MOBILE
FIRST
LUKE WROBLEWSKI
OCTOBER 2011
@LUKEW
LUKEW
IDEATION + DESIGN

Web products should be designed for mobile first.

Flickr photo by @kevinv033

Google programmers are doing work on **mobile applications first**, because they are better apps and that's what top programmers want to develop.
–Eric Schmidt, Google Chairman

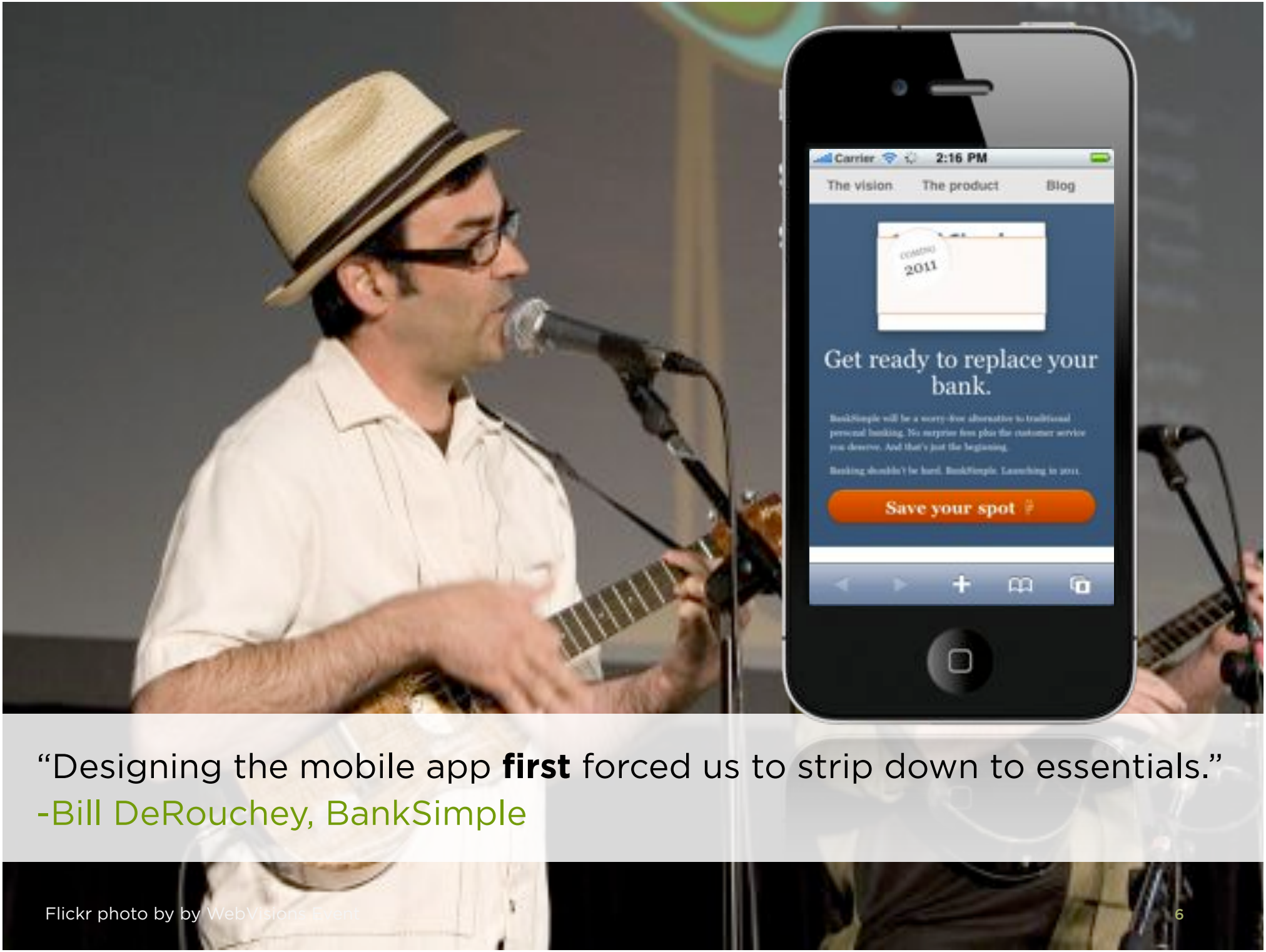
We're just now starting to think about **mobile first and desktop second** for a lot of our products."
-Kate Aronowitz, Design Director Facebook

Flickr photo by gscottolson

We really need to shift now to start thinking about **building mobile first**. This is an even bigger shift than the PC revolution."

-Kevin Lynch, CTO Adobe

Flickr photo by jdlasica



"Designing the mobile app **first** forced us to strip down to essentials."
-Bill DeRouchey, BankSimple

