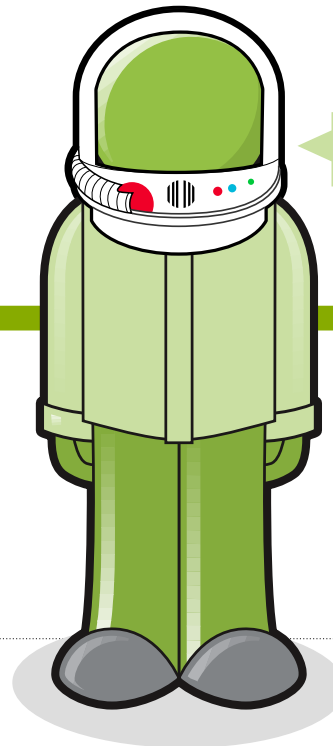


MOBILE IN THE FUTURE



@lukew

LUKE WROBLEWSKI

IGNITERS 2017

LUHEW
IDEATION + DESIGN

10 YEARS AGO...

JUNE 29 2007



“ What we wanna do is make a leapfrog product that is way smarter than any mobile device has ever been... ”

Worldwide Device Shipments

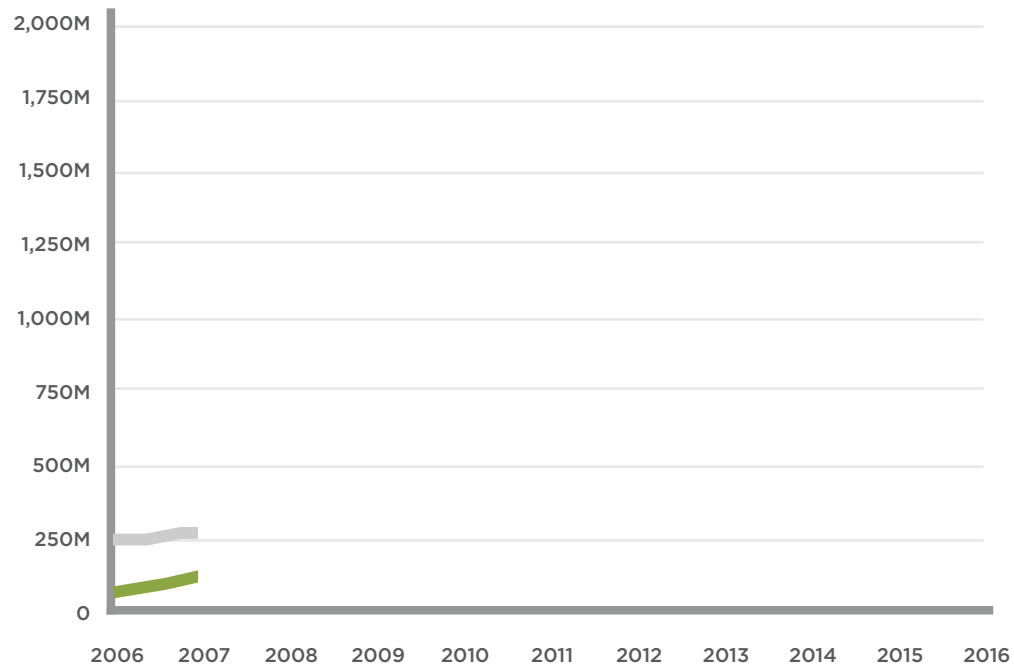
2006

239M

PCS

68M

SMARTPHONES



BLACKBERRY PEARL 8100



MOTOROLA Q



PALM TREO 680



Worldwide Device Shipments

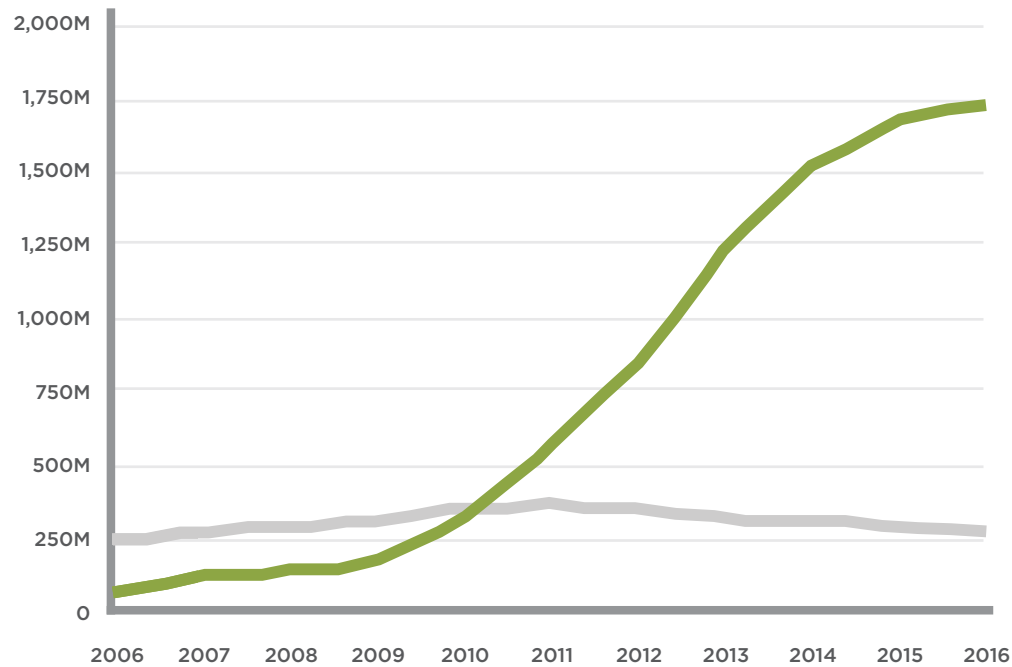
2006

239M

PCS

68M

SMARTPHONES



2016

269M

PCS

1,729M

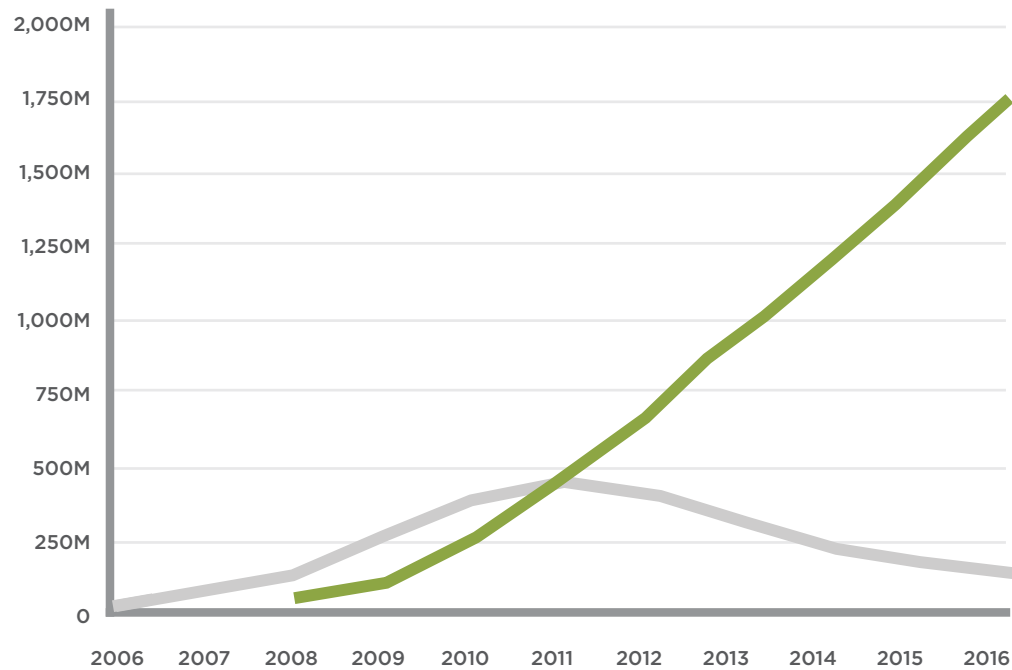
SMARTPHONES
& TABLETS

facebook Monthly Active Users

2006

12M

DESKTOP MAU



2016

120M

DESKTOP MAU

1,740M

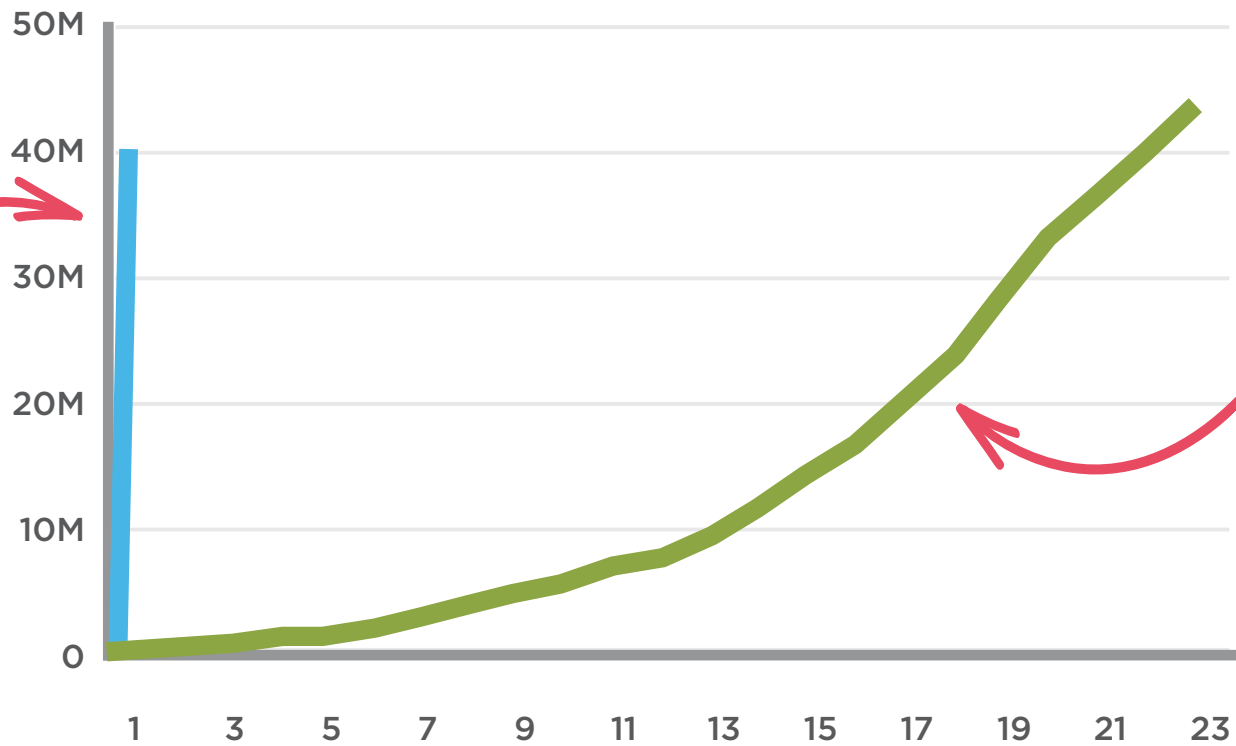
MOBILE MAU

App Growth in 2005 vs. 2016



4 days to 40M downloads







hit 40M in December 2016



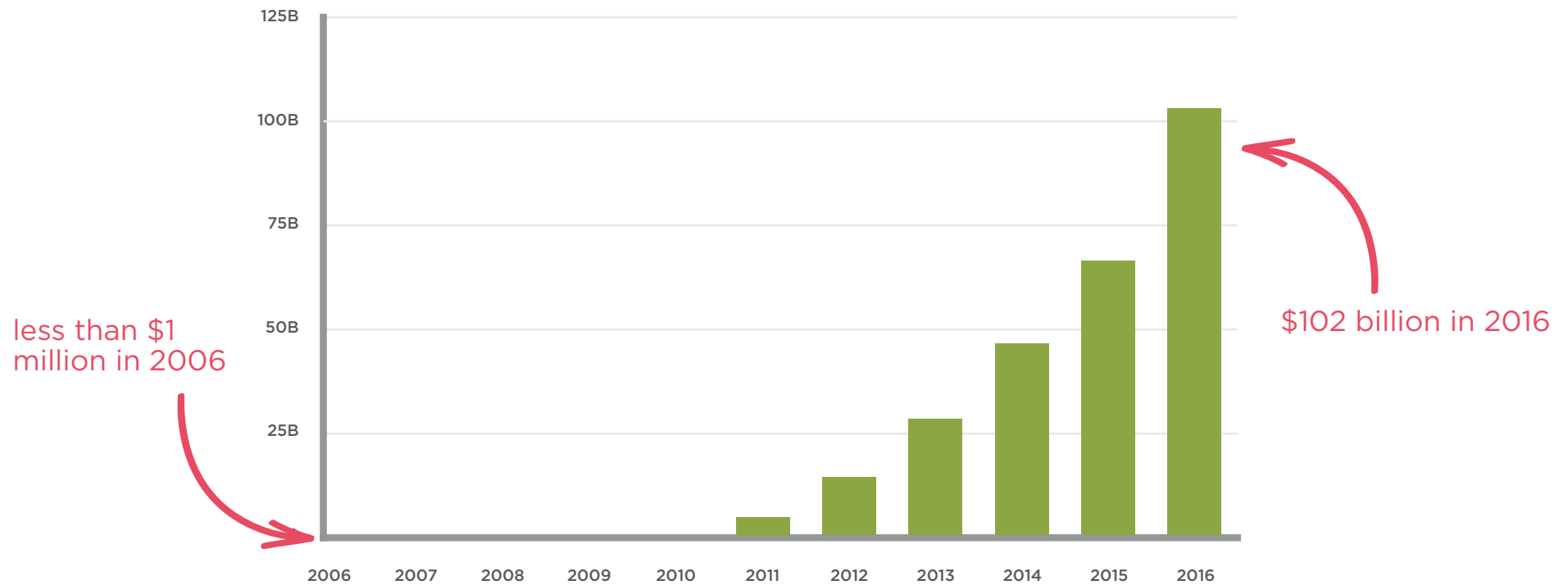
630 days to 40M users

hit 40M in Q2 2005

Time to Reach 10M Users

1 DAY		SUPER MARIO RUN
2 DAYS		POKEMON GO
3 DAYS		ANGRY BIRDS SPACE
16 DAYS		GOOGLE+
780 DAYS		TWITTER
852 DAYS		FACEBOOK

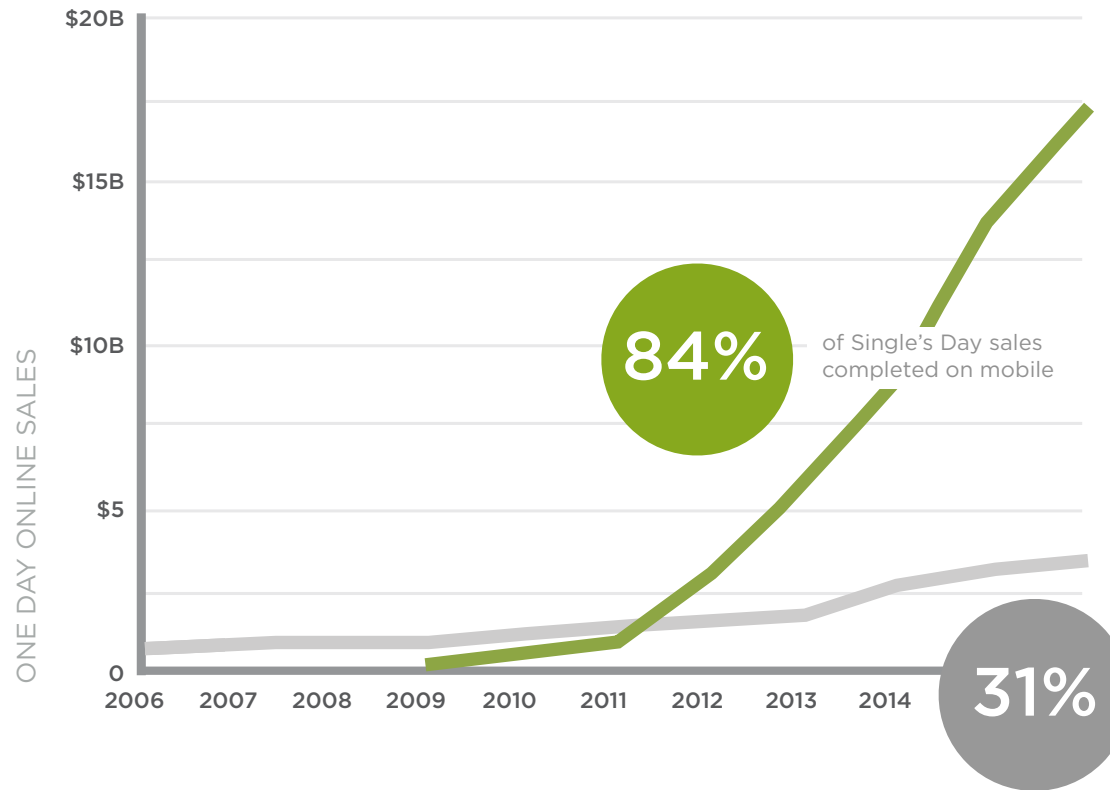
PayPal[™] Annual Mobile Payments Volume



Cyber-Monday (US) vs. Single's Day (China)

2006

\$610M
CYBER MONDAY



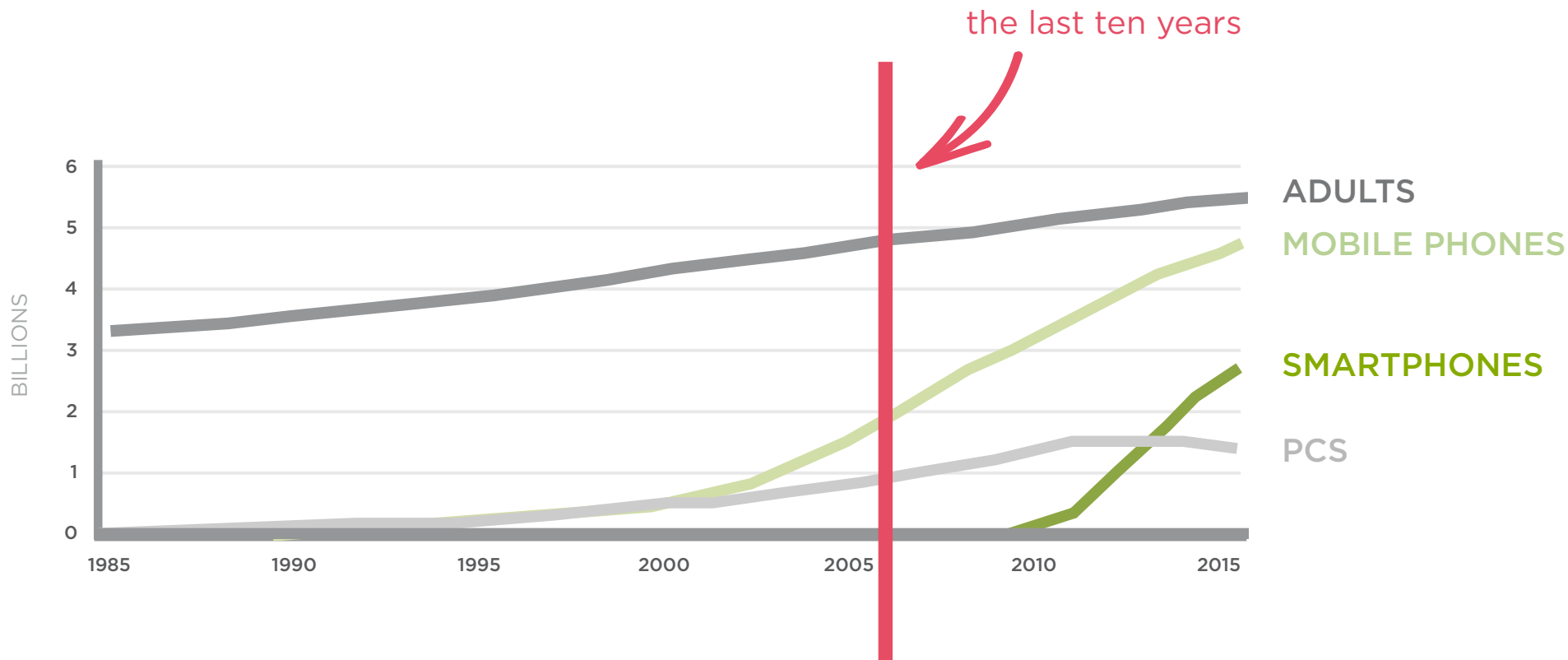
2016

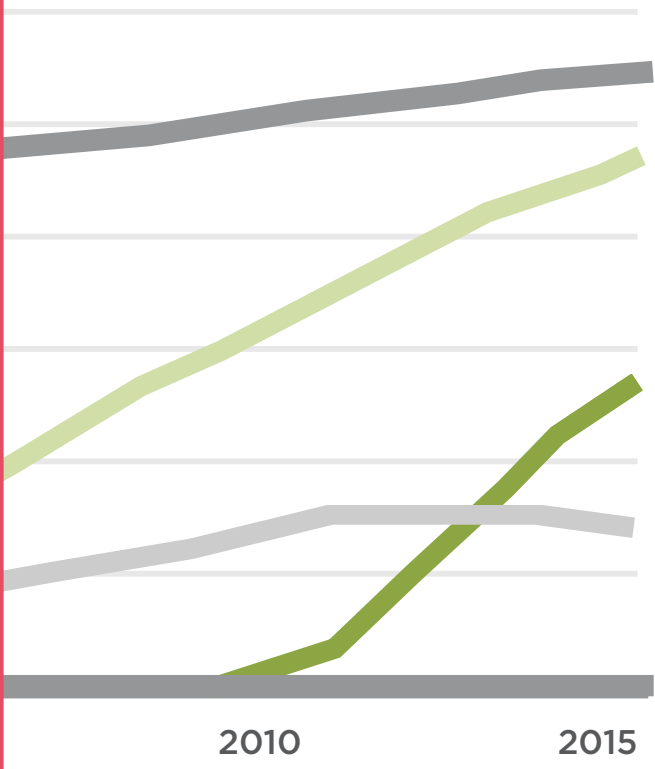
\$3.4B
CYBER MONDAY

\$17.8B
SINGLE'S DAY

of Cyber Monday sales completed on mobile

Global Population





ADULTS

MOBILE PHONES

SMARTPHONES

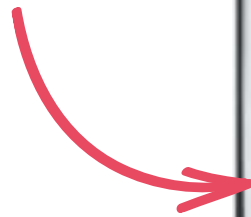
PCS

what have we learned about designing for this World?



