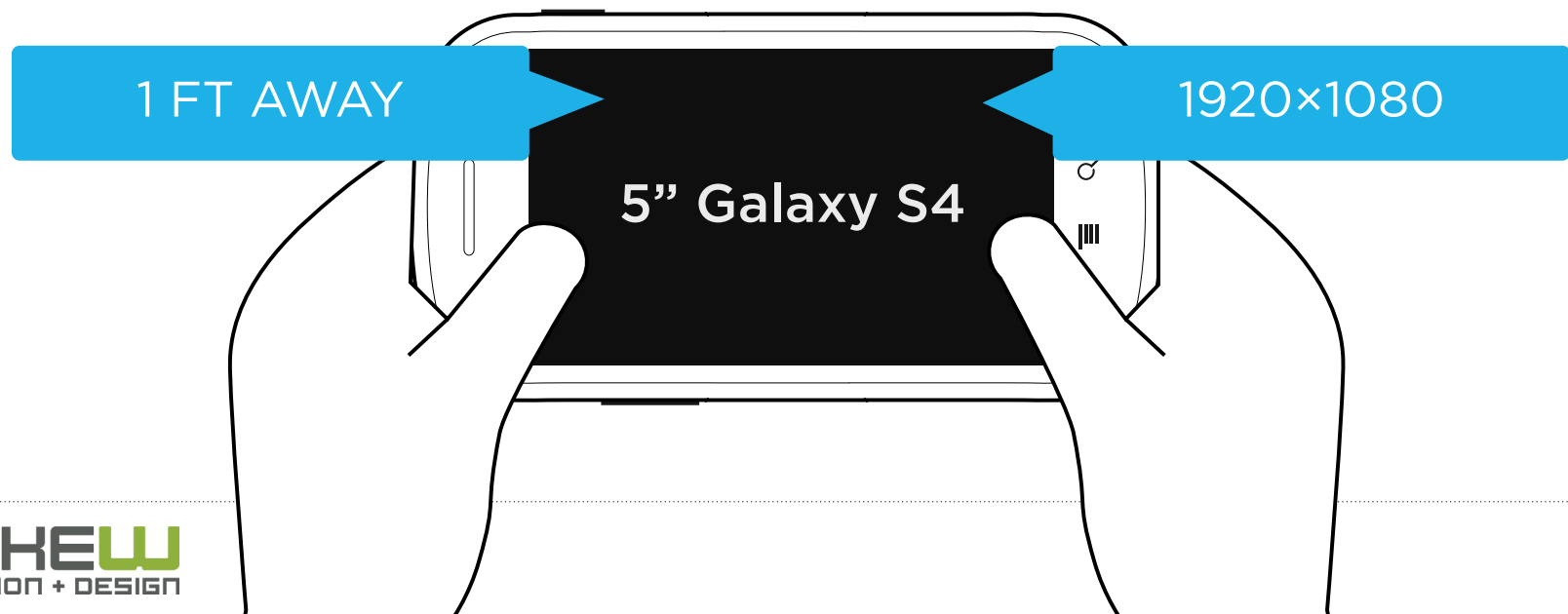
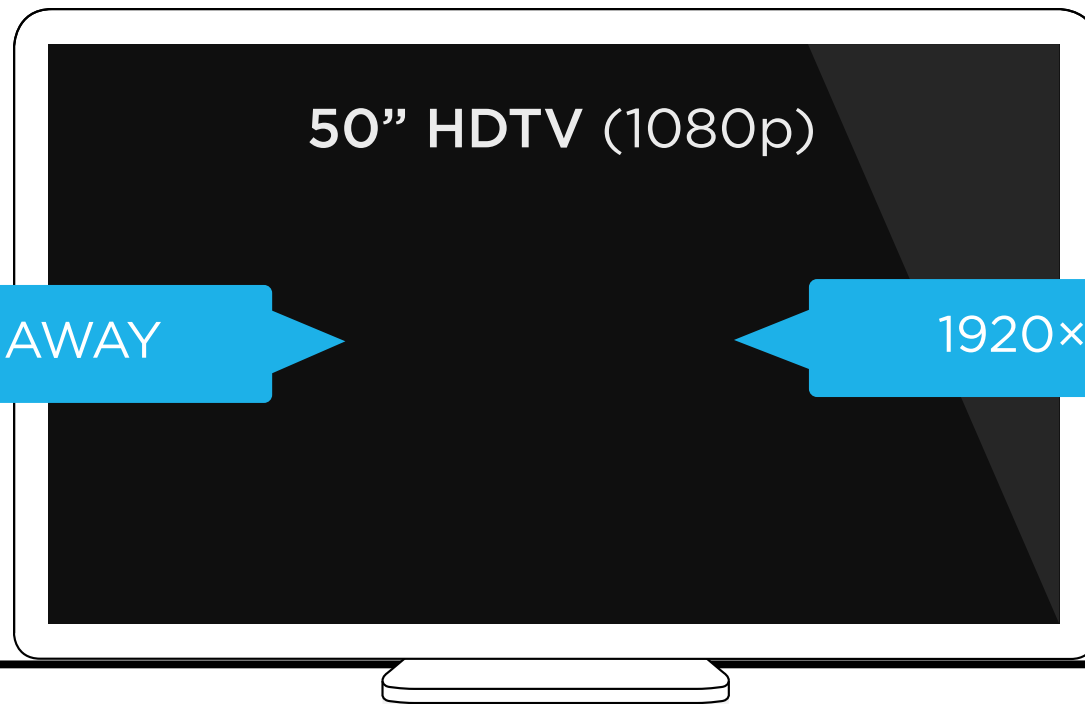




## SIGNS MANUAL (VIEWING DISTANCE)

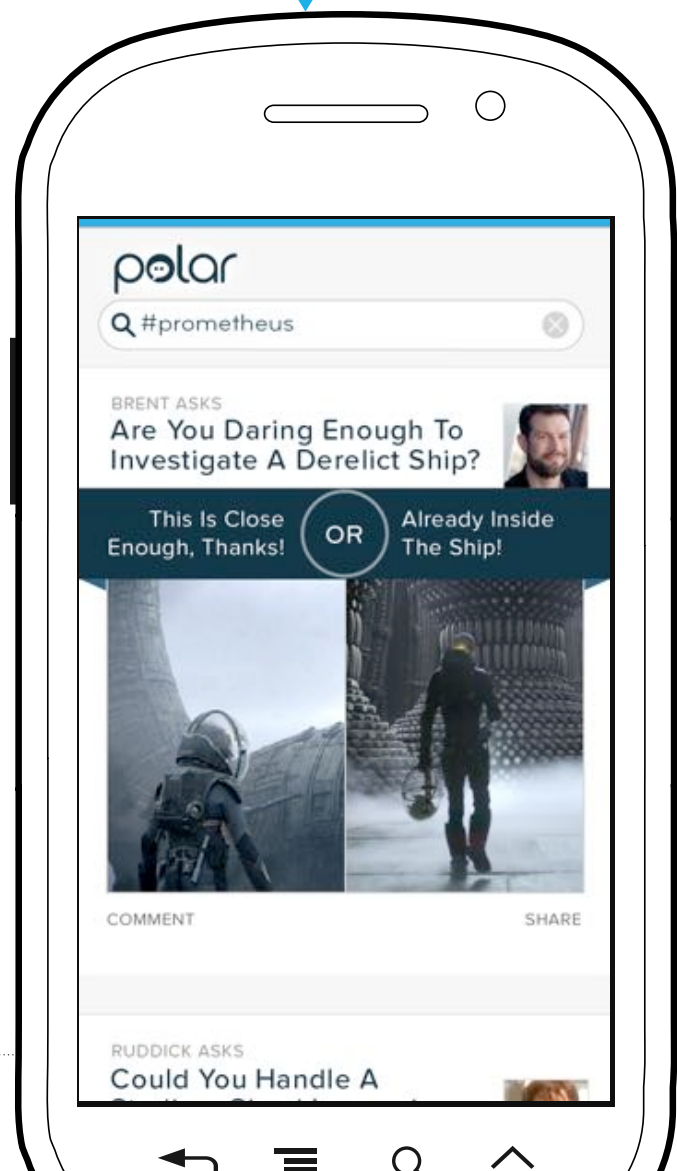