Flickr photo by by WebVisions Event

MOBILE FIRST

1. GROWTH = OPPORTUNITY
2. CONSTRAINTS = FOCUS
3. CAPABILITIES = INNOVATION

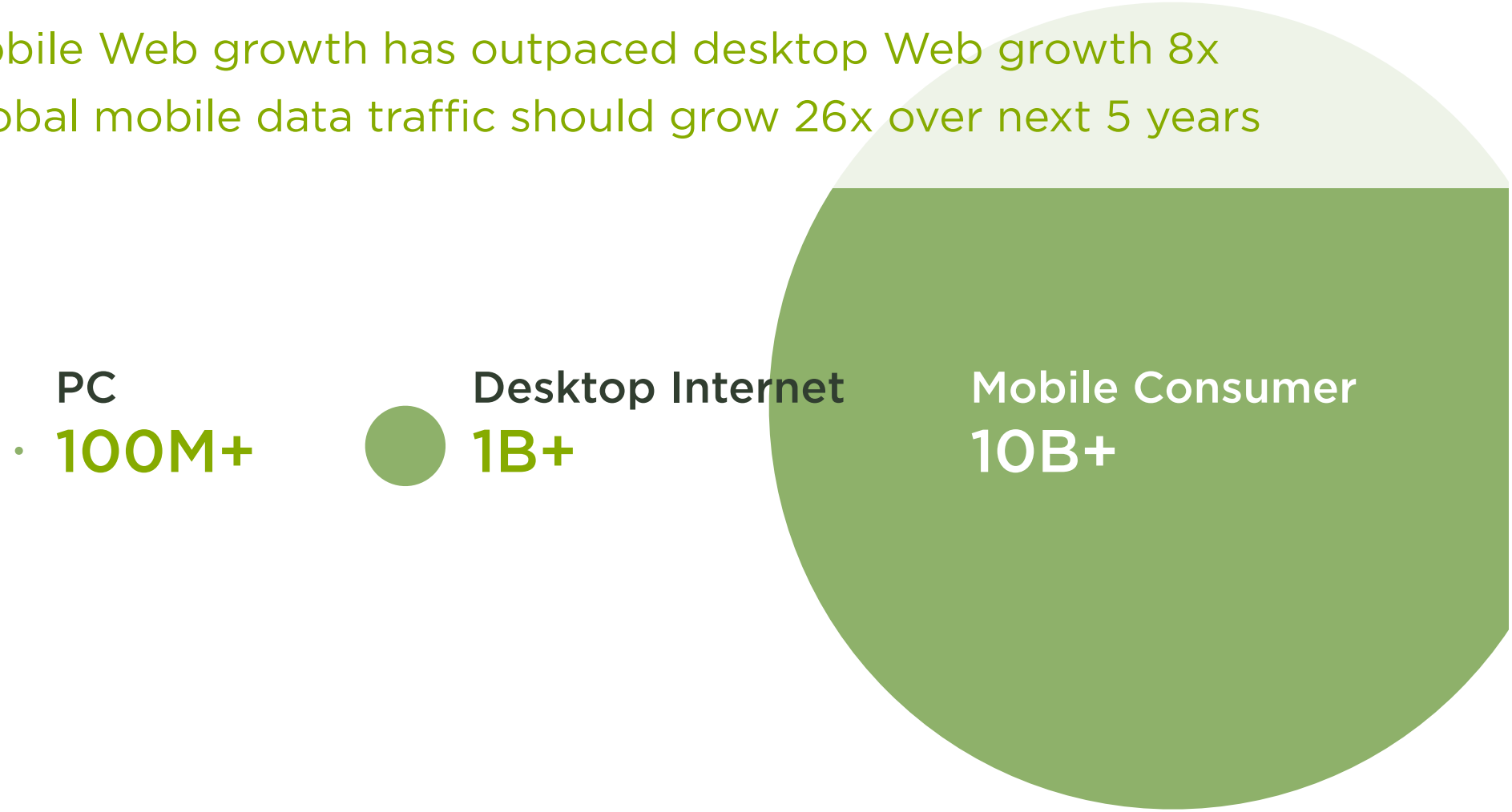
MOBILE FIRST

1. GROWTH = OPPORTUNITY
2. CONSTRAINTS = FOCUS
3. CAPABILITIES = INNOVATION

GROWTH = OPPORTUNITY

Mobile Web growth has outpaced desktop Web growth 8x

Global mobile data traffic should grow 26x over next 5 years



Note: PC installed base reached 100MM in 1993, cellphone / Internet users reached 1B in 2002 / 2005 respectively;25 Source: ITU, Mark Lipacis, Morgan Stanley Research.

Commerce

- Amazon: over $1 billion spent via mobile devices in the past 12 months
- eBay: global mobile sales ~$4 billion in 2011, $2B in 2010, $600M in 2009
- Best Buy: mobile Web users doubling every year:
  30M (10), 17M (09), 6M (08)

Social

- Twitter: 40% of tweets sent via mobile, 16% of new users start on mobile
- Instagram: iPhone only 3 months to hit 1M users. Six weeks to 2M
- Mixi (Japan): 85% of page views on mobile vs. 14% 4.5 years ago

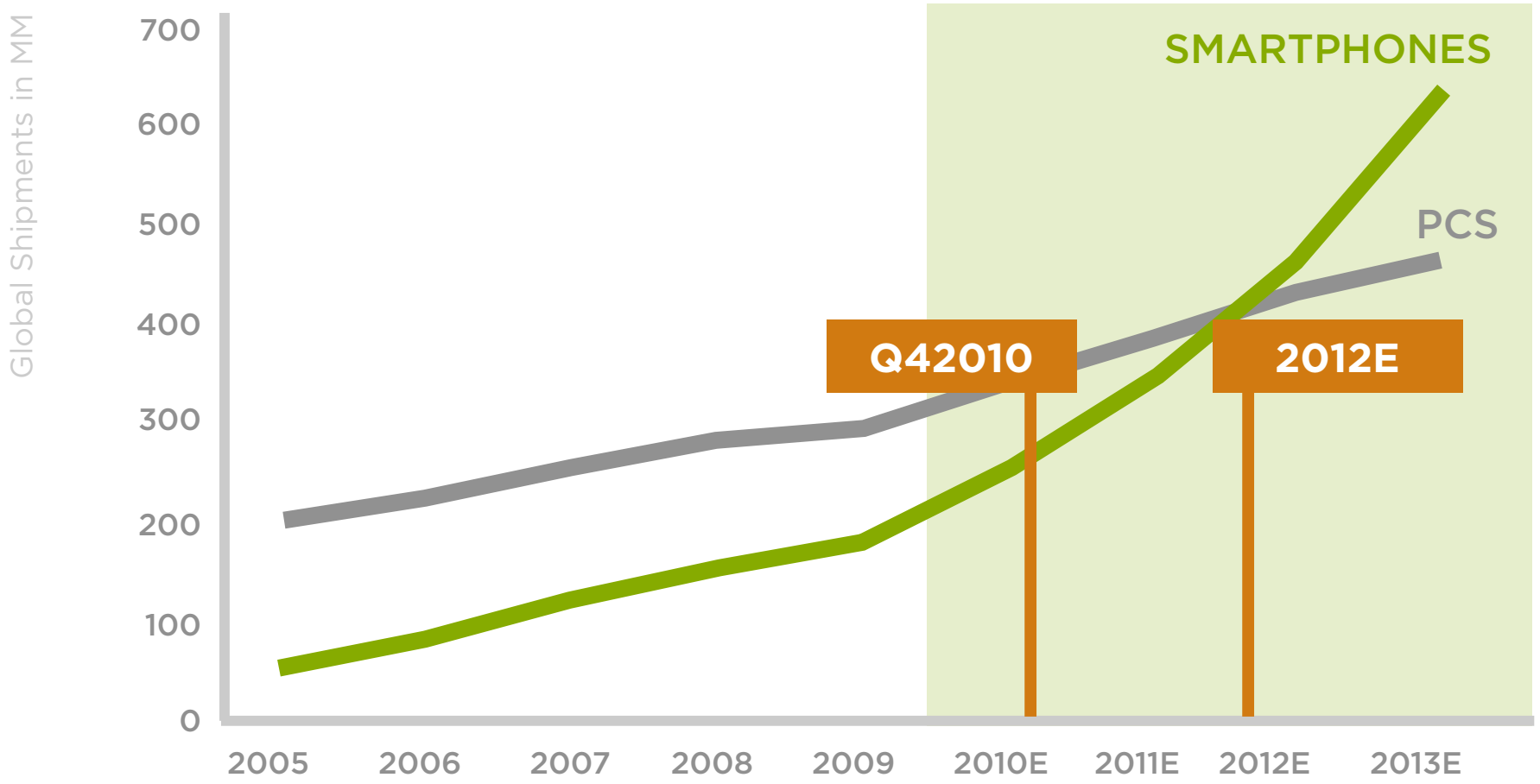
Productivity & Media

- Google: mobile searches grew 130% in Q3 2010
- Pandora: 50% of total user base subscribes to the service on mobile
- Email: 70% of smartphone users have accessed email on mobile device

Source: http://www.lukew.com/ff/entry.asp?1188

PC vs. Smartphone Shipments

Smartphones **passed** PC shipments in Q42010



Source: http://bit.ly/glqKm9
Source: http://bit.ly/g5ktGq

Shift in Usage

-20% Home usage of PC since 2008

Why? Smartphones & tablets

Source: http://read.bi/efrmCj

Shift in Usage

-7% Visitors to Web-based email sites declined

+36% Visitors accessing email on mobile devices increased

Source: http://bit.ly/hJdtty

35% of searches come from **7%** of users

- 35% of all Yelp searches come from their **mobile applications** which had 3.2 million unique users in Feb 2011
- That month Yelp had 45 million monthly unique users around the world

Additional Usage

- Every other second a consumer calls a local business and generates driving directions from a Yelp mobile app.

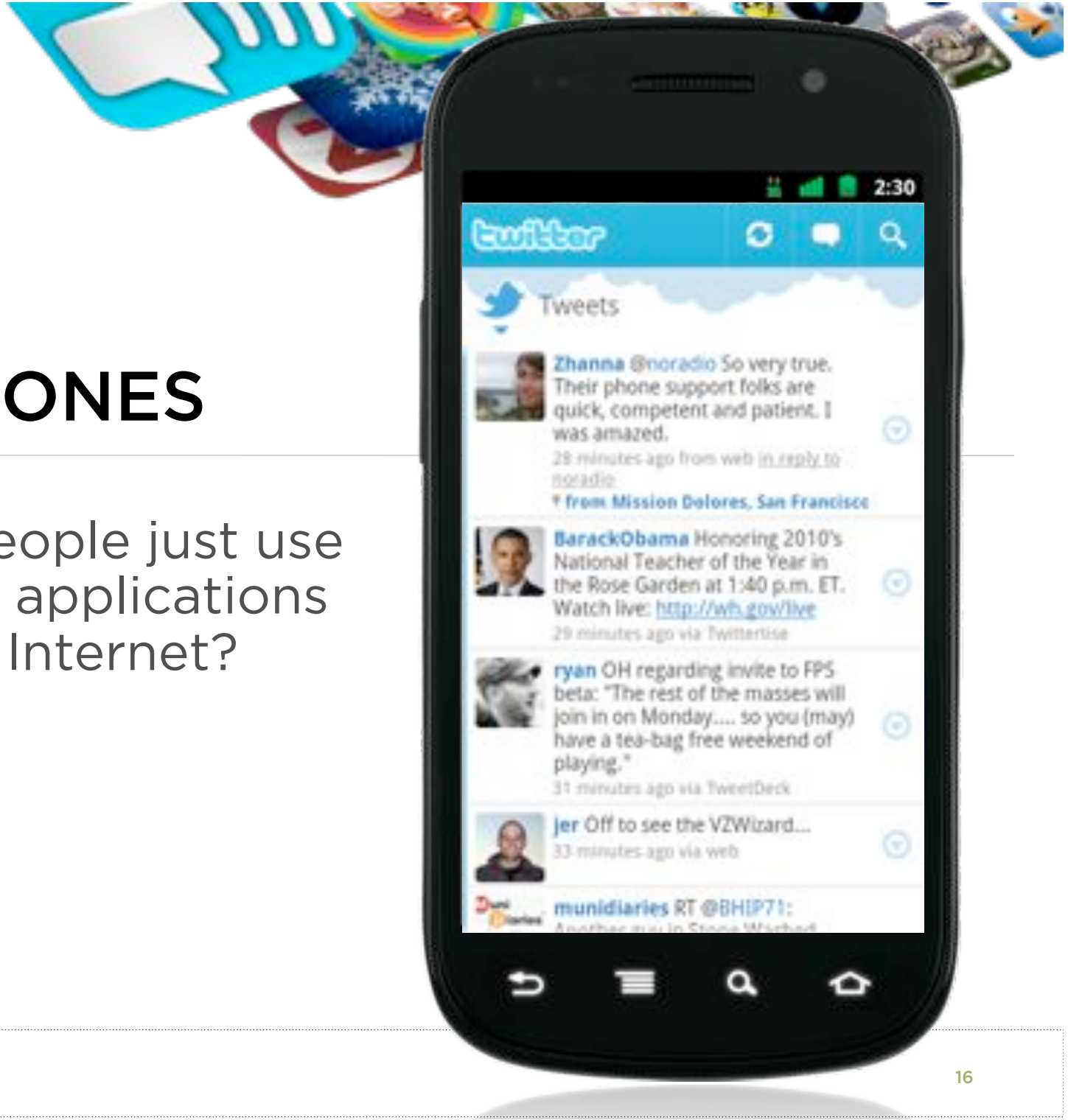
- Viewing active listings 45% more often from mobile devices (audience is primarily active buyers, on location or scoping out neighborhoods)

- People that use Facebook on their mobile devices (350M active) are twice as active on Facebook than non-mobile users.

Source: http://www.lukew.com/ff/entry.asp?1131
Source: http://www.lukew.com/ff/entry.asp?1178

SMARTPHONES

Don’t most people just use native mobile applications to access the Internet?



Twitter Usage

347% INCREASE IN MOBILE BROWSER USERS (4.7M) JAN 2010

- **40%** of tweets sent via mobile
- **16%** of new users start on mobile
- What are the **top two** Twitter mobile clients?

Carrier
10:34 AM
boonerang
Welcome to another episode of "That which cannot be unseen: Orange Line edition." Sigh. #mbta
lukew
@paularmstrong fixed -thanks!
KISSmetrics
Conversions vs. Traffic: Have Your Cake and Eat it Too! http://kiss.ly/aE2CQ0 #measure
unruthless
Tag along with my bike ride across America this summer: follow @cyclingcoder! My journey starts
Carrier
10:36 AM
Luke Wroblewski
@lukew
Silicon Valley, CA + the Web
Digital product design & strategy guy in Silicon Valley, CA. Author of Web Form Design & Site Seeing. Currently CPO and co-founder of Bagcheck. http://www.lukew.com
Tweets
5,650
Following
119
Followers
10,667
Favorites
1,343
lukew
@paularmstrong fixed -thanks!
lukew
Crafting the User Experience http://bit.ly/lj4mJ my notes from @sazzy

Facebook Usage

112% INCREASE IN MOBILE BROWSER USERS (251M) JAN 2010

- **33%** of posts sent via mobile
- What are the **top two** Facebook mobile clients?

Carrier
10:40 AM
facebook
Profile
Messages (85)
More
Top News · Most Recent
What's on your mind?
Share
Matthew Griffin Looks like fun... —
via Adam Sewell
BMW 1M - Walls - MPowered Performance Part 1
youtube.com
7 minutes ago
1 person
Jared Spool Page 27: Litter Kwitter 3-Step Cat Toilet Training System $49.99 @ Terminal A - Boston
Carrier
10:40 AM
Luke Wroblewski
Wall
Info
Photos
Luke Wroblewski
Senior Principal, Product Ideation & Design at Yahoo!
Studied Interface Design at University of Illinois at Urbana-Champaign
See More
What's on your mind?
Share
Luke Wroblewski likes a link.
What to Bag Dad for Father's Day | Bagcheck
bagcheck.com

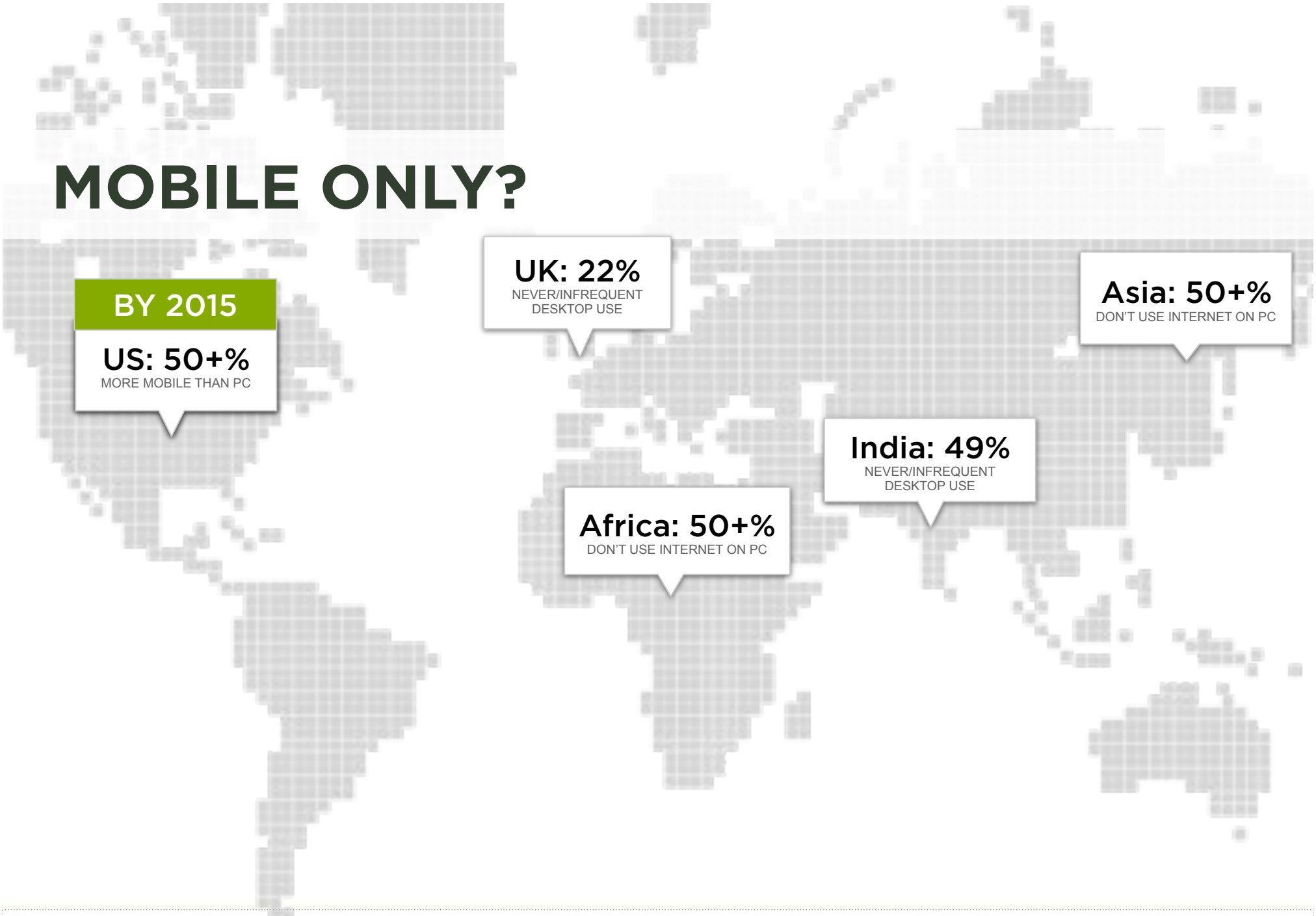
Carrier
7:04 AM
14
1
14
Update Status
Check In
TOP STORIES
Jon Sweet
Anyone know if there's a good online collection of stats on which charitable investments are yielding the best return, e.g. $ per life saved?
$258M Bill Gates project eliminated 100k HIV infections from 2003-2008
medicalxpress.com
47 minutes ago near Santa Clara
1 person
3 comments
Jon Sweet
If you can't stomach looking at your portfolio balance for a week, you probably need to dial back the risk knob
Carrier
7:06 AM
14
1
14
Wall
Info
Photos
Luke Wroblewski
Senior Principal, Product Ideation & Design at Yahoo!
Studied Interface Design at University of Illinois at Urbana-Champaign
Update Status
Check In
Luke Wroblewski
Data Monday: iPhone 4S Pre-Orders
Yesterday at 4:27am
3 comments

Mobile Web Usage

- Mobile phones will overtake PCs as the most common Web access devices worldwide by 2013
- 600% growth in traffic to mobile websites in 2010
- Avg smartphone user visits up to 24 Web sites visits per day
- Top 50 websites constitute only 40% of all mobile visits
- Opera Mini traffic up 200% yr/yr

Source: http://www.mobiadnews.com/?p=5133
Source: http://www.lukew.com/ff/entry.asp?1013

MOBILE ONLY?



LUKEW IDEATION + DESIGN

Source: http://www.lukew.com/ff/entry.asp?1391

"My goal was initially just to make a mobile companion, but I became convinced it was possible to create a version of Facebook that was actually **better than the website**."

–Joe Hewitt

MOBILE FIRST

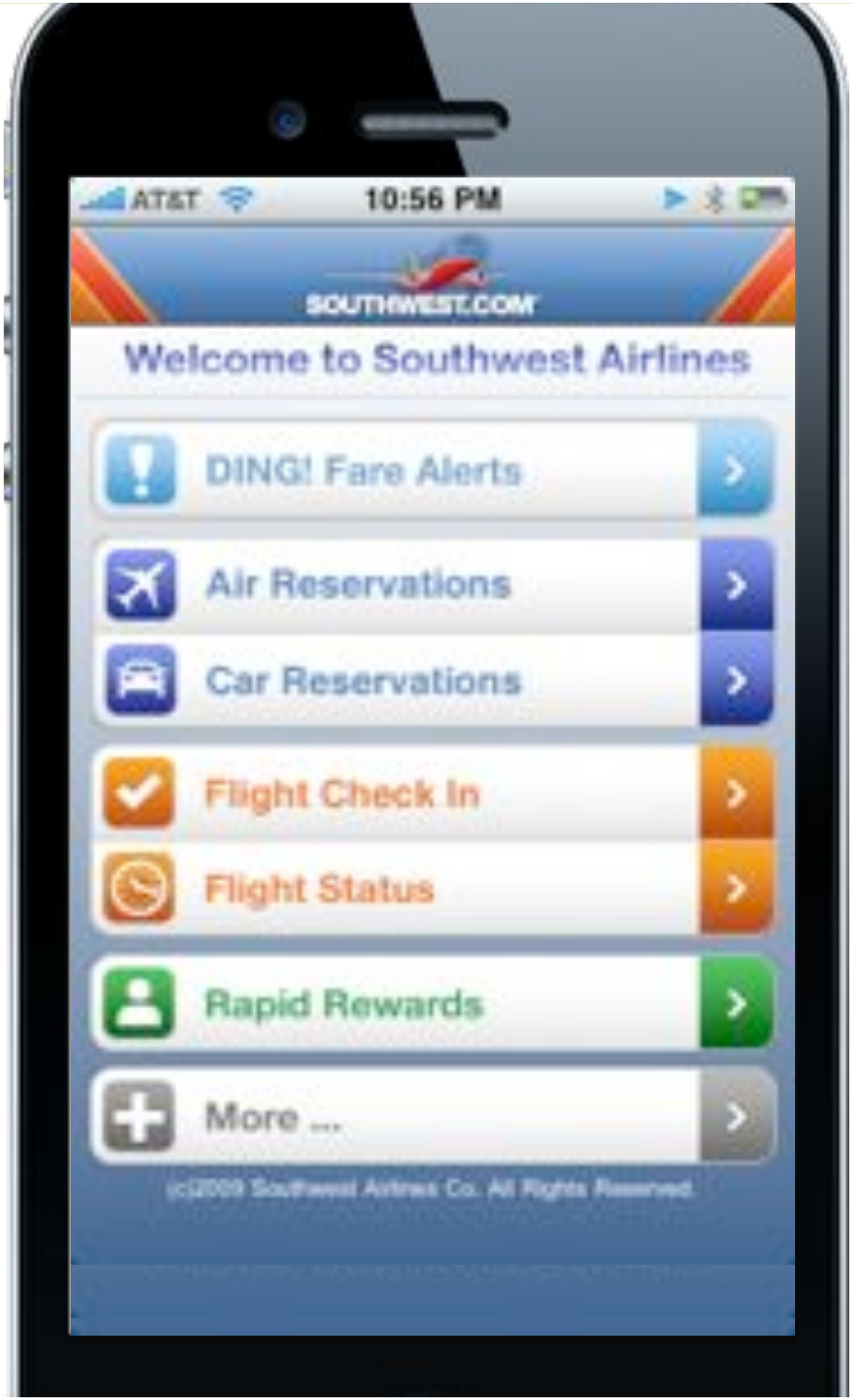
1. GROWTH = OPPORTUNITY
2. CONSTRAINTS = FOCUS
3. CAPABILITIES = INNOVATION

CONSTRAINTS

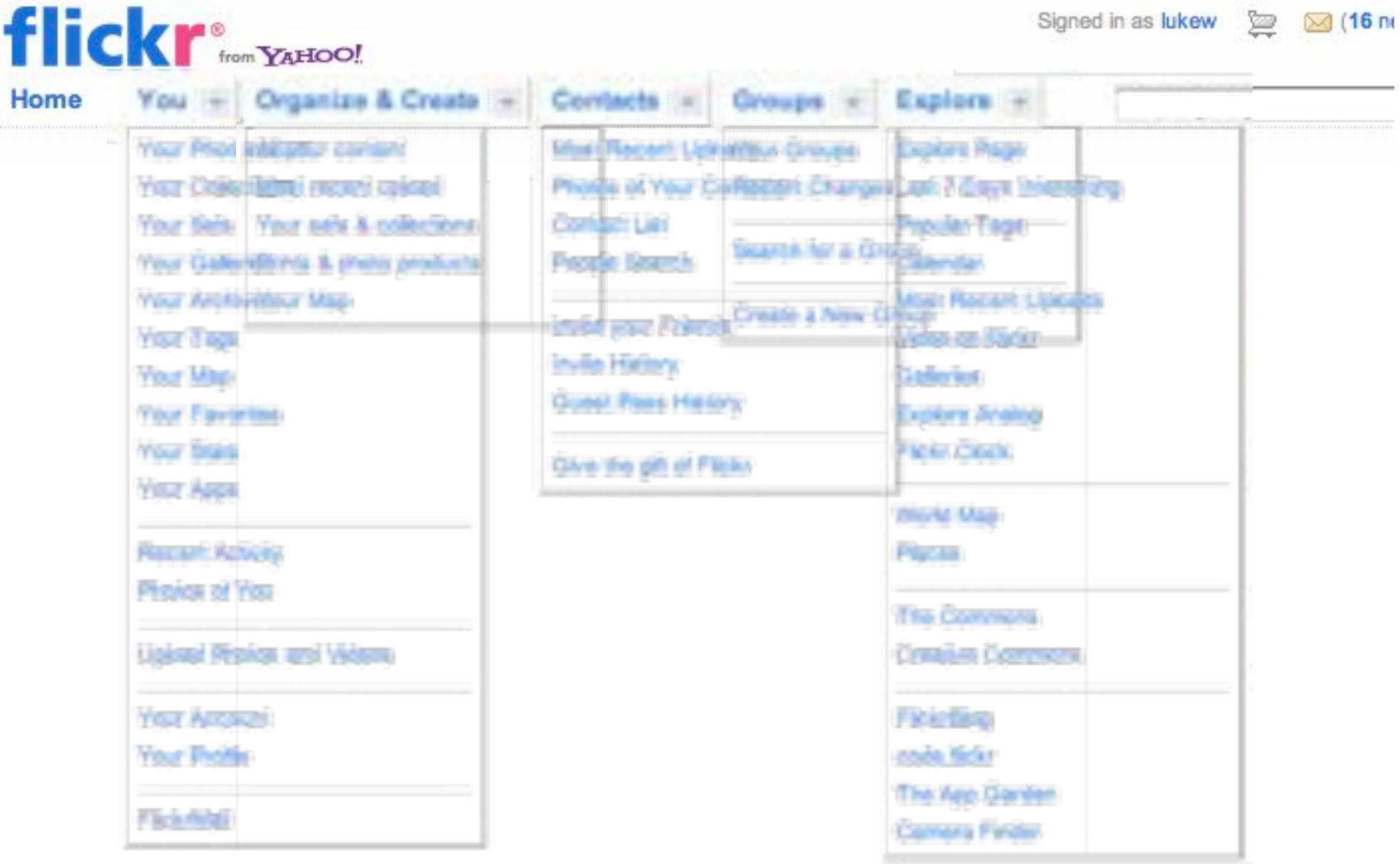
- Size of Screen
- Speed of Networks
- Modes of Use

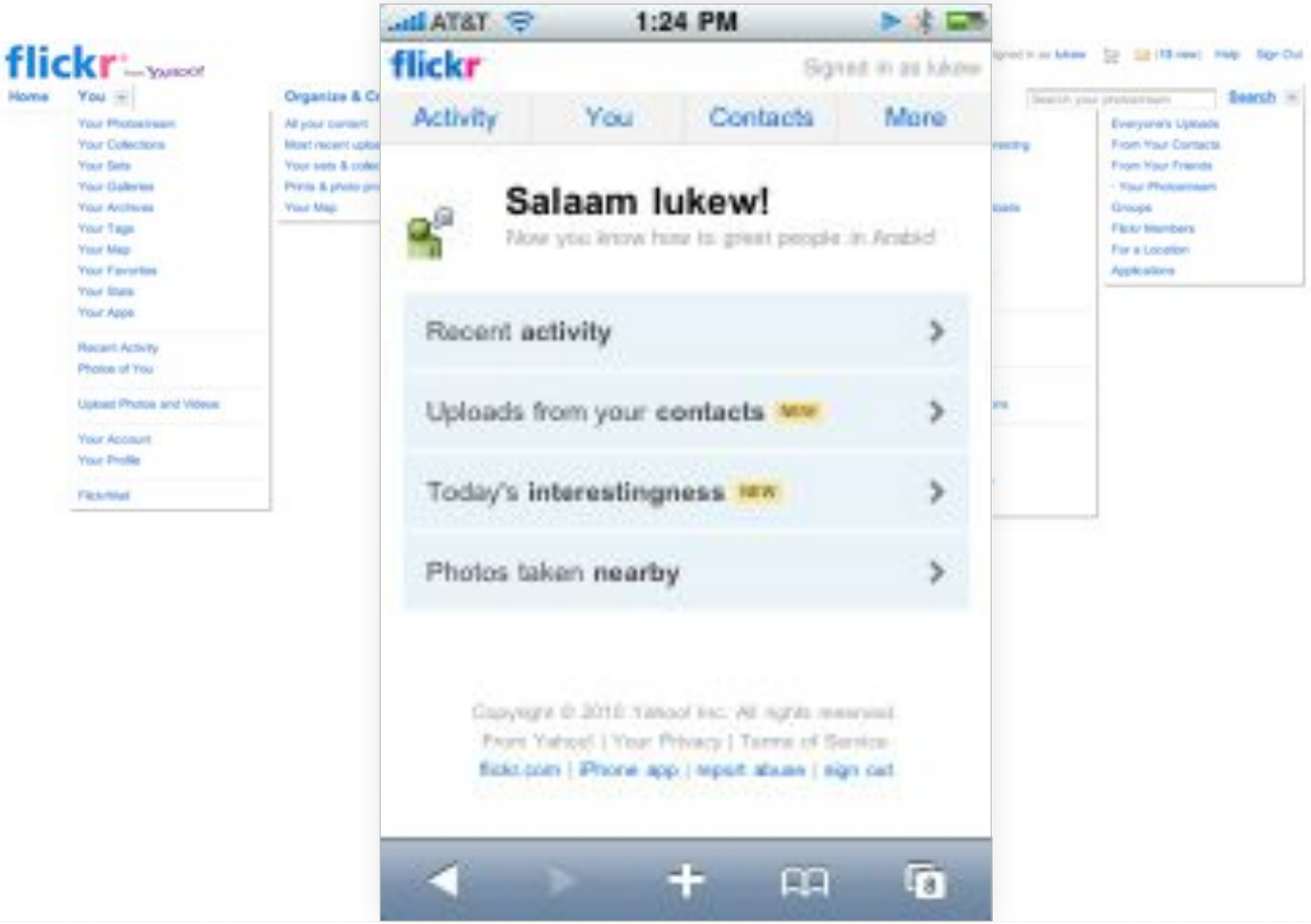
1024x768

SOUTHWEST.COM
Search Southwest
GO
The Southwest Difference | Sign Up 'n Save | Help
Travel Tools
Special Offers
Last Minute Deals & Packages
Air
Car
Hotel
Vacations
WHY FLY SOUTHWEST ›
Travel Guide
Forums & Destination Suggestions
Rapid Rewards®
Earn Flights Faster
Air
Car
Hotel
Recent Searches
Round Trip
One-Way
San Jose, CA - SJC
San Diego, CA - SAN
03/22/2010
03/24/2010
1 Adult age
0 Seniors 65
Promo Code
Where We Fly
Advanced Search
Search
CHECK OUT CHI-TOWN
25
NAVY PIER
My Account
Enroll Now!
Rapid Rewards #
Password
Remember me
Log In
My Travel
Check In Online
Check Flight Status
Change Flight
My Rapid Rewards
My Travel Journal
News:
Taking a trip this fall? Time to start planning. On March 23rd we're opening our flight schedule thru October 30th.
SOUTHWEST.COM
LUCKY IN LUV SWEEPSTAKES
Win Two Tickets Anywhere We Fly
Enter Now
Flexible Travel Dates?
Browse low fares by month from
Oakland, CA - OAK
GO
$59
$79
EarlyBird Check-In
Let us take care of check-in for you for only $10 one-way.
Learn More
Featured Destination:
Nashville
Earn enough credits for a
DING
CLICK 'N SAVE


AT&T
10:56 PM
SOUTHWEST.COM
Welcome to Southwest Airlines
DING! Fare Alerts
Air Reservations
Car Reservations
Flight Check In
Flight Status
Rapid Rewards
More ...
(c)2009 Southwest Airlines Co. All Rights Reserved.

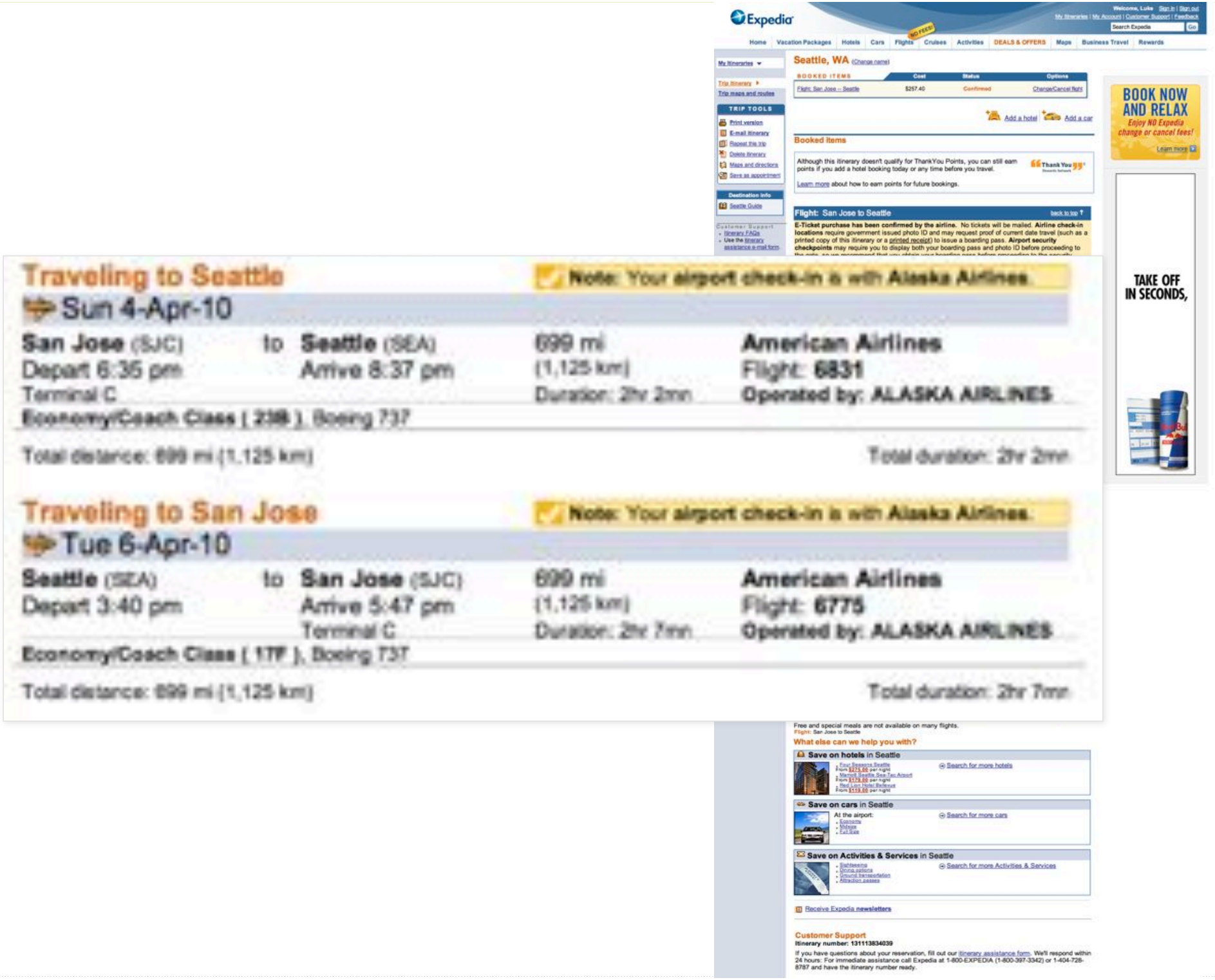
SOUTHWEST.COM
About Southwest | Help | Español
Book Travel
Special Offers
Travel Tools
Rapid Rewards
LUV is seeing my country
Book A Flight
Check In Online
Check Your Flight Status
View or Change Your Flight
My Southwest
Manage Your Travel with MySouthwest
LOG IN
View travel itineraries
Set online travel preferences
View Rapid Rewards credit details
Want an account? Sign up Now!
Fly For Less
More
$49-$169
Fantastic Fares
Save systemwide with 14-day advance purchase. Book by Feb 22.
Starting at $59
Featured Destination: New Mexico (via Albuquerque or El Paso)
Travel through May 10, 2007, 14-day advance purchase.
What's New
Southwest has California Covered!
Airline announces intent to resume service at San Francisco International.
southwestgiftcard™
Give the southwestgiftcard, and don't be apart from your sweetheart!
Use of the Southwest websites and our Company Information constitutes acceptance of our Terms and Conditions, Privacy Policy. ©2007 Southwest Airlines Co. All Rights Reserved.
SOUTHWEST AIRLINES VACATIONS
Vacation Packages
SWABIZ
Business Travel
SOUTHWEST AIRLINES CARGO
Ship Packages


flickr
from YAHOO!
Signed in as lukew
Home
You
Organize & Create
Contacts
Groups
Explore


AT&T
1:24 PM
flickr
Activity
You
Contacts
More
Salaam lukew!
Recent activity
Uploads from your contacts
Today's interestingness
Photos taken nearby
Home
You
Search

Know your audience

Flickr photo by wertheim



Expedia

Welcome, Luke Sign In | Sign Out
My Itineraries | My Account | Customer Support | Feedback
Search Expedia Go

Home | Vacation Packages | Hotels | Cars | Flights (NO FEES!) | Cruises | Activities | DEALS & OFFERS | Maps | Business Travel | Rewards

My Itineraries

Trip Itinerary
Trip maps and routes

TRIP TOOLS
Print version
E-mail itinerary
Repeat this trip
Delete itinerary
Maps and directions
Save as appointment

Destination info
Seattle Guide

Customer Support
- Itinerary FAQs
- Use the itinerary assistance e-mail form

Seattle, WA (Change name)

BOOKED ITEMS	Cost	Status	Options
Flight: San Jose -- Seattle	$257.40	Confirmed	Change/Cancel flight

Add a hotel | Add a car

Booked items

Although this itinerary doesn't qualify for ThankYou Points, you can still earn points if you add a hotel booking today or any time before you travel.

ThankYou Rewards Network

Learn more about how to earn points for future bookings.

Flight: San Jose to Seattle back to top

E-Ticket