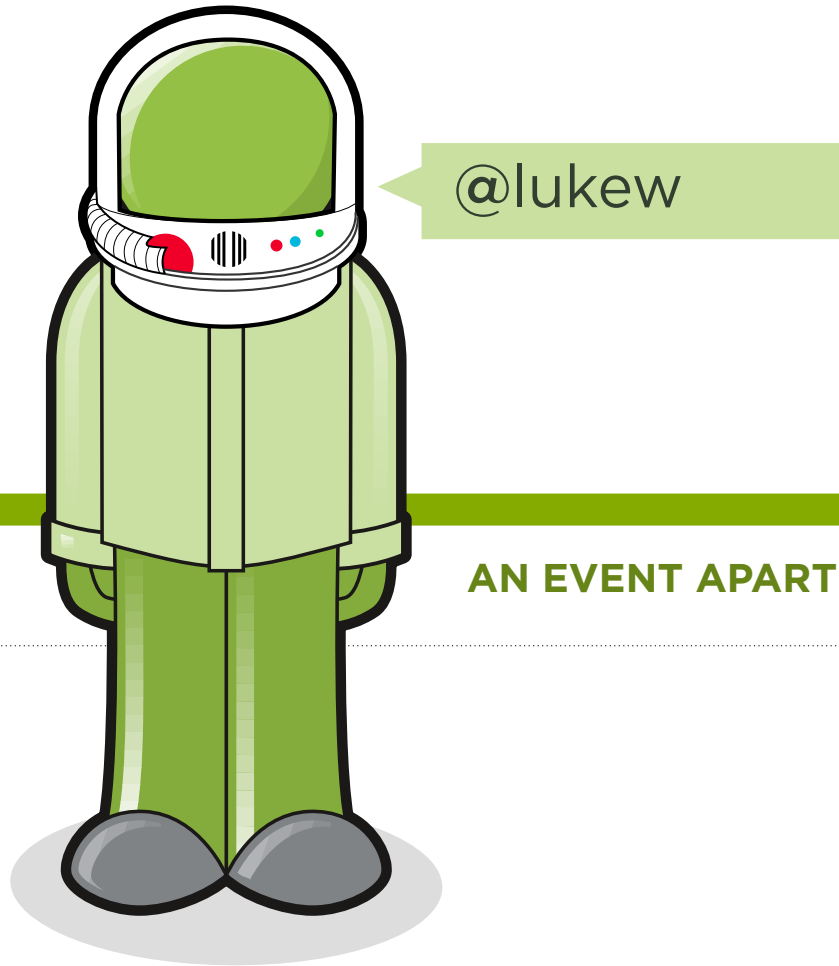


# MOBILE TO THE FUTURE



LUKE WROBLEWSKI

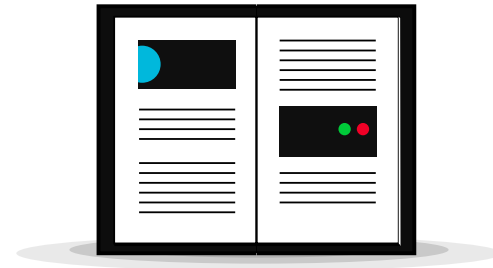
AN EVENT APART 2012

**LUKEW**  
IDEATION + DESIGN

# MASS MEDIA

1500

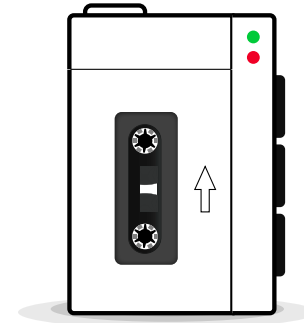
Print (books, pamphlets, newspapers, magazines, etc.)



# MASS MEDIA

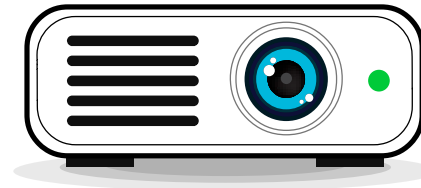
1890

Recordings (records, tapes, cartridges, CDs, DVDs)



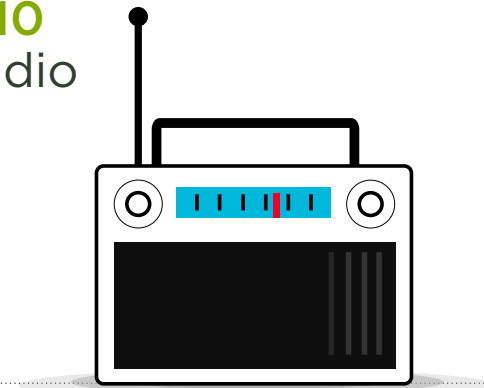
1900

Cinema



1910

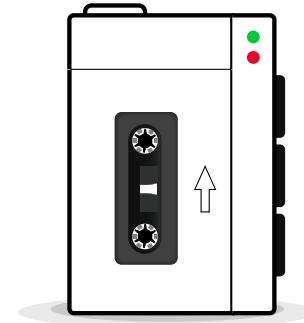
Radio



# MASS MEDIA

1890

Recordings (records, tapes, cartridges, CDs, DVDs)

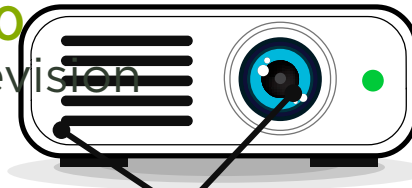


1900

Cinema

1950

Television



1910

Radio



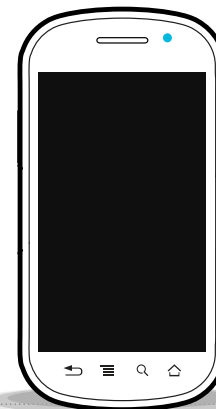


# MASS MEDIA

1990  
Internet

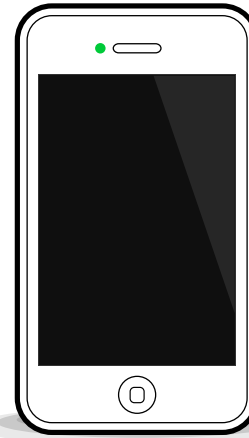
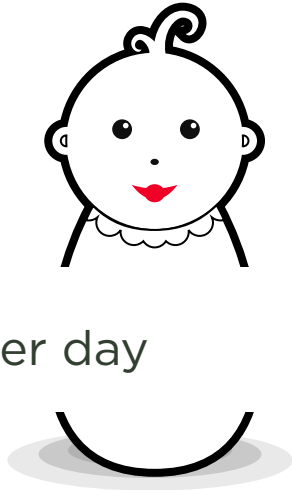


2000  
Mobile Devices



**371K**

Babies born per day

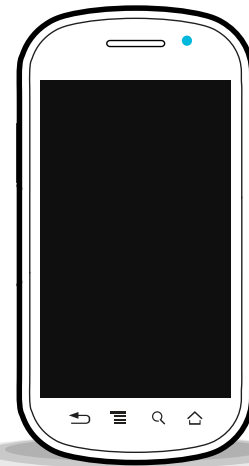


**378K**

iPhones sold per day

**562K**

iOS devices



**1.3M**

Android devices  
activated per day

**200K**

Nokia smartphones

**143K**

Blackberry devices

5 YEARS

10 YEARS

15 YEARS

TELEPHONE

39 YRS

ELECTRICITY

COMPUTER

RADIO

MOBILE PHONE

INTERNET

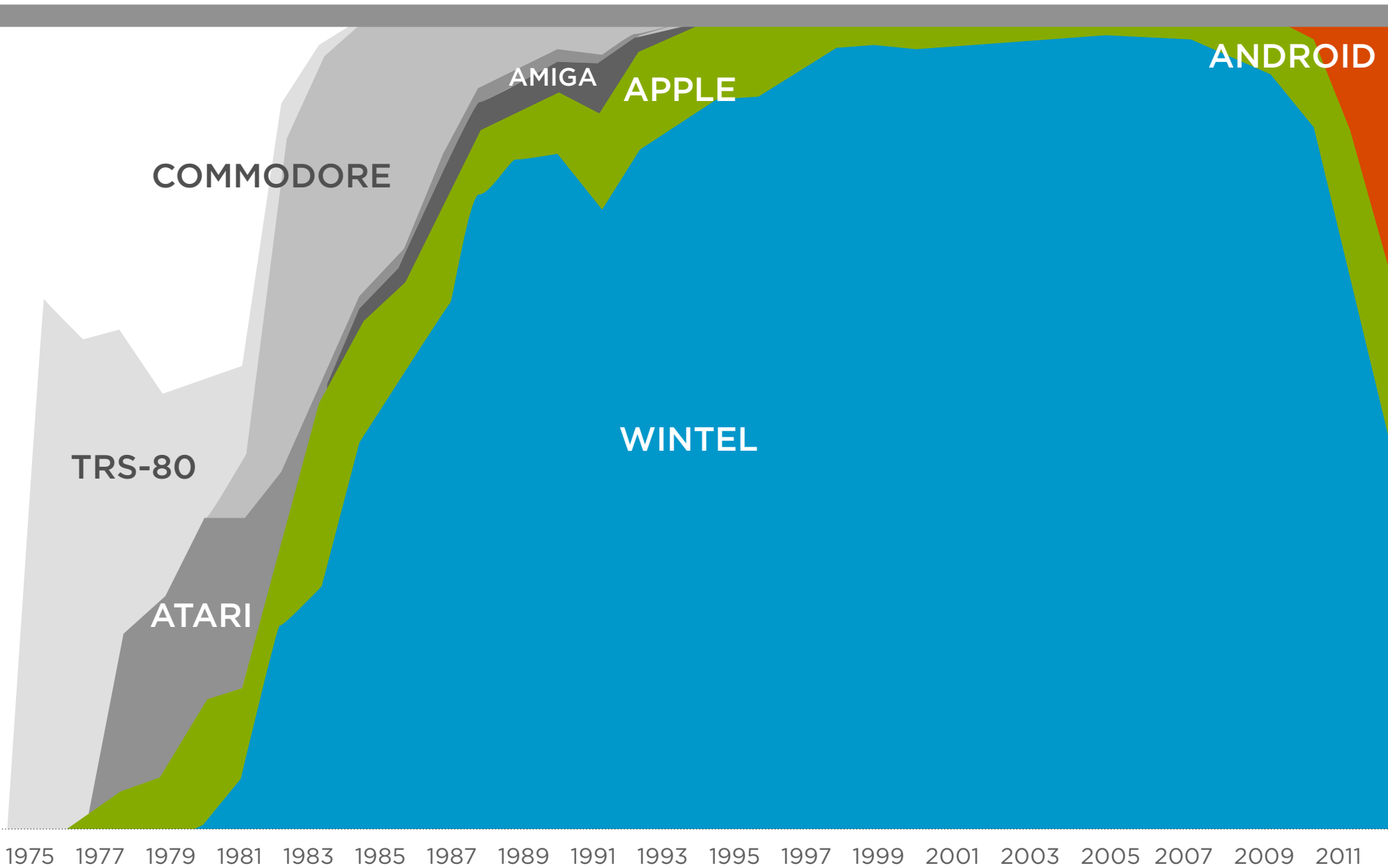
TELEVISION

SMARTPHONE

# Share of Personal Computing

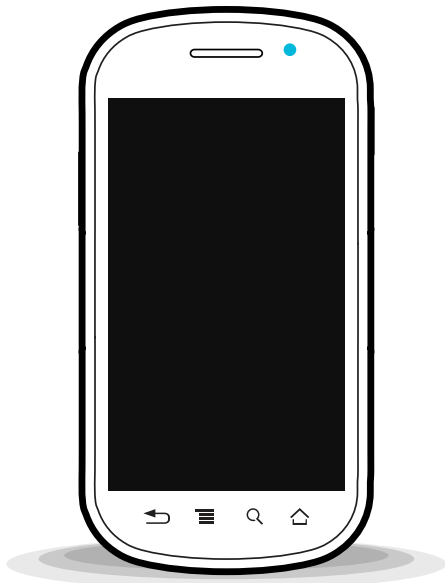
---

# Share of Personal Computing



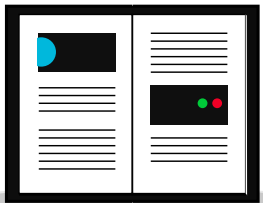
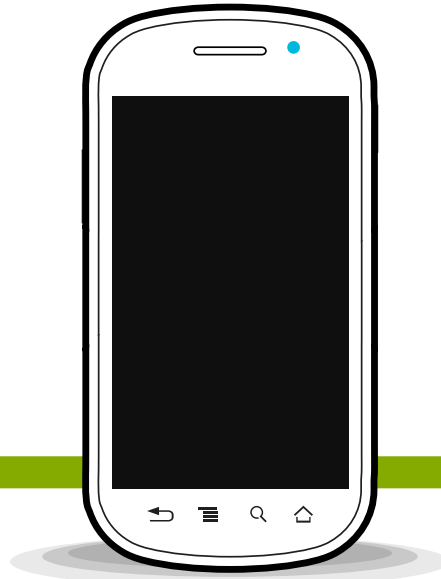
Source: <http://bit.ly/xDzag2>

# MOBILE

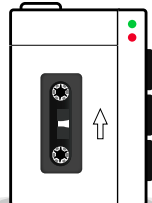


- 6B** connections today
- 10B** connections in 2016
- 26X** worldwide traffic growth

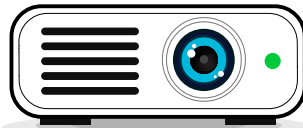
# MOBILE



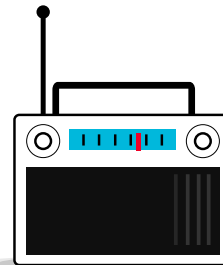
Print



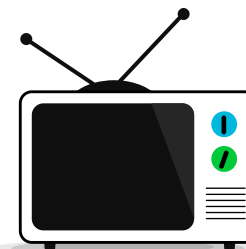
Recordings



Cinema



Radio

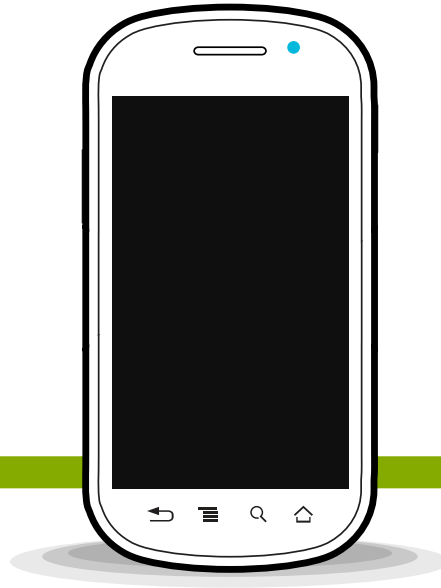


Television



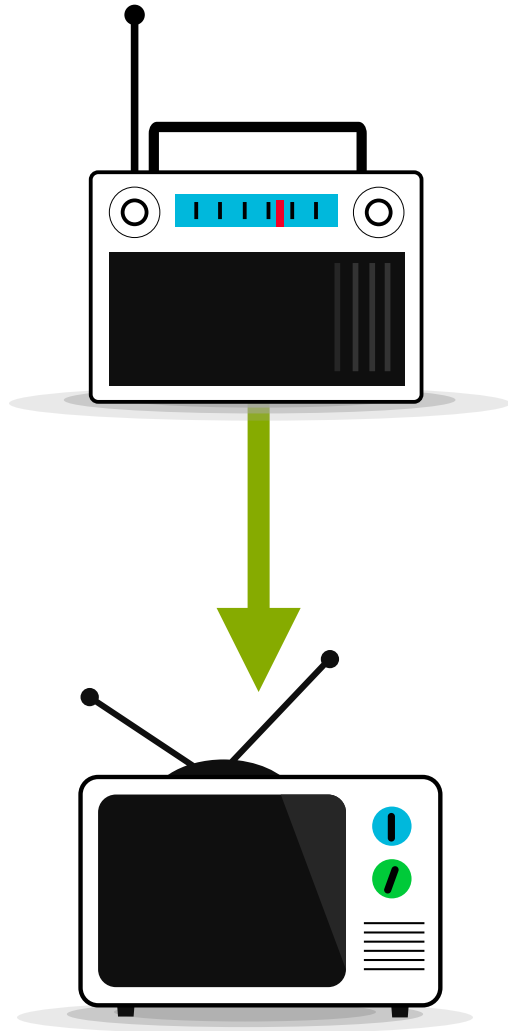
Internet

# MOBILE



1. Permanently carried
2. Always on
3. Built-in payment mechanism
4. At point of inspiration
5. Accurate audience
6. Captures social context
7. Augmented reality
8. Digital interface to reality





Sponsors  
Jingles  
Spokesmen  
Programs

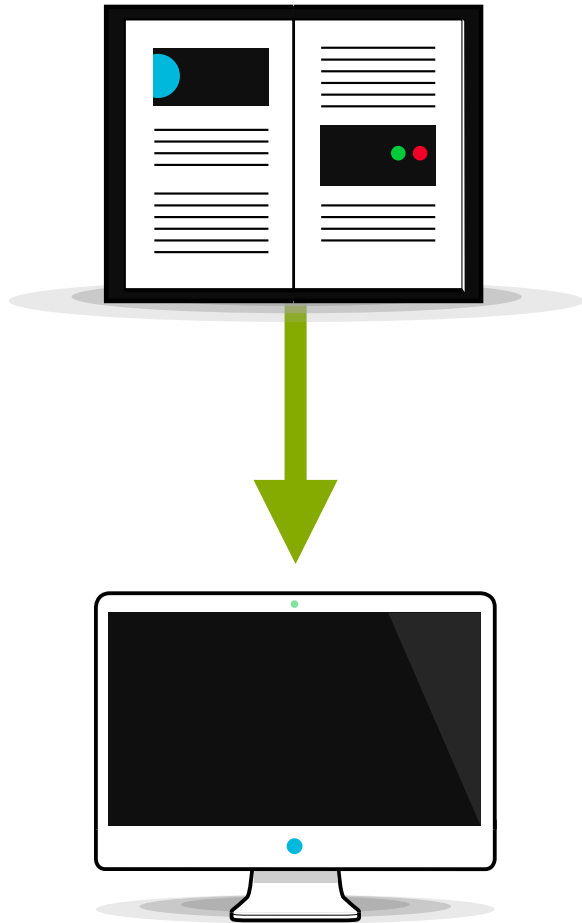


Flickr Photo: by OSU Special Collections & Archives

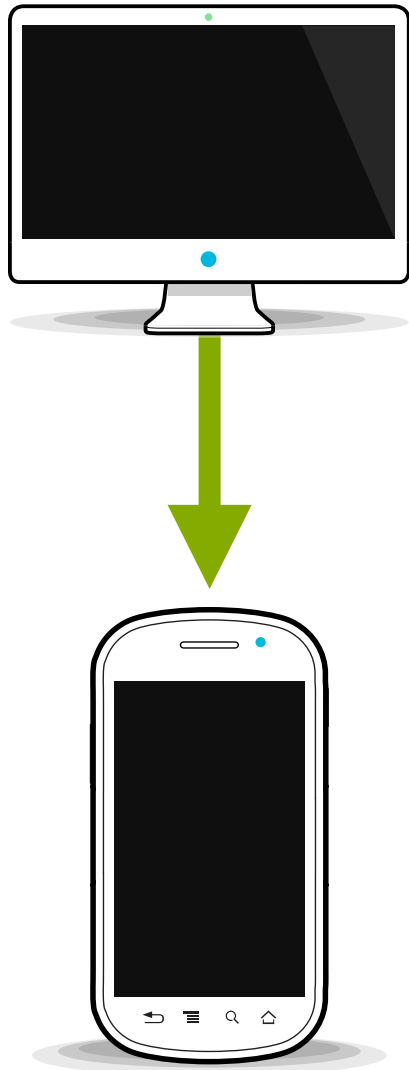
The image is a horizontal composition of three distinct parts. On the left, a Star Wars droid, resembling a protocol droid, is shown in a dynamic, slightly hunched pose. The central portion is a solid green rectangle containing the text 'RADIO IS NOT TV.' in a large, white, sans-serif font. On the right, a blue square sign with a white wheelchair symbol is mounted on a light-colored tiled wall.

RADIO  
IS NOT  
TV.

Photo: Robot Chicken Star Wars



THE WEB  
IS NOT  
PRINT.

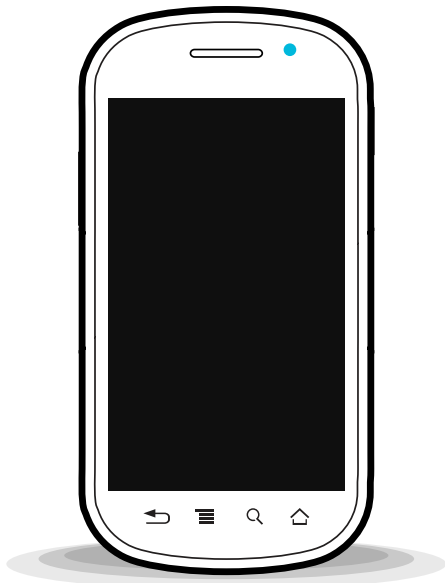


MOBILE  
IS NOT A  
DESKTOP  
PC.