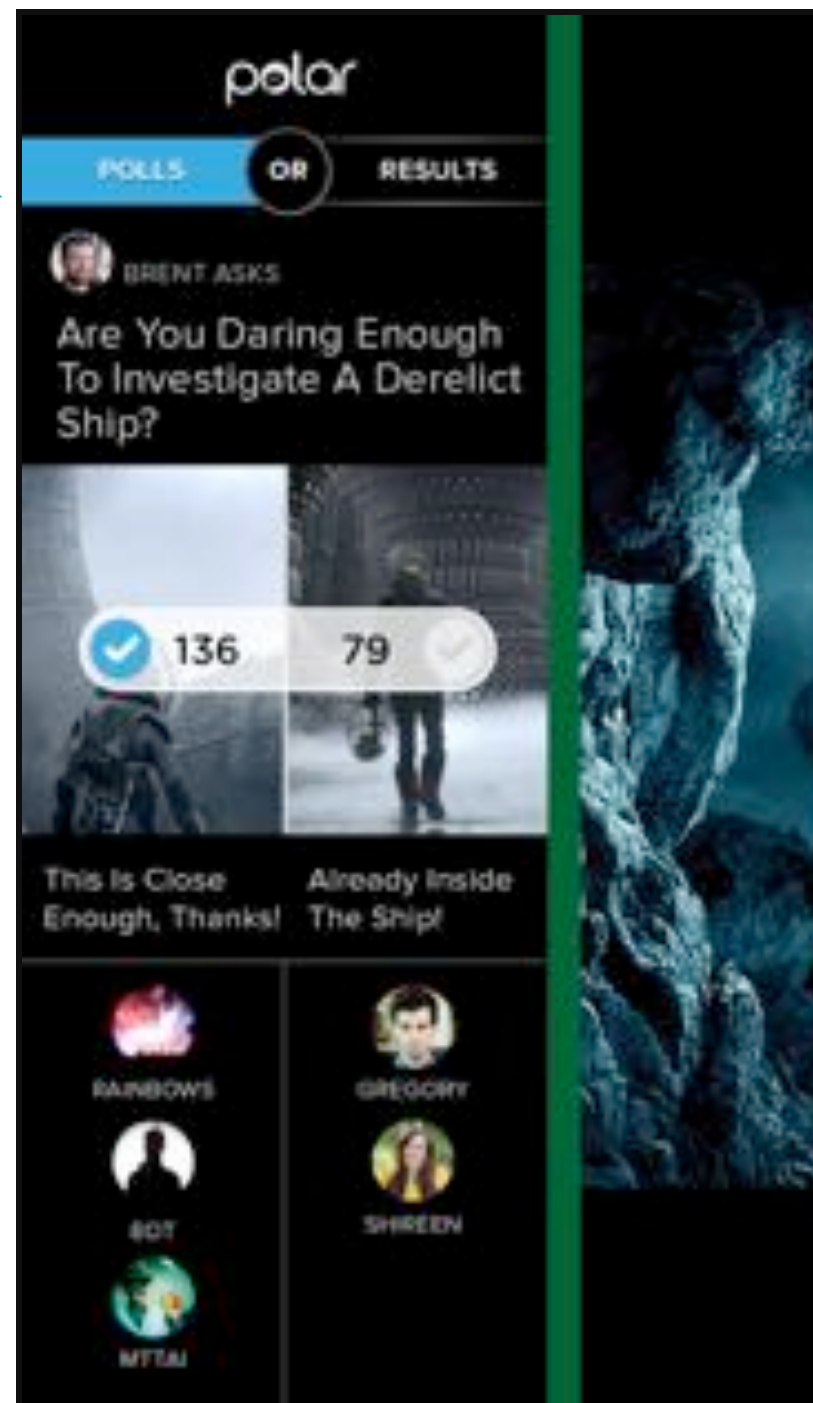
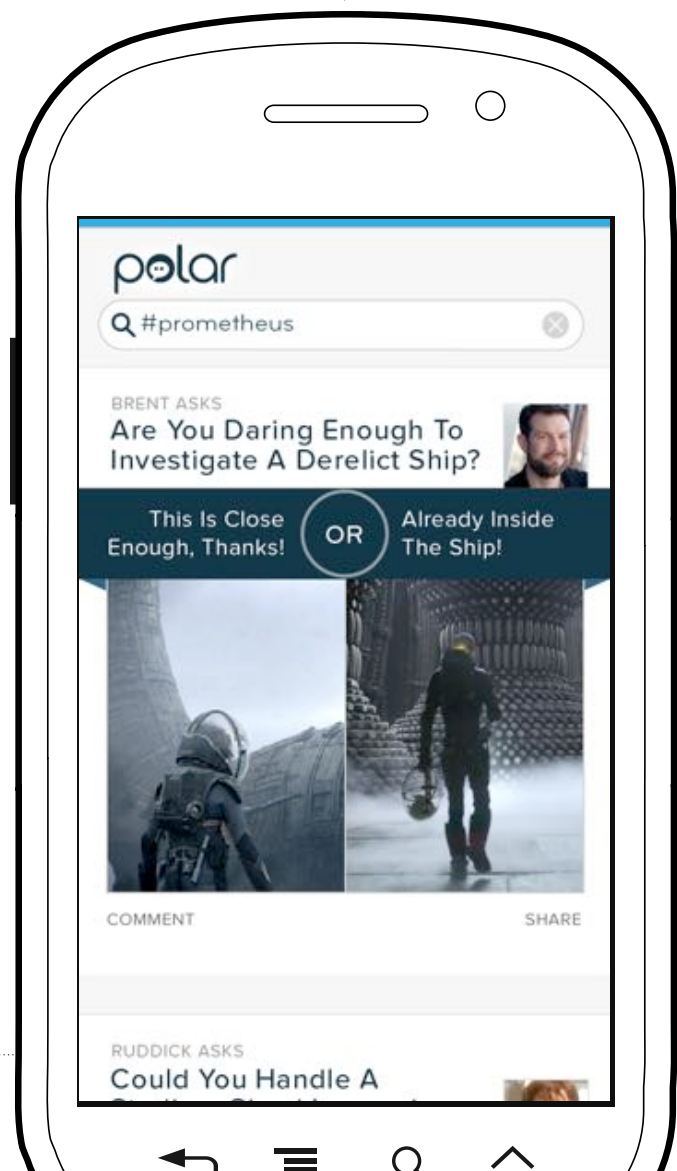
320PX WIDTH

320PX WIDTH



1 FT AWAY

10 FT AWAY



GLASS



640

8 FT AWAY

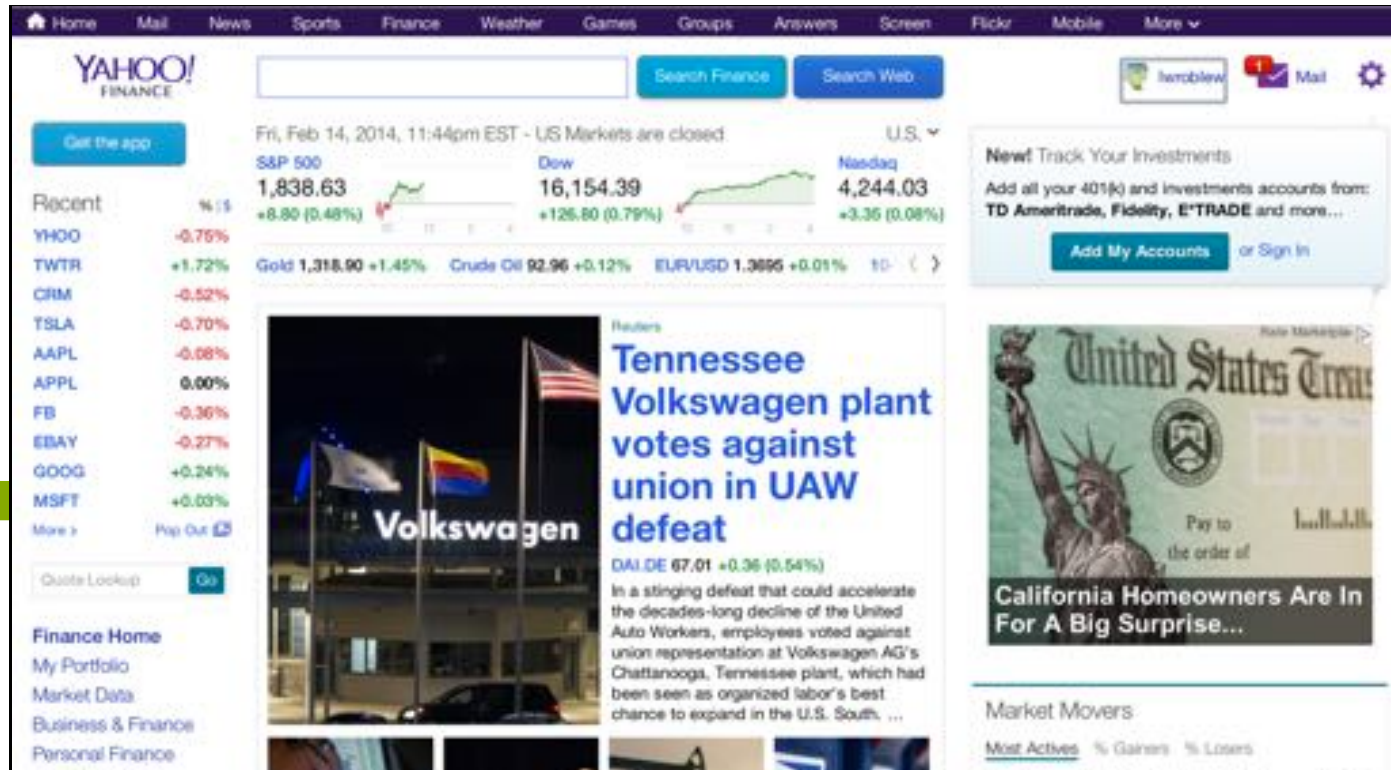
25" HD SCREEN

360





# VIEWPORT: 960PX



DEVICE-WIDTH: 640px

The screenshot shows the Yahoo! Finance mobile app interface. At the top, there is a hamburger menu icon on the left, the 'YAHOO! FINANCE' logo in the center, and a search icon on the right. Below the header, a table displays market data for the S&P 500, Dow, and Nasdaq. The S&P 500 is at 1,838.63 (+8.80, +0.48%), the Dow is at 16,154.39 (+126.80, +0.79%), and the Nasdaq is at 4,244.03 (+3.35, +0.08%). Below the table is a large image of a Volkswagen plant at night with flags. The headline reads 'Tennessee Volkswagen plant votes against union in UAW defeat'. The sub-headline reads 'In a stinging defeat that could accelerate the decades-long decline of the United Auto...'. The source is 'Reuters' and the time is '11 mins ago'. The page number '1 of 6' is visible in the bottom right corner.

Index	Value	Change	% Change
S&P 500	1,838.63	+8.80	+0.48%
Dow	16,154.39	+126.80	+0.79%
Nasdaq	4,244.03	+3.35	+0.08%

**Tennessee Volkswagen plant votes against union in UAW defeat**  
In a stinging defeat that could accelerate the decades-long decline of the United Auto...  
Reuters 11 mins ago 1 of 6



DEVICE-WIDTH: 640px



AAPL	503.73	-16.57 (3.18%)
AMZN	274.03	+6.09 (2.27%)
GOOG	727.58	-12.41 (1.68%)

just now





DEVICE-WIDTH: 640px

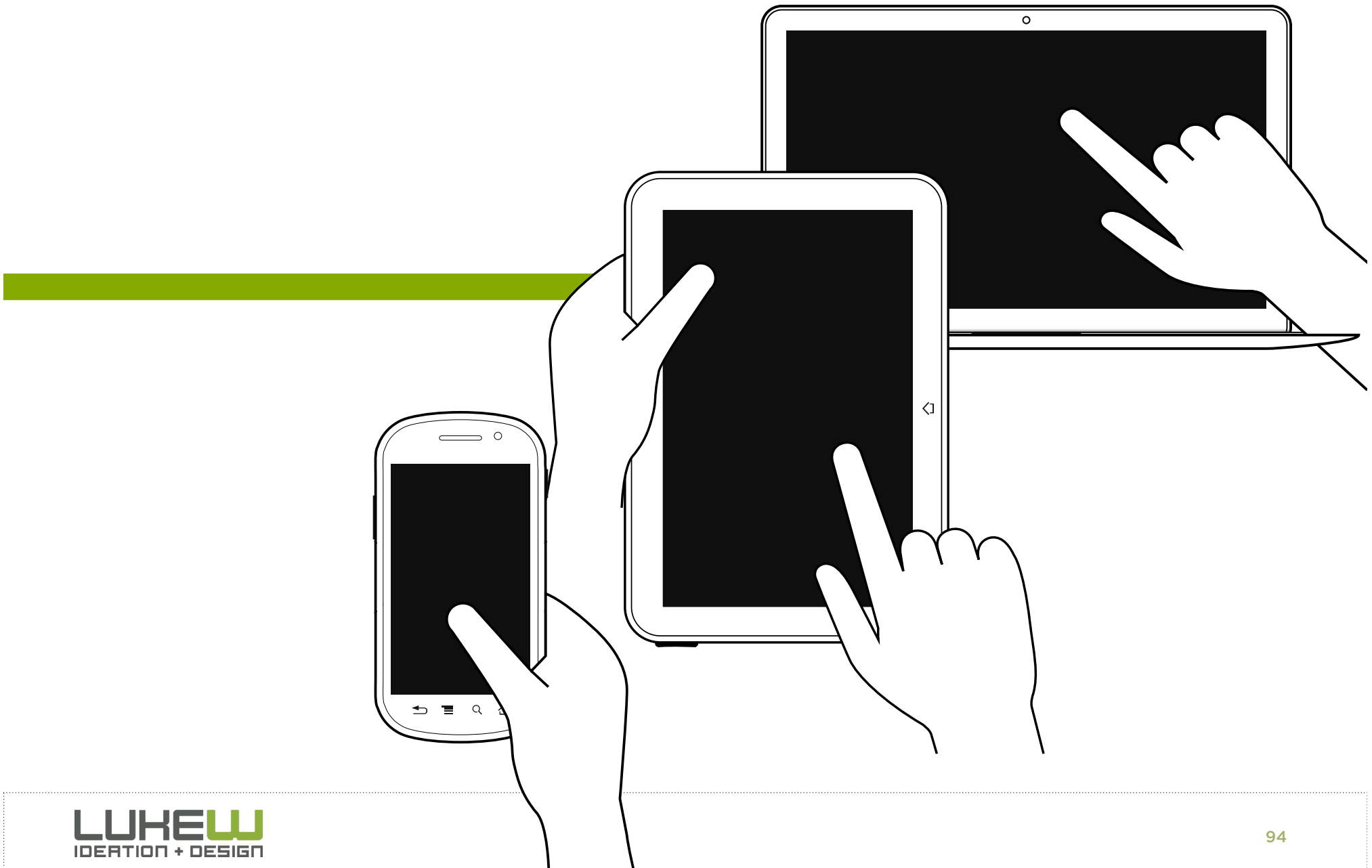
Celtics  
101

Bulls  
95

Final Score

just now



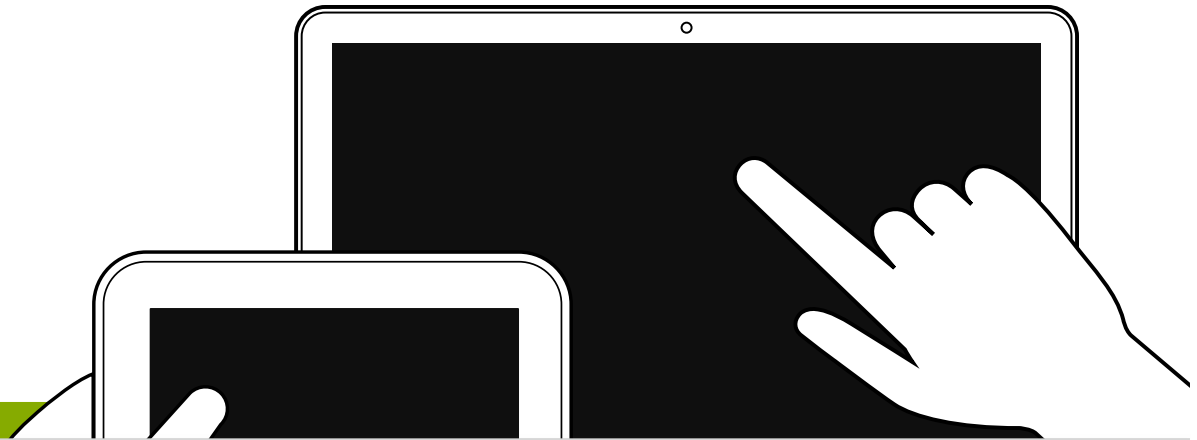


“More ergonomically accessible.”

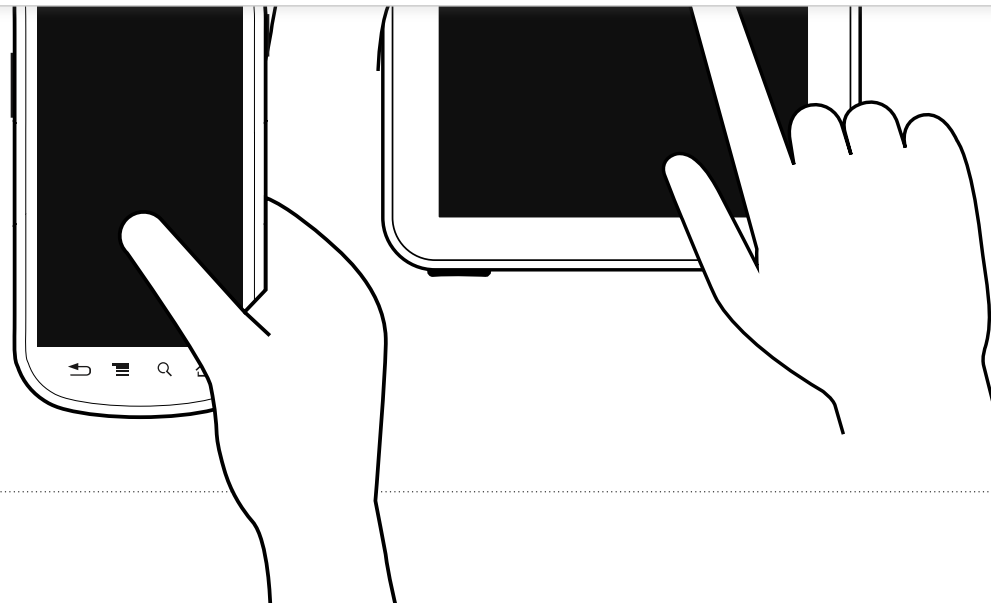


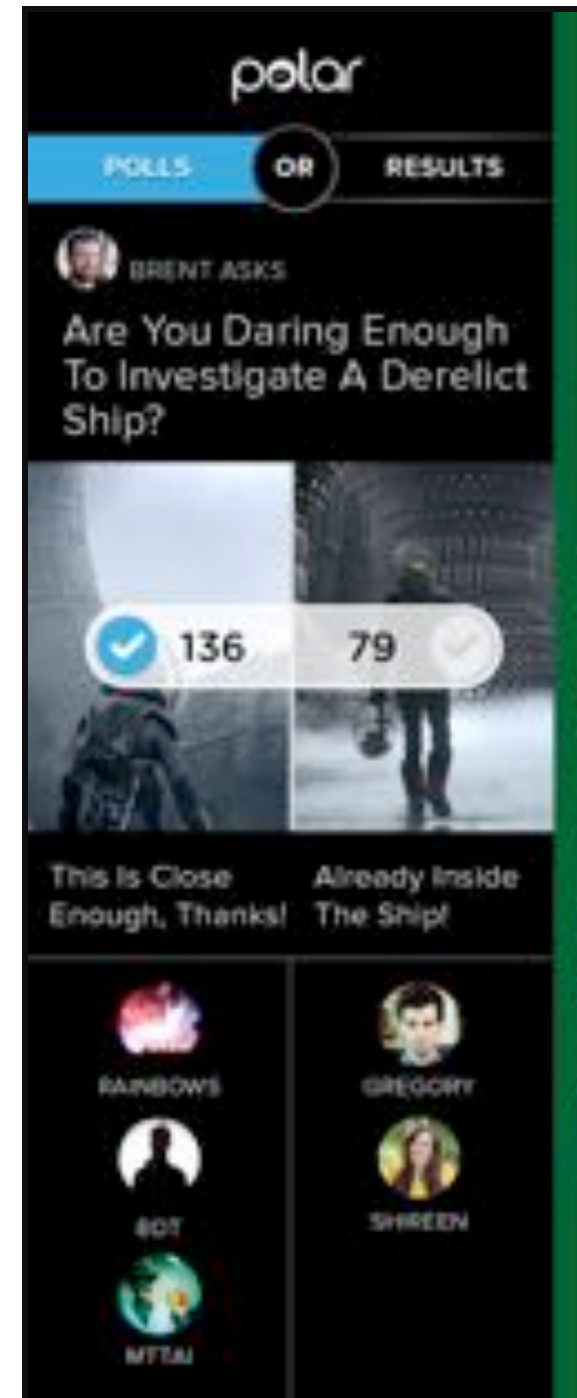
distinct command sets on the left

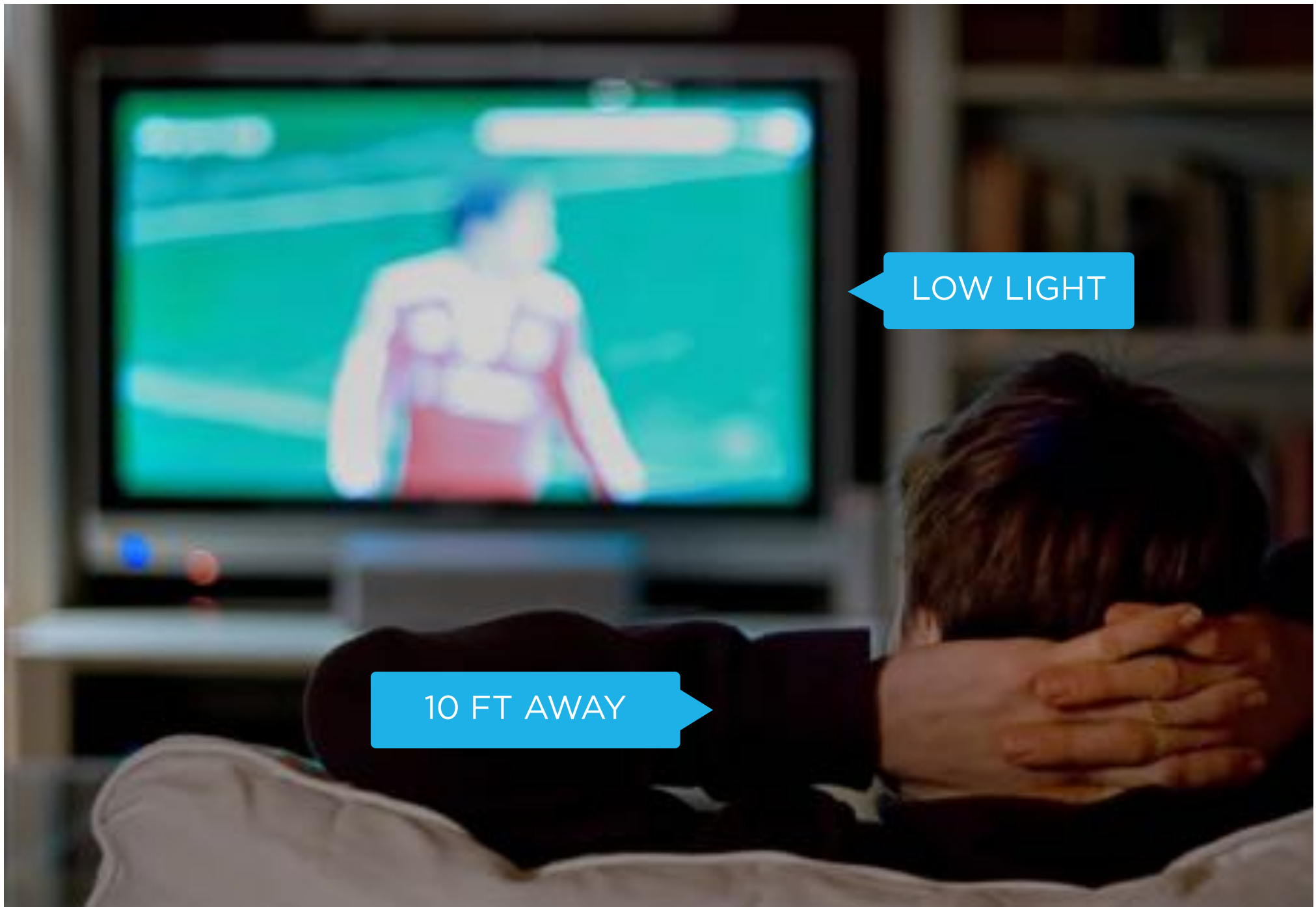
persistent commands on the right



Screen size is a poor proxy for posture.