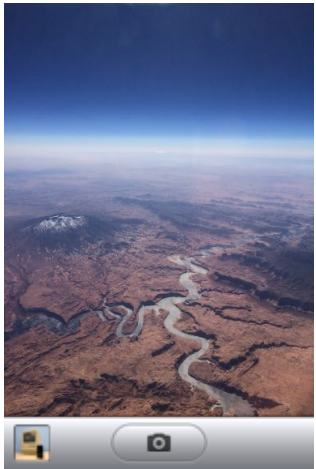
Ten Years of iOS Camera Design

take photo, view it

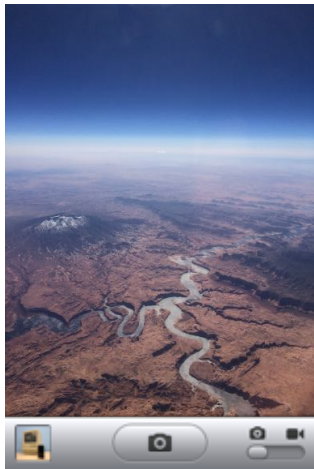


IOS 2

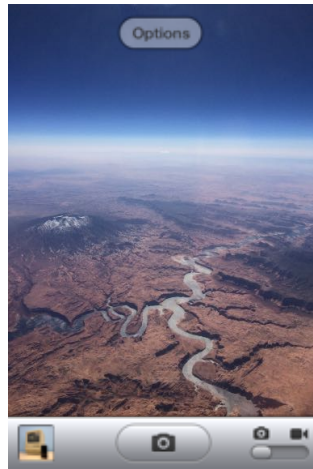
Ten Years of iOS Camera Design



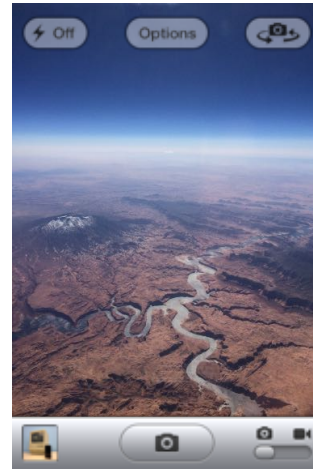
iOS 2



iOS 3



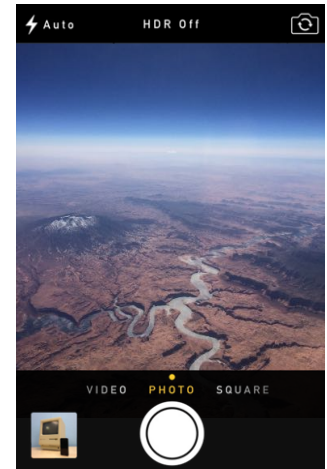
iOS 4



iOS 5

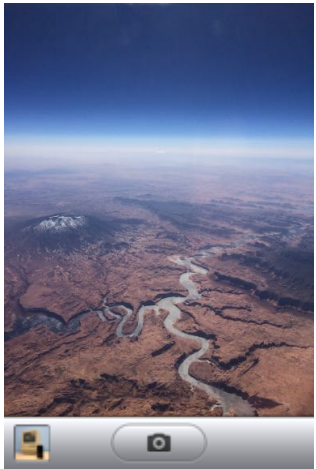


iOS 6

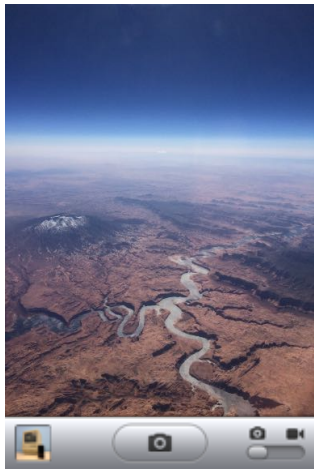


iOS 7

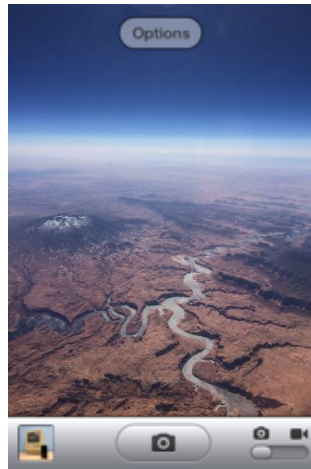
Ten Years of iOS Camera Design



IOS 2



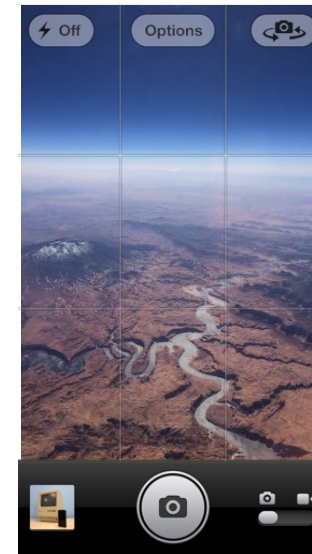
IOS 3



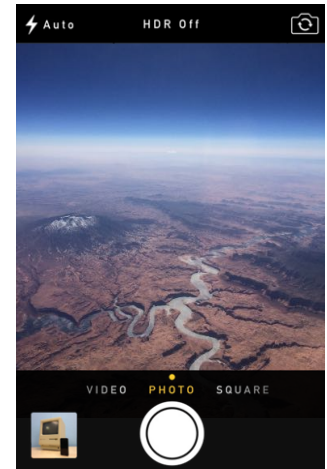
IOS 4



IOS 5



IOS 6



IOS 7

Ten Years of iOS Camera Design



take photo
view it
take square photo
take pano photo
take live photo
take portrait photo
take video
take slo-mo video
take time-lapse video
switch front/rear camera
switch telephoto/non camera
loop, bounce & long exposure
options for live photos
turn filters on/off
turn timer on/off
turn live photos on/off
turn HDR on/off
turn flash on/off



Ten Years of iOS Camera Design



take photo
view it
take square photo
take pano photo
take live photo
take portrait photo
take video
take slo-mo video
take time-lapse video
switch front/rear camera
switch telephoto/non camera
loop, bounce & long exposure
options for live photos
turn filters on/off
turn timer on/off
turn live photos on/off
turn HDR on/off
turn flash on/off



Classic Case of Feature Creep? Or...

take photo
view it

take photo
view it
take square photo
take pano photo
take live photo
take portrait photo
take video
take slo-mo video
take time-lapse video
switch front/rear camera
switch telephoto/non
camera
loop, bounce & long
exposure options for live
photos
turn filters on/off
turn timer on/off
turn live photos on/off
turn HDR on/off
turn flash on/off

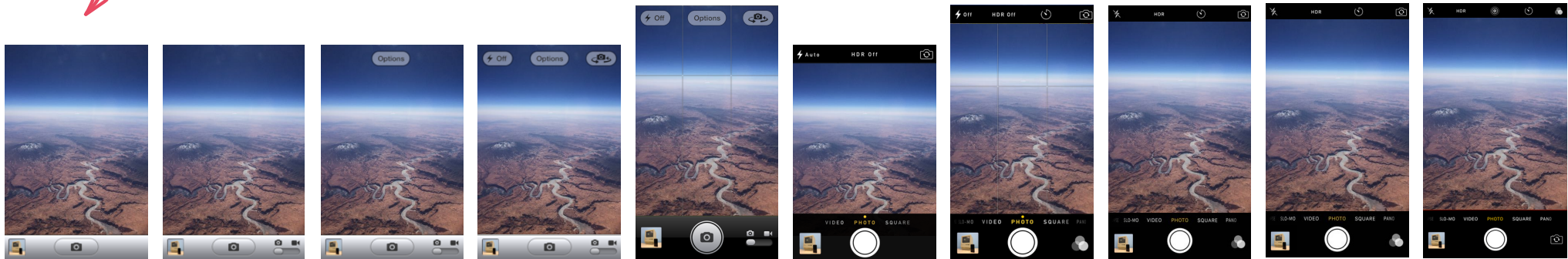


Building a Minimum Viable Product at Scale?



take photo
view it

take photo
view it
take square photo
take pano photo
take live photo
take portrait photo
take video
take slo-mo video
take time-lapse video
switch front/rear camera
switch telephoto/non camera
loop, bounce & long exposure options for live photos
turn filters on/off
turn timer on/off
turn live photos on/off
turn HDR on/off
turn flash on/off



IOS 2

IOS 3

IOS 4

IOS 5

IOS 6

IOS 7

IOS 8

IOS 9

IOS 10

IOS 11

Classic Case of Feature Creep?

OR

Minimum Viable Product Process?

Probable Use of Each Action

88%

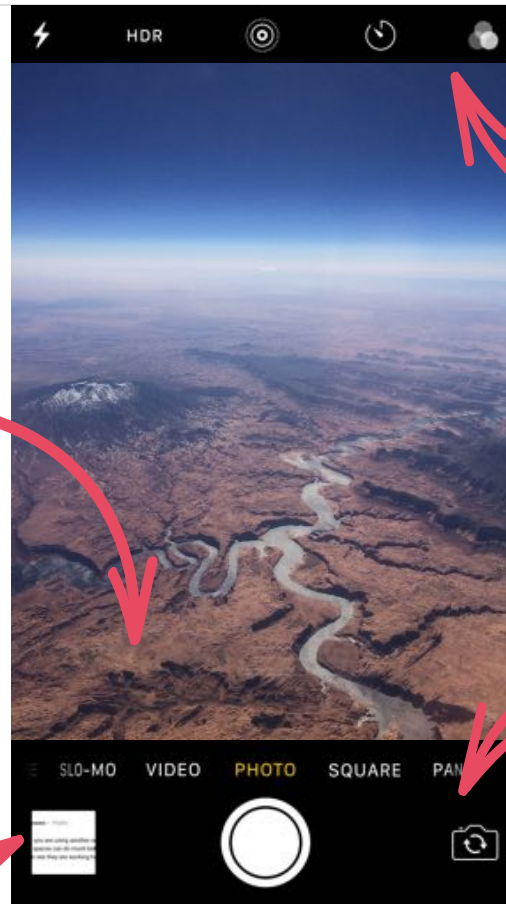
take picture

90% photo
9% video

.5% square
.2% slo-mo
.01% time lapse
.2% pano

10%

review/send picture



.4%

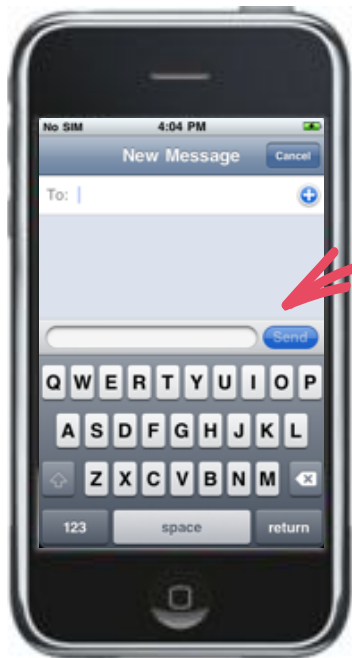
turn settings on/off

.02% flash on/off
.005% HDR on/off
.01% Live Photos on/off
.005% timer on/off
.01% select filter

1.6%

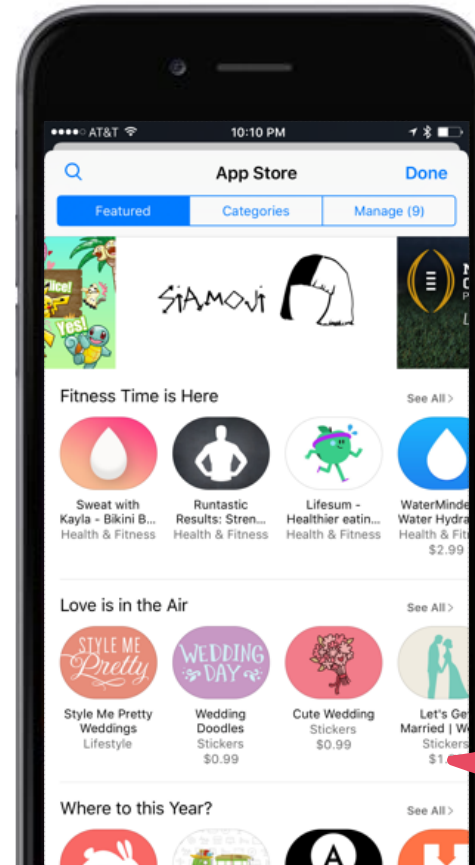
switch front/
rear camera

Ten Years of iOS Messaging Design



IPHONE 2G
IOS 1, 2007

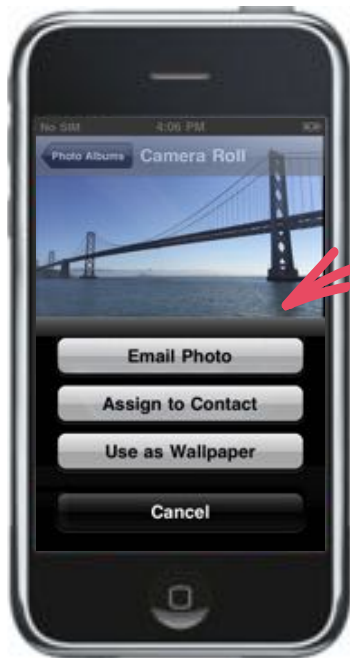
send text
messages



IPHONE 7 PLUS
IOS 10, 2016

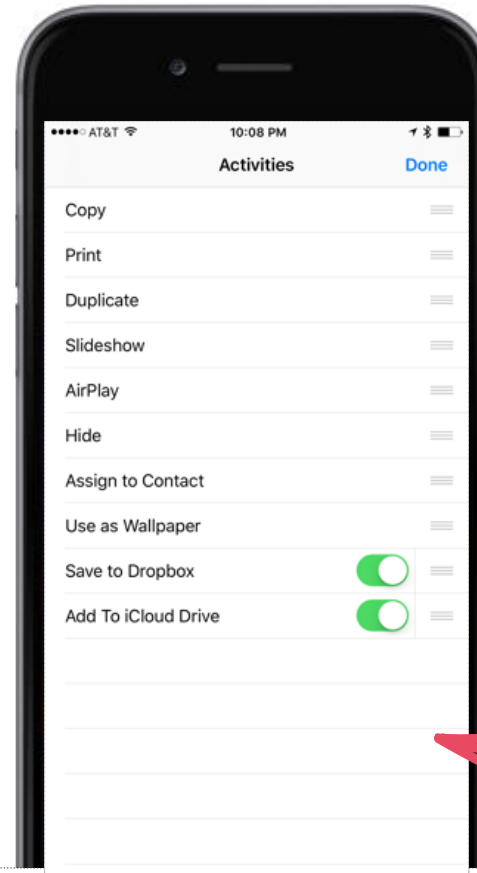
send text, photos,
videos, audio,
drawings, annotated
photos & videos,
touch gestures, and
much more through
messaging app
store

Ten Years of iOS Sharing Design



IPHONE 2G
IOS 1, 2007

email, assign to
contact, use as
wallpaper



IPHONE 7 PLUS
IOS 10, 2016

email, message,
copy, print,
duplicate, slideshow,
airplay, hide, assign
to contact, use as
wallpaper, save to
cloud, and lots more
through share
extensions

Ten Years Later on iOS...



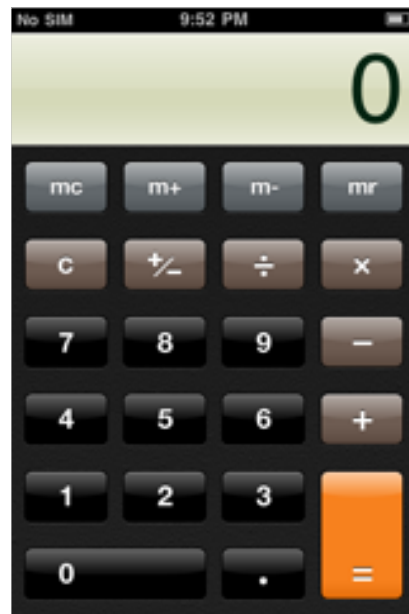
VS



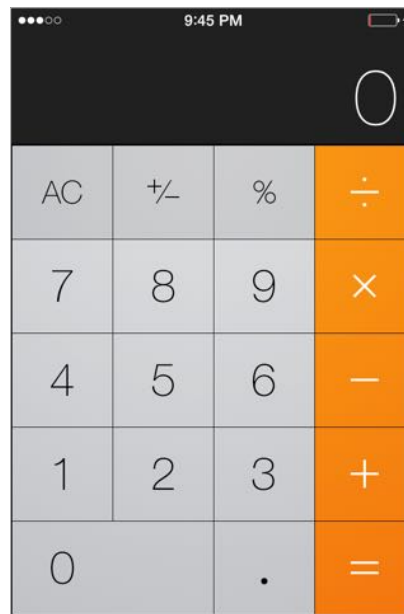
Ten Years of iOS Calculator Design



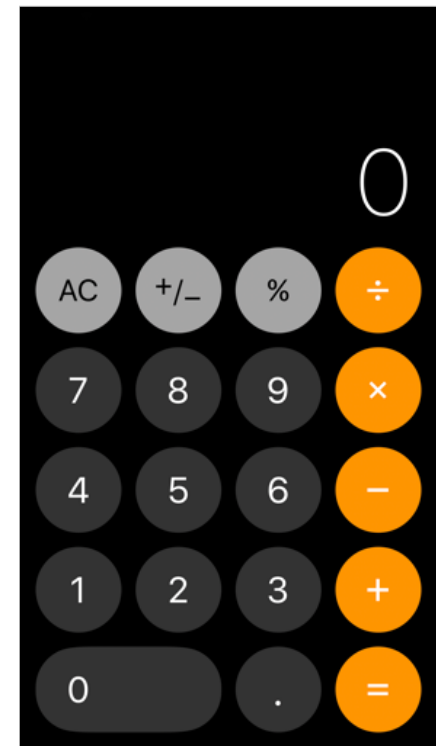
IOS 1



IOS 3



IOS 7

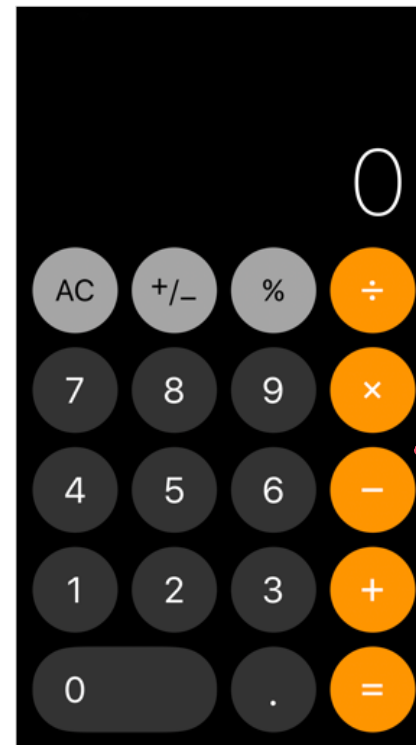


IOS 11

Ten Years of iOS Calculator Design

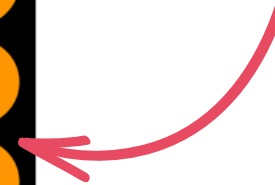


IOS 1



IOS 11

have we come full circle?



Twitter iOS App



2010 “We need an iOS app.”



2011 “People don’t understand Twitter, add some labels.”



2013 “Flat design!”



2014 “People really don’t understand Twitter, ditch the @ and #.”



2015 “We’re real-time news!”

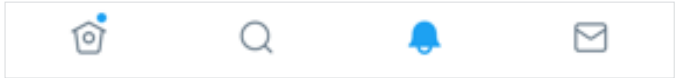


2016 “If we put Moments in Search, more people will use them.”



2017 “Just do whatever the design team wants.”

Twitter iOS App



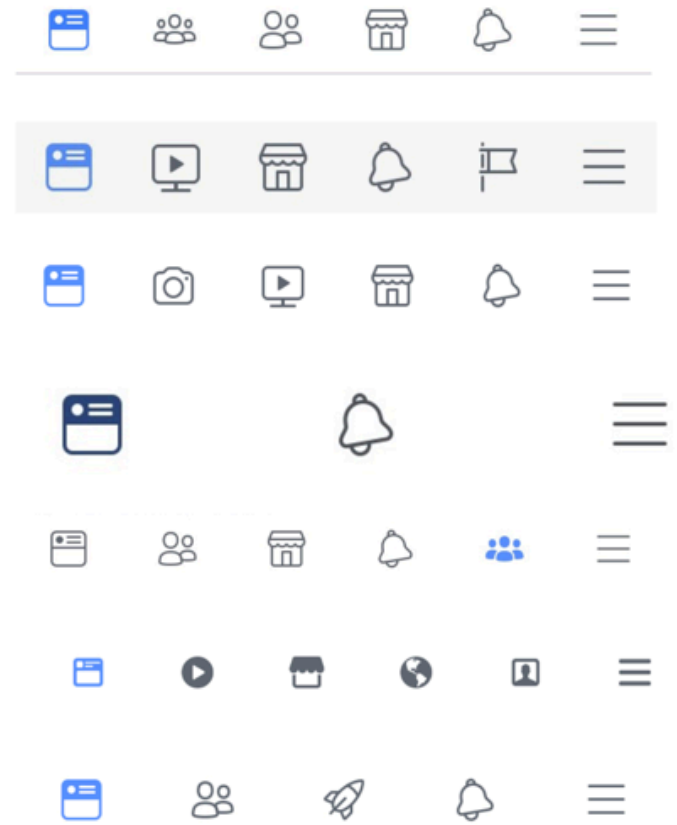
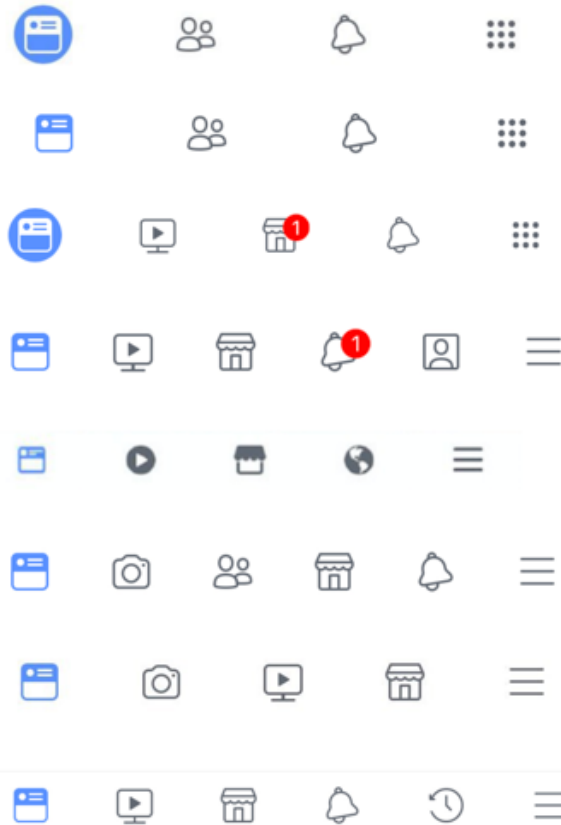
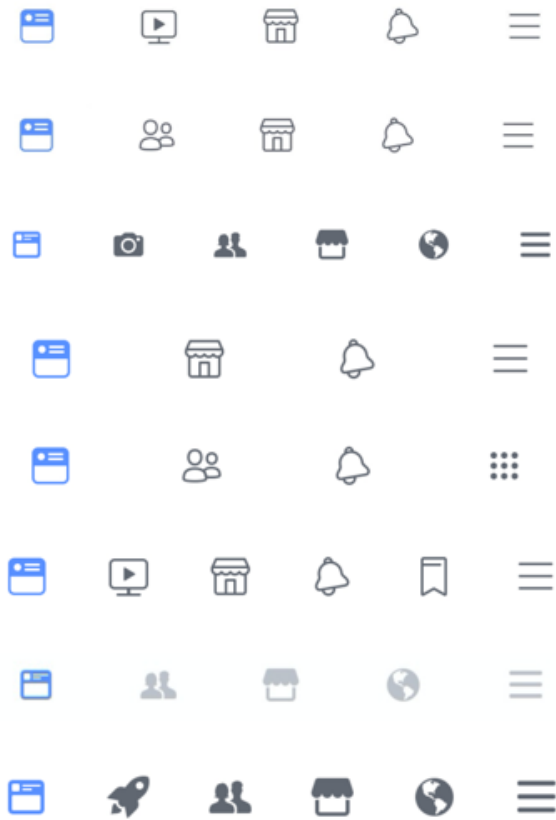
2010

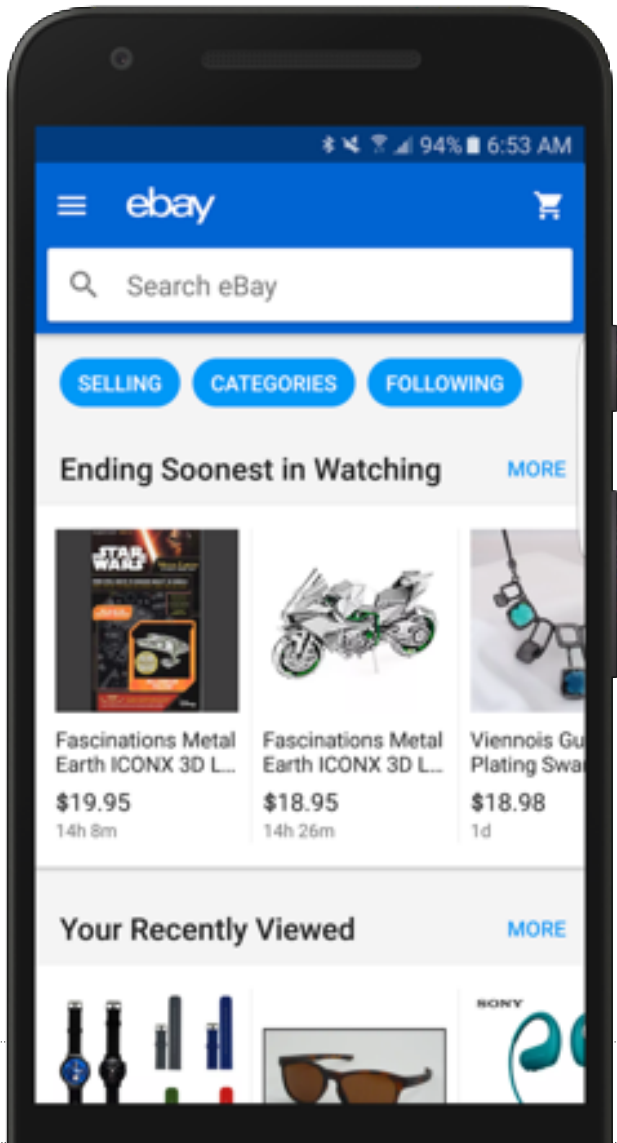
2017

have we come full circle?

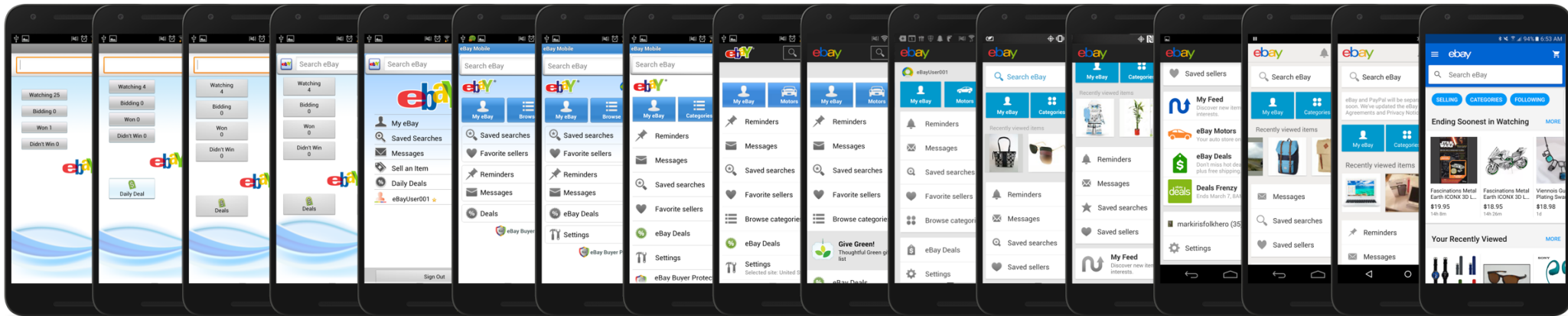


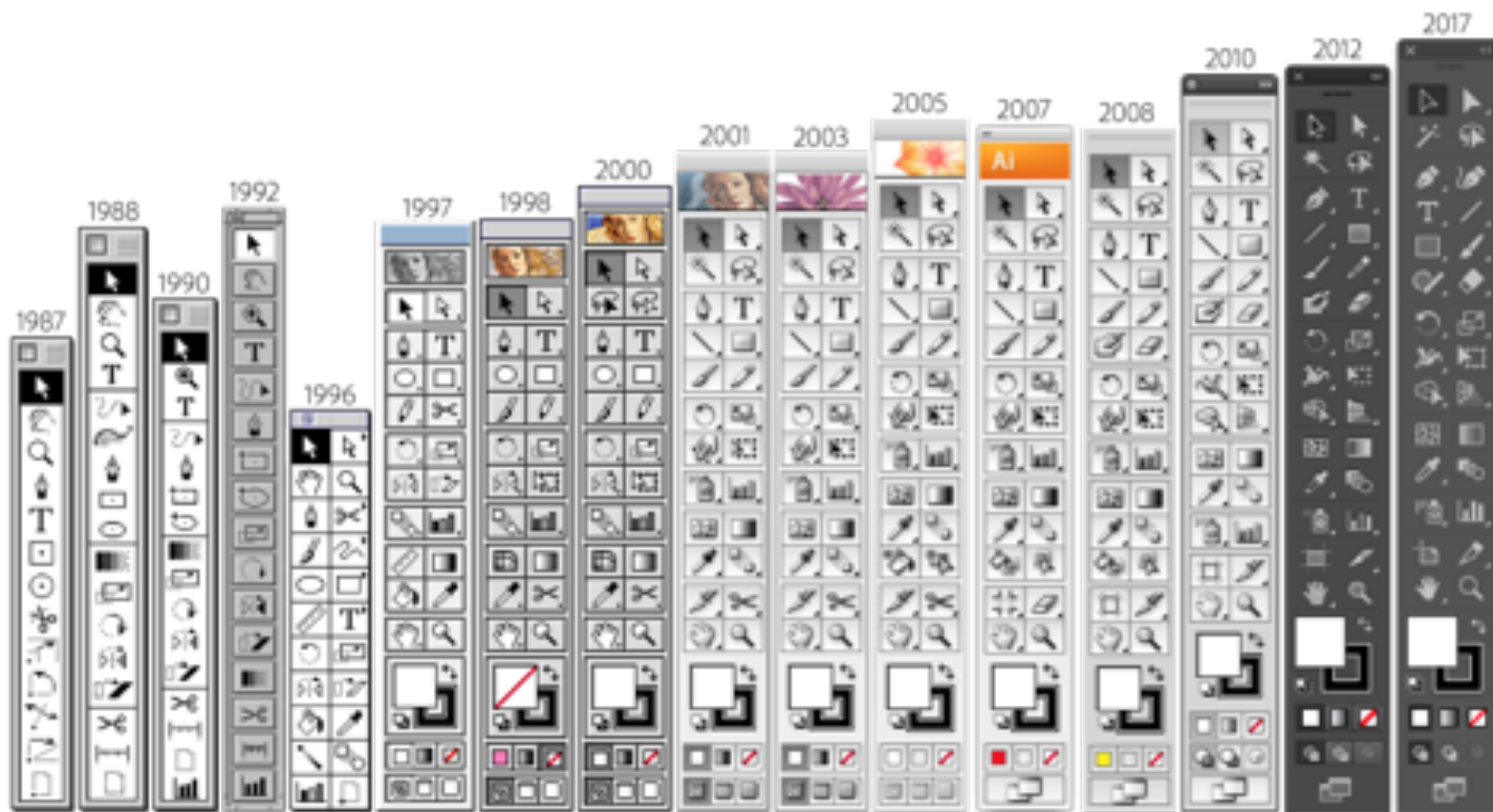
Facebook Mobile App

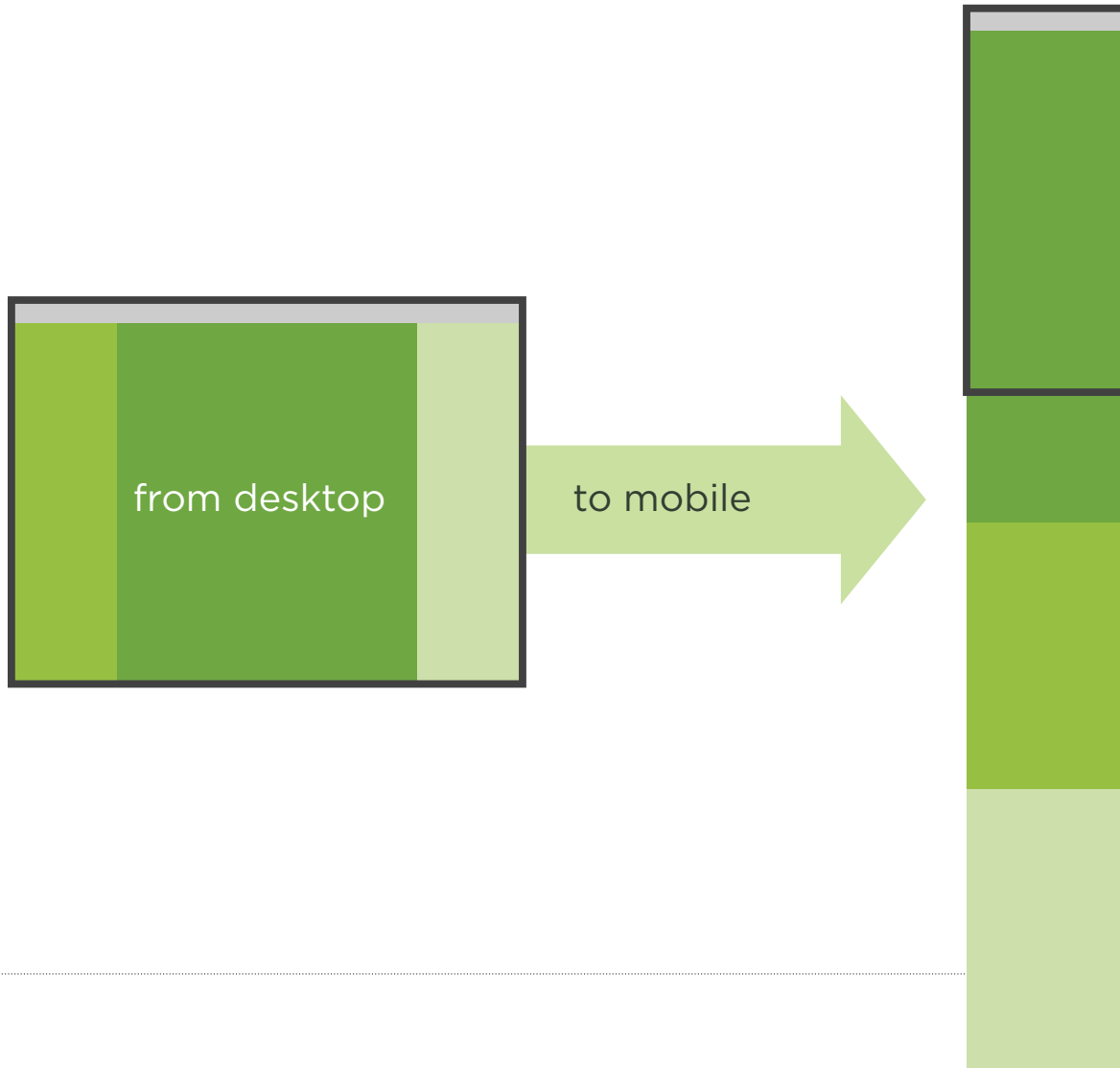




Ten Years of eBay Android App Design



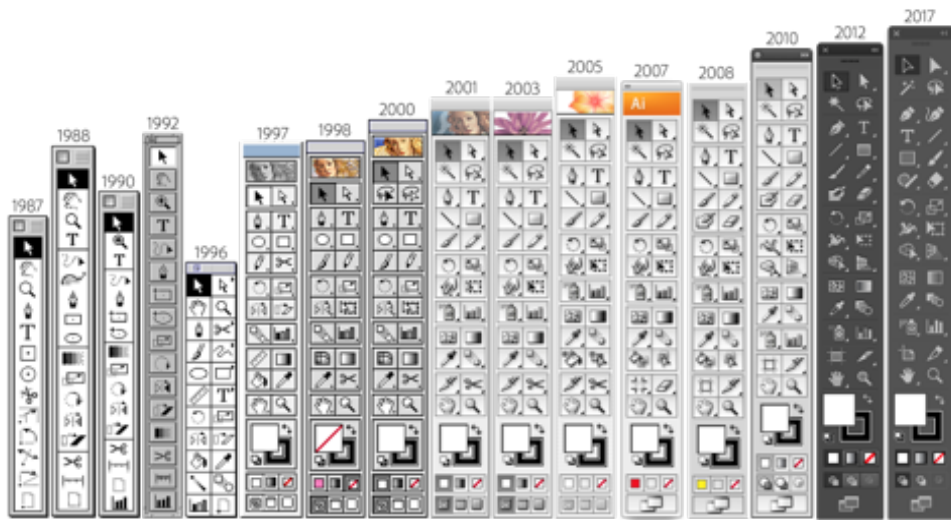




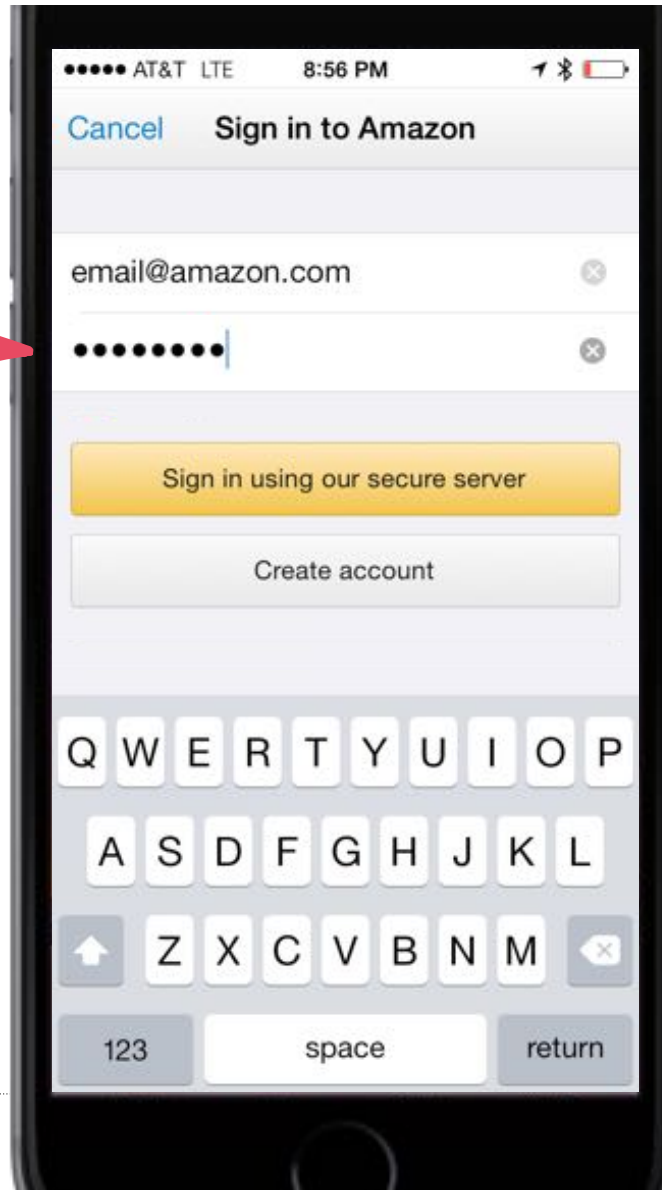
DESKTOP DESIGN

VS

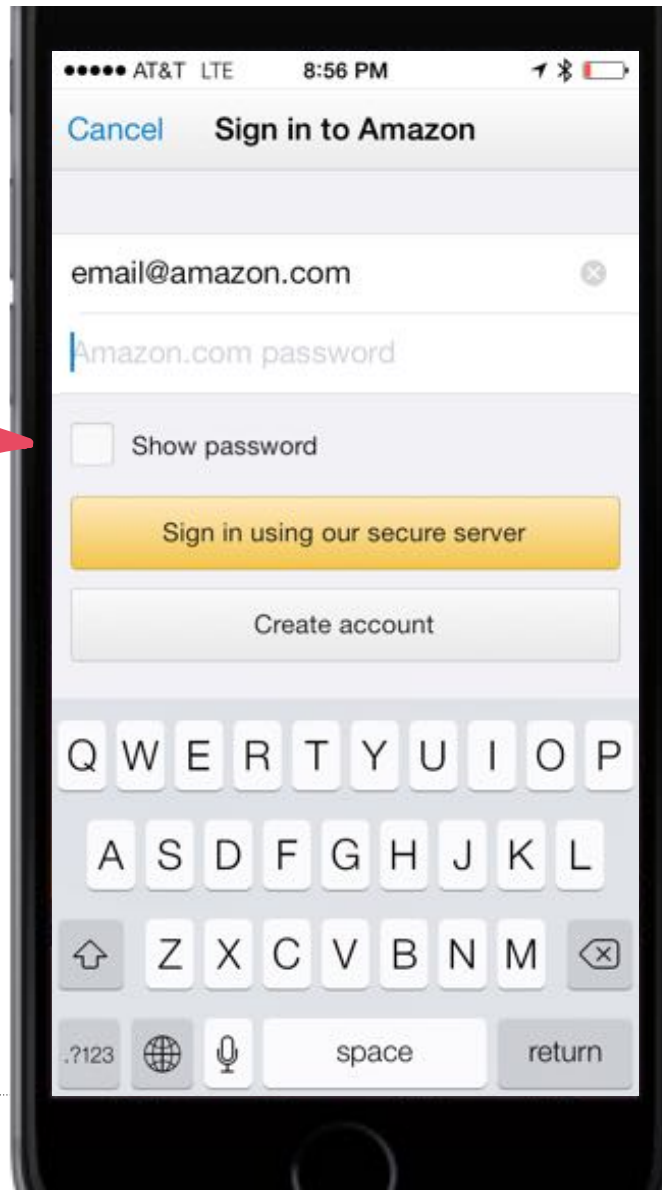
MOBILE DESIGN







can't view password
when logging in



tap to reveal password

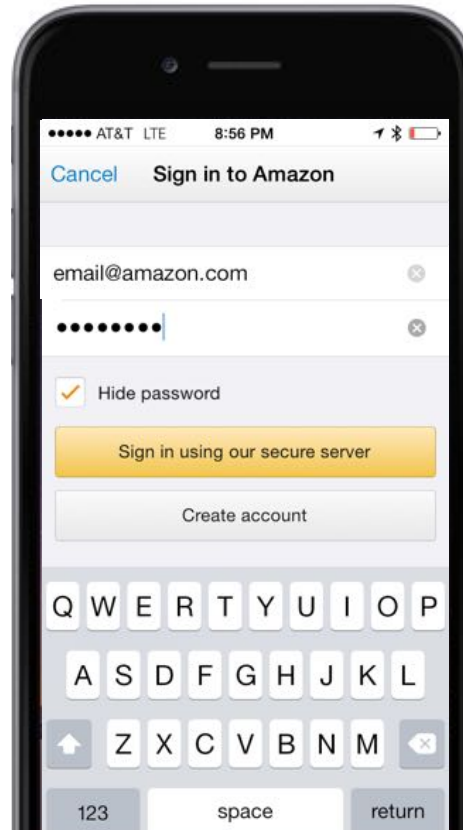
Can't view password



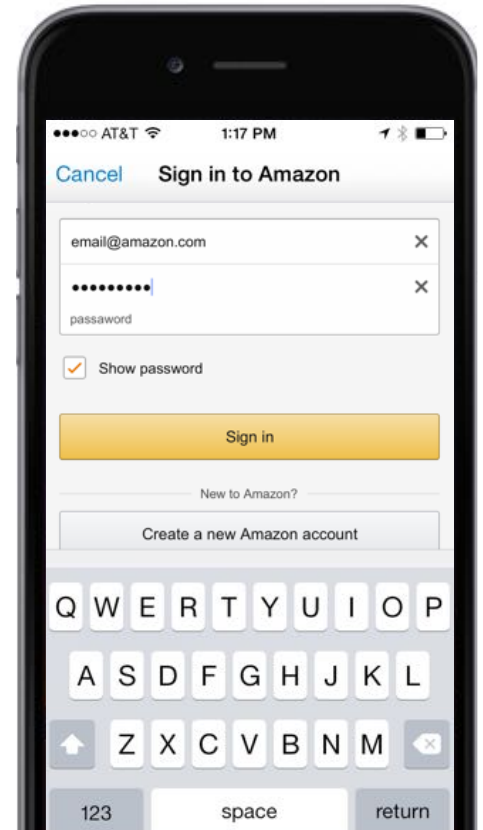
Tap to reveal password

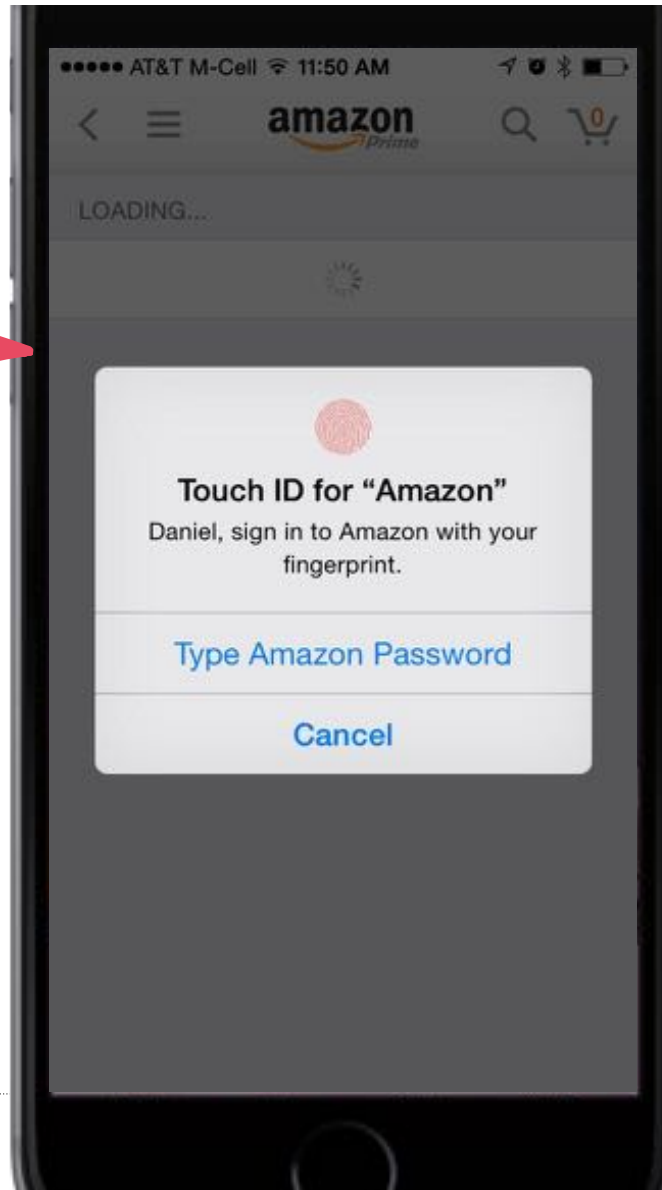


Password revealed by default, tap to hide



Reveal password below as you type

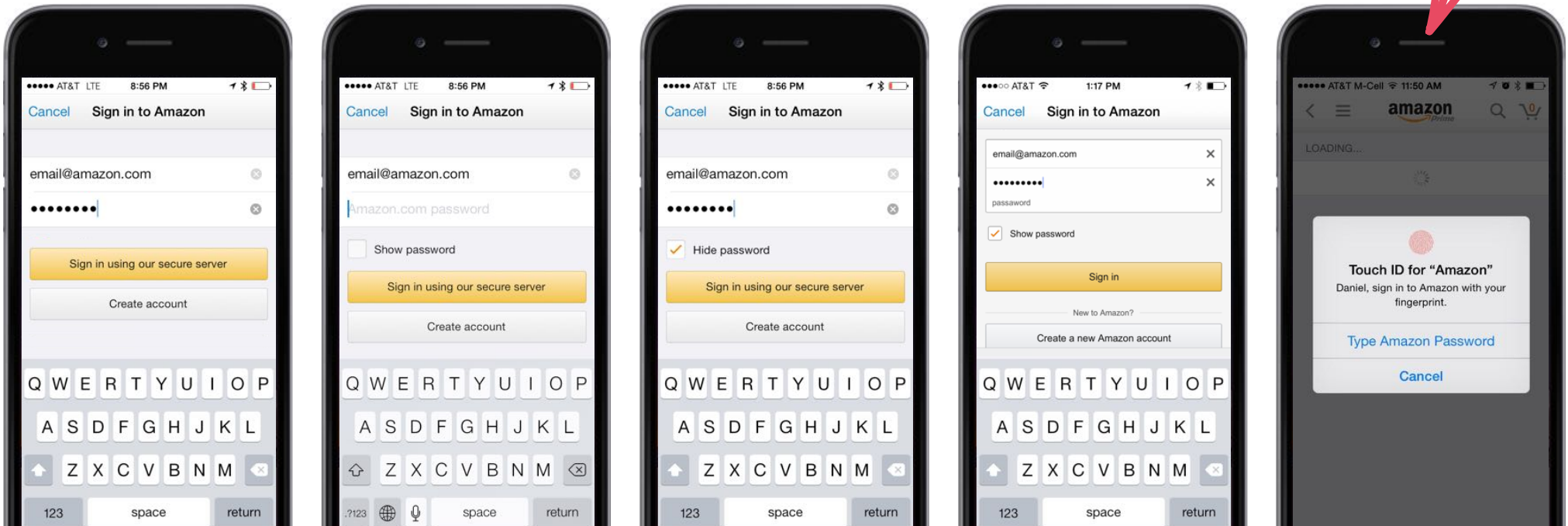


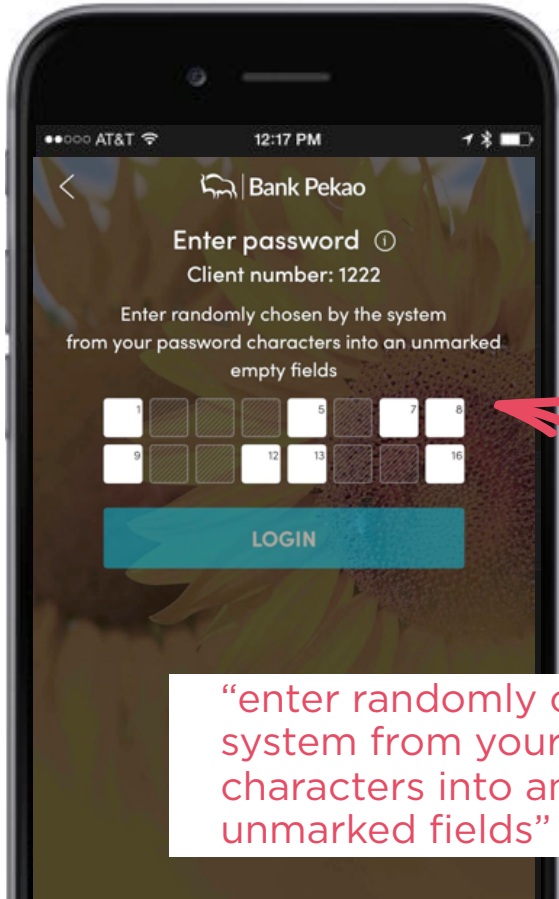


sign in with your
fingerprint

ITERATION

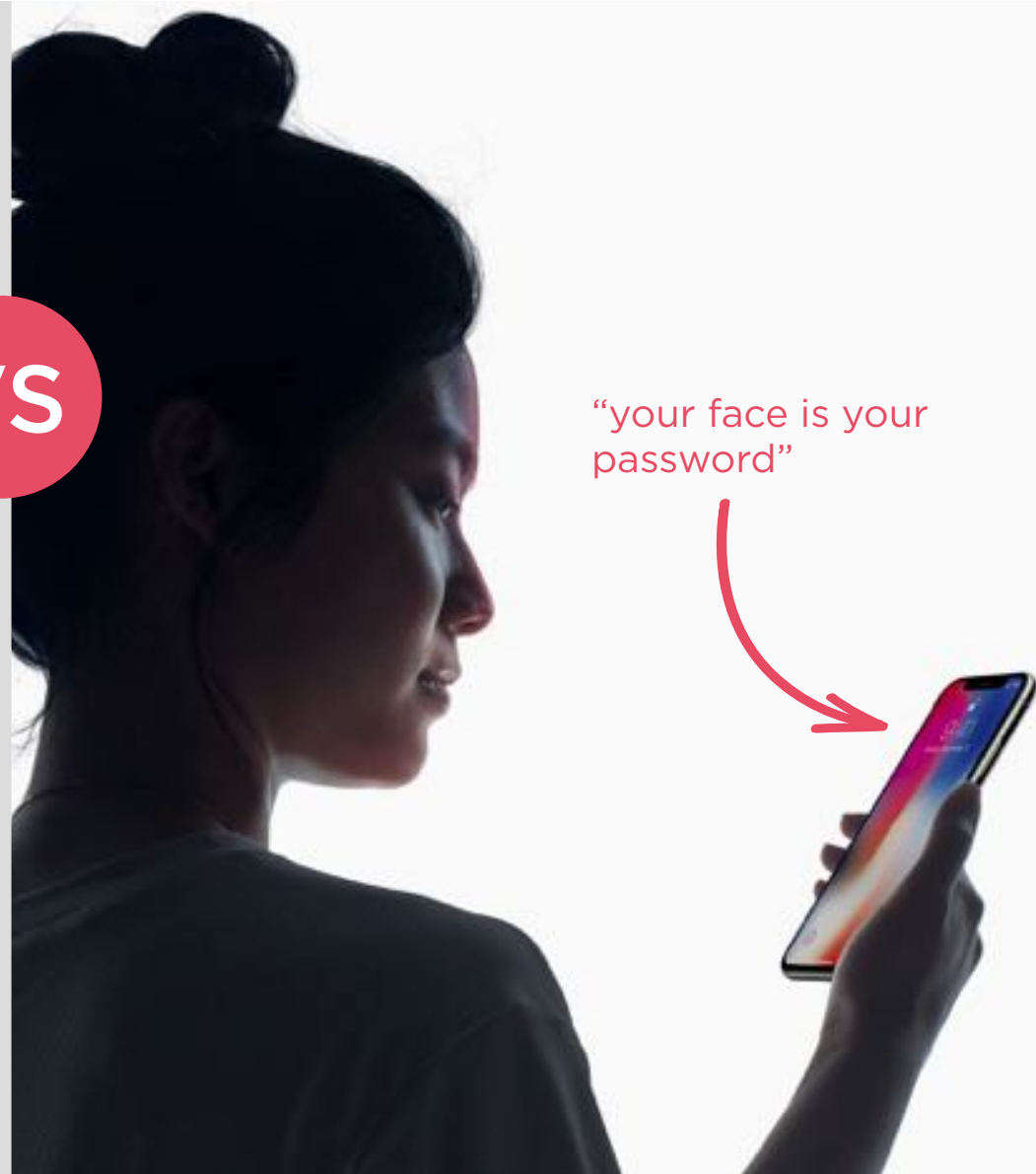
what are we iterating toward?





“enter randomly chosen by the system from your password characters into an empty unmarked fields”

VS



“your face is your password”



Checkout

Shipping

Payment

Verify & Submit Order

Order Submitted

Shipping

A signature is required for delivery. We do not ship to PO Boxes.

*First Name

MI

*Last Name

*Street Address

[+ Add another street address field](#)

*City

*State



*Postal Code

*Phone Number

*Email Address

[+ Add a phone extension](#)

*Billing Address [what is this?](#)

Same as Shipping information

Use a different address and contact

Order Summary

1 item [view cart](#)

\$200.00 Total Savings

Subtotal **\$799.99**

Shipping and taxes not included.

[Continue](#)



Verified by
VISA
[Learn more](#)

MasterCard
SecureCode.
[Learn more](#)

 [Go to Business Site](#)
 Enter search terms

Shipping

* Indicates Required Fields

Ship To

A signature is required for delivery. We do not ship to PO Boxes.

*First Name

MI

*Last Name

*Address

Please see address guidelines.

[More Info](#)

*City

*State

 Choose a state / province

*Zip Code

 -

4-digit Ext.

*Daytime Phone Number

 () -

Ext.

Home Phone Number

 () -

Ext.

Mobile Number

 () -

Ext.

Daytime Fax Number

 () -

Ext.

Use above information as billing

*E-mail address

Yes, send me exclusive Dell offers and specials by email.

Shipping & Handling Method

Shipping Option

7 Business Days \$9.99 - \$9.99 = \$0.00

3-5 Business Days \$9.99

2 Business Days \$13.99

Next Business Day \$23.99

Terms and Conditions of Sale

I AGREE to Dell's

[Terms and Conditions of Sale.](#)

I DO NOT AGREE to Dell's Terms and Conditions of Sale.

The Terms and Conditions of Sale contain very important information about your rights and obligations as well as limitations and exclusions that may apply to you. They contain limitations of liability and warranty information. They also contain an agreement to resolve disputes through arbitration, rather than through litigation. Please read them carefully.

[Click to Call Sales](#)

[Cart](#)

[Home](#)

[Feedback](#)

[Privacy Policy](#)

[Disclosures](#)

[View Full PC Site](#)



[Go to Business Site](#)

Enter search terms

Payment

Select Credit Card

Visa

[Click to Call Sales](#)

[Cart](#)

[Home](#)

[Feedback](#)

[Privacy Policy](#)

[Disclosures](#)

[View Full PC Site](#)



[Go to Business Site](#)

Enter search terms

Payment

* Indicates Required Fields

Credit Card Details

Pay with one Credit/Debit Card

Please note that we will obtain immediate authorization from your card issuer to reserve funds for your purchase. However, your card will not be charged until your order has shipped.

PLEASE READ: Please use the billing address that is on record with Dell and NOT the billing address on record with the credit card company - even if you are using an end user's credit card to pay for the order. Your order will be delayed if the billing address does not match what is on record with Dell. If you do not know the billing address on record with Dell please contact your sales representative.

Card Information

*Credit card type

VISA

*Card number

*Expiration date

 [Month] [Year]

*Name as it appears on card

*Card identification number

Required for Visa, MasterCard, Amex and Discover

*Daily limit on charges

No Limit

Required for debit cards only

*Phone number on record with card issuer

 () -

Dell Billing Information

*First Name

 [Go to Business Site](#)
 Enter search terms

*First Name

MI

*Last Name

*Address

*City

*State

 Choose a state / province

*Zip Code

 -

4-digit Ext.

*Daytime Phone Number

 () -

Ext.

Dell has partnered with Visa and MasterCard to do an additional level of security to your online purchase. You may receive an authentication page or an opportunity to activate your card for authentication with your card issuer after submitting the payment information below.

(You can review your order on the next step before its final.)

[Click to Call Sales](#)

[Cart](#)

[Home](#)

[Feedback](#)

[Privacy Policy](#)

[Disclosures](#)



[Go to Business Site](#)

Enter search terms

Review and submit

ALMOST FINISHED! Your order is ready for processing, but first:

1. Review & Edit: Please review details of your order and edit if necessary.

2. Submit Order: Select Submit Order to process your order

By completing this order you are representing that your purchase is for personal use.

Order Date and Time:

January 27, 2012 11:31 PM CST

Shipping & Handling Information

Shipping & Handling Method

7 Business Days \$0.00

Contact Information

Ship To

Luke Wroblewski

8880 Main St

San Jose, CA 95128

(408) 913-7337

E-mail Receipt To

lw@us.ibm.com

Pay with one credit/debit card online

\$43.29

Luke Wroblewski

VISA, *****

Billing Address

Luke Wroblewski

8880 Main St

San Jose, CA 95128

(408) 913-7337

[Edit](#)

All customers using Dell Preferred Account as their payment method will receive the promotional financing features listed in the Order Summary for each eligible item shown below.

Certain, best-qualified Dell Preferred Account holders may receive additional promotional financing feature not listed in the Order Summary.

22 INPUTS

The screenshot shows a mobile checkout form with the following sections and inputs:

- EMAIL ADDRESS:** 1 input field (Enter email).
- SHIP TO:** 10 input fields (First Name*, Last Name*, Telephone Number* Ext, Street Address*, City/Town*, State*, Zip*, Use as billing address checkbox, Ship to store near me radio button).
- BILL TO:** 10 input fields (First Name*, Last Name*, Telephone Number* Ext, Street Address*, City/Town*, State*, Zip*, Billing address must match credit card checkbox).
- COUPONS & REWARDS:** 0 input fields.
- CUSTOM DELIVERY OPTIONS:** 0 input fields.
- AMOUNT DUE:** 0 input fields.
- Credit Card Number:** 1 input field.
- CID*:** 1 input field.
- Month*:** 1 dropdown menu.
- Year*:** 1 dropdown menu.

A red button labeled "RECALCULATE" is at the bottom.



5 INPUTS

The screenshot shows a simplified mobile checkout form with the following sections and inputs:

- Returning customer? SIGN IN:** 1 button.
- Guest Checkout:** 4 input fields (Full Name (First Name Last Name), Shipping Address, Phone, Email).
- Credit Card Details:** 1 input field.
- Use as billing address:** 1 checked checkbox.
- Summary:** Product Total (\$382.00), Shipping (FREE), Estimated Tax (\$32.85), Total Amount Due (\$414.85).
- PLACE ORDER:** 1 red button.

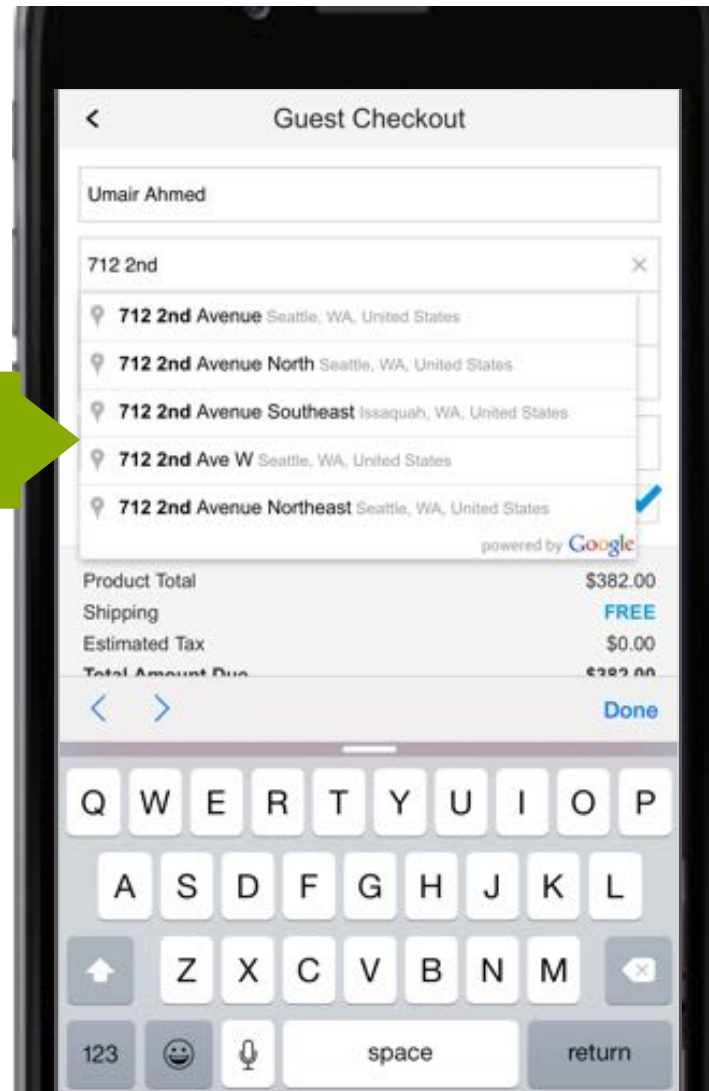
Avoid Splitting
Inputs

The screenshot shows a mobile application interface for a 'Guest Checkout' process. The form includes several input fields: a name field containing 'Umair Ahmed', a shipping address field, a phone field, and an email field. Below these is a 'Credit Card Details' field. A checkbox labeled 'Use as billing address' is checked. At the bottom of the form, a summary table lists the following items and amounts:

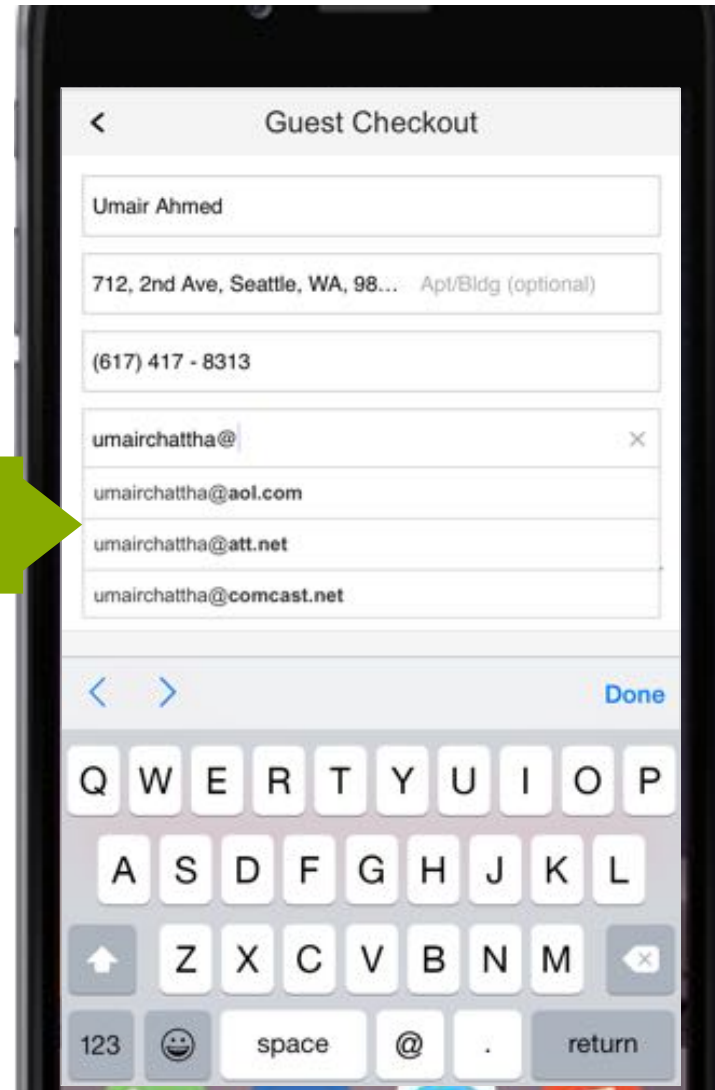
Product Total	\$382.00
Shipping	FREE
Estimated Tax	\$0.00
Total Amount Due	\$382.00

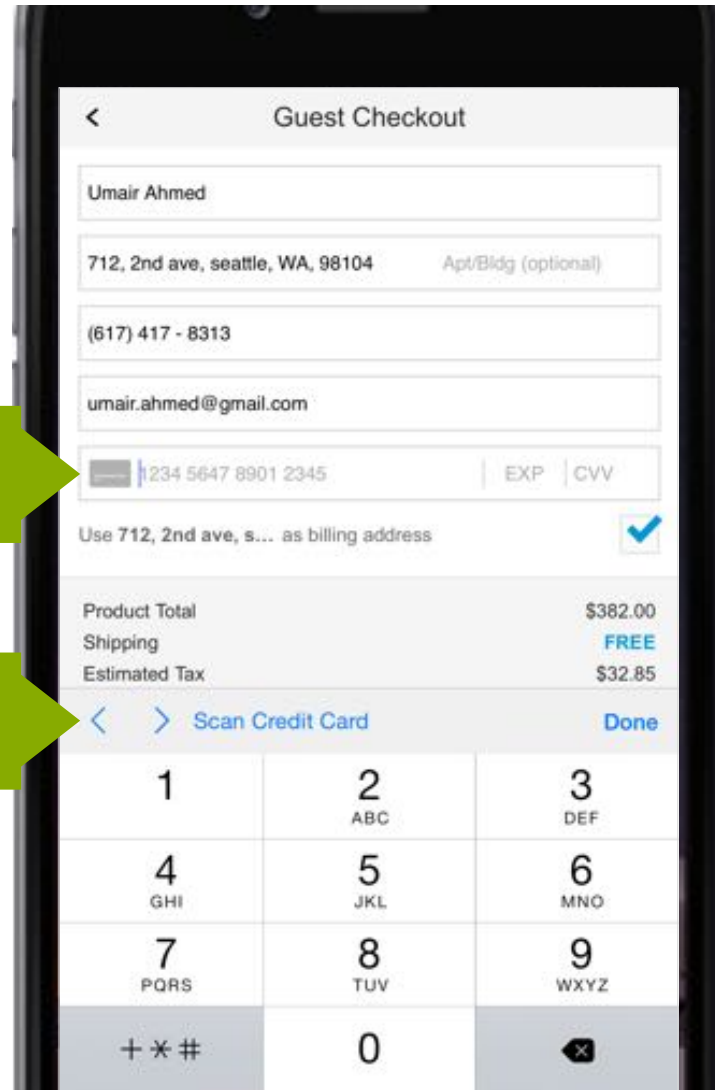
A keyboard is visible at the bottom of the screen, and a green arrow points to the name input field.

Inline Validation



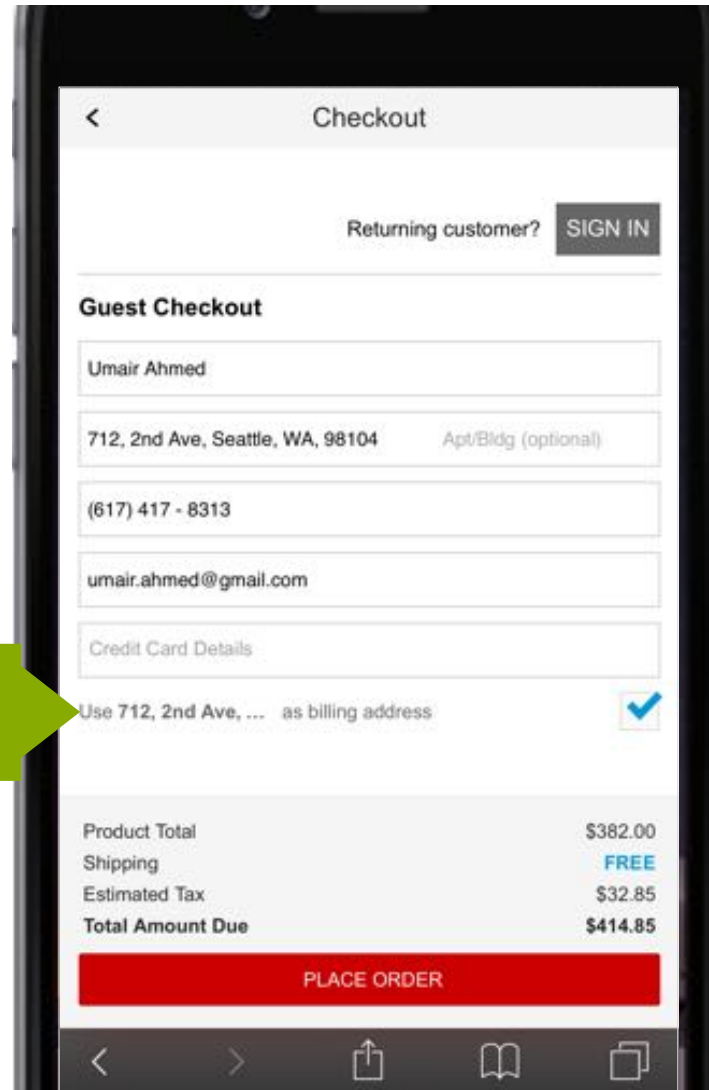
Inline Validation





Input Mask

Scan Card



Smart Defaults

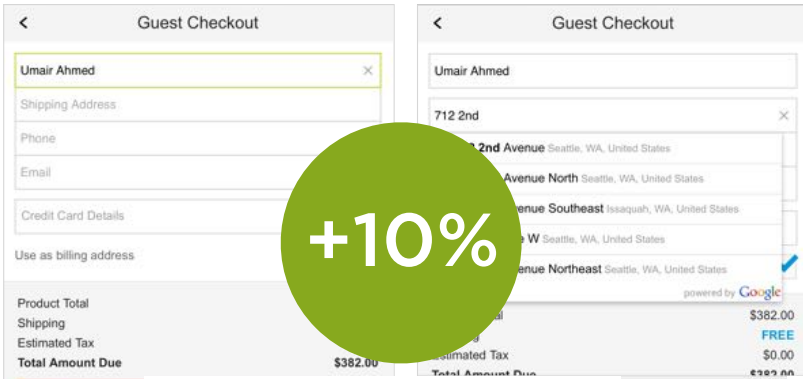
Reduced inputs

Address Lookup

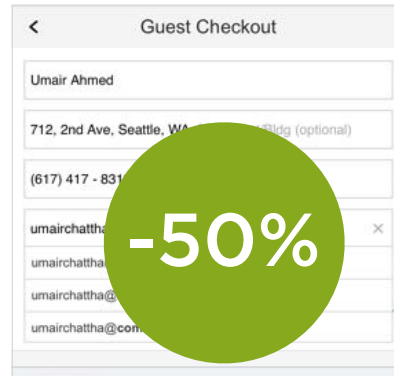
Inline Validation

Input Masks

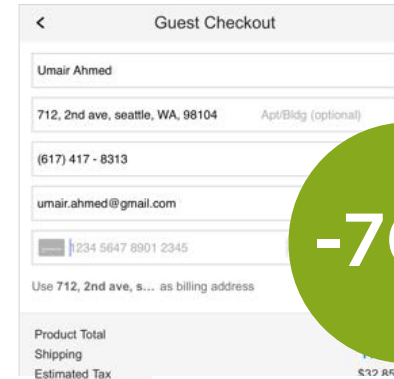
Smart Defaults



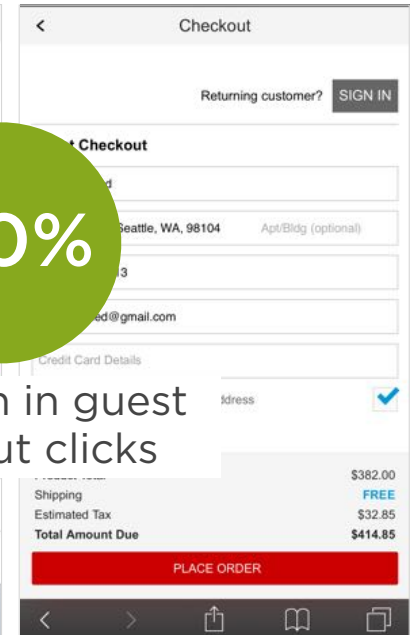
+10%
people starting checkout



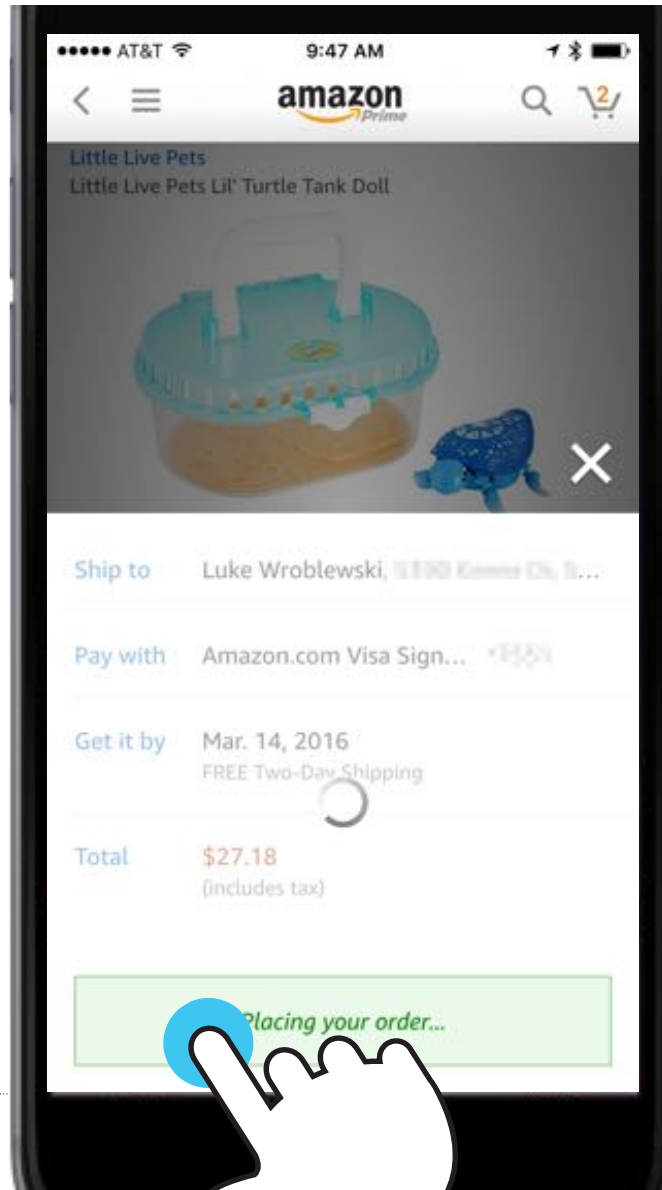
-50%
reduction in checkout time



-70%
reduction in guest checkout clicks



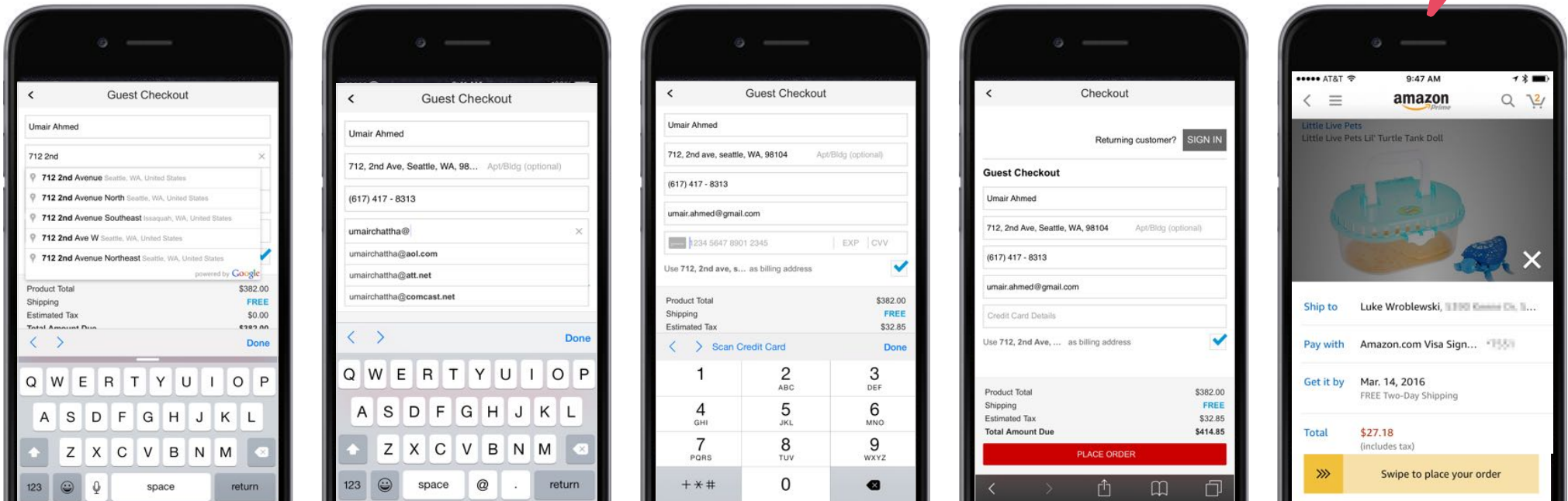
swipe to purchase



accounting for one-handed use

ITERATION

what are we iterating toward?



Amazon Dash Button





amazon go

amazon go

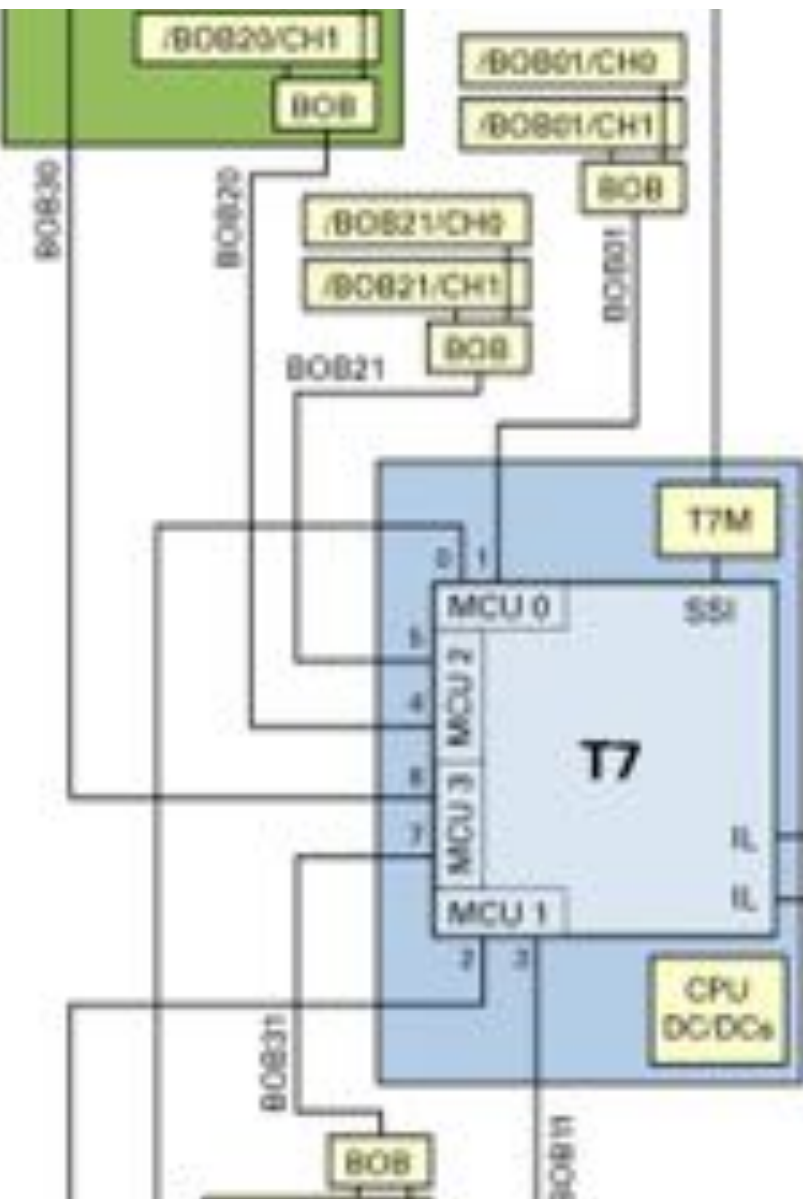
**NO LINES. NO CHECKOUT.
(NO, SERIOUSLY.)**



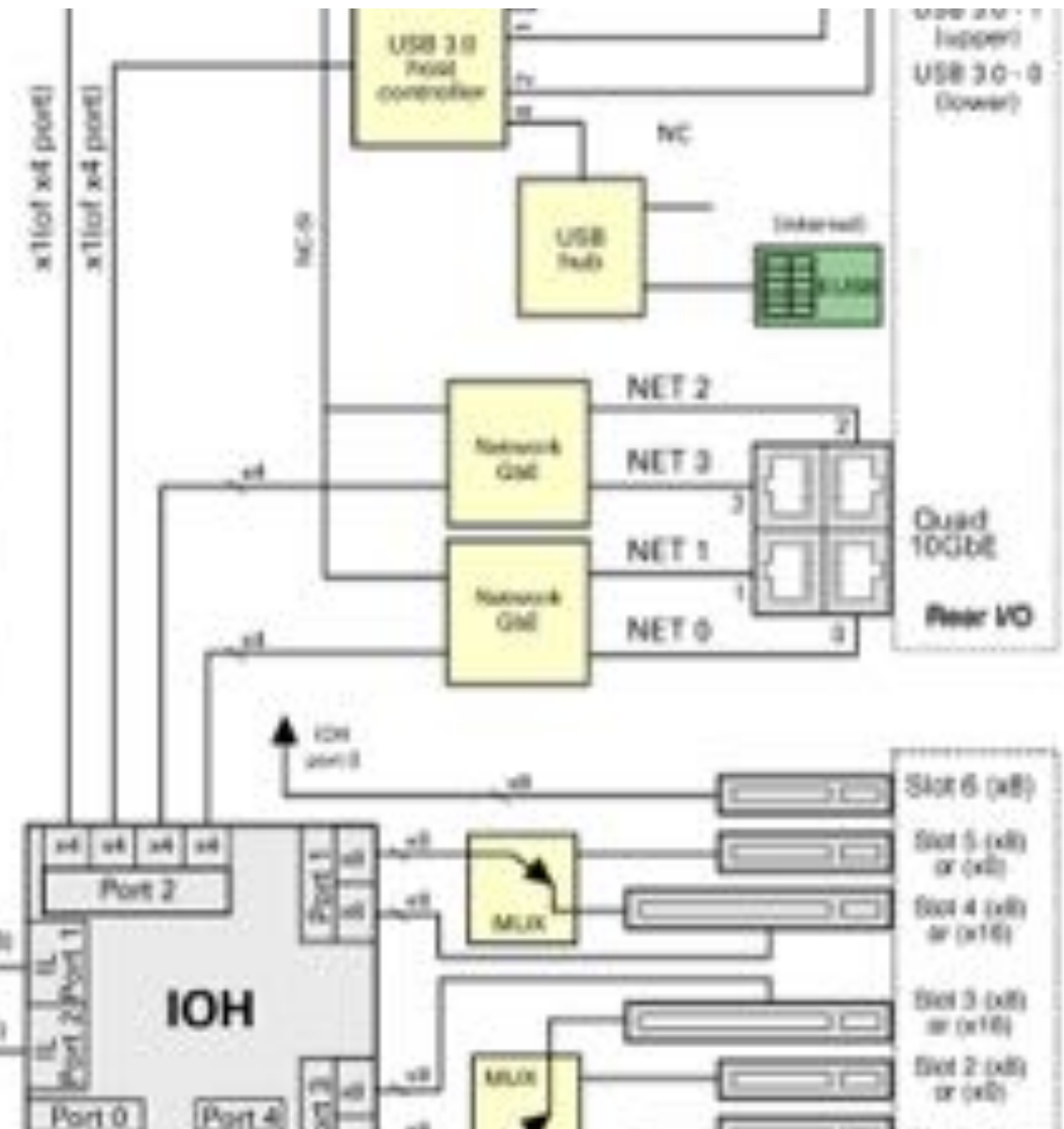




BRIDGE



Note: T7CLs A and B - NC

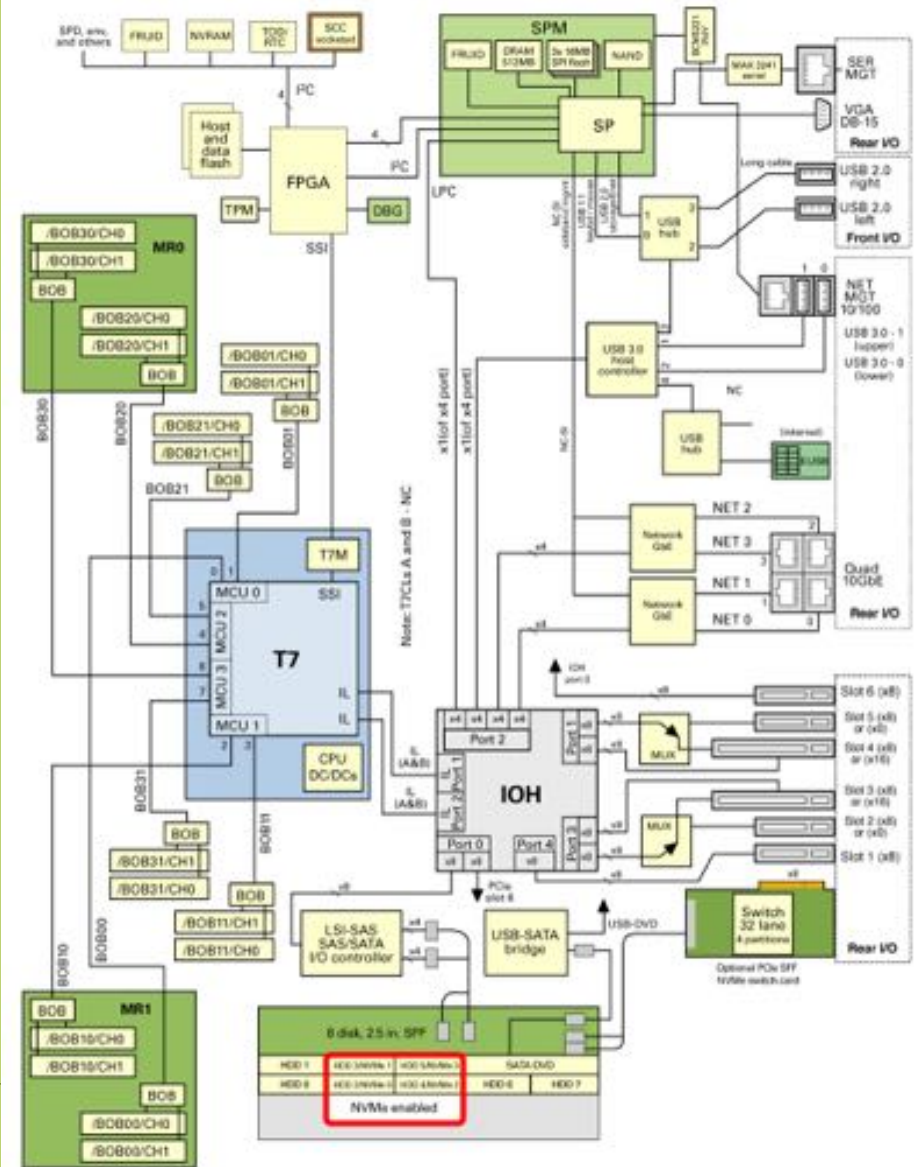


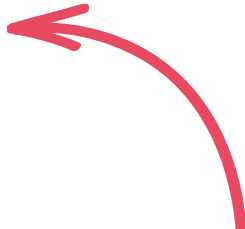
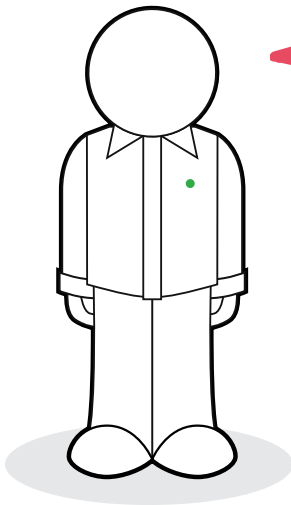
View 20-1
 (upper)
 USB 3.0-0
 (lower)

Quad
 10GbE
 Rear IO

Slot 6 (x8)
 Slot 5 (x8)
 or (x16)
 Slot 4 (x8)
 or (x16)
 Slot 3 (x8)
 or (x16)
 Slot 2 (x8)
 or (x16)

technical complexity

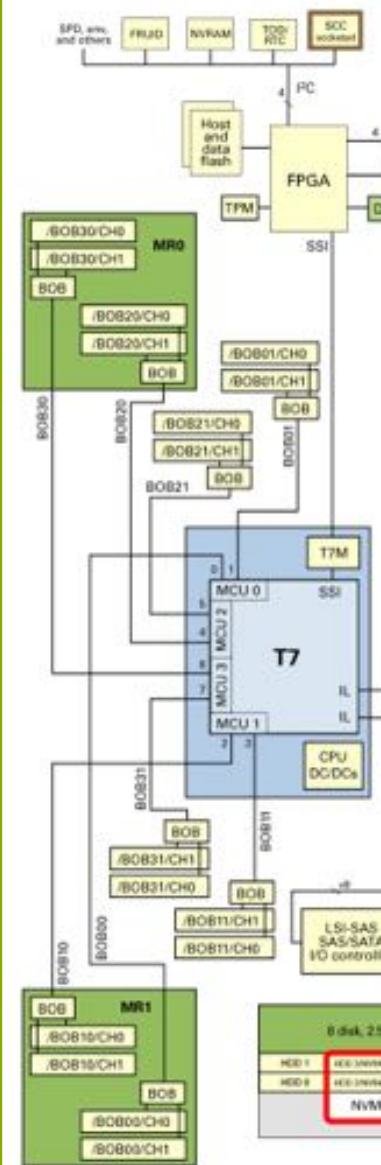




happy humans



technical complexity



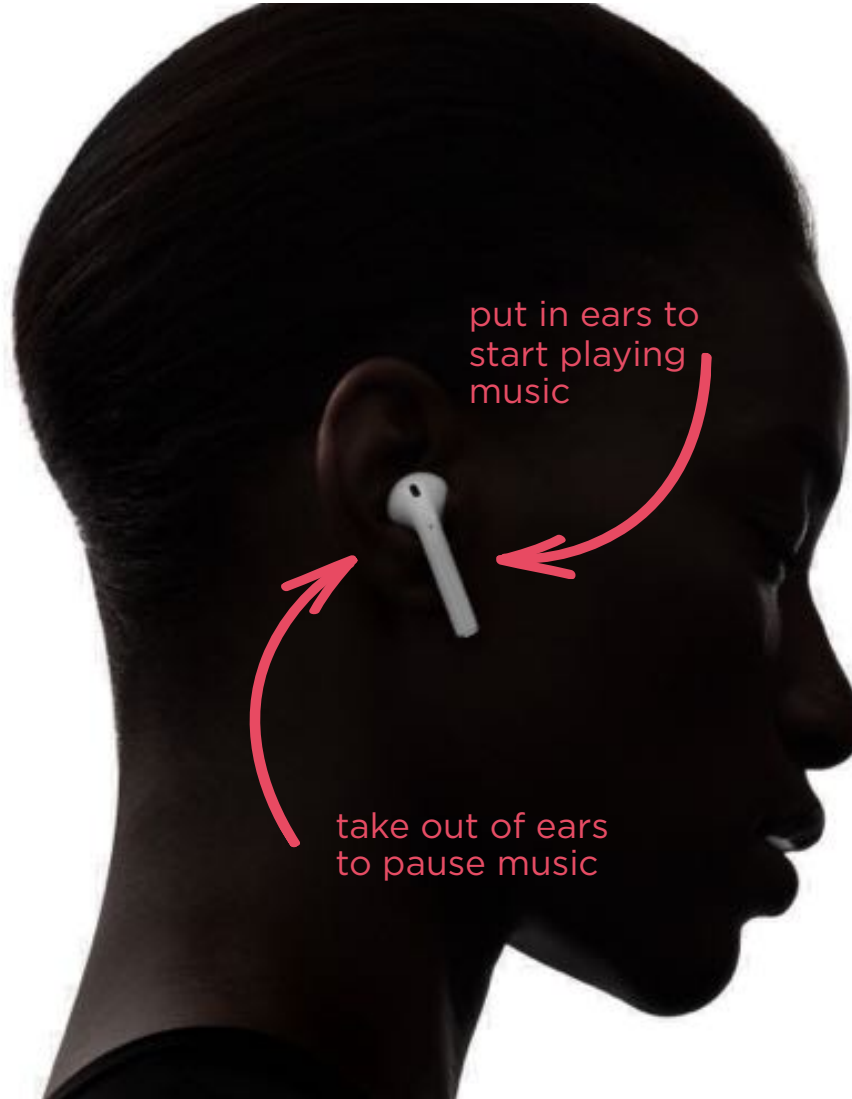
Amazon Dash Button



open the case near iPhone to connect



put in ears to start playing music



take out of ears to pause music

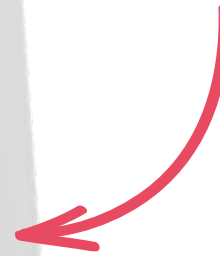
put into case to charge



Google Home



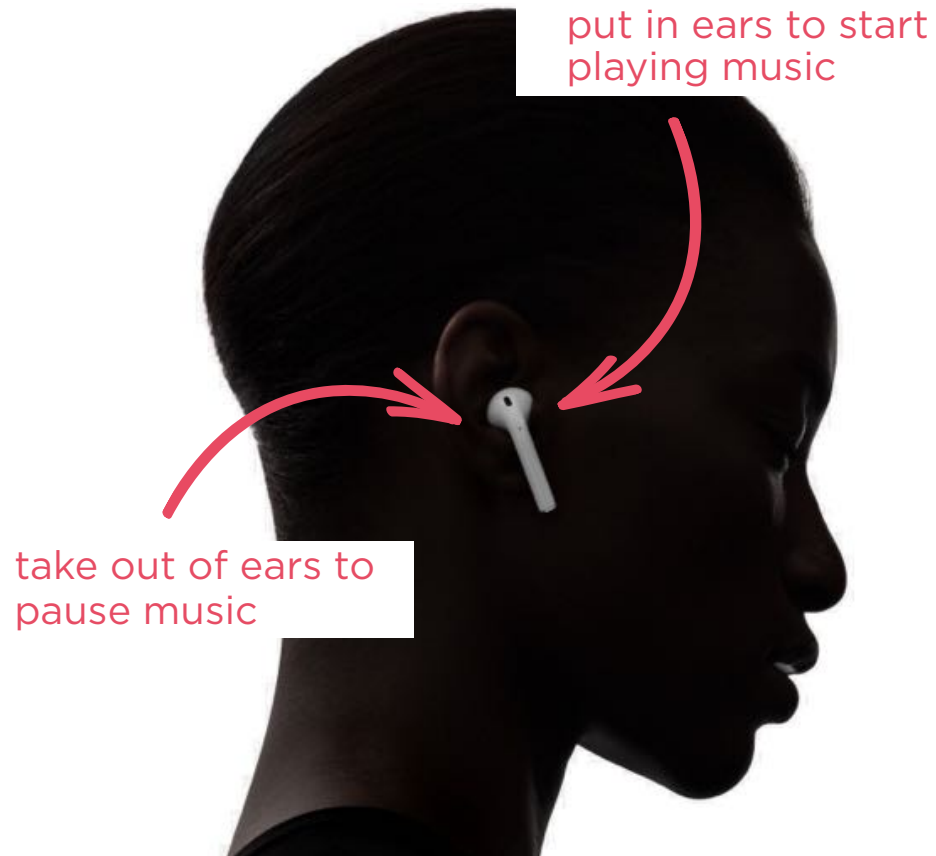
talk to get answers,
manage tasks



AMAZON DASH



APPLE AIRPODS



GOOGLE HOME



NUI

NATURAL USER INTERFACES

VS

GUI

GRAPHICAL USER INTERFACES



can be a great
north star

Snapchat Spectacles



tap once to take a
10 second video

take out phone,
open app

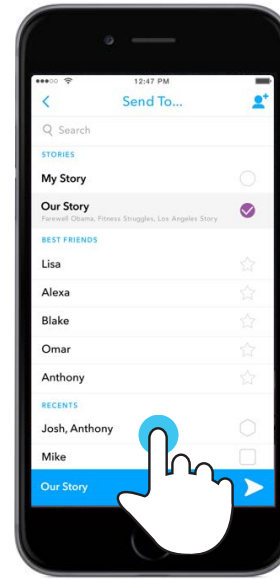
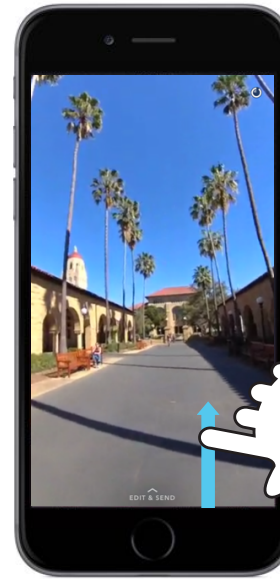
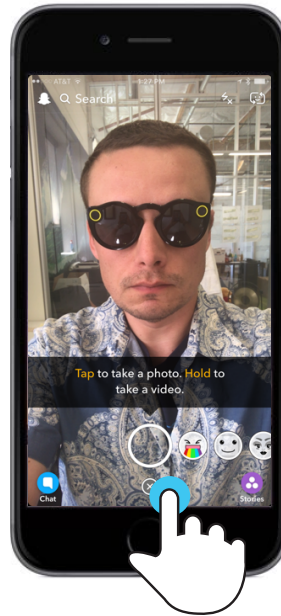
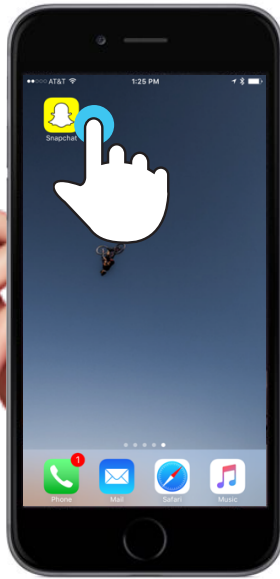
tap
Memories

tap Specs

tap (multiple
times) to find
video

swipe or long
press to
share

select where
to send ...



to space

SEARCH

being president

READ MORE

ENTERTAINMENT NEWS

ENTERTAINMENT ON AOL

- What parenthood forced Maka to realize about himself
- Ice Cube isn't afraid of hard work
- Idina Menzel suffers unbelievable wardrobe oops
- Jennifer Lopez and Alex Rodriguez show PDA
- Big news for 'Big Bang Theory'
- Kendall Jenner shakes booty in lingerie

READ MORE

FINANCE NEWS

FINANCE ON AOL

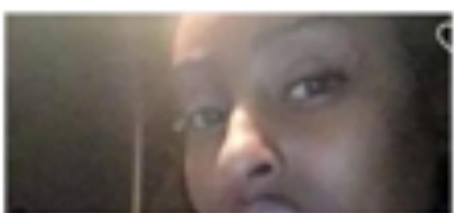
- Netflix to replace ratings with a whole new system
- Cheerios' attempt to save bees backfired massively
- This billionaire made more money than Trump in 2016

March Madness

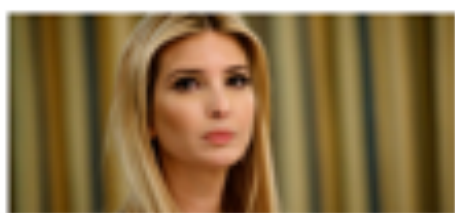


- ▶ Kansas new betting favorite in NCAA tourna...
- ▶ A look at the biggest March Madness upsets...
- ▶ Sweet 16 power rankings: Kansas on top

SEE LATEST SCORES & COVERAGE



Woman dies after undergoing cosmetic surgery



Ivanka Trump brand sees 223 percent 'purge surge'



Study reveals surprising link between dogs and people



Atomic bomb footage released after years of being

Follow us

Luke Pasqualino, Rupert Grint & Alex De Rakoff talk about the British slang used in 'Snatch'

MONDAY, MARCH 20TH

Choose your sign:

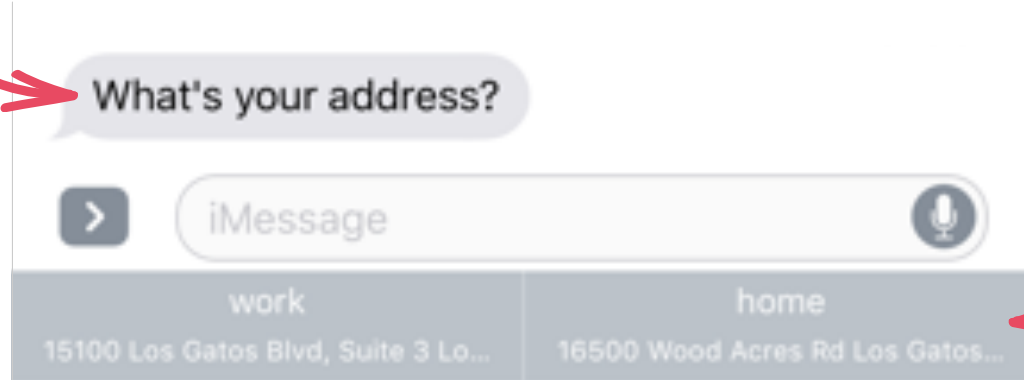
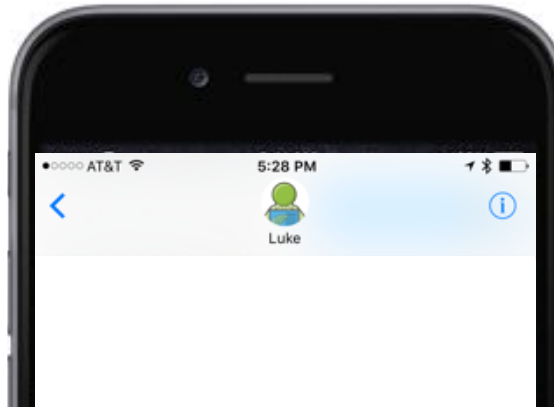
<p>ARIES</p> <p>03/21-04/19</p>	<p>TAURUS</p> <p>04/20-05/20</p>	<p>GEMINI</p> <p>05/21-06/20</p>	<p>CANCER</p> <p>06/21-07/22</p>
<p>LEO</p> <p>07/23-08/22</p>	<p>VIRGO</p> <p>08/23-09/22</p>	<p>LIBRA</p> <p>09/23-10/22</p>	<p>SCORPIO</p> <p>10/23-11/21</p>
<p>SAGITTARIUS</p> <p>11/22-12/21</p>	<p>CAPRICORN</p> <p>12/22-01/19</p>	<p>AQUARIUS</p> <p>01/20-02/18</p>	<p>PISCES</p> <p>02/19-03/20</p>

SEE ALL

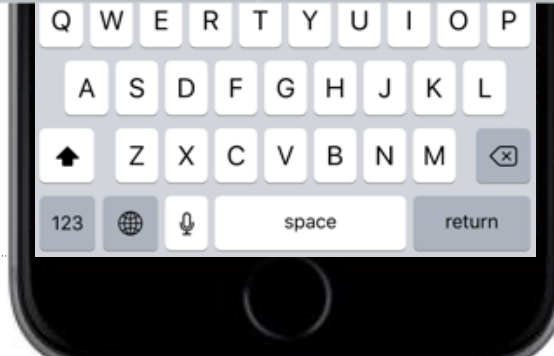
POWERED BY TAROT.COM

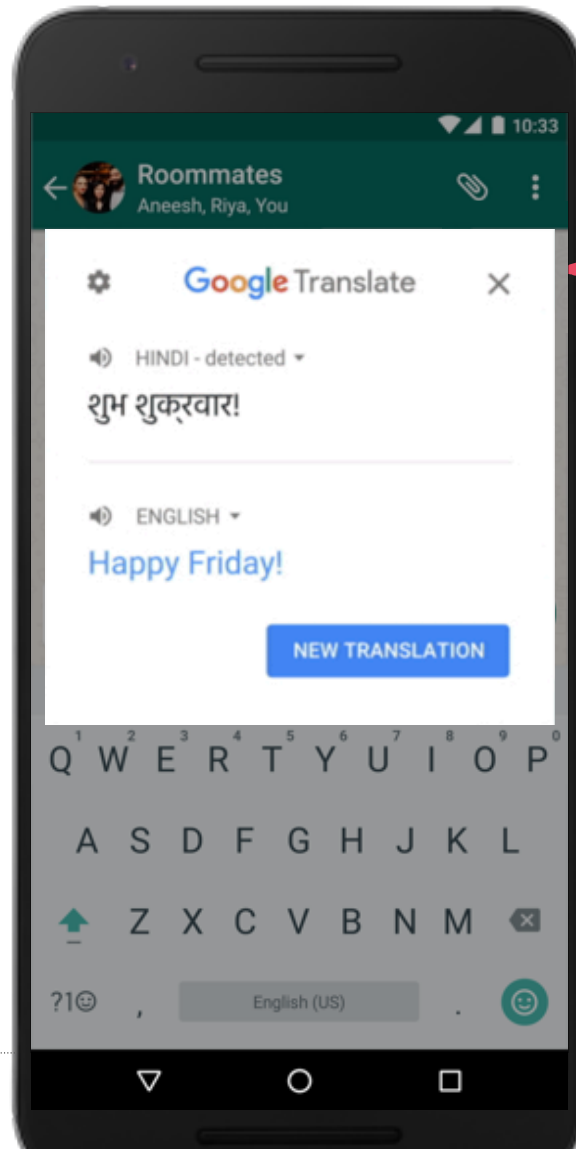


get request

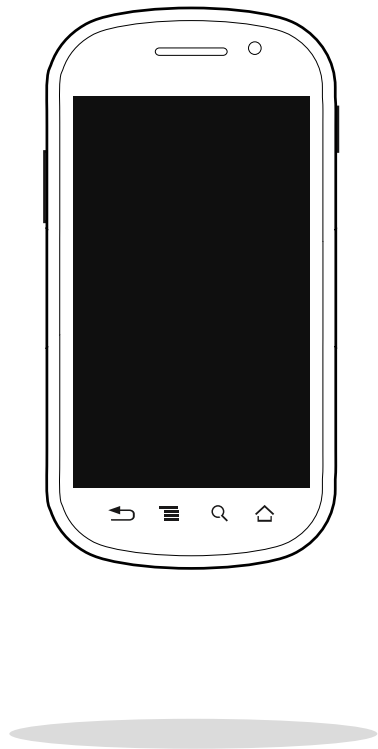


respond with one tap





tap to translate for Android



“ Not every interaction on mobile can/should be that simple, right? ”



perhaps not, but it really helps to try

Mobile 3G Traffic Patterns

Laptop



Tablet



Smartphone



lots of short, bursty sessions

9 12 15 18 21 24

80x

per day, people log into their iPhones

76x

separate phone sessions a day (Android study)

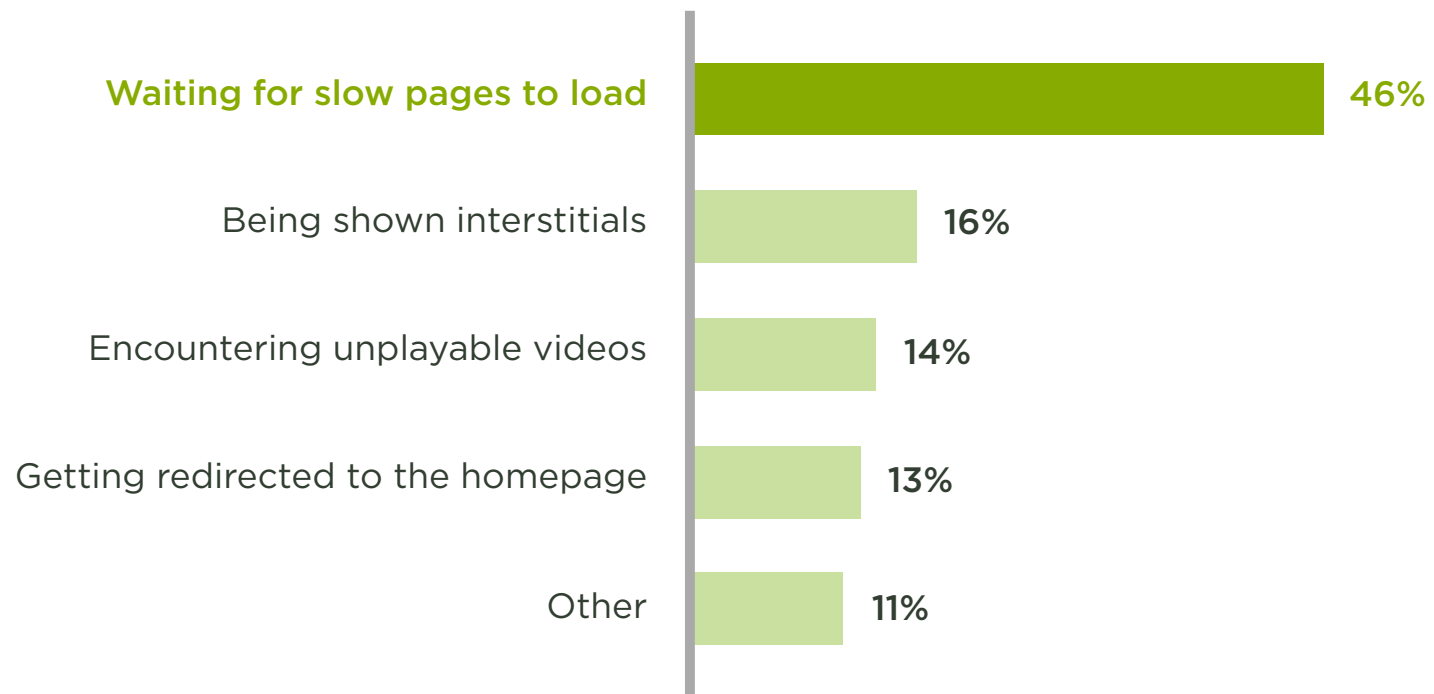


30s

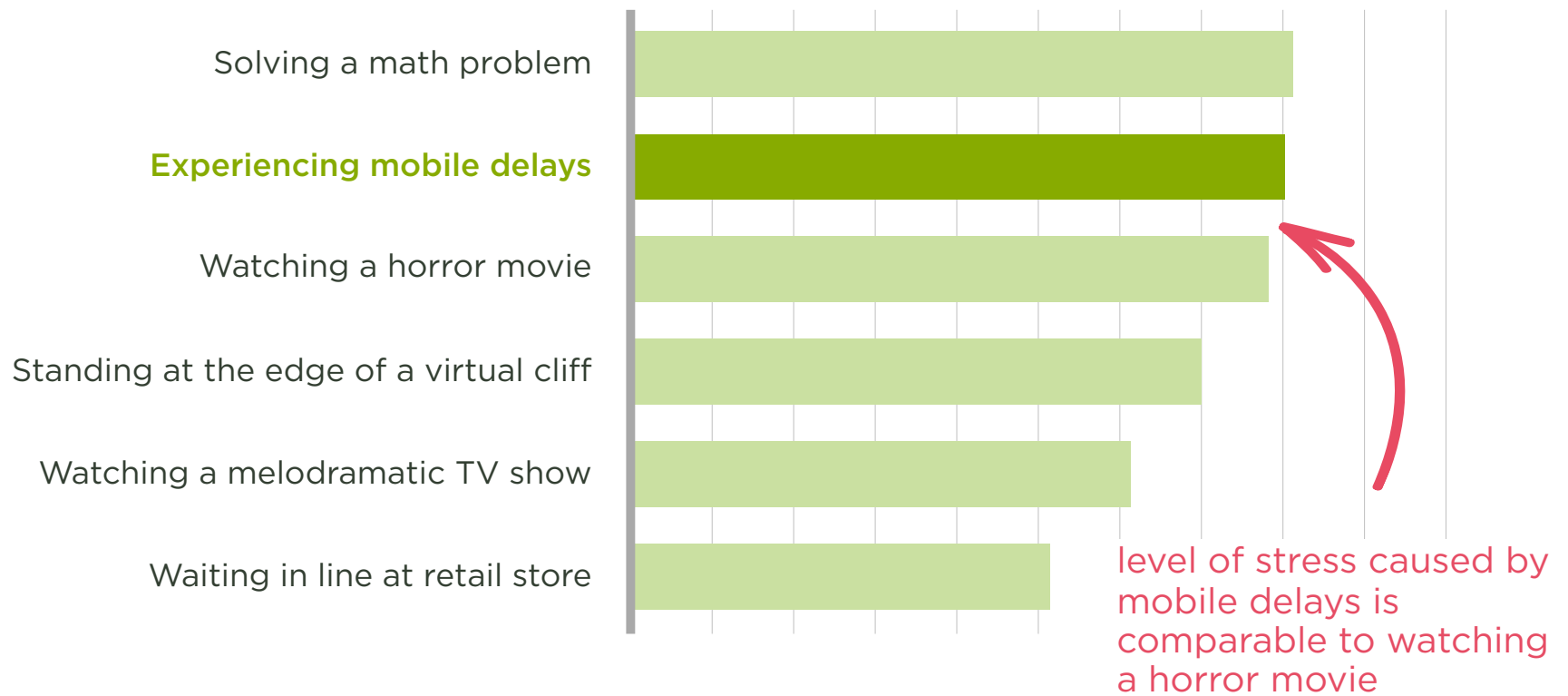
more than half of sessions
are 30secs or less



What do you dislike most when browsing Web on mobile?



Cognitive Load with Stressful Situations



7s

average
interaction
times



average
interaction
times

38s



BEFORE



need to explicitly
save workouts

VS

AFTER



workouts saved
automatically

FIRST TIME



all actions equal size,
default ordered

VS

SECOND TIME



last used action at
top, larger size

HAPTIC ENGINE



light tap on the wrist

ACCELEROMETER



lift arm to view

MAGNETOMETER

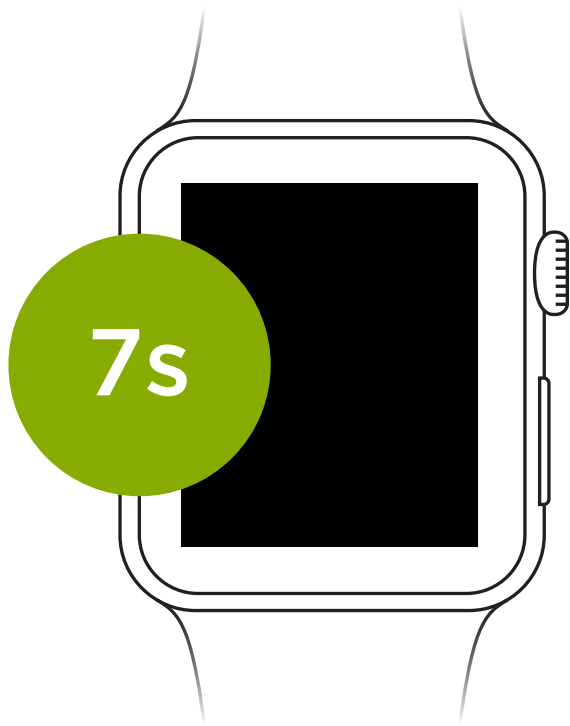


which direction to look

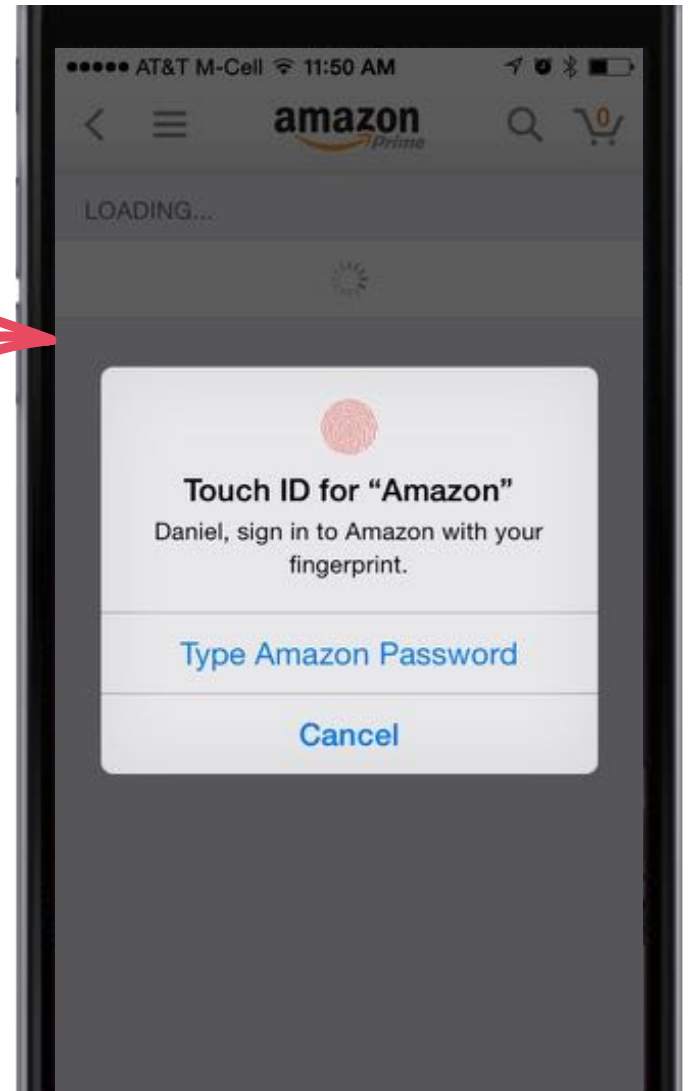
GPS



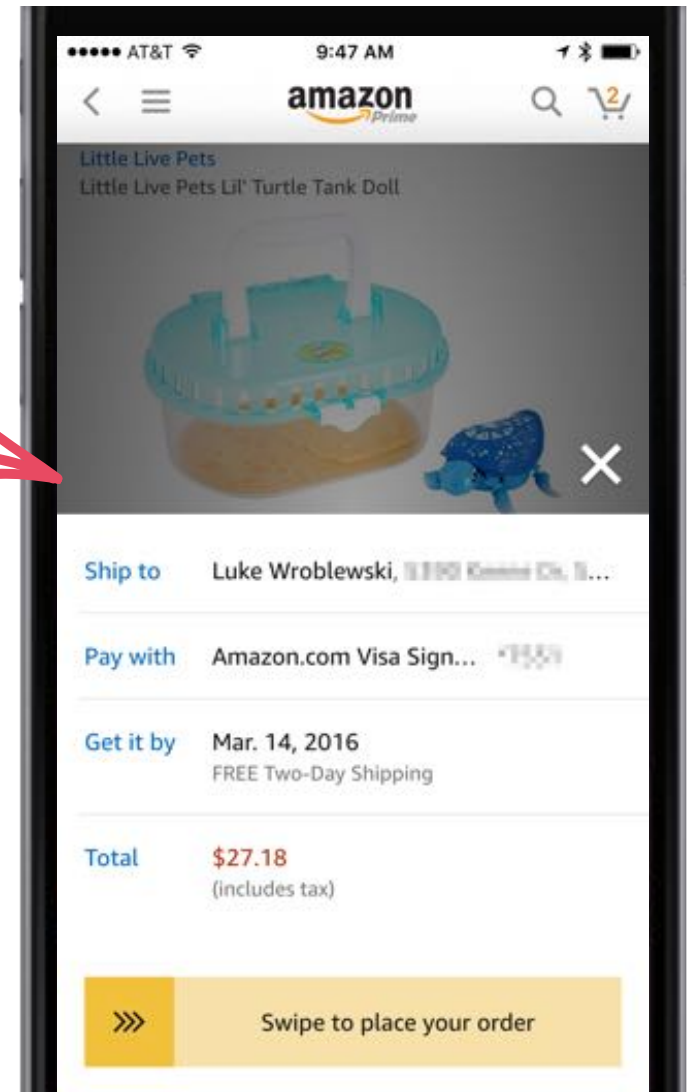
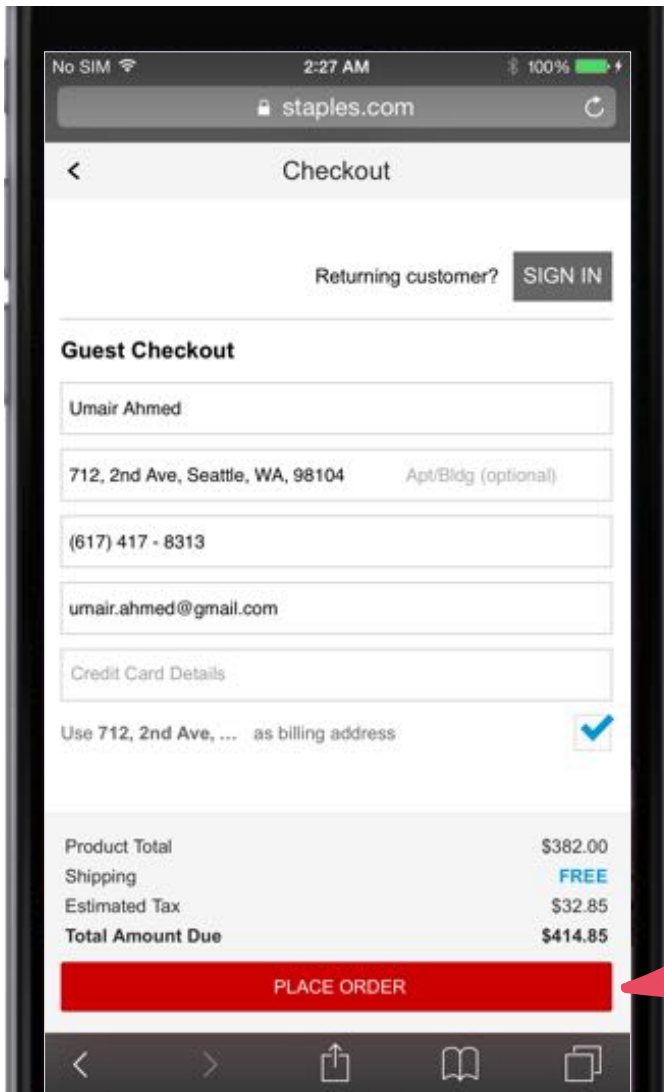
from where you are



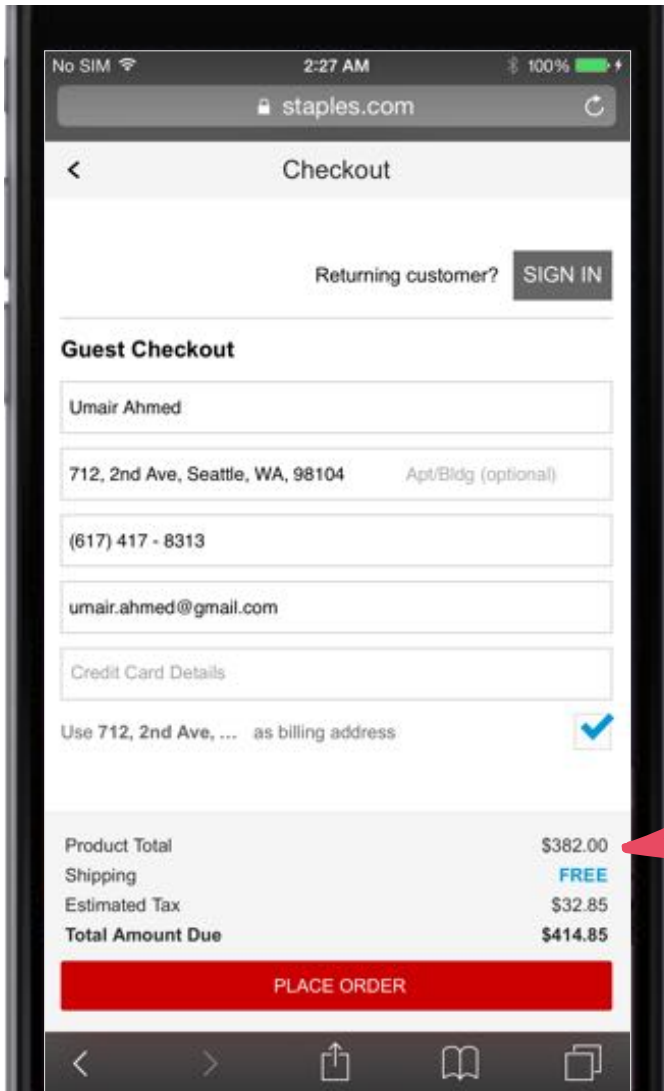
- Take the work on yourself
- Learn from past behavior
- Make use of sensors/hardware



login without the login form

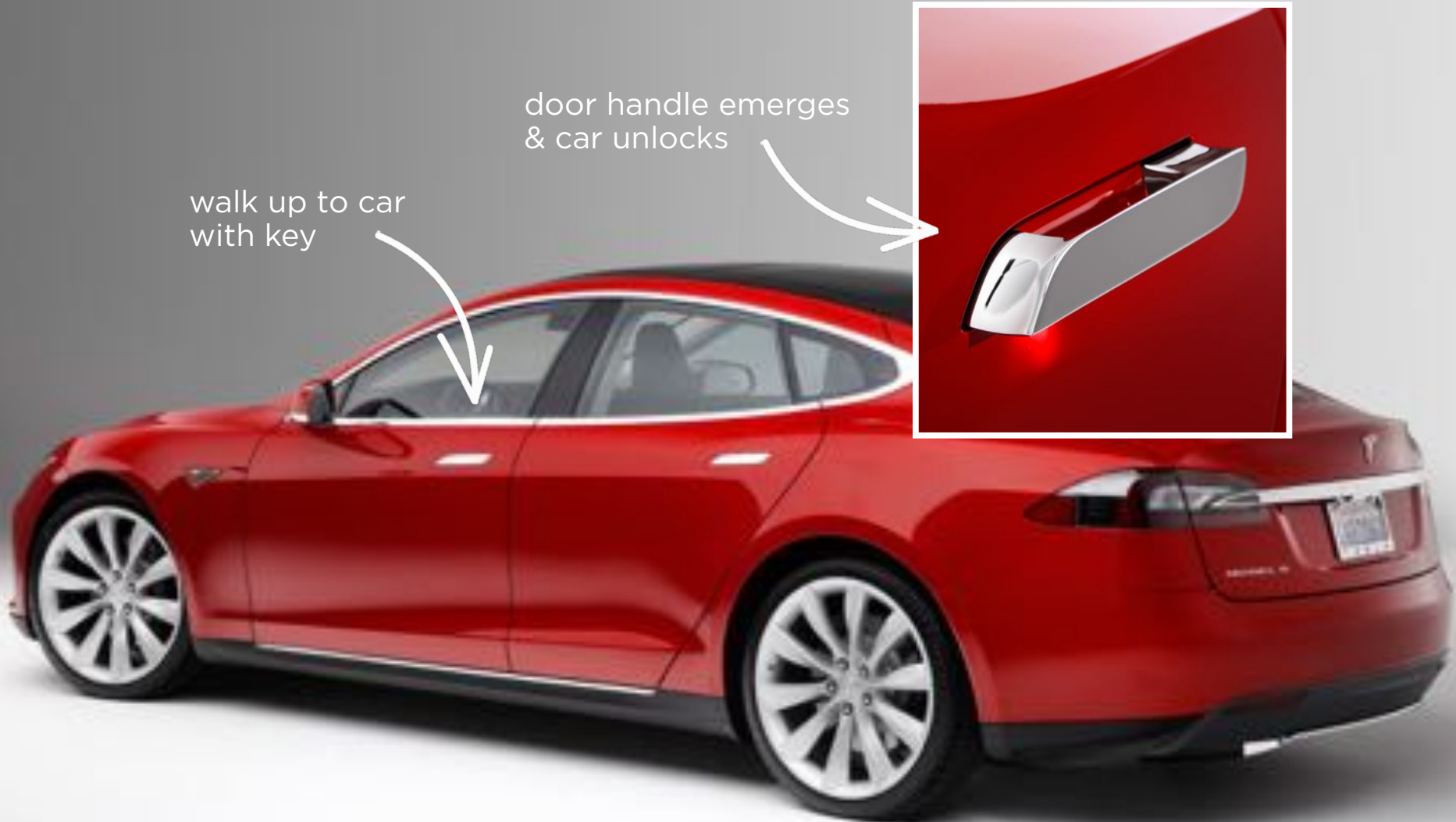


checkout without the checkout form



checkout without the
checkout form





walk up to car
with key

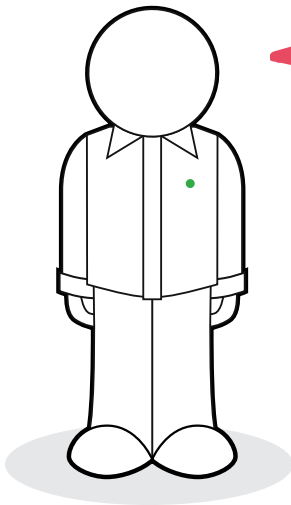


door handle emerges
& car unlocks



tap screen with pencil to unlock & open notes app

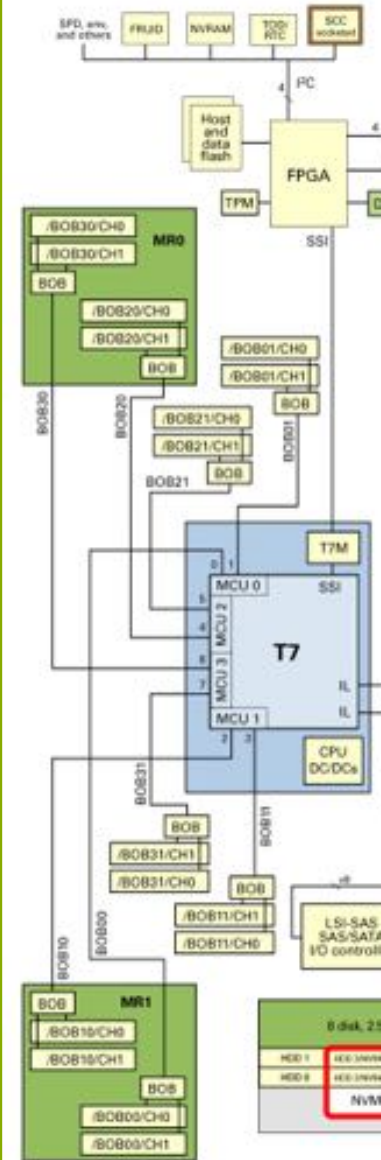




happy humans

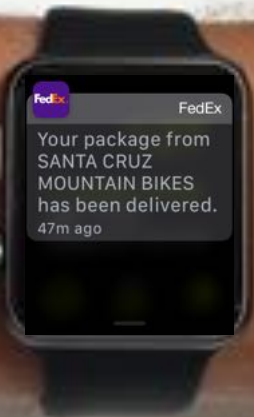


technical complexity



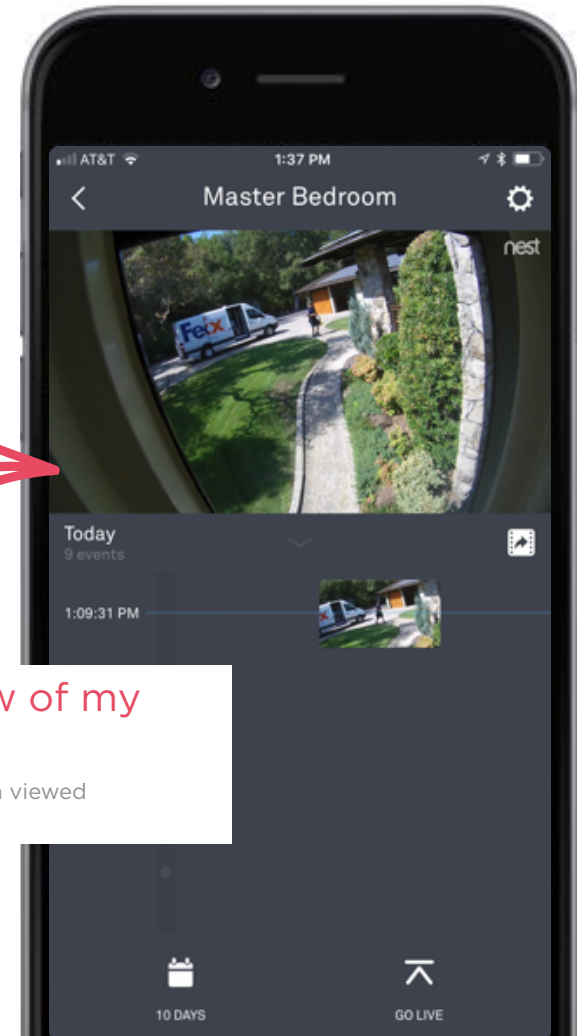
instant information from a tap on my wrist

via bluetooth connected smartwatch with haptic controls



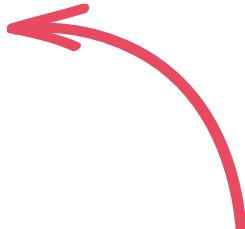
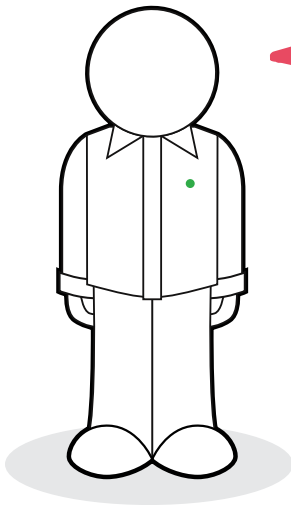
real-time portal/view of my front door

via activity monitoring video camera viewed on pocket supercomputer





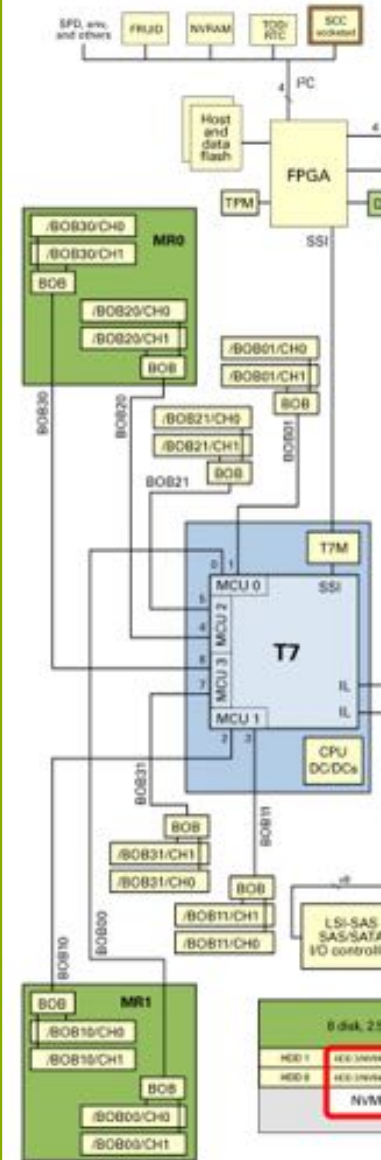
“ i don't understand what is new here. [...] i'm struggling to see what is the innovation in a motion-activated webcam, in 2017. Please correct me if this is a sarcastic post, otherwise...”



happy humans



technical complexity



There isn't enough time in the world for people to sacrifice infinite amounts of opportunity and cognition. It follows that much of this activity should be done for us by other people. A class of aware, well-informed, trained and educated people...

be done for us by other people. A class of aware, well-informed, trained and educated people...

People who will make it their professional business, no, even their calling, their practice, their very mode of being -to create a human-object relationship that is as advanced as we can manage while still being acceptable. Who would that be then? **Designers.**
Who else is there?

Bruce Sterling, 2005



MOBILE DESIGN NOW...

1. Immense Opportunity

MOBILE DEVICES, AUDIENCE, GROWTH, REVENUE
AT GLOBAL SCALE

2. Optimize for Today

FOR CRITICAL INTERACTIONS
MANY IMPROVEMENTS POSSIBLE NOW

3. Aim for the Future

SET VISION, ITERATE TOWARD IT
NUIS AS A GUIDING STAR

THANKS