“...copy, extend, and finally, discovery of a new form. It takes a while to shed old paradigms.” -Scott Jenson

# MOBILE

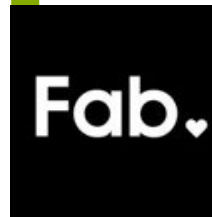
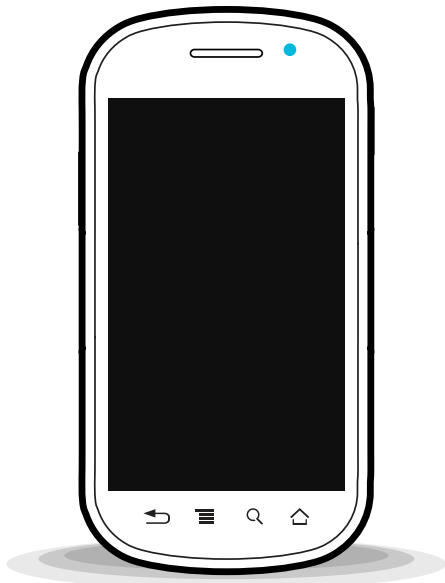


**PayPal™**

## MOBILE PAYMENTS

\$141M	2009
\$750M	2010
\$4B	2011
\$10B	2012 <sup>EST</sup>

# MOBILE



2X

more likely to  
buy on mobile



2.5X

more likely to  
subscribe



3X

engagement  
on mobile



# MOBILE

“We’re doing a complete relaunch [...] inspired by our mobile experience” -CEO  
Garrett Camp



**800%** mobile  
growth

What we know from  
desktop Web



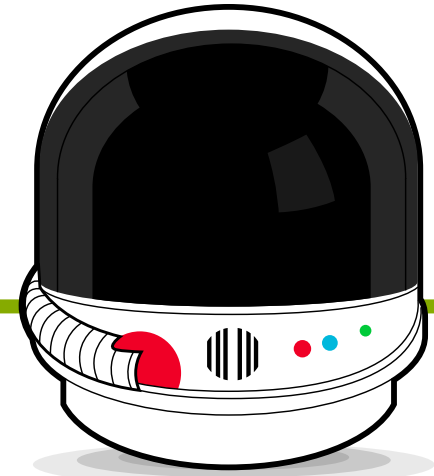
YESTERDAY

How to adapt &  
optimize for mobile



TODAY

Ways to move  
forward



TOMORROW

# LOGIN

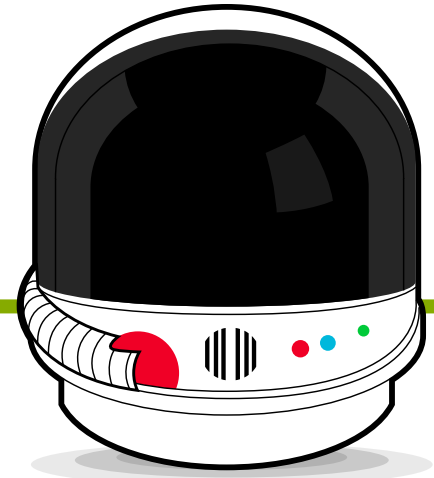
---



YESTERDAY



TODAY



TOMORROW

# LOGIN



YESTERDAY

15

authentications  
per day

82%

have forgotten a  
site password

5-10%

request password

#1

request to  
intranet help desk

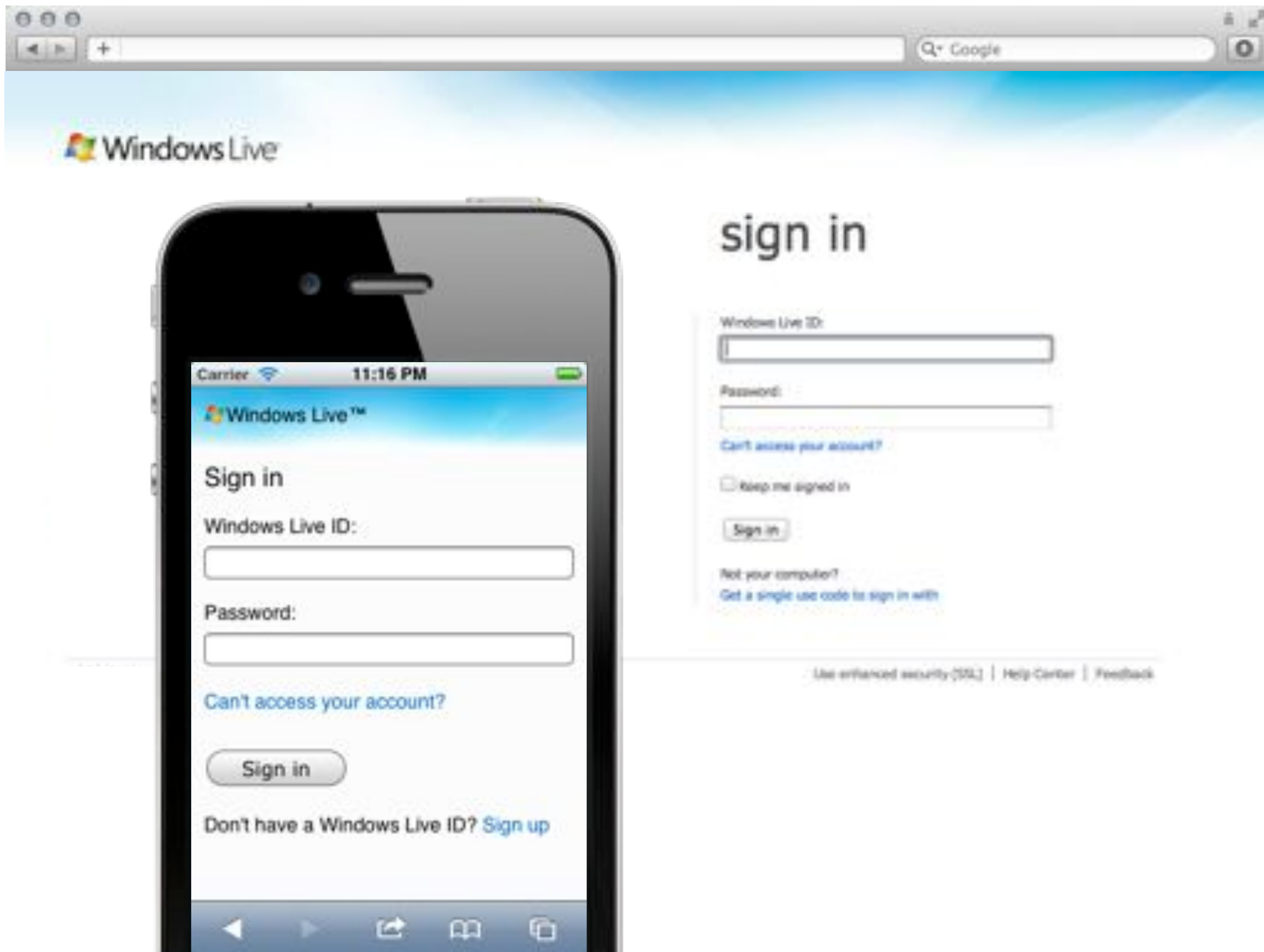
## Help: Change Password

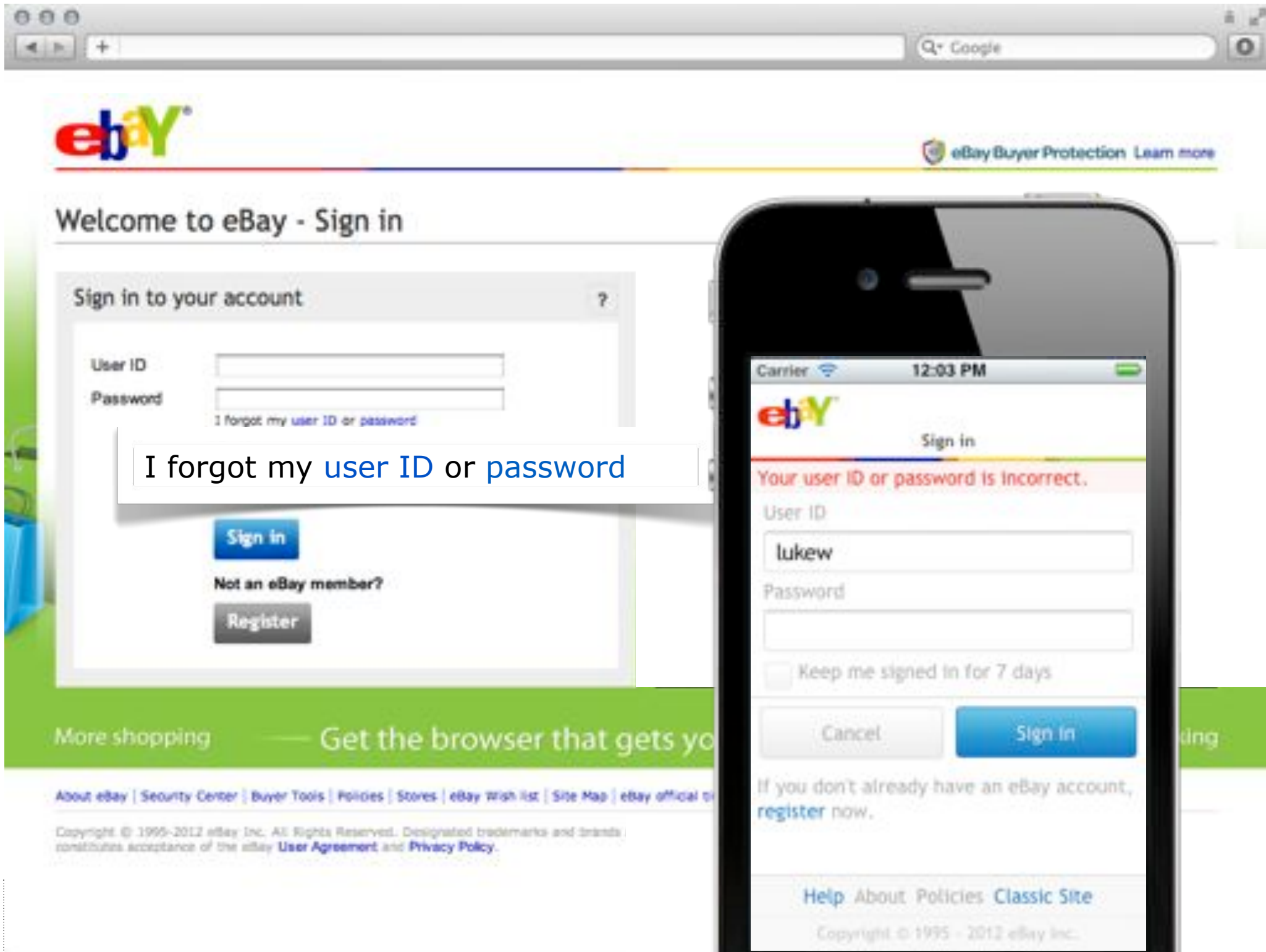
Because you have logged in successfully, you can change your password here by entering your password in the **Current Password** field, entering the new password in the **New Password** field, and confirming the new password by entering it again in the **Confirm New Password** field. Then click **Submit**.

Remember that the new password must fulfill these requirements:

1. The password must be **exactly** 8 characters long.
2. It must contain **at least** one letter, one number, and one special character.
3. The **only** special characters allowed are: @ # \$
4. A special character must **not** be located in the first or last position.
5. Two of the same characters sitting next to each other are considered to be a "set." No "sets" are allowed.
6. Avoid using names, such as your name, user ID, or the name of your company or employer.
7. Other words that cannot be used are Texas, child, and the months of the year.
8. A new password cannot be too similar to the previous password.
  - a. Example: previous password - abc#1234, acceptable new password - acb\$1243
  - b. Characters in the first, second, and third positions cannot be identical. (abc\*\*\*\*)
  - c. Characters in the second, third, and fourth positions cannot be identical. (\*bc#\*\*\*\*)
  - d. Characters in the sixth, seventh, and eighth positions cannot be identical. (\*\*\*\*\*234)
9. A password can be changed voluntarily (no Help Desk assistance needed) once in a 15-day period. If needed, the Help Desk can reset the password at any time.
10. The previous 8 passwords cannot be reused.

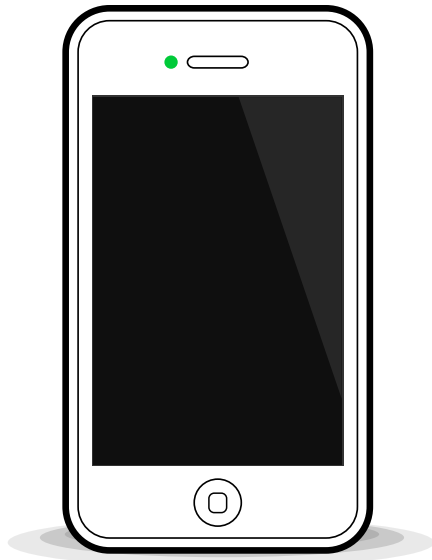
[Top of page](#)







# LOGIN

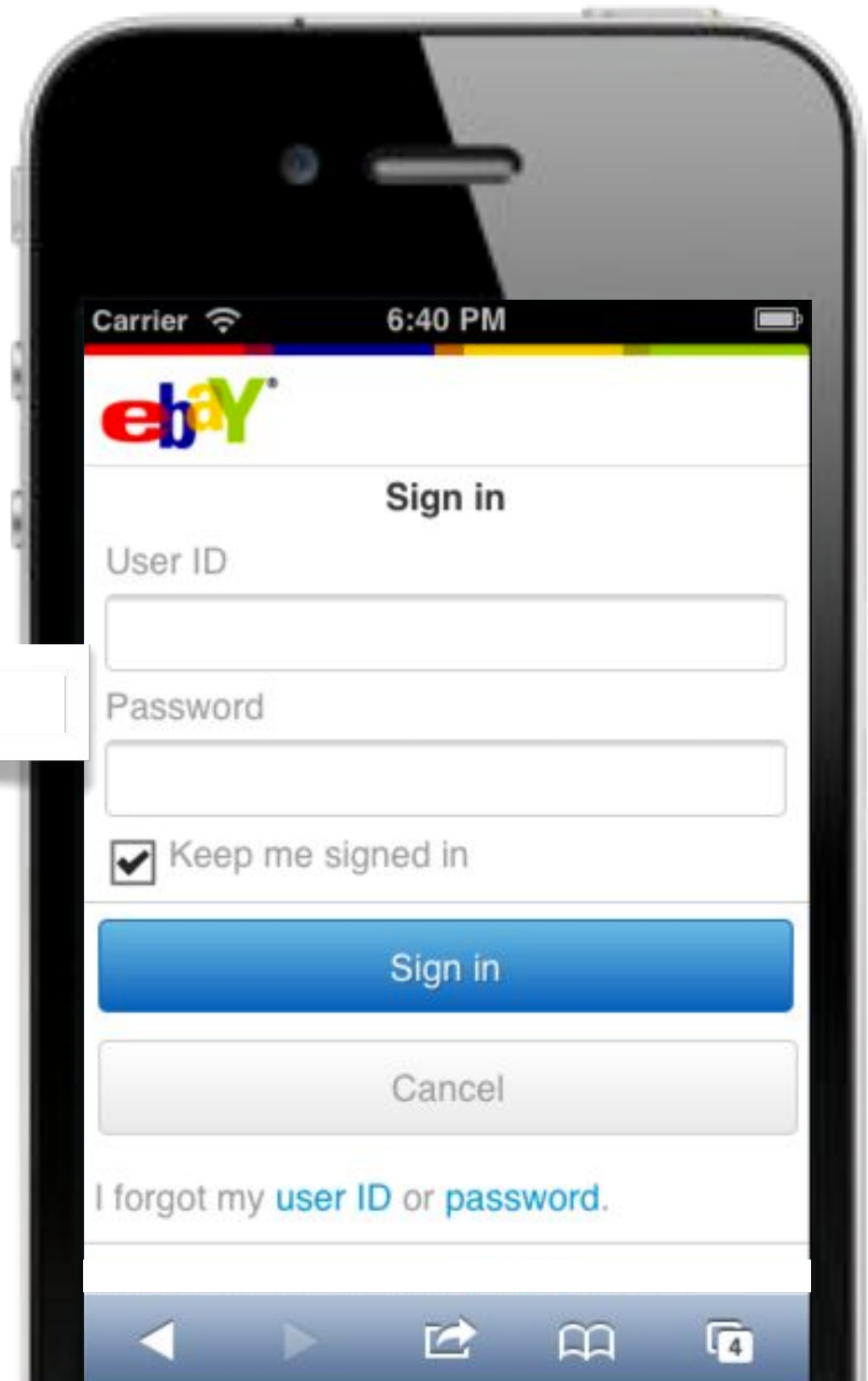


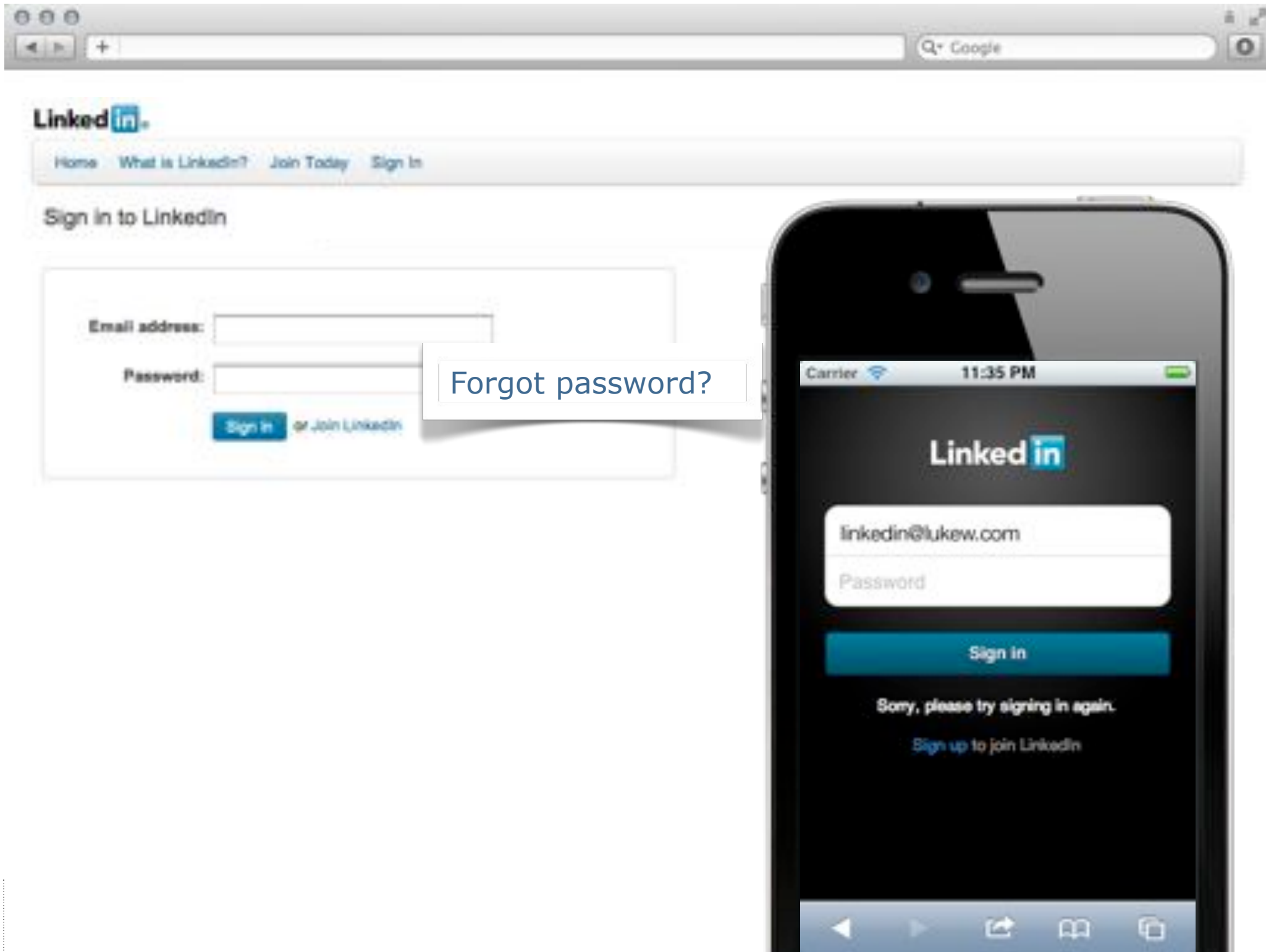
TODAY

90% of customer  
service inquiries



I forgot my [user ID](#) or [password](#)

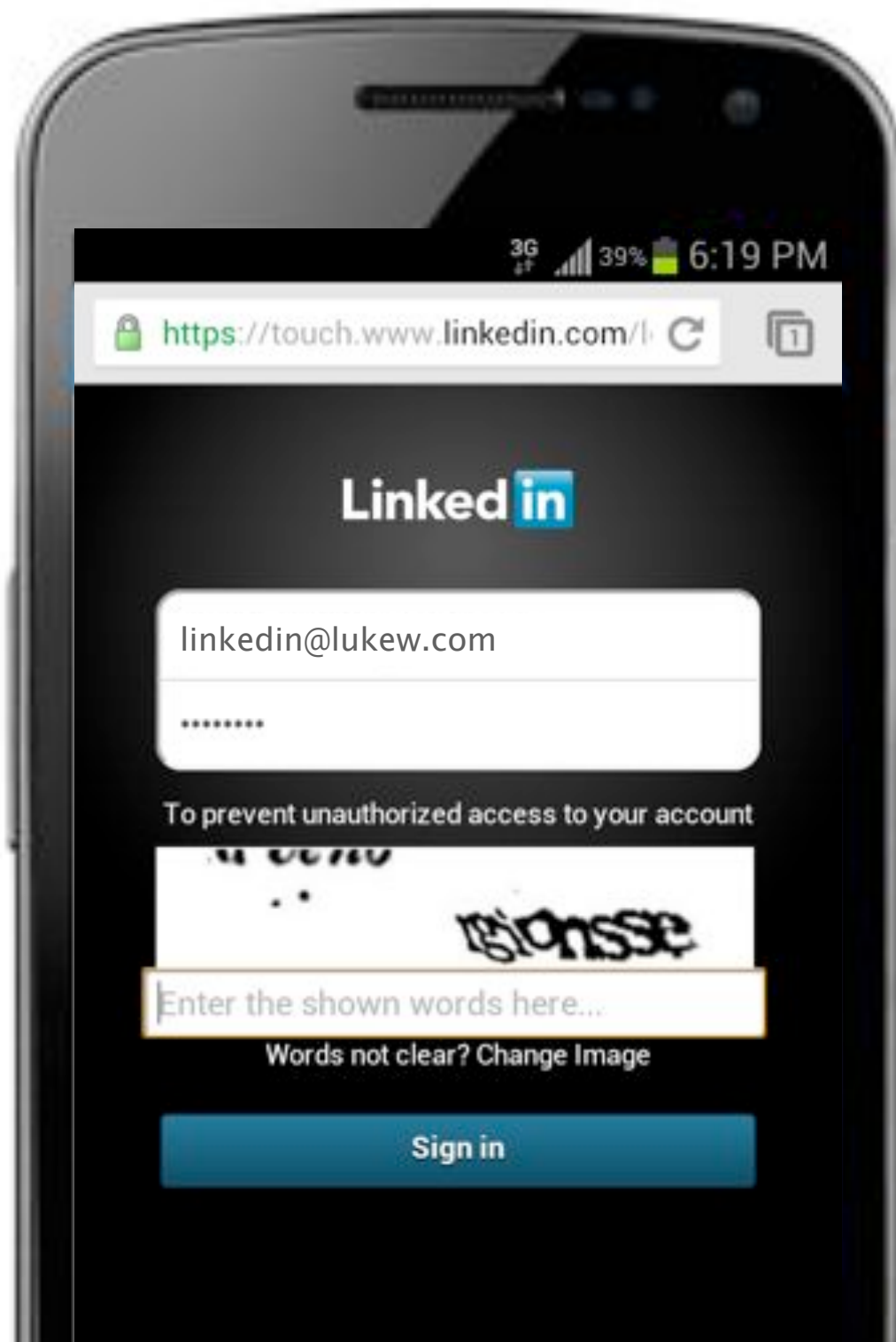




# Log In Flow

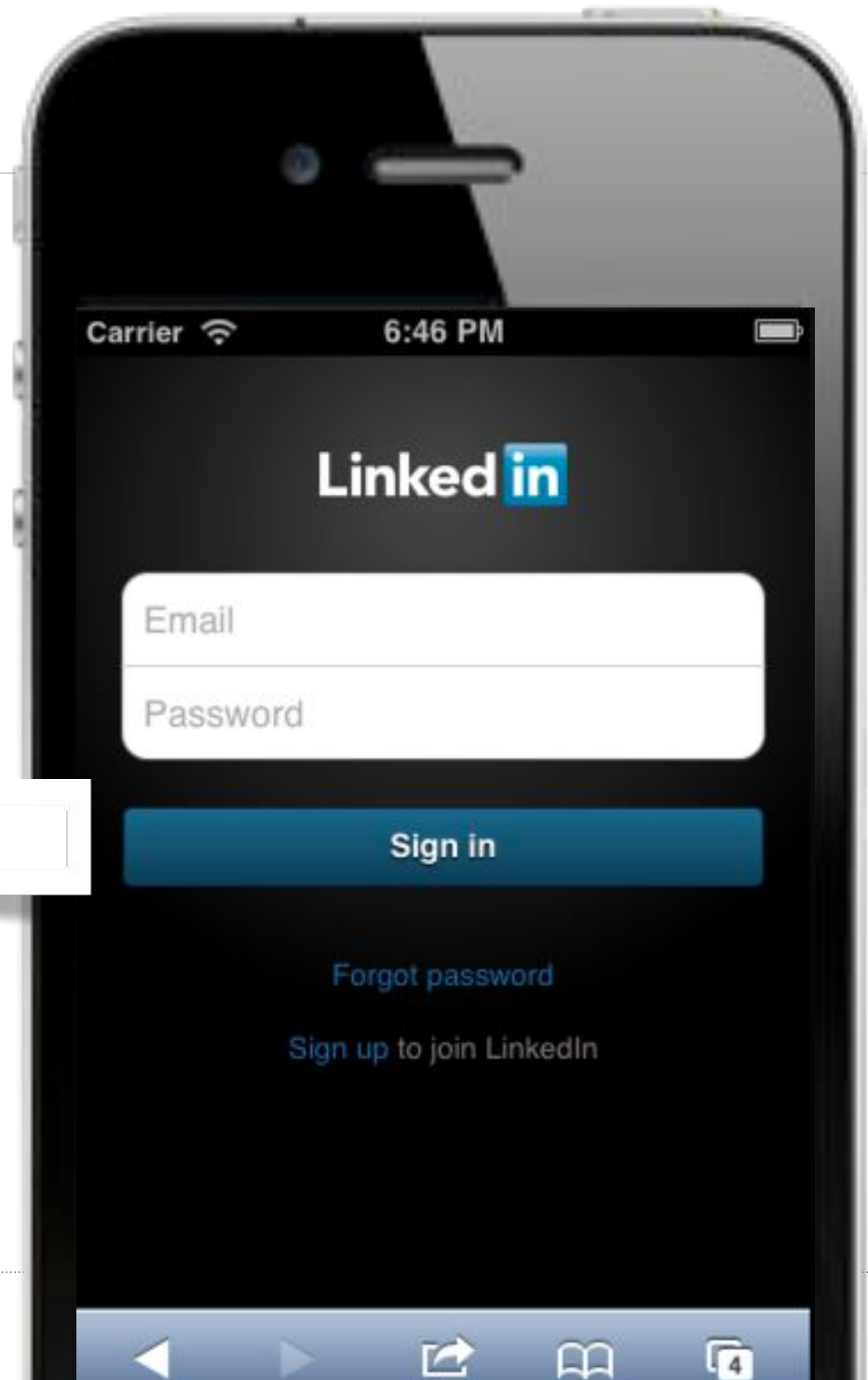
---



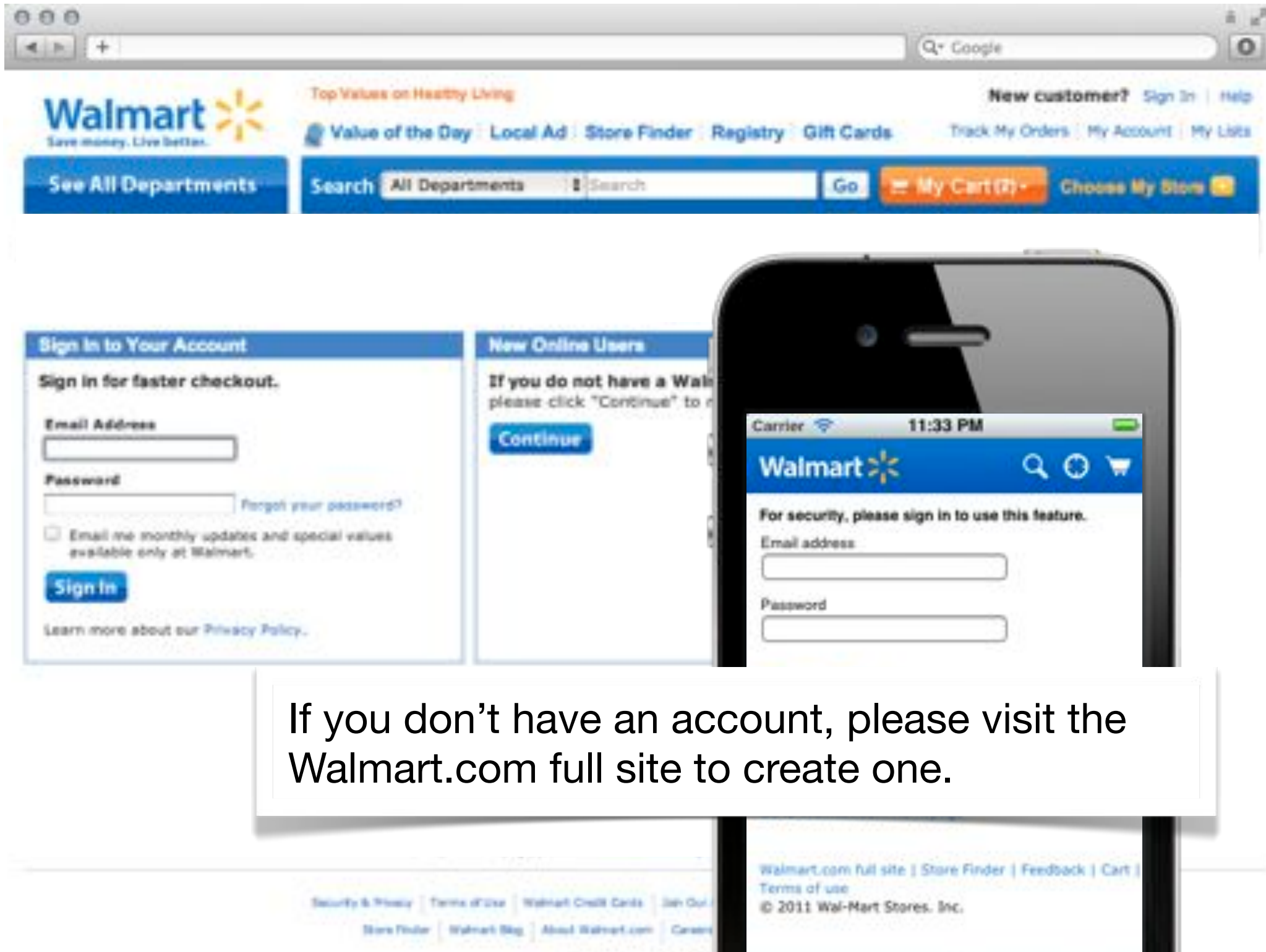


# Log In Flow

---

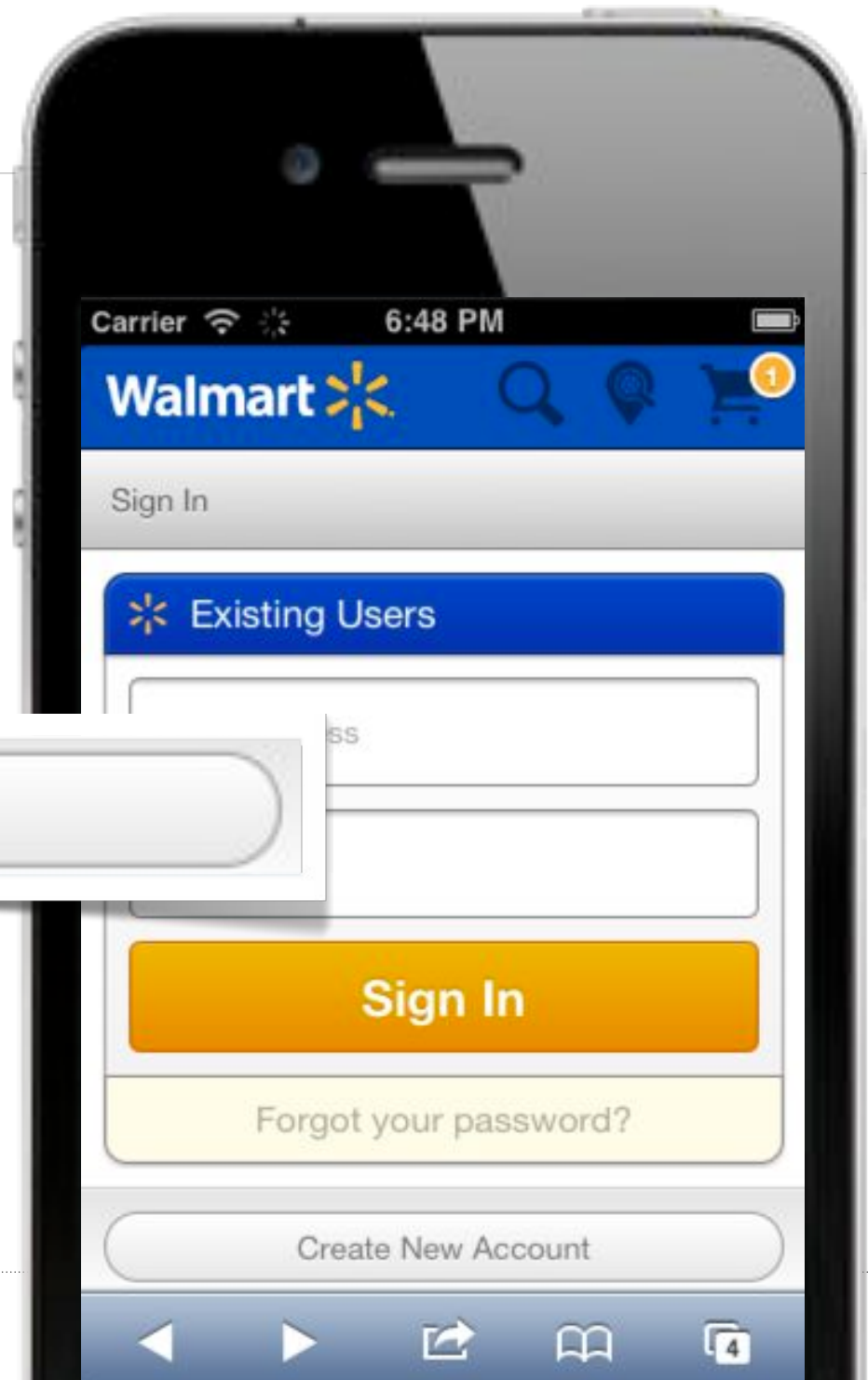


Forgot password



# Log In Flow

---



Create New Account

Sign In

Forgot your password?

Create New Account



“Mobile must never be a dumbed-down, limited experience.” -Steven Hooper

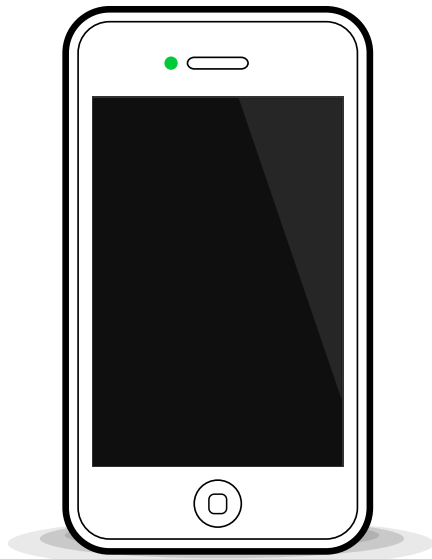
# Interfaces

O'REILLY®

*Steven Hooper  
& Eric Berkman*



# LOGIN



TODAY

- Don't remove **critical** features
- Use input types & attributes
- Show passwords by default
- Use input masks, if needed
- If possible, save passwords
- Consider single sign-on

# Input Types & Attributes



type=password  
autocapitalize=off  
autocomplete=off

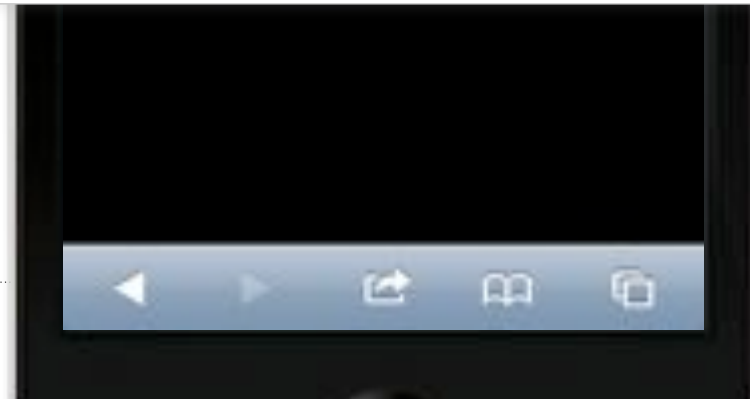
type=email  
autocapitalize=off  
autocomplete=off

# Show Passwords

---



“Masking passwords doesn’t even increase security, but it does cost you business due to login failures.” -Jakob Nielsen

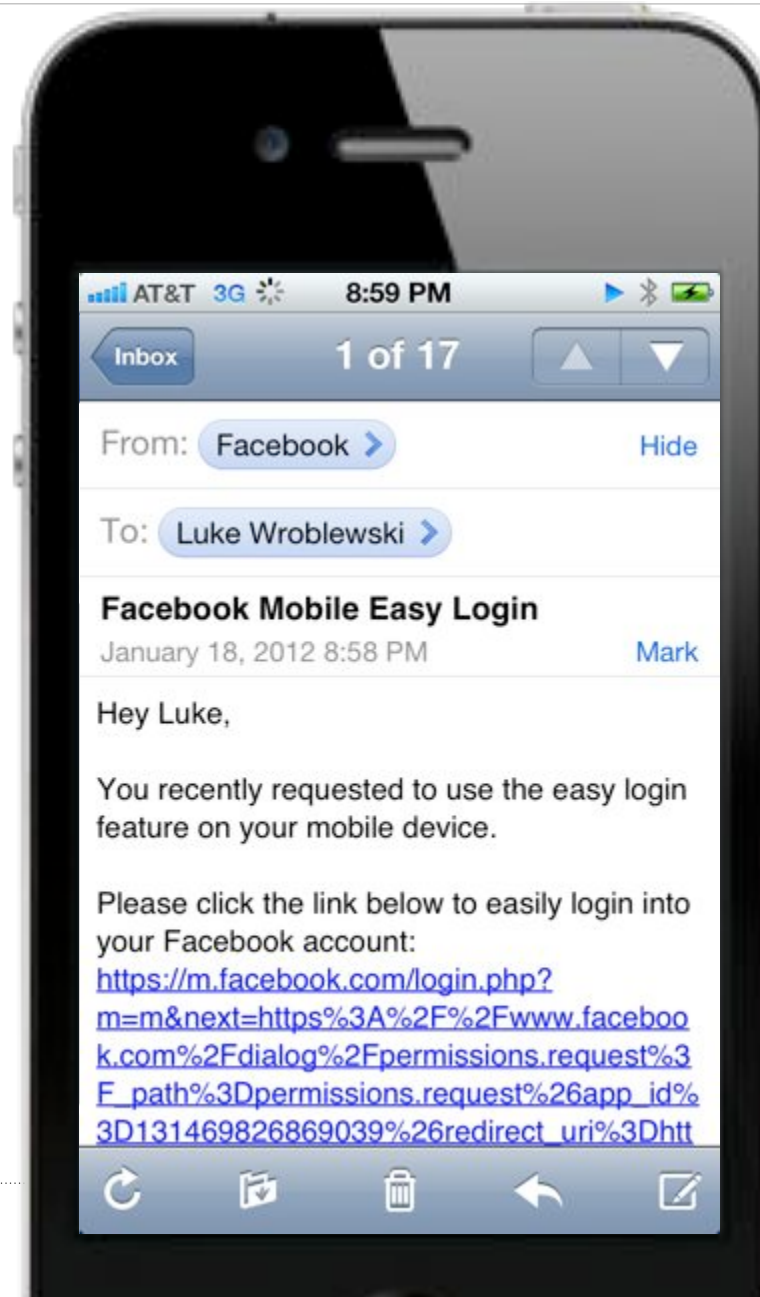


A photograph of a man with glasses and a microphone, speaking. A magnifying glass is held over his nose, making it appear significantly larger than the rest of his face. A speech bubble is positioned to the left of the magnifying glass.

“...and it's worse  
on mobile.”

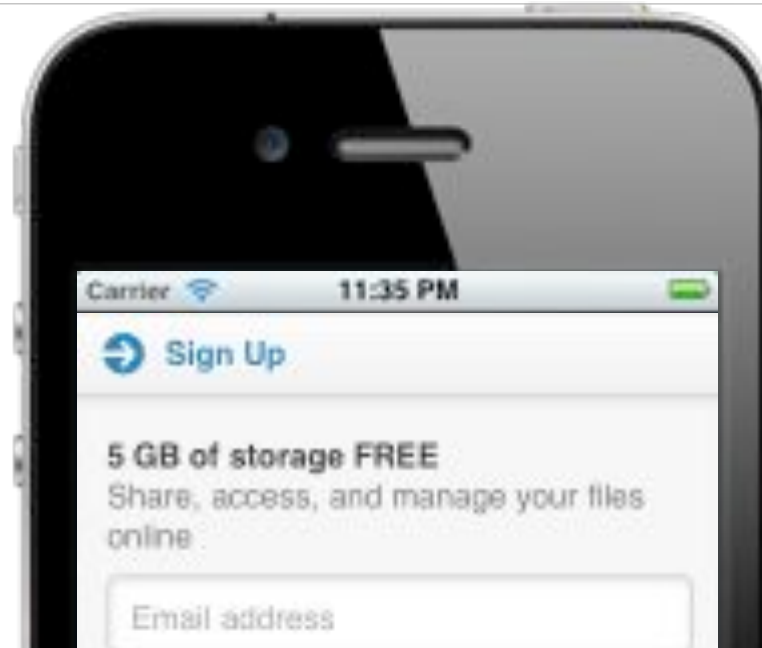
Mobile is a magnifying lens for your  
usability problems.

# Show Passwords



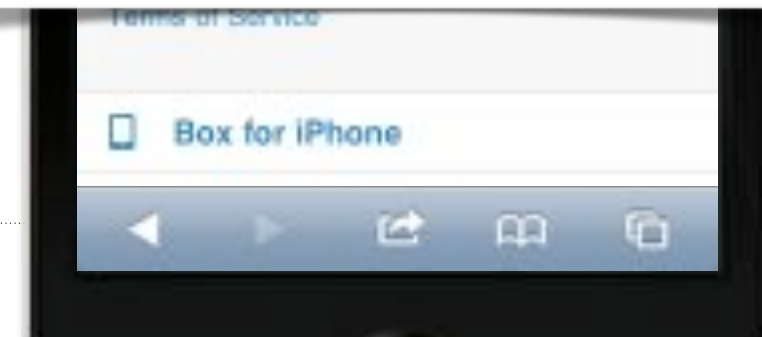
# Show Passwords

---



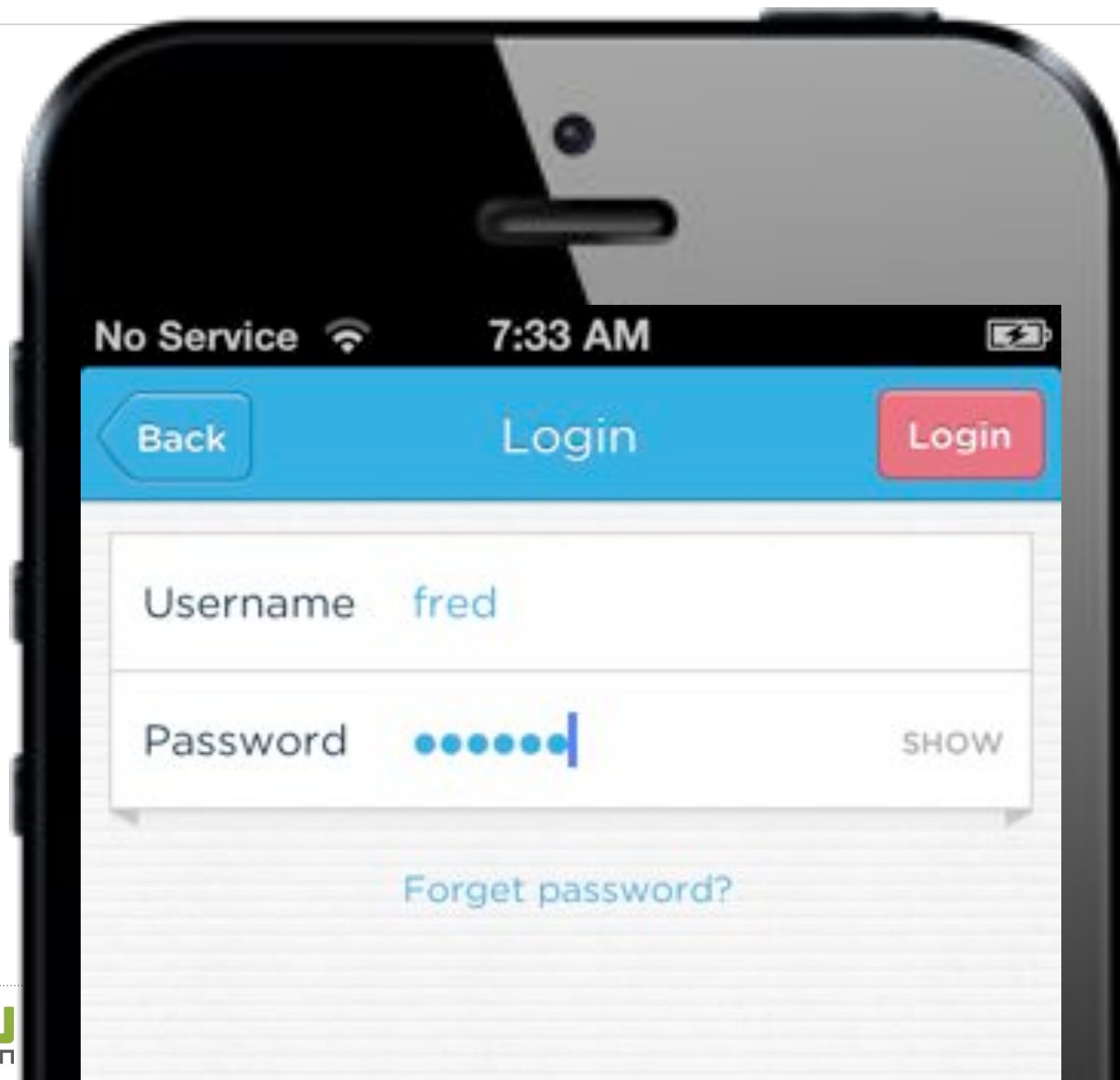
Smart  
Defaults

☐ Hide password



# Show Passwords

---



# Show Passwords

---



@tkadlec @lukew Lots of clients worry about negative security perception from users when showing passwords...



Jonathan Heron

5 days ago



@tkadlec @lukew We rolled it out for a large client recently & had zero negative feedback from either user test participants or live users.



Jonathan Heron

5 days ago



# Show Passwords

---



First time I removed masking/dupes was Sprint All 20mm customers needed new pswd (CPNI). Success, NO issues. Tested, well-measured. @lukew



steven hooper

5 days ago

# Show Passwords

---



@lukew when I was at Y! We eliminated the second input field and displayed the full password prior to form submission. Eavesdropping unlikely



Mike Lee

5 days ago



@lukew We saw double digit improvements in the overall flow, but that was also influenced by other changes to the form. No security issues.



Mike Lee

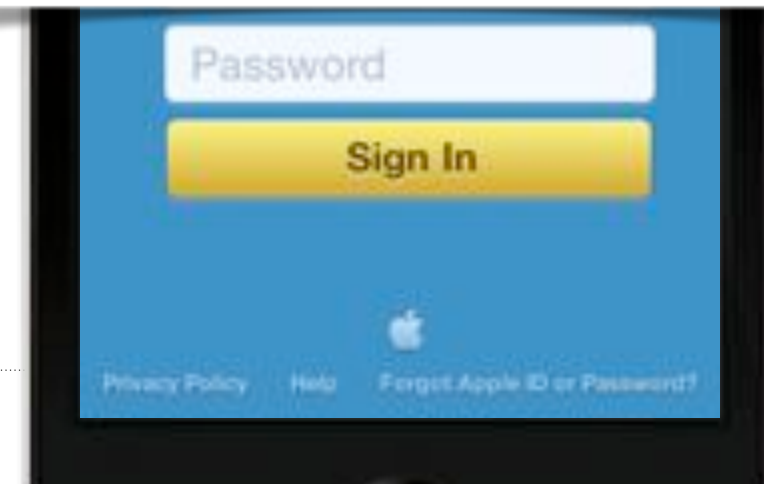
5 days ago

# Input Masks

---



steve@|me.com



# Input Masks

---



Username @lukew|



# Avoiding Errors

---

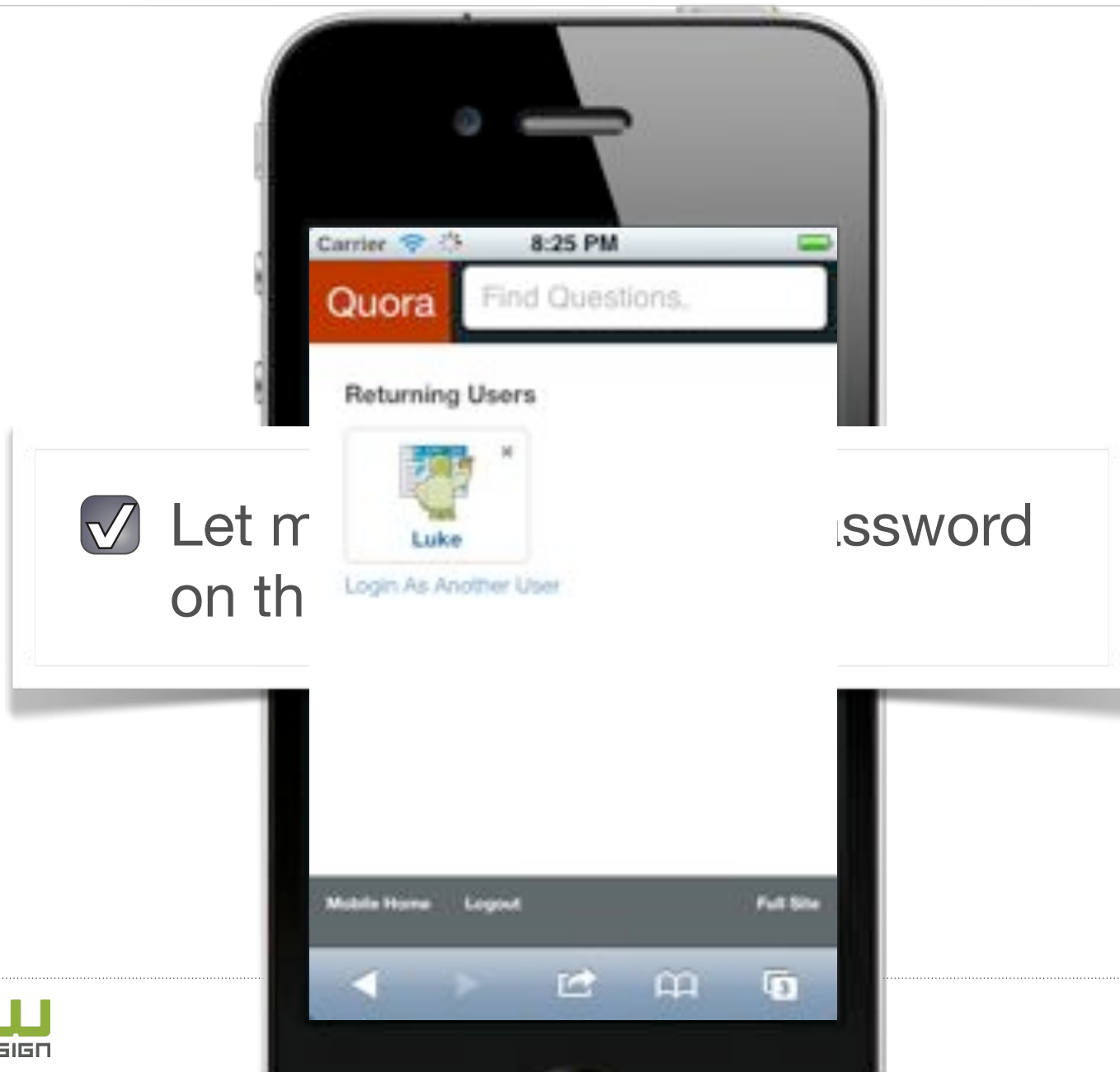


No account found for this email address.  
To create an account, [sign up for Quora](#).



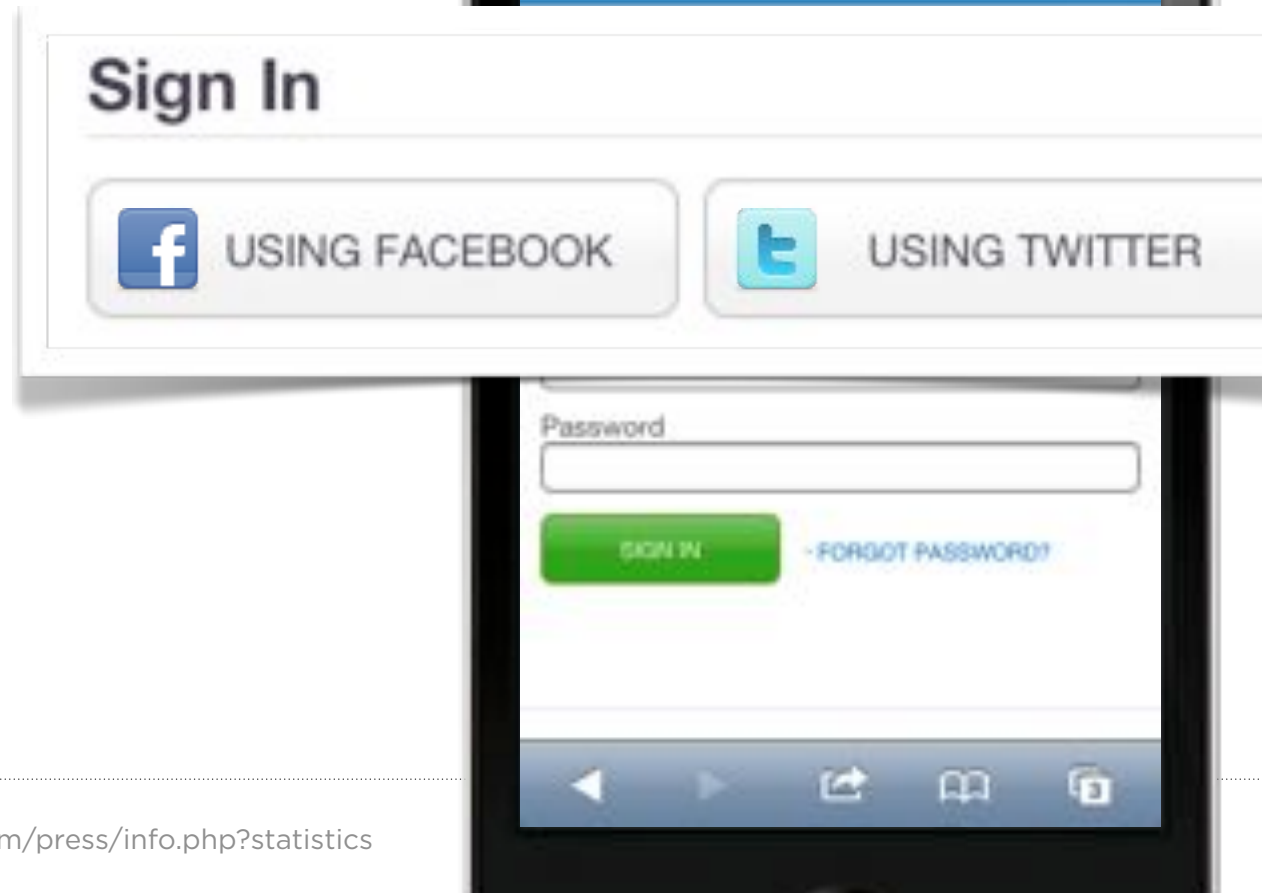
# Saving Passwords

---



# Single Sign-On

- **910M** active users
- **50%** log in daily
- **500M** use platform



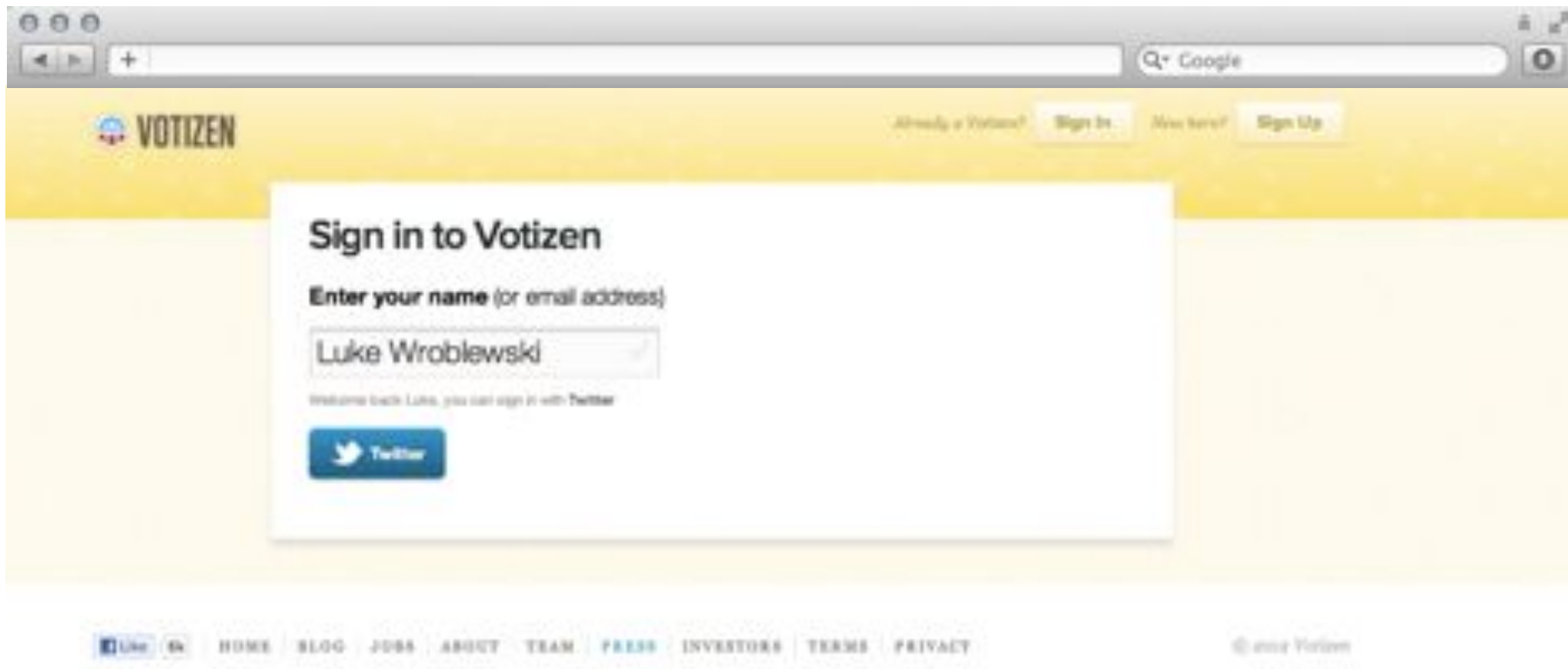


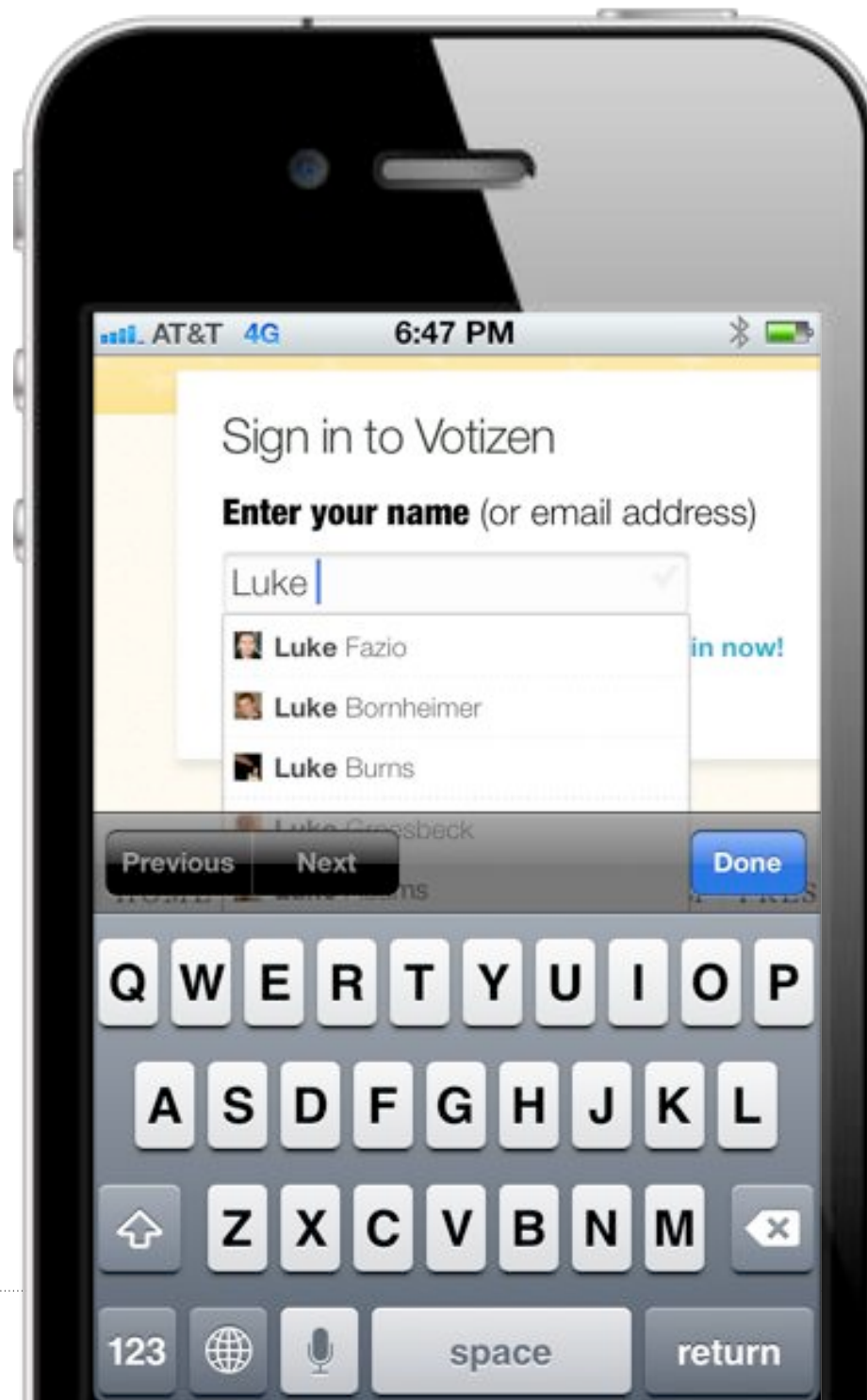
## Sign In to Bagcheck

Enter Your Name (or email)

Can't find your name or new here? [Join Now](#)







## Sign In



USING FACEBOOK



USING TWITTER

Or Your Bagcheck Account

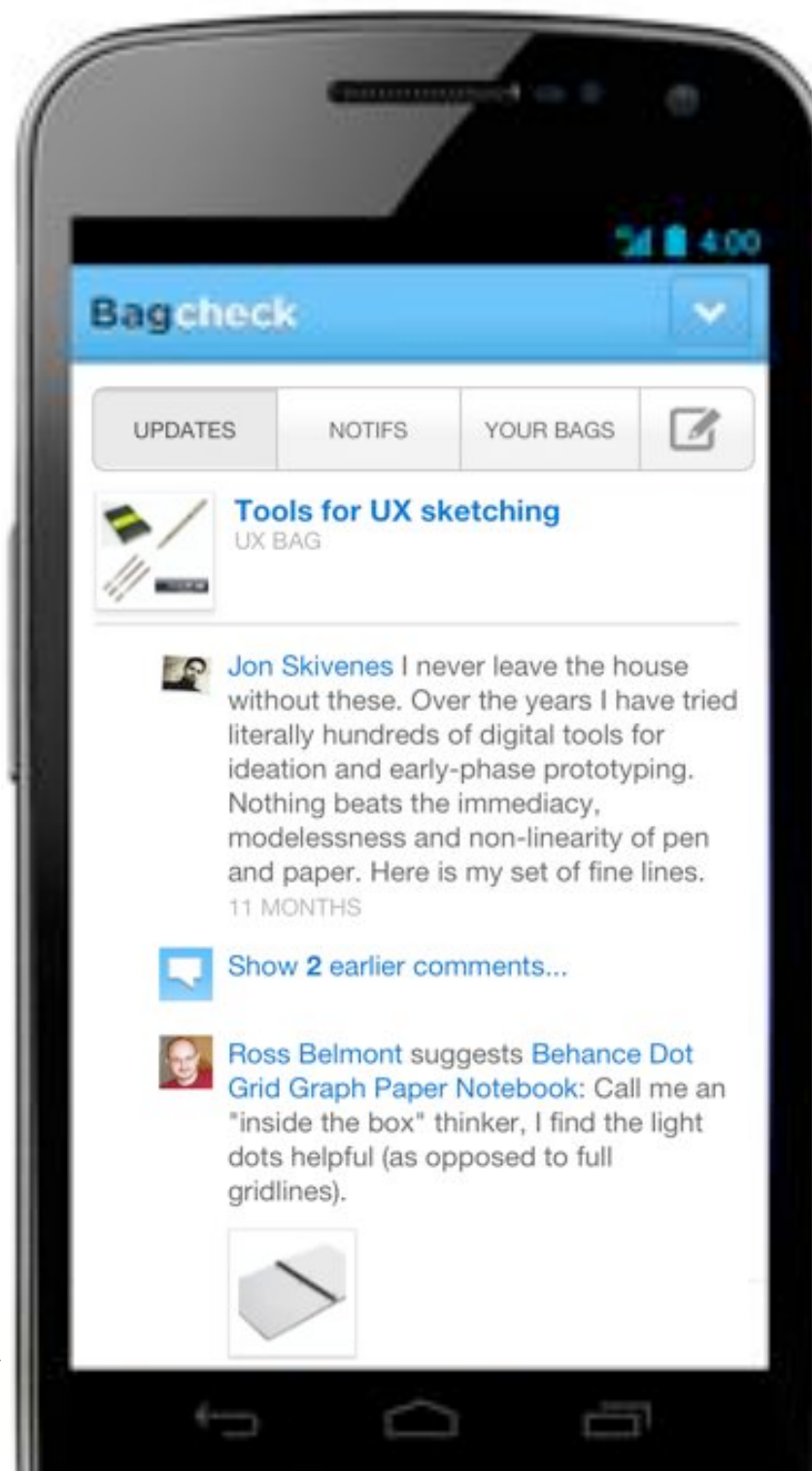
Email Address

Password

SIGN IN

[FORGOT PASSWORD?](#)

[ABOUT](#) | [BLOG](#) | [TERMS](#) | [FULL SITE](#)



Q Google

# Congratulations!

We're happy to have you aboard!

Your Simple card should arrive in the mail in five to seven business days. Until then, let's set up the rest of your account.

DETAILS HERE

SIMPLE

0000 0000 0000 0000

0000

0000 0000 0000 0000

DEBIT

VISA

1 Create your credentials

Username

Passphrase

\*\*\*\*\*

show passphrase

Your passphrase grade is **C**. Acceptable, but only minimally secure.

**Passphrase?** Yes. Passphrases are easier to remember and more secure than traditional passwords. For example, try a group of words with spaces in between, or a sentence you know you'll remember. Correct horse battery staple is a better passphrase than r0b0tz26.

Save username and passphrase

Be flexible in what you accept

Use input types & attributes

If possible, save passwords

## Sign In

Email or Full Name

Password

[Hide](#)

Sign In

☒

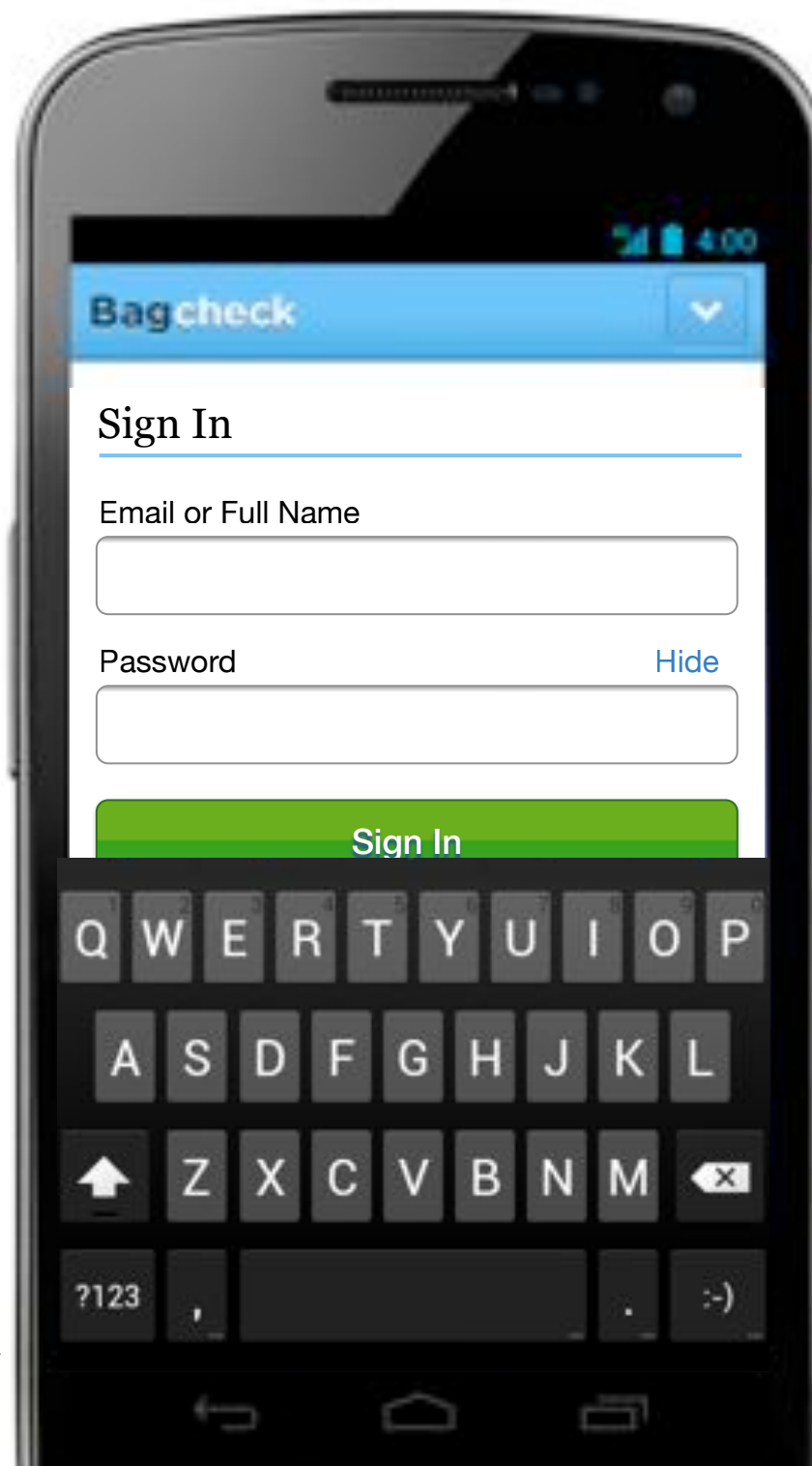
Remember Me

[Sign In Help](#)

[New Here? Sign Up](#)

Show password by default

Don't remove critical features



## Sign In

Email or Full Name

luke@luke.com

Password

[Hide](#)

mypassword



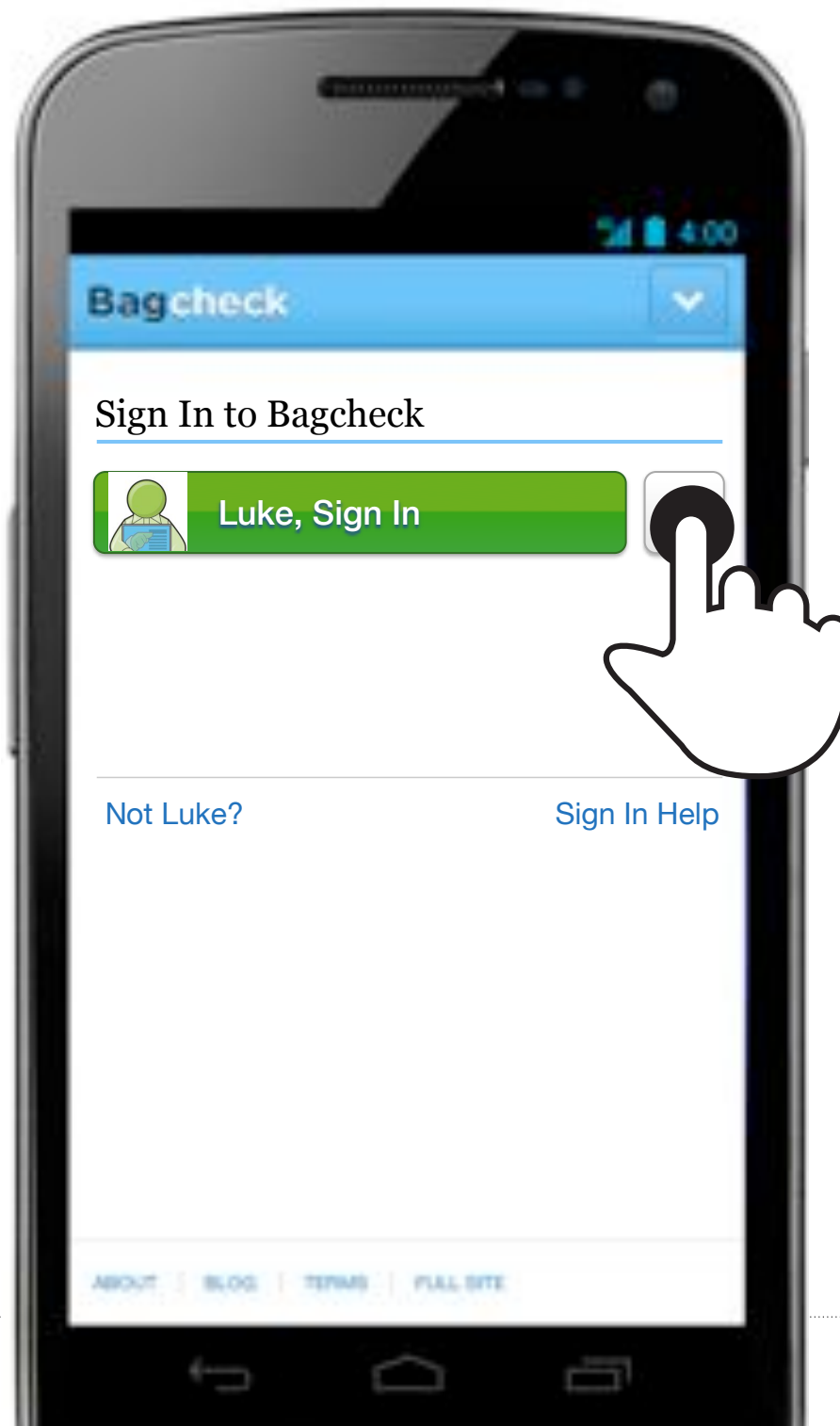
Luke, Sign In

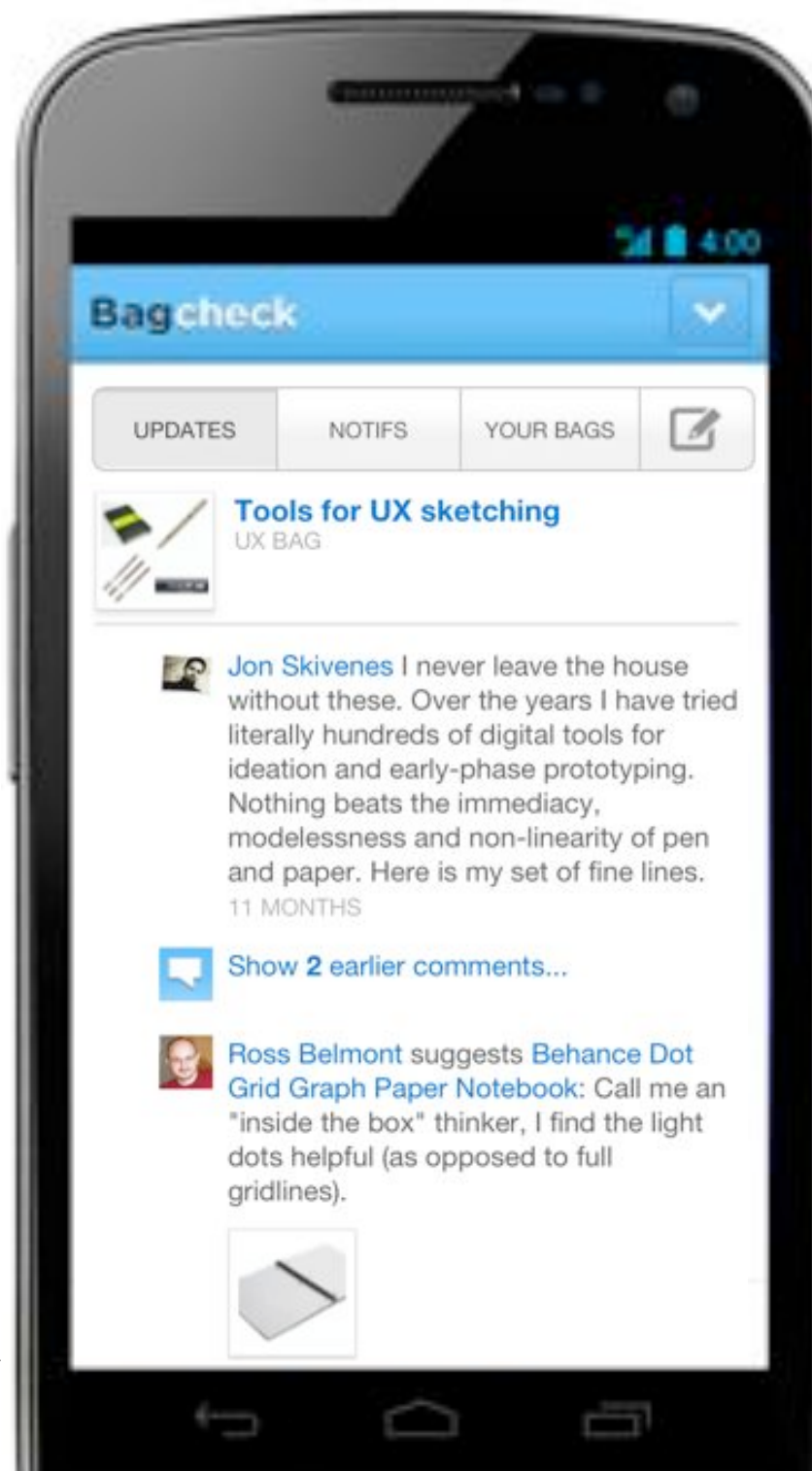


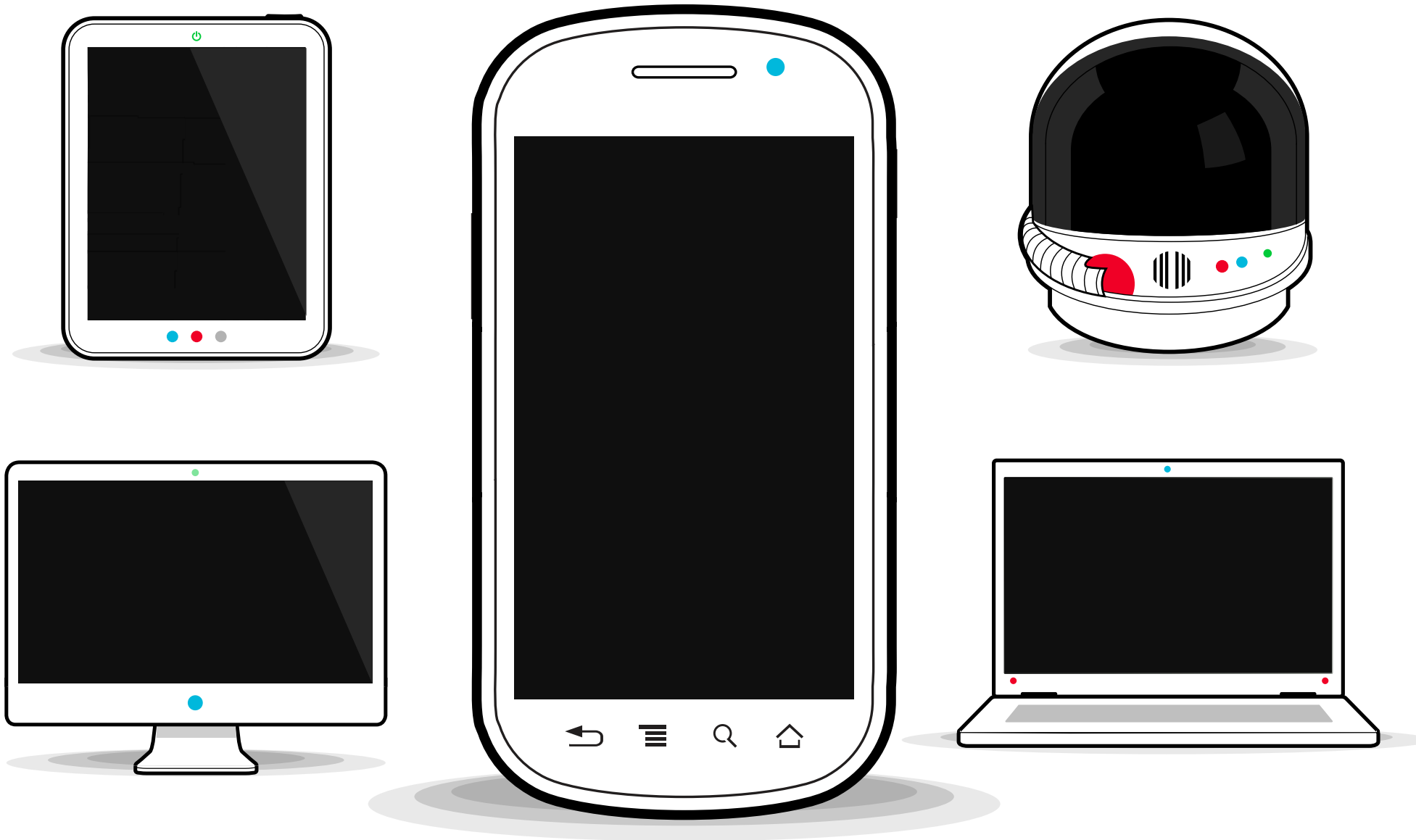
Remember Me

[Sign In Help](#)

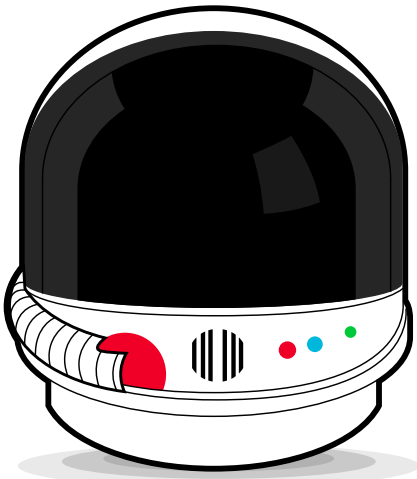






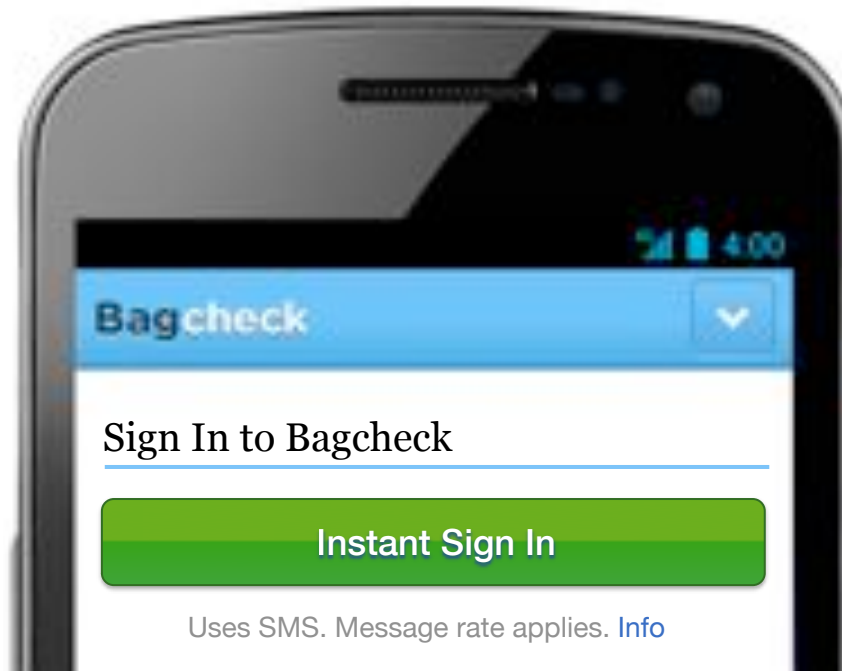


# LOGIN



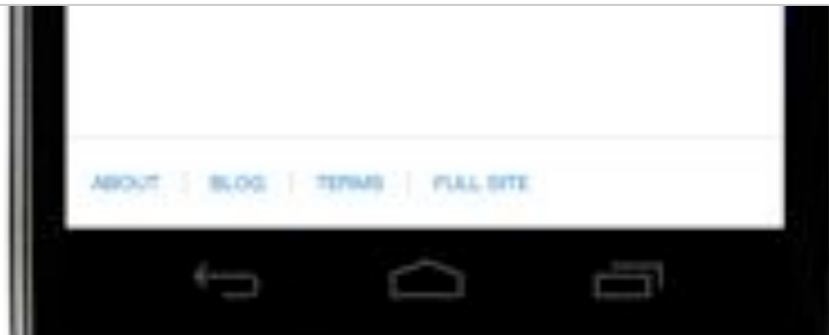
TOMORROW

- SMS Authentication
- Touch Gestures
- Facial Recognition
- Finger Identification



```
navigator.sendMessage("sms:16505551234?" +  
"body=Sign%20me%20in");
```

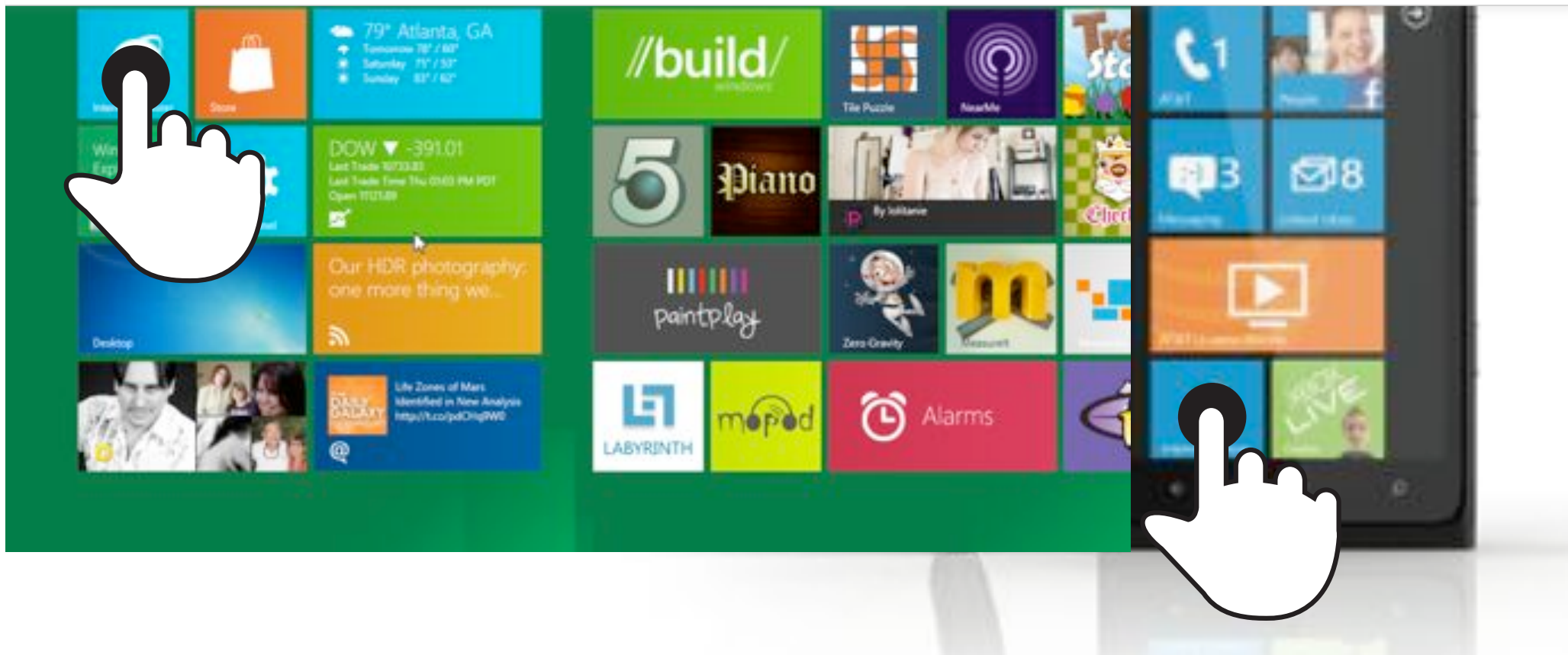
```
bondi.messaging.subscribeToSMS(alert("Let In");  
, {from: "16505551234"},true);
```



Source: <http://slidesha.re/zBTZ3U>

# Touch Gestures

“Microsoft Windows 8 shows mobile’s influence.”



# Building "Windows 8"

Signing in with a picture password

© 2011 Microsoft

# Password Combinations

	10-digit	A-Z character	Complex character	Multi-gesture
1	10	26	n/a	2,554
2	100	676	n/a	1,581,773
3	1,000	17,576	81,120	1,155,509,083
4	10,000	456,976	4,218,240	6.12157E+11
5	100,000	11,881,376	182,790,400	3.98047E+14



# WHAT ABOUT THE BROWSER?



- Touch Events API
- **touchstart** finger on
- **touchmove** finger dragged
- **touchend** finger removed



- HTML Media Capture
- Form enhancements that provide access to the audio, image and video capture capabilities of the device

# iOS 6.0+

---



`<input type="file" accept="image/*" capture="camera">`

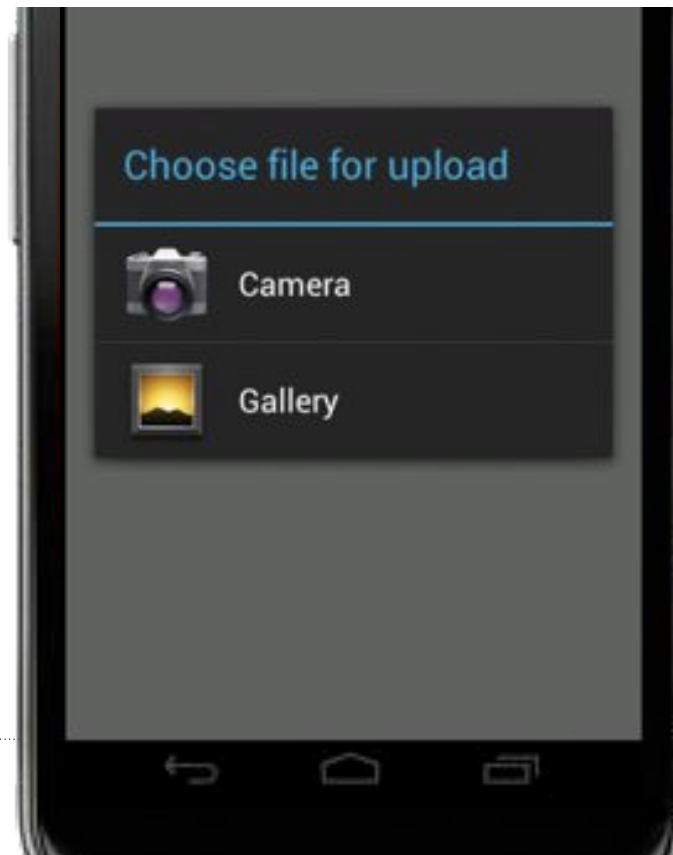


# Android 3.0 +

---

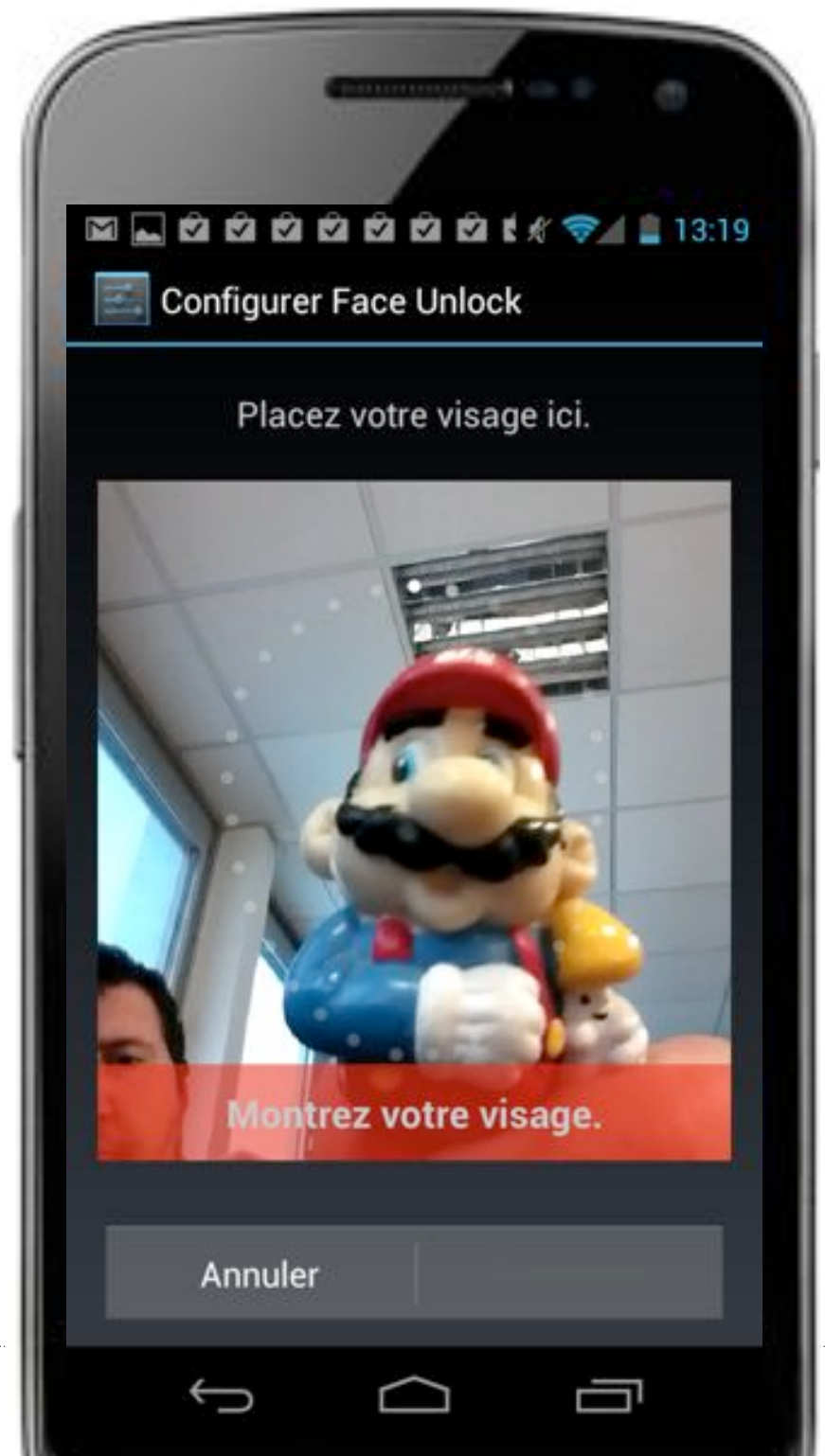


`<input type="file" accept="image/*" capture="camera">`



# Facial Recognition

GALAXY NEXUS





## ABOUT THE BROWSER?

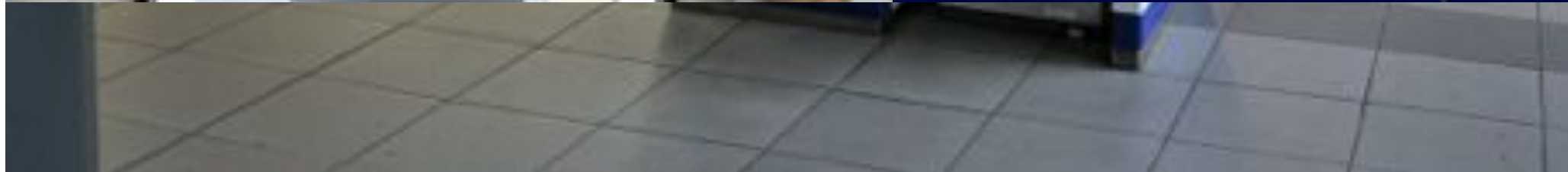
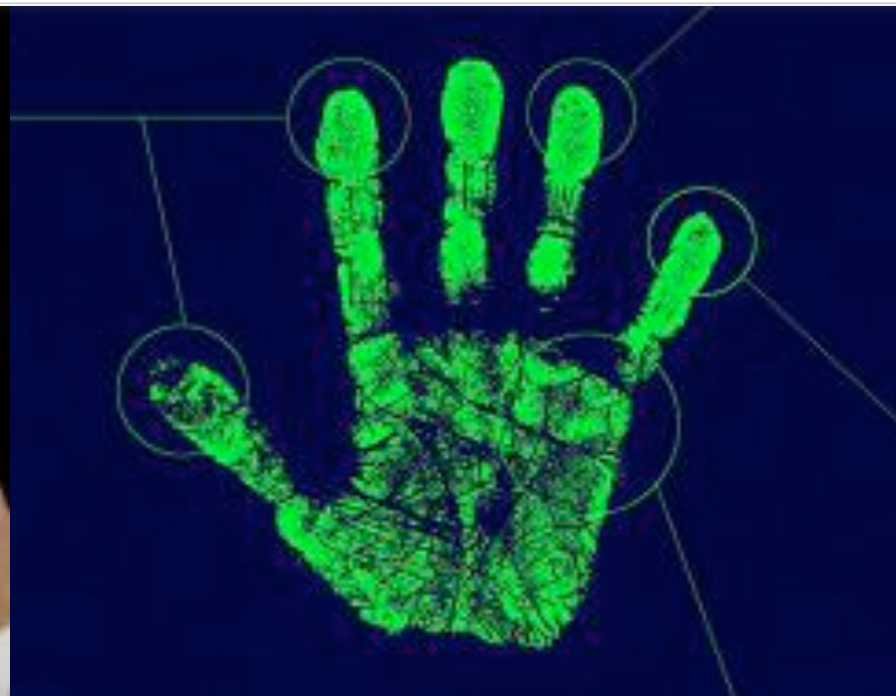


- GetUsermedia API
- Access to local device multimedia data streams
- Video cameras, microphones, Web cams





“You are the cash card.”





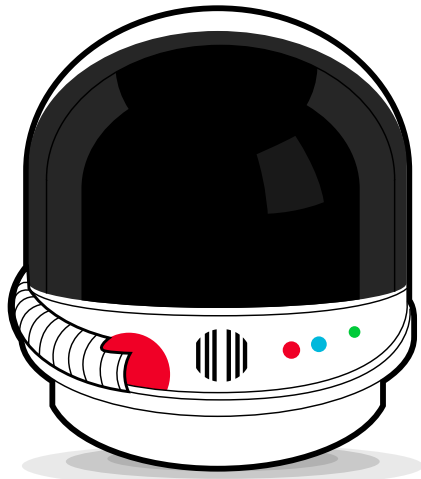
# Finger ID

- Specific functions depending on which finger is being used
- Index finger press might perform one action
- While a middle finger press could perform another





# LOGIN



TOMORROW

- SMS Authentication
- Touch Gestures
- Facial Recognition
- Finger Identification

# LOGIN



# LOGIN

---

## WHY BOTHER?

1. Permanently carried
2. Always on
3. Available at point of inspiration

Email not found. New Here?



Remember Me

[Sign In Help](#)

[Not Luke?](#)

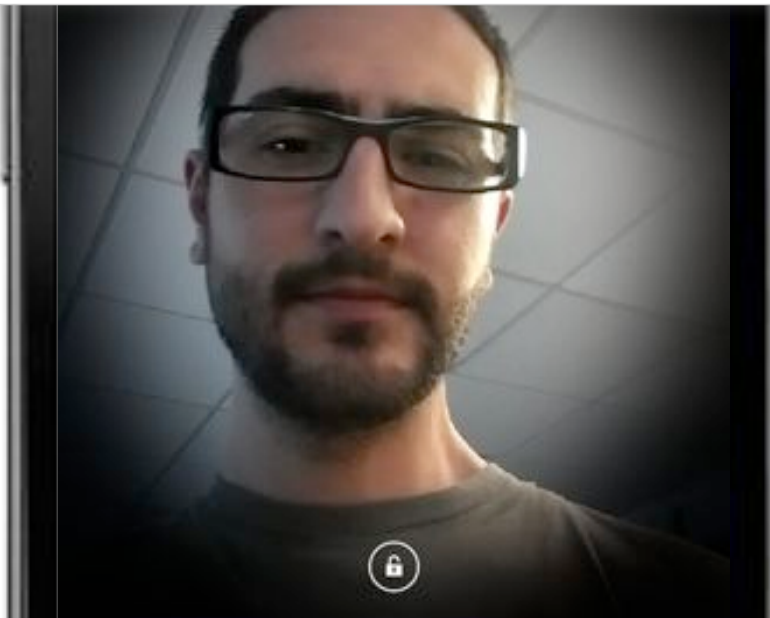
[Sign In Help](#)

# LOGIN

---



Our focus on layout keeps us from seizing big opportunities on mobile.



# LOGIN

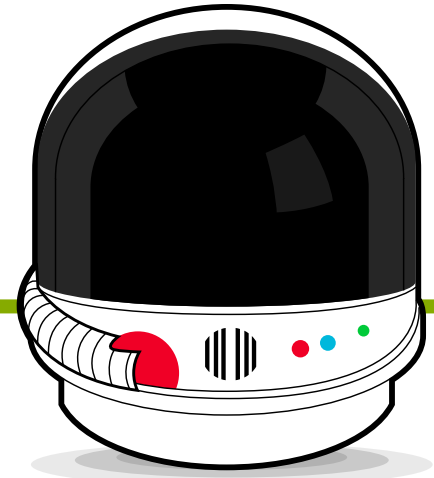
---



YESTERDAY



TODAY



TOMORROW

# CHECKOUT

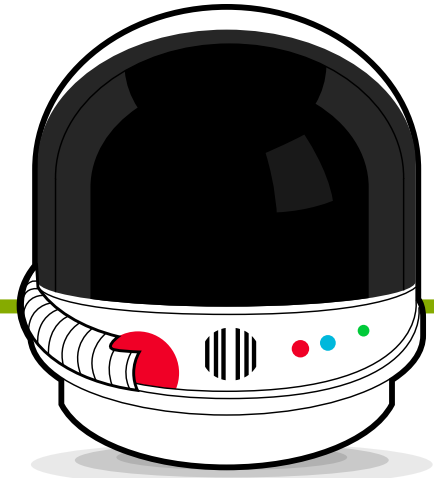
---



YESTERDAY



TODAY



TOMORROW

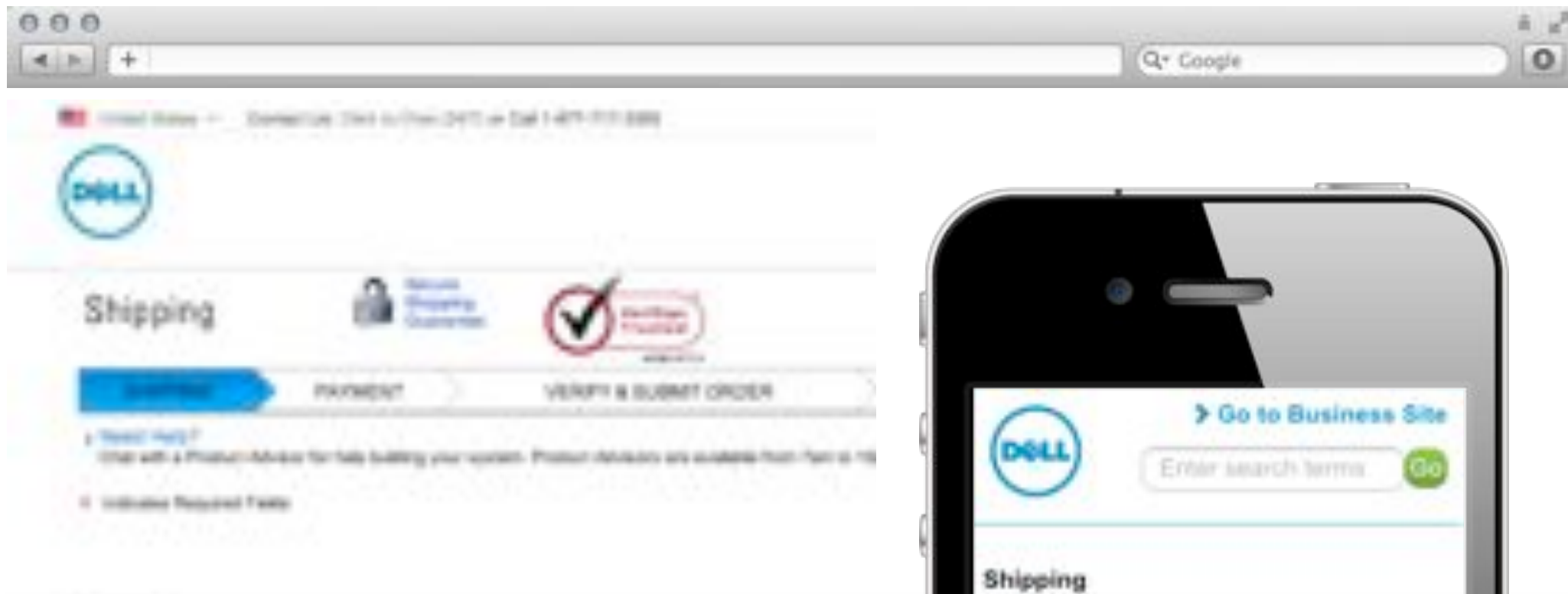
# CHECKOUT



YESTERDAY

**75%** 2011 shopping cart abandonment rate

**71%** 2010 shopping cart abandonment rate



## REDUCE EFFORT

Address  
Please see address guidelines: [link](#)

City State  
  (Choose a state (dropdown...))

Zip Code

Daytime Phone Number

Home Phone Number

not ship to PO Boxes.

\*First Name

MI

\*Last Name

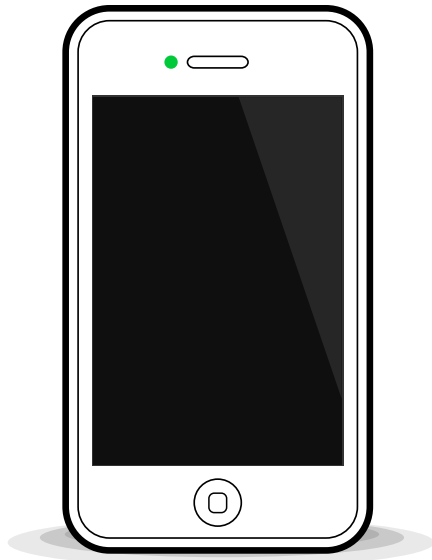
\*Address





- Clicked **Buy Now** but did not complete transaction
- Form had an optional field under Name titled Company
- **\$12M** of profit a year overnight
- Found 50 or 60 of these kinds of issues

# CHECKOUT



TODAY

- Remove **unnecessary** questions
- Keep people on the keys
- Reduce number of controls
- Progressive input types

# Multiple Fields



A smartphone screen displaying a Dell login form. The form includes the Dell logo at the top, followed by a horizontal line. Below the line are three input fields: a text field for the first name, a small square checkbox for the 'MI' (My Information) option, and a text field for the last name. The labels for the first and last name fields are marked with a red asterisk, indicating they are required.



---

\*First Name

MI  
☐

\*Last Name

# Multiple Fields

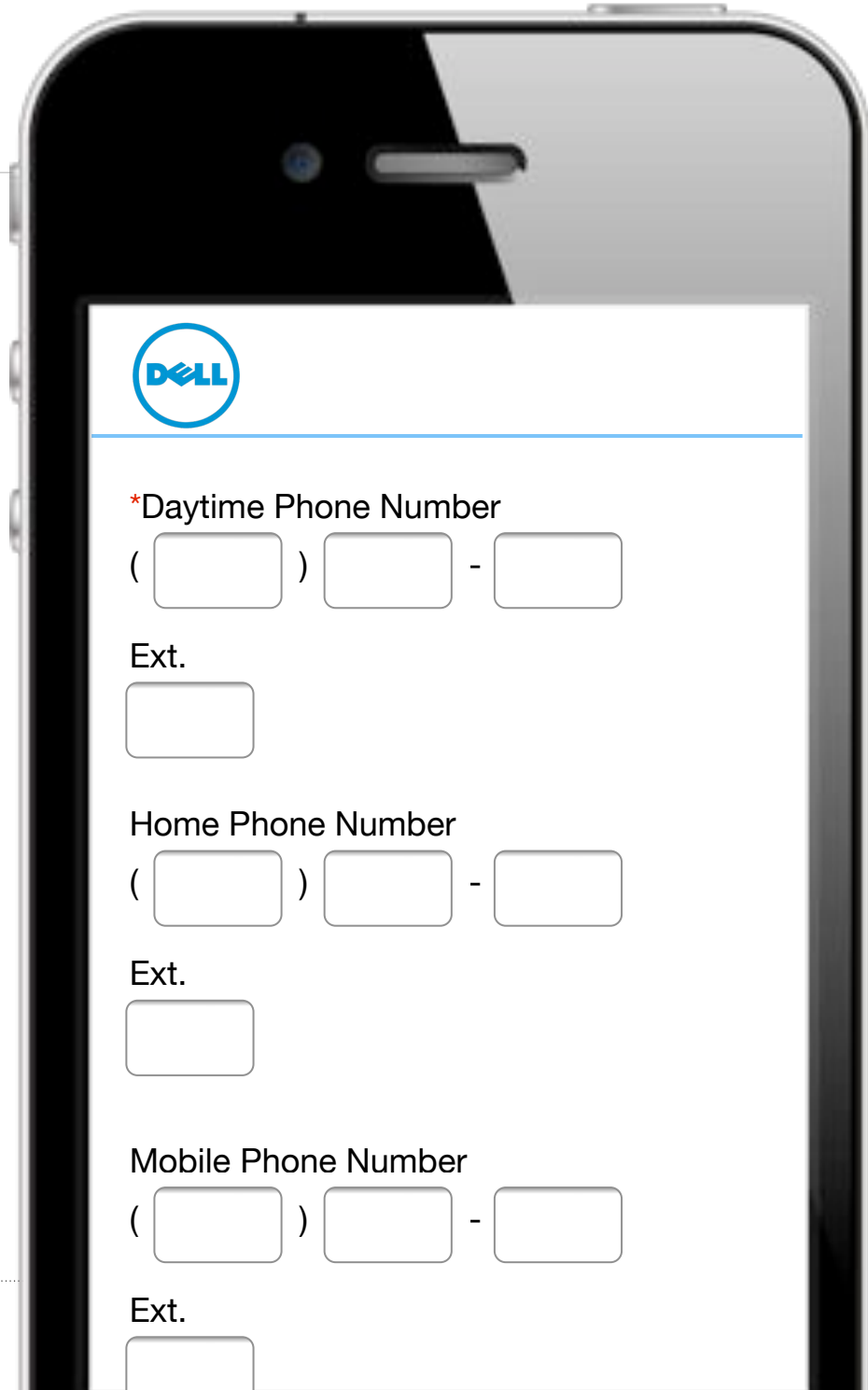
Remove optional fields


Stay on the keys



The image shows a smartphone screen with a Dell logo at the top. Below the logo is a text input field labeled 'Full Name'. At the bottom of the screen, there is a keyboard with a 'Previous' button, a 'Next' button, and a 'Done' button. The keyboard is a standard QWERTY layout with a spacebar and a return key.

# Phone Numbers





\*Daytime Phone Number  
(  )  -   
Ext.

Home Phone Number  
(  )  -   
Ext.

Mobile Phone Number  
(  )  -   
Ext.

# Phone Numbers

input type=tel

hide irrelevant controls

The image shows a smartphone screen with a Dell logo at the top. Below the logo is a form titled "Daytime Phone Number". It features a text input field, a "+ Ext." button, and a link "+ Another Number". At the bottom of the screen is a numeric keypad with buttons for numbers 1-9, 0, \*, #, and a back arrow. Navigation buttons "Previous", "Next", and "Done" are also present.

# Phone Numbers

input type=tel



The image shows a smartphone screen displaying a contact form. At the top is the Dell logo. Below it is the label "Daytime Phone Number". There is a text input field for the phone number, followed by a "+ Ext." link. Below the input field is a "+ Another Number" link. At the bottom of the screen is a numeric keypad with buttons for digits 1-9, \*, #, 0, and a "Next" button. The keypad also includes letters for T9-style input (e.g., "2 ABC", "3 DEF").

# Phone Input

input type=tel

The screenshot shows a mobile browser interface. At the top, the status bar displays "Luke's 2nd kindle 1", the time "11:04", and icons for settings, Wi-Fi, and battery. Below the status bar is a browser address bar with "Site Name" and a close button. The main content area features the Dell logo. Below the logo is a form titled "Daytime Phone Number". It contains a text input field with a "+ Ext." label to its right. Below the input field is a "+ Another Number" label. At the bottom of the screen is a numeric keypad with buttons for digits 1-9, 0, and symbols like #, \*, /, +, -, ., (, ), and a "Next" button.



# Phone Numbers

input mask

Dell

Daytime Phone Number

(555)-123-\_\_\_\_\_

Previous Next Done

1	2 ABC	3 DEF
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ
+ * #	0	⬅ ✕

# Addresses

The image shows a smartphone screen with a contact form. The form includes the following fields:

- \*Last Name**: A single-line text input field.
- \*Address**: Two stacked text input fields.
- \*City**: A single-line text input field.
- \*State**: A dropdown menu with the text "Choose a state / province".
- \*Zip Code**: A text input field followed by a hyphen and a second text input field.
- 4-digit Ext.**: A text input field.
- \*Daytime Phone Number**: A text input field.

A green callout bubble with the text "Remove optional fields" points to the "4-digit Ext." and "Daytime Phone Number" fields, indicating they should be removed from the form.

Remove optional  
fields

# Addresses

4 tap operation

\*Last Name

\*Address

\*City

Previous Next Done

✓ Choose a ...province

AL

AK

# Addresses

still 4 taps

\*City

\*State

\*Zip Code

4-digit Ext.

Previous Next Done

Q W E R T Y U I O P  
A S D F G H J K L  
↑ Z X C V B N M ↵  
. ? 1 2 3 space return

# Addresses

cut down 2 fields

stepper

Street Address

Apt, Suite, Bldg. (optional)

ZIP Code

95124 San Jose, CA

Previous Next

1 2 3  
ABC DEF

4 5 6  
GHI JKL MNO

7 8 9  
PQRS TUV WXYZ

+ \* # 0 < x

# Addresses

---

Stay on the keys

Address

ZIP Code

Enter ZIP for City & State

weber

Q\* Google

Shopping Cart

## CHECKOUT

Billing > Shipping > Payment > Review Order

After entering your zip code above, you must select (click to highlight) your city/state combination from the display on the left. After selection, the city/state will auto-fill in the appropriate category.

City:

State:

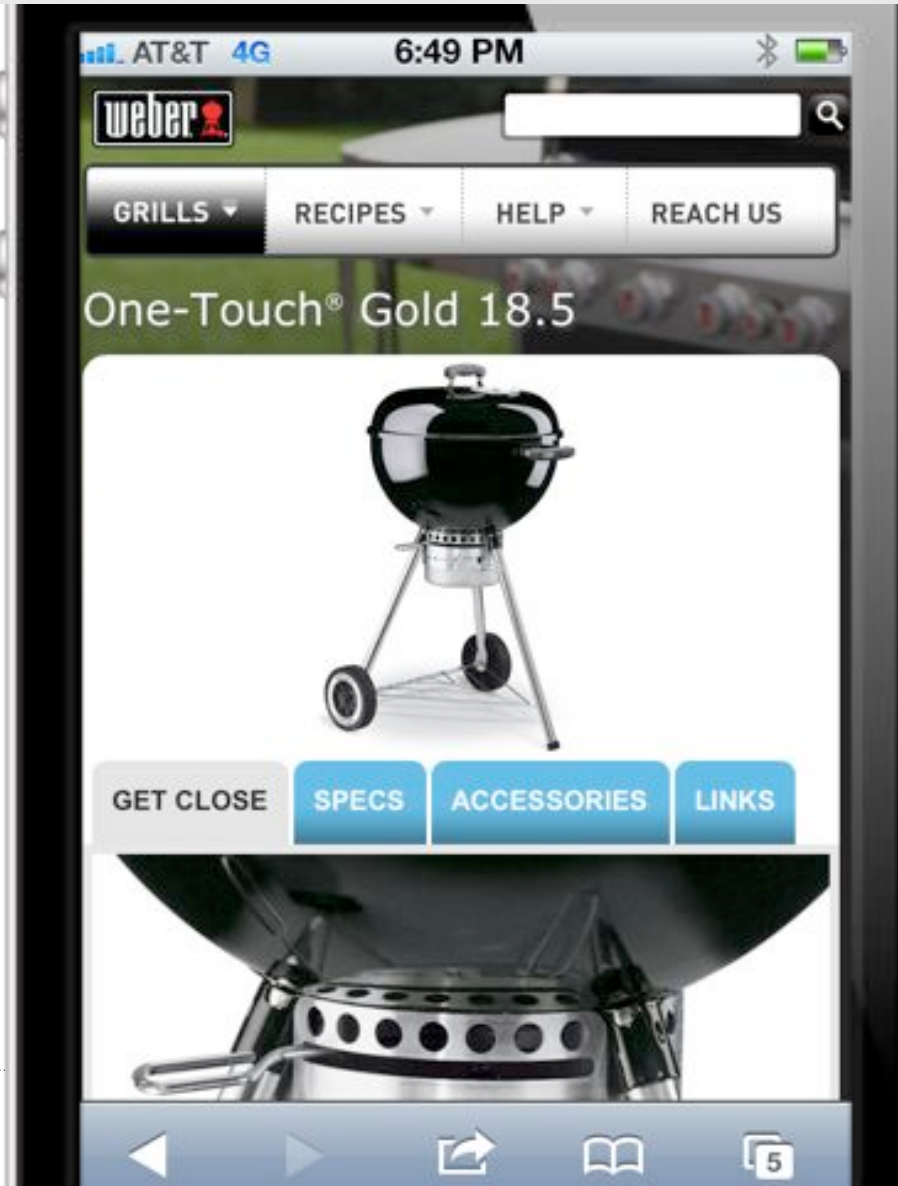
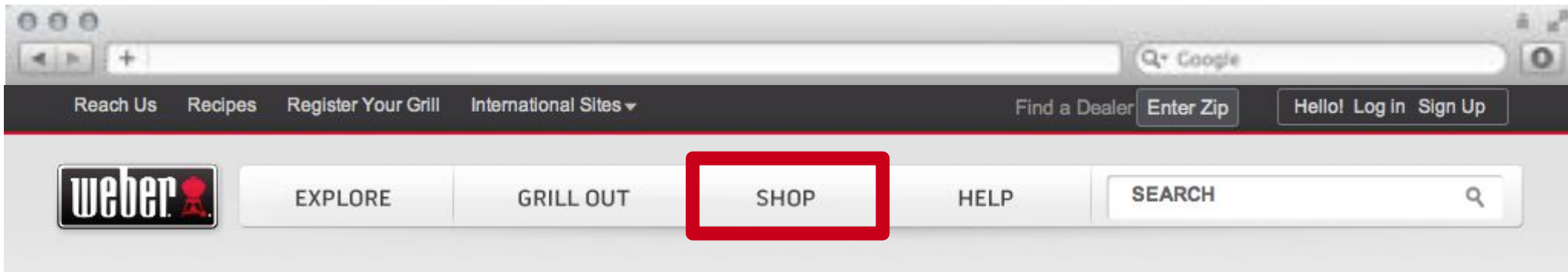
Shipping to the Contiguous United States, Hawaii, and Alaska only available at this time.

☐ Use this address as the shipping address

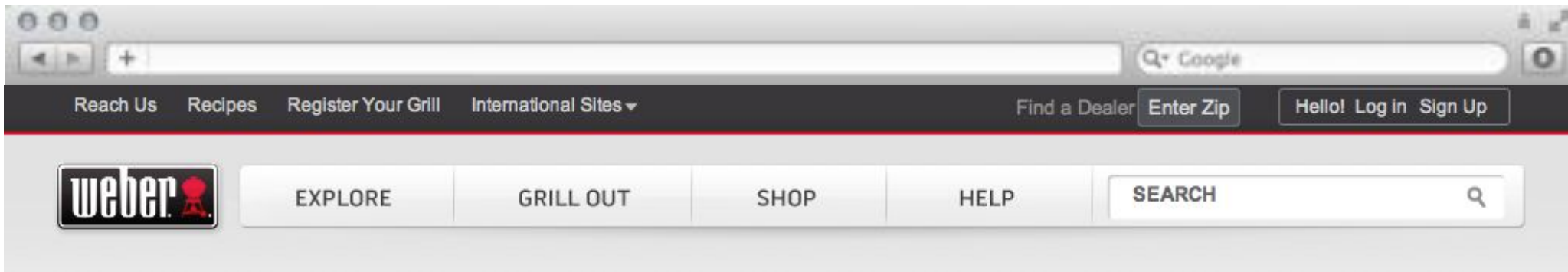
Enter Contact Information for this order.

E-mail Address:

Re-enter E-mail Address: (for confirmation)





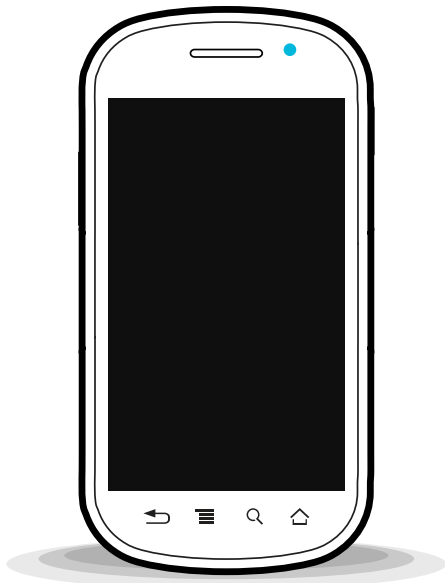


**38%** of US consumers have used smartphones to buy content or services

---

**70%** of Internet users have purchased content or services online

# METRICS



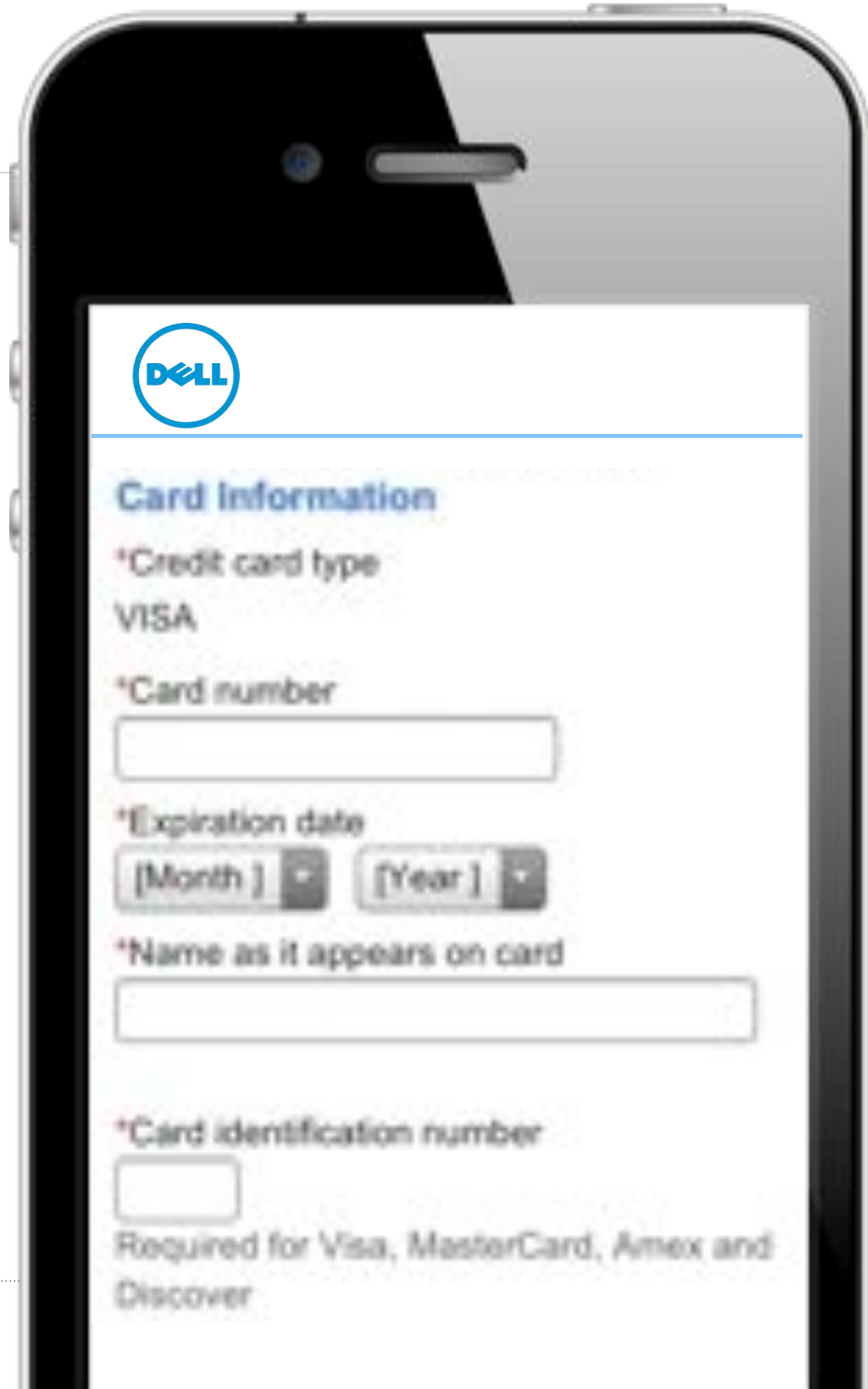
## MOBILE PURCHASES

**\$4B** 2011 mobile GMV


**3** purchases on  
mobile per sec

**2M** listings added on  
mobile per week

# Credit Cards



The image shows a smartphone screen with a Dell credit card registration form. The form is titled "Card Information" and includes several required fields marked with an asterisk. The fields are: "Credit card type" (with "VISA" selected), "Card number" (a text input field), "Expiration date" (with dropdown menus for "Month" and "Year"), "Name as it appears on card" (a text input field), and "Card identification number" (a small text input field). A note at the bottom states "Required for Visa, MasterCard, Amex and Discover". The Dell logo is visible at the top of the form.



**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

# Credit Cards

input type="text"  
pattern="[0-9]\*"



Credit or Debit Card

 1234 5678 9012 3456

Enter card number, expiration date & CVV code

Previous Next Done

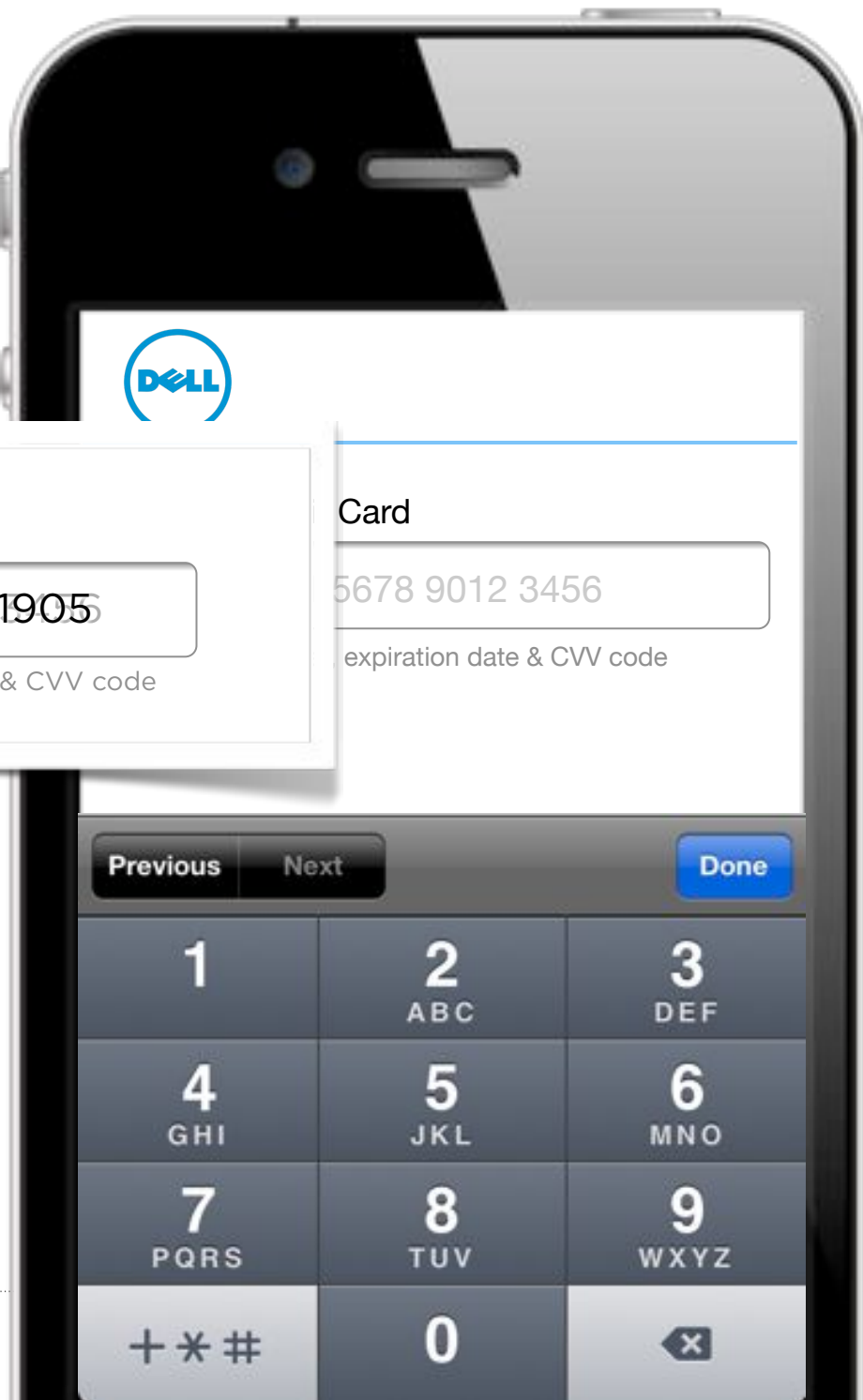
1 2 3 4 5 6 7 8 9 0

\$ ! ~ & = #

#+= . \_ - + ⌫


ABC space @ . return

# Credit Cards



The image shows a smartphone screen with a credit card payment form. A modal window is overlaid on the screen, titled "Credit or Debit Card". The modal contains a MasterCard logo and a card number "5123 4356 1234 1905". Below the card number is a text input field for the expiration date and CVV code. The background form on the phone also has a "Card" title, a card number input field with "5678 9012 3456", and a text input field for the expiration date and CVV code. At the bottom of the phone screen is a numeric keypad with buttons for "Previous", "Next", "Done", and a "Back" button.

**Credit or Debit Card**

 5123 4356 1234 1905

Enter card number, expiration date & CVV code

**Card**

5678 9012 3456

expiration date & CVV code

Previous Next Done

1 2 3  
ABC DEF

4 5 6  
GHI JKL MNO

7 8 9  
PQRS TUV WXYZ

+ \* # 0 < x

# Credit Cards

## Credit or Debit Card



5123 4356 12 912

Enter card number, expiration date & CVV code

reduced number of  
controls/inputs

Stay on the keys



Card

5678 9012 3456

expiration date & CVV code

Previous

Next

Done

1

2

3

ABC

DEF

4

GHI

5

JKL

6

MNO

7

PQRS

8

TUV

9

WXYZ

+ \* #

0

⌫

# Type=month

type=month

Credit Card Number

AMERICAN EXPRESS MasterCard VISA DISCOVER NETWORK are accepted

Expiration Date

September 2012 ▼

ZIP Code

Previous Next Clear Done

July	2010
August	2011
September	2012
October	2013
November	2014

# Type=month

Credit Card Number

AMERICAN EXPRESS MasterCard VISA DISCOVER are accepted

Expiration Date

07/12

input mask

as it appears on your credit card bill



**Bank Name**



1234 5678 9876 5432

1234

VALID THRU ▶ MONTH/YEAR  
12/99

**CARDHOLDER**

# Progressive Enhancement

---

type=month

June 2011



Javascript

Expiration Date

\_\_ / \_\_

select menus

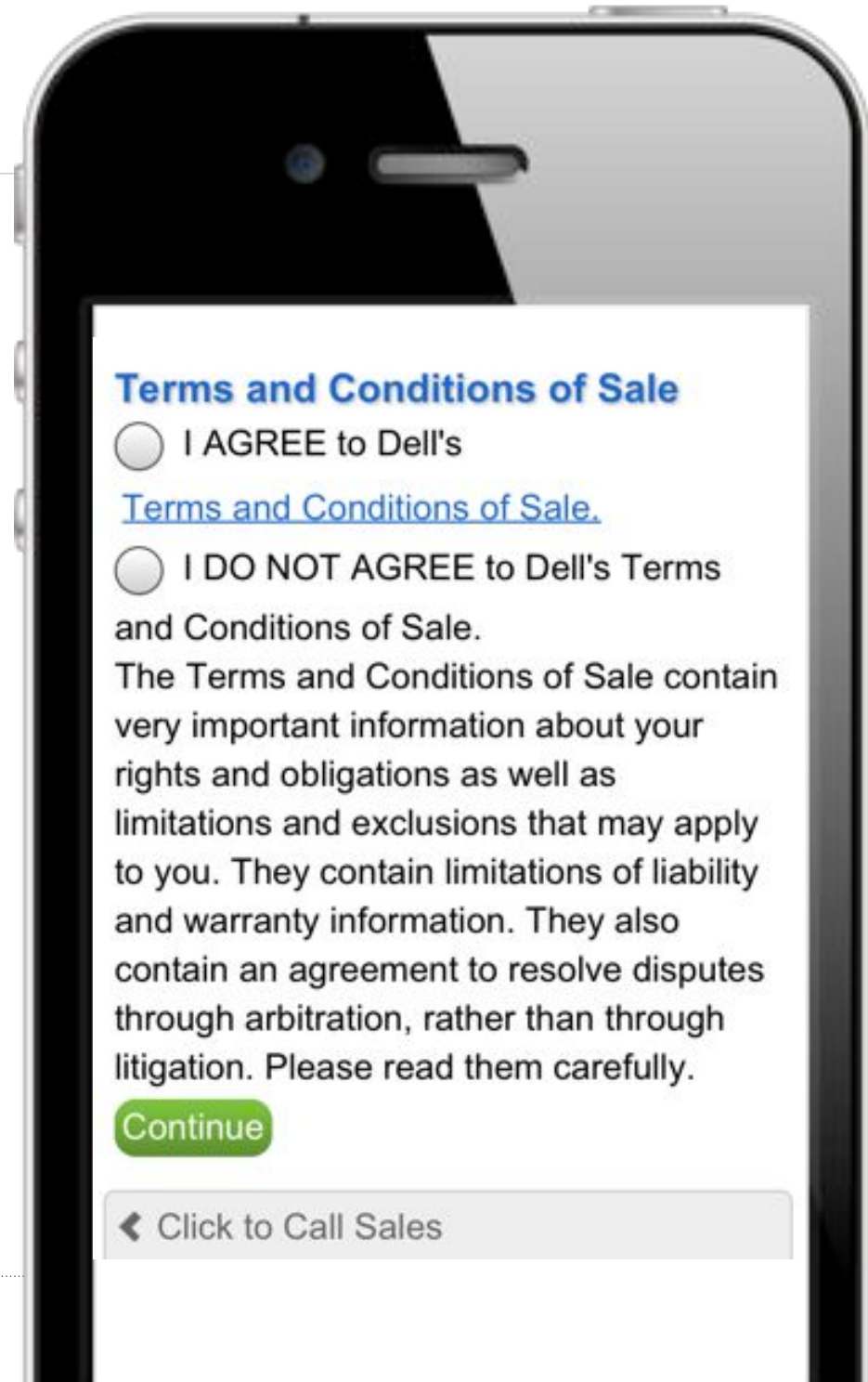
07



2011



# Terms of Use



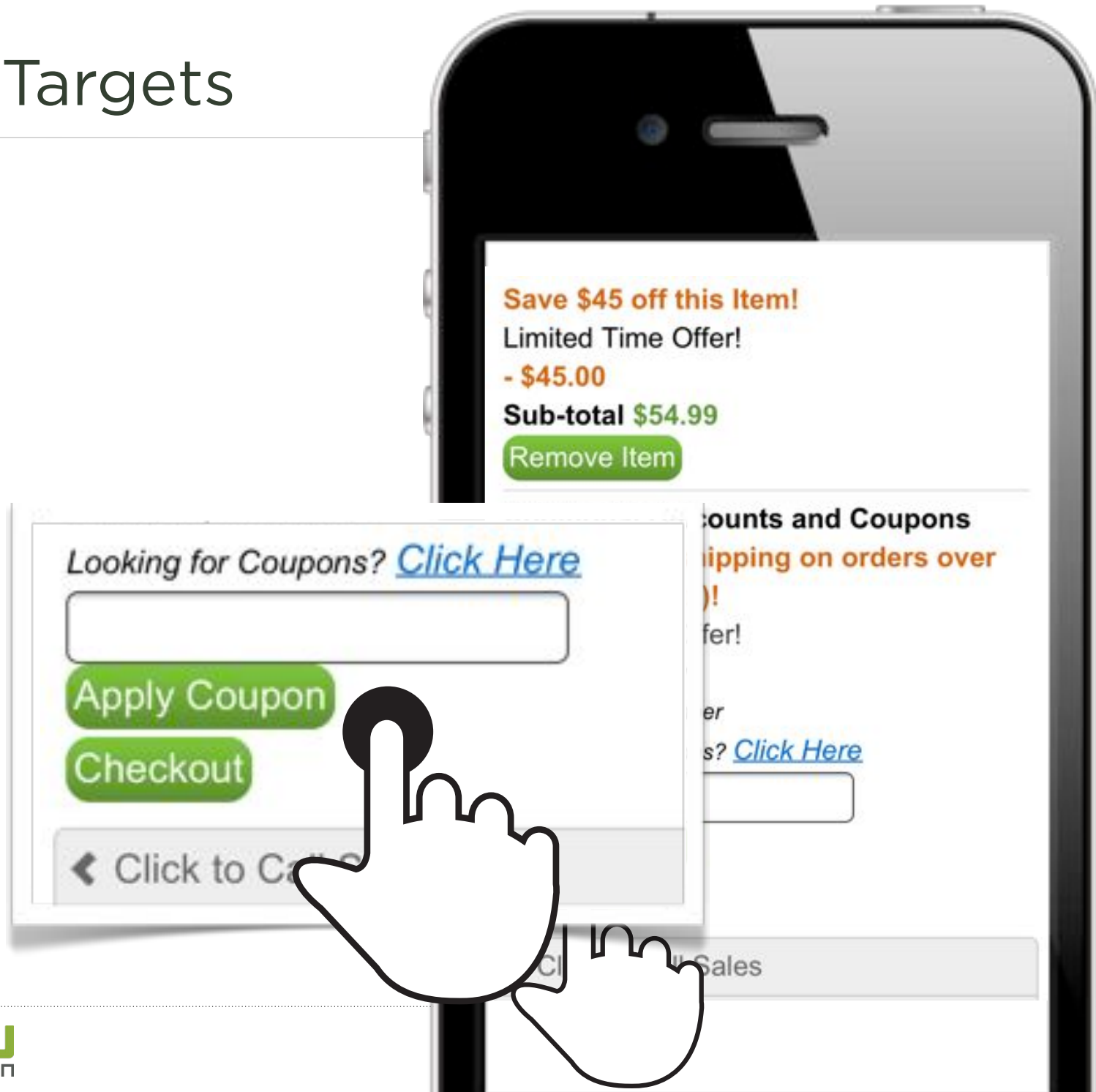
# Terms of Use

reduced number of controls

By selecting "Continue" I agree to the [terms of sale](#).

Continue

# Touch Targets



# Digital Content



## WHY BOTHER?

1. Permanently carried
2. Always on
3. Available at point of inspiration

stay on keys

reduced controls

Enter card number, expiration date & CVV code

Cardholder Name

[+ Pay with Gift Certificate or Promo](#)

**Purchase**

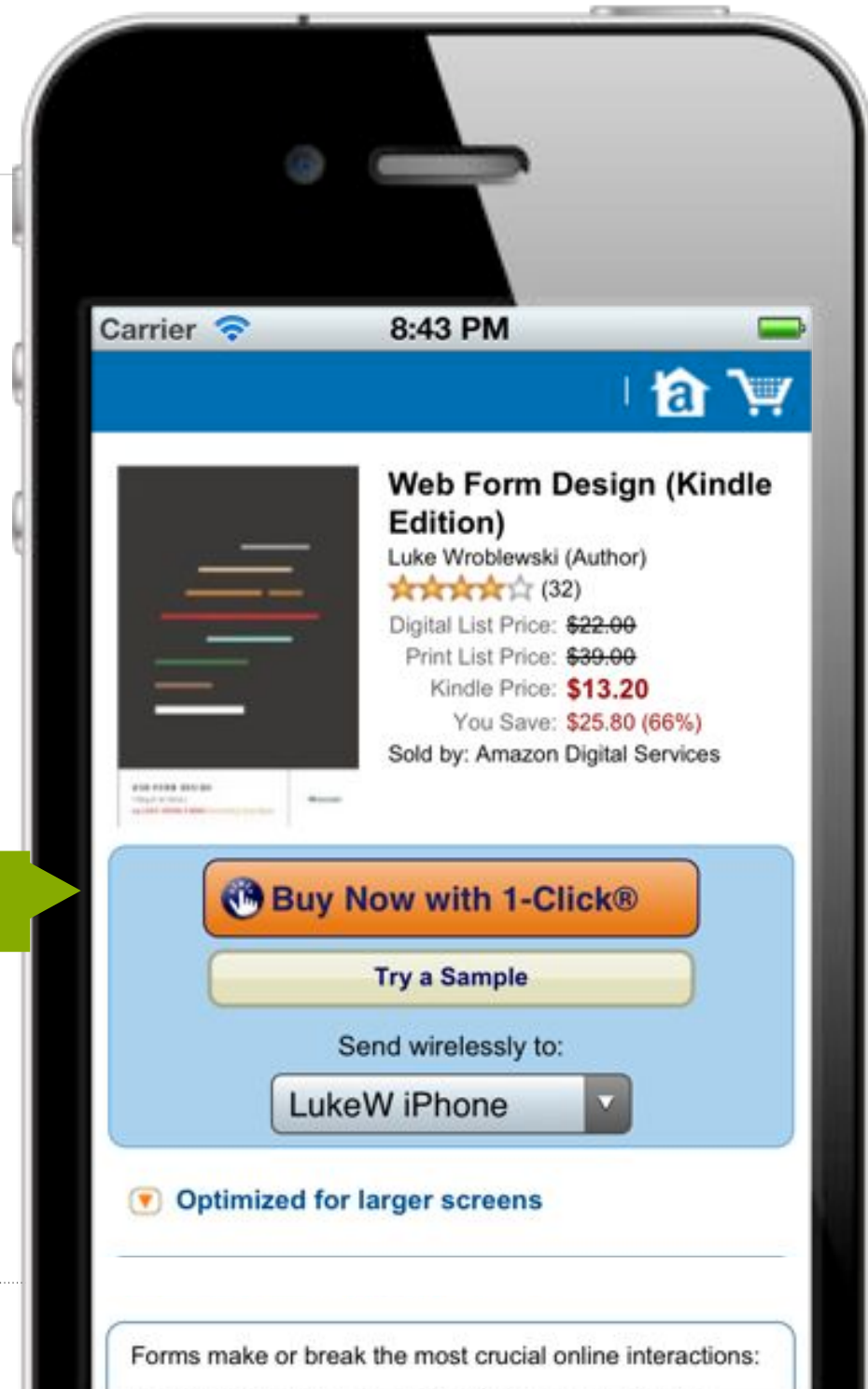
& read your book now!

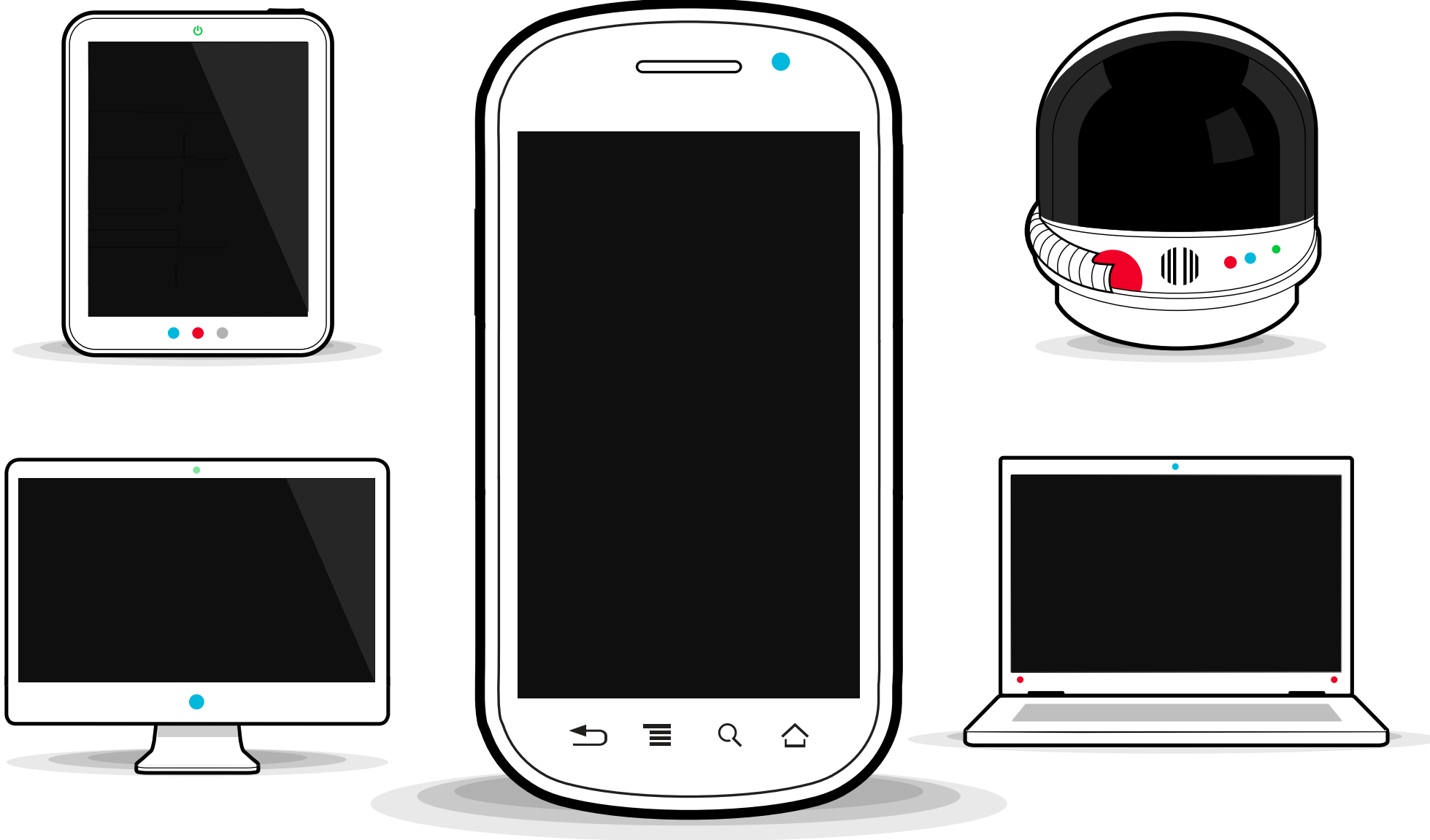
# One-Click

amazon.com  
Prime

130% more spent  
20% of all US  
sales

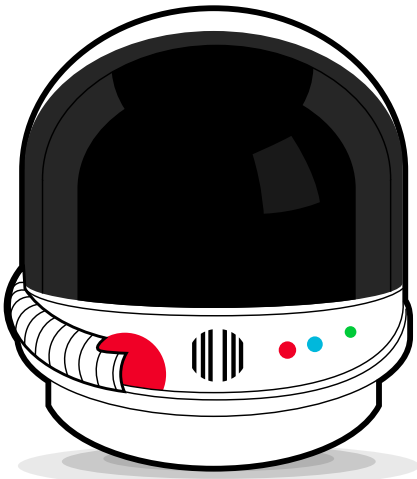
1-Click Buying







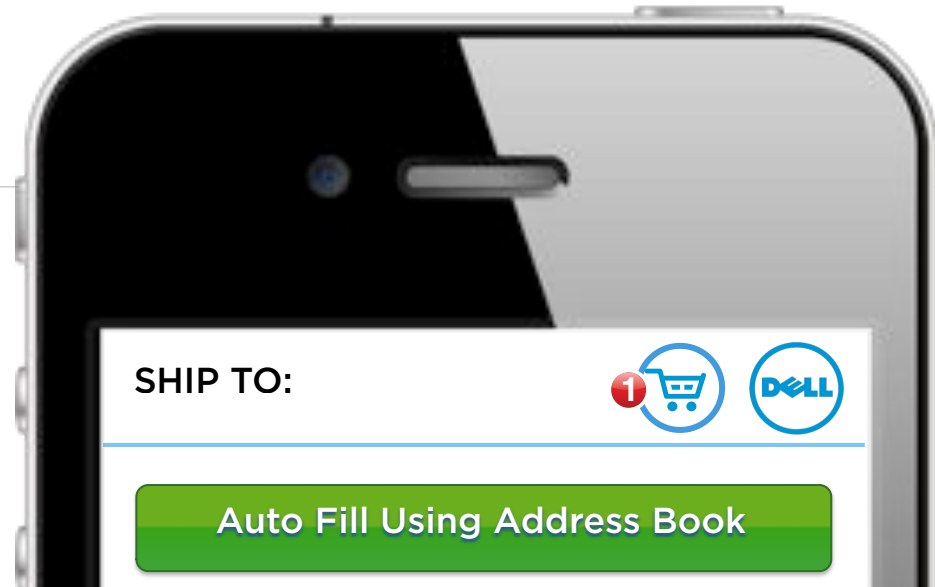
# CHECKOUT



TOMORROW

- Contact Autofill
- Location Detection
- Virtual Shopping
- Self Checkout

# Contacts API

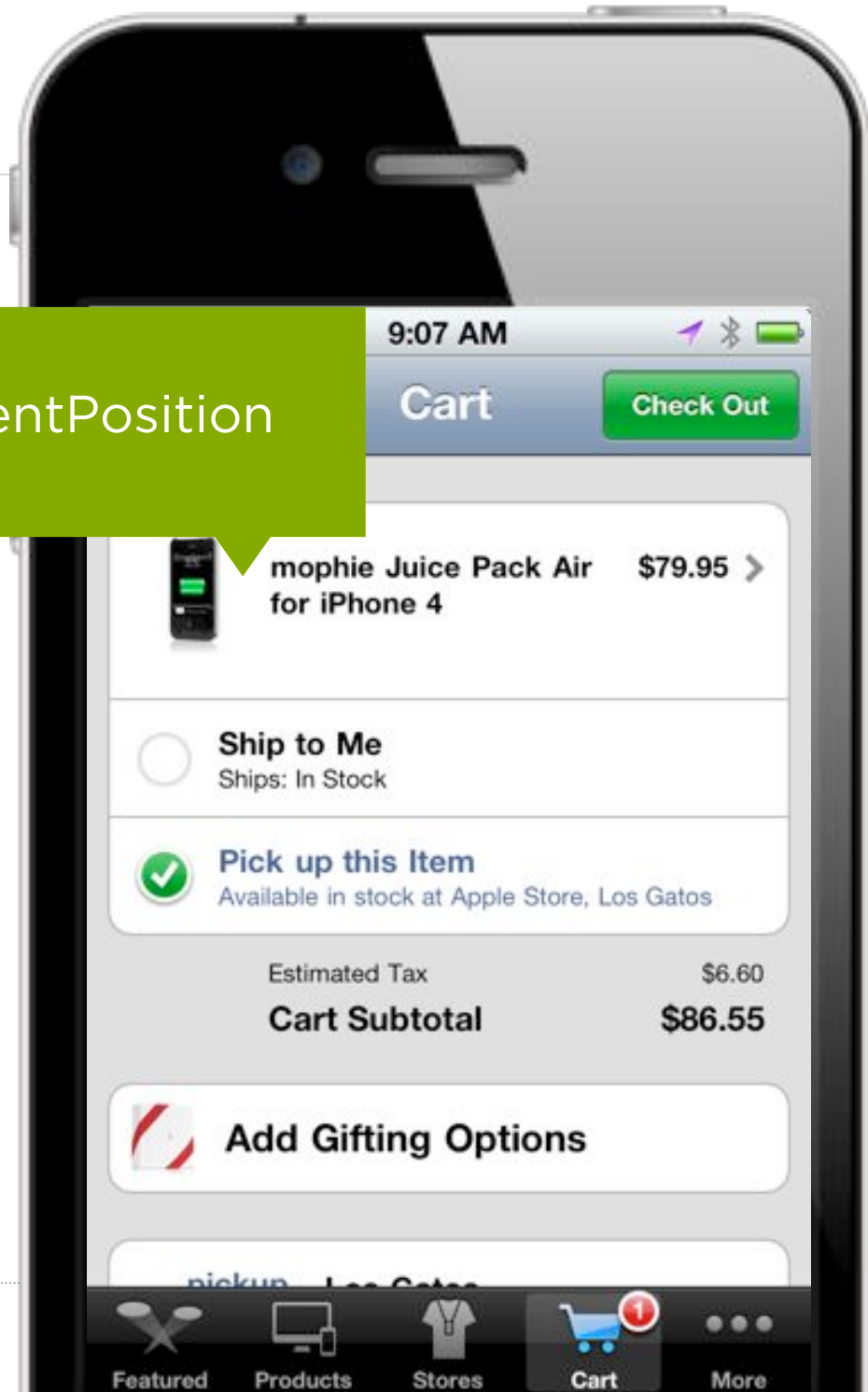


```
navigator.contacts.find({_id: owner});
```

A vertical stack of form fields for a shipping address. It includes a text input field, a label 'Signature required for delivery. No P.O. boxes', a label 'City' followed by a text input field, a label 'State' followed by a dropdown menu, and a label 'ZIP Code' followed by a text input field.

# Local Purchases

```
if (navigator.geolocation) {  
  navigator.geolocation.getCurrentPosition  
}
```



# Local Purchases



**Web Workers:** API for spawning background scripts in your web application.





```
navigator.getUserMedia({video: true}, gotStream);  
function gotStream(stream) {  
    // ... use 'stream' ...  
}
```



Source: <http://bit.ly/irYREo>



**2X** faster registration  
(60 sec to 25 sec)

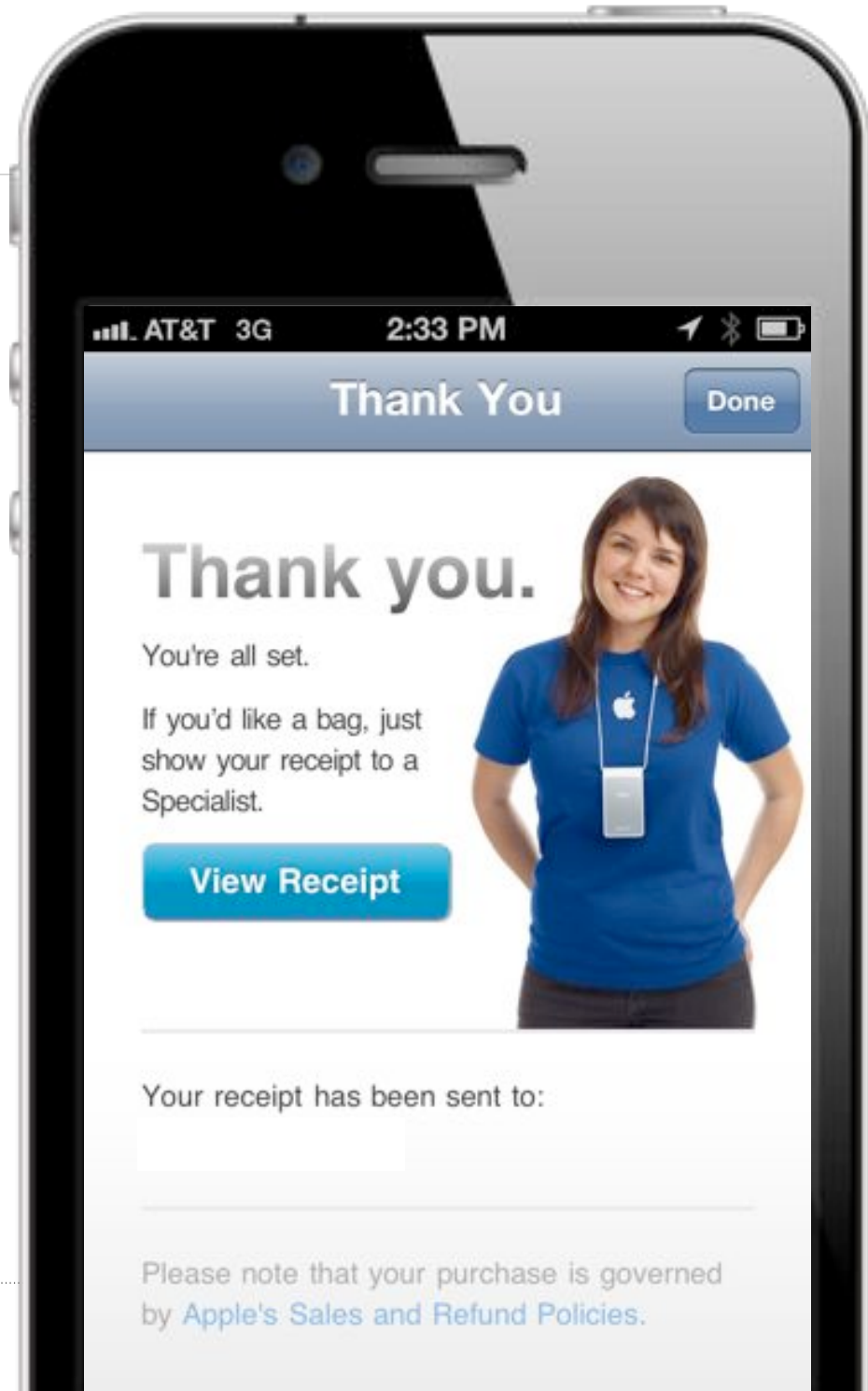
**13%** sales lift with  
card.io integration



# Self Checkout

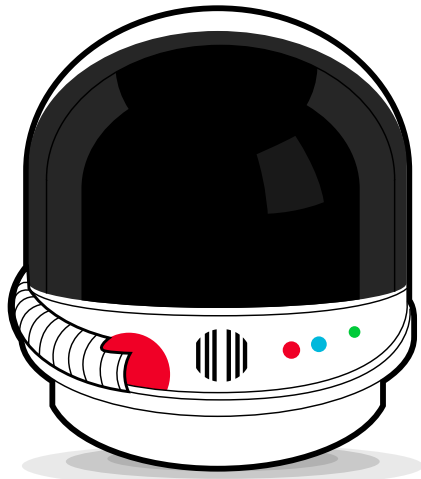
50% increase in  
barcode scans  
last year

40% online  
prescriptions  
scanned on  
mobile





# CHECKOUT

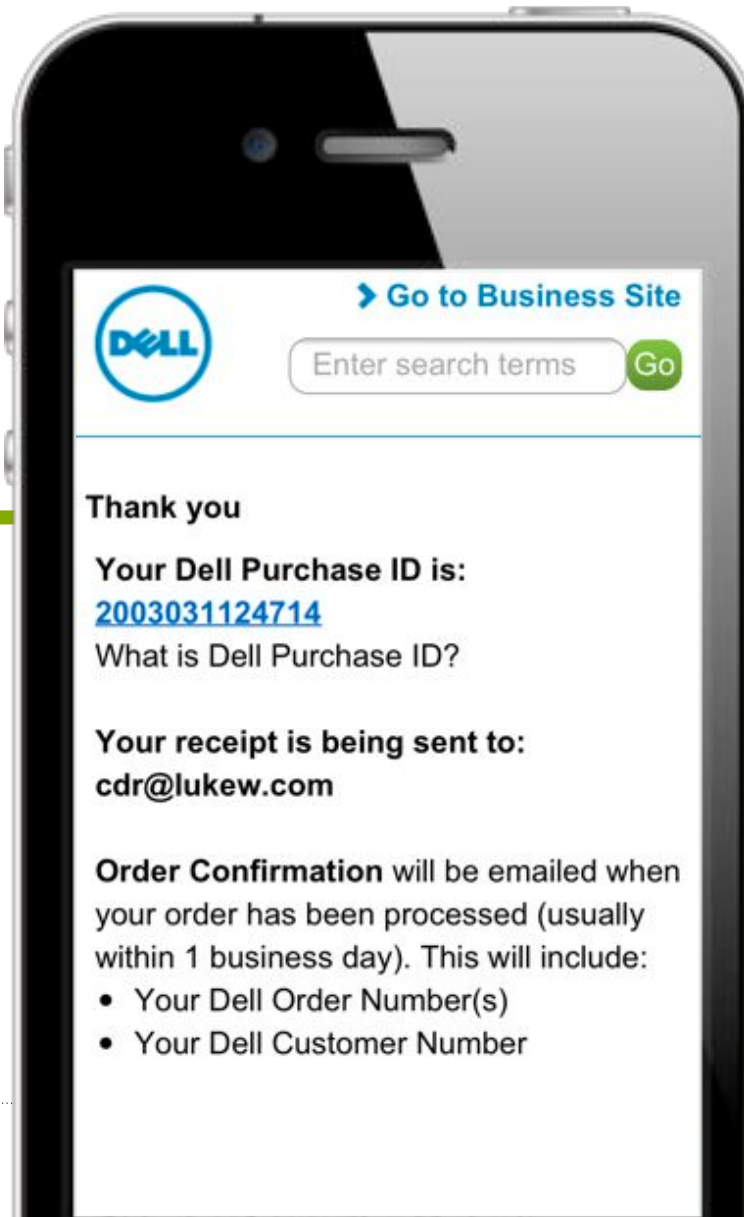


TOMORROW

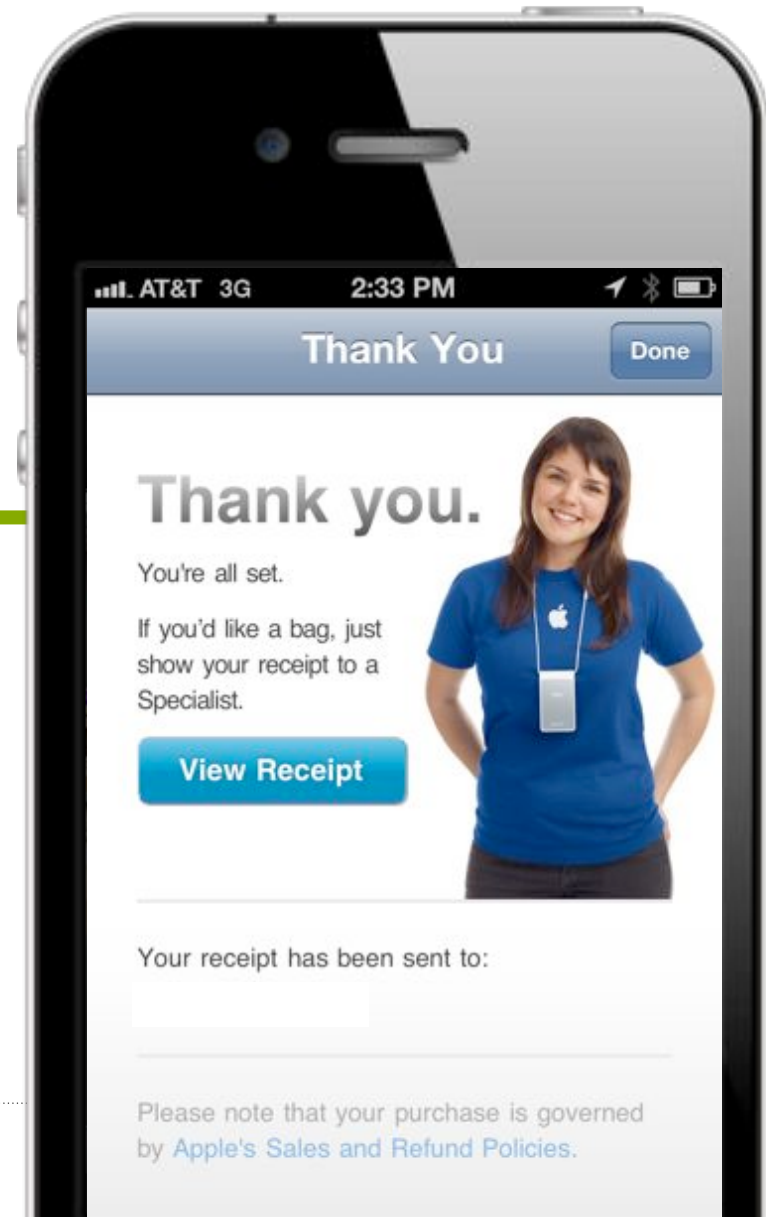
- Contact Autofill
- Location Detection
- Virtual Shopping
- Self Checkout



# CHECKOUT



VS.



# MOBILE

And opportunity

That's good for all devices

Even on the Web!

1. Is a massive new medium

2. Forces us to adapt & optimize our solutions

3. Moves us towards the future

# THANKS

@LUKEW

LUKEW.COM