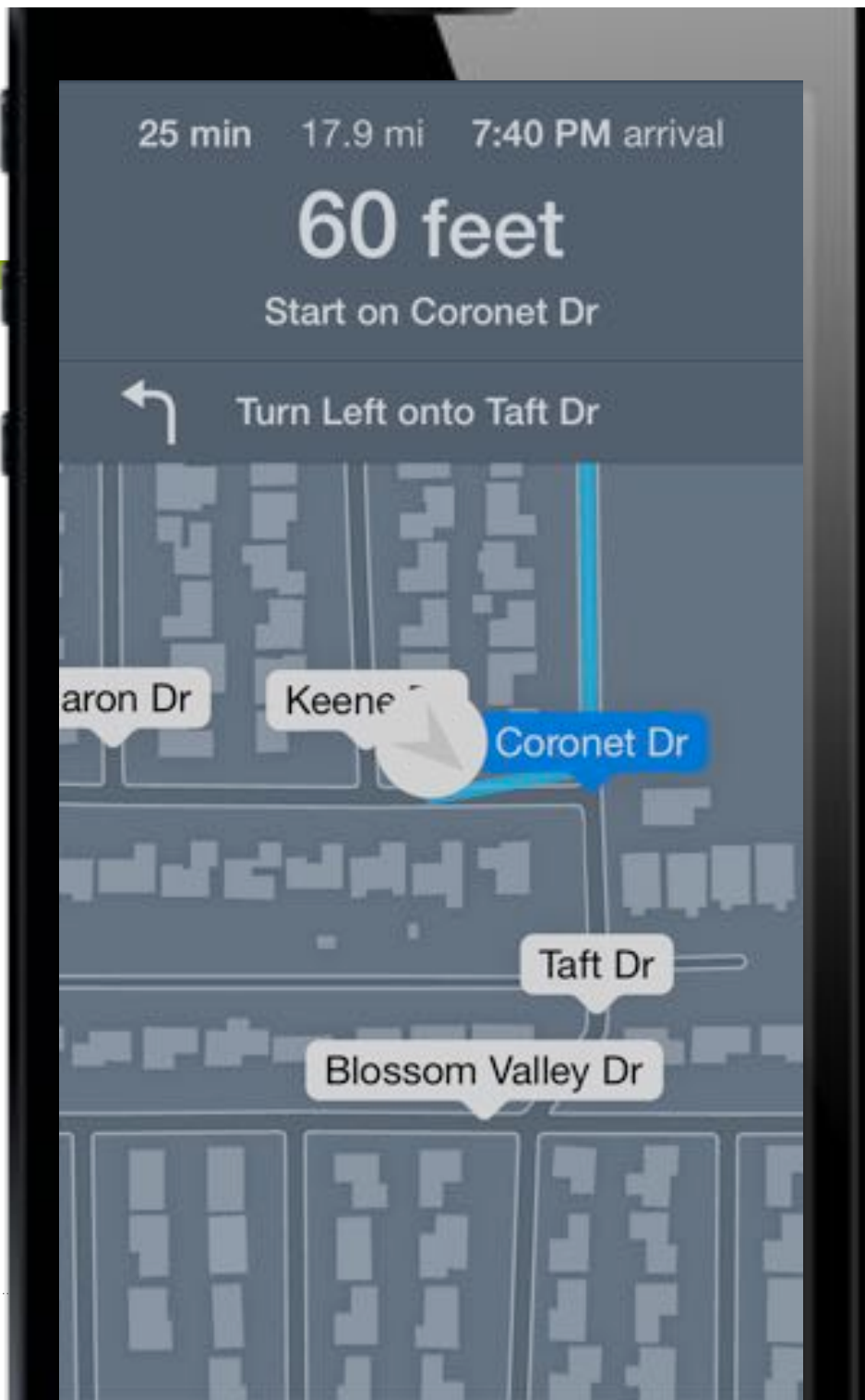






LOW LIGHT

10 FT AWAY





AT&T

7:20 PM



Video



'CATCHES' IN A VERY LOOSE SENSE

## Fisherman Catches More Than He Bargained For

Sports

617

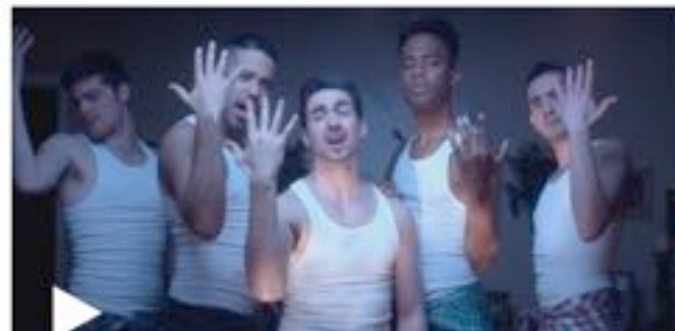


TREAT YO SELF

## A Song To Get You Through Valentine's Day

Music

2







## MEDIA QUERIES LEVEL 4

```
@media (light-level: washed) {  
  body {  
    background: #ffffff;  
  }}  

```



# POSTURE

---

1. Design to human scale
2. And environments
3. Not just to screen width



media queries don't help  
much here... yet.

## IN A WORLD OF GLASS...

---

### 1. Know Your Screen

ONLINE TIME IS SCREEN TIME  
AND INCREASINGLY MOBILE

### 2. Output

HIGH RESOLUTION & WIDESCREEEN  
VERTICAL MEDIA QUERIES

### 3. Input

SUPPORT ALL INPUTS  
COMMUNICATE WHAT'S POSSIBLE

### 4. Posture

VIEWING DISTANCE  
ENVIRONMENT & MORE



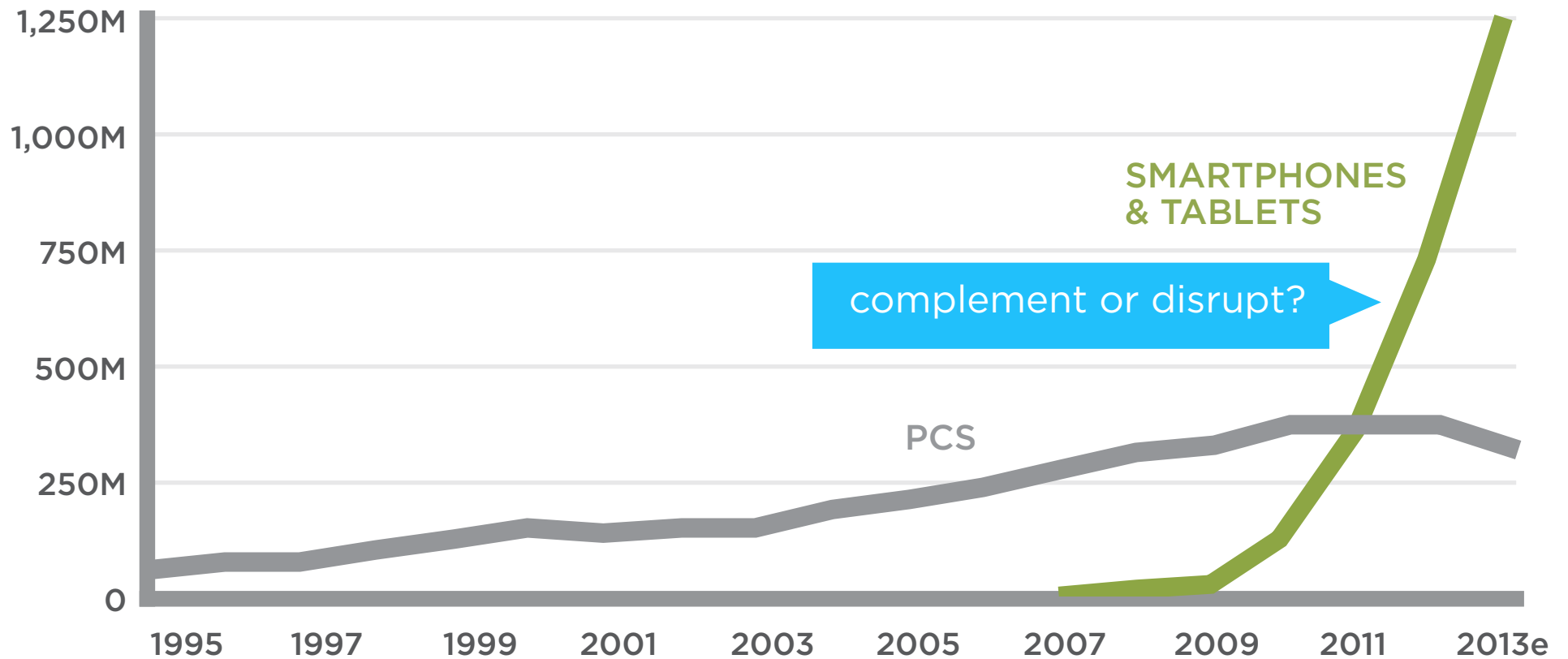
sapphire?

“What material comes after glass? What’s the disruption?”

wearables?

voice interfaces?

# Global Sales



“Flexible glass  
that is thinner  
than a dollar  
bill.”



CORNING  
Willow™ Glass

# THANKS



@lukew

**LUKEW**  
IDEATION + DESIGN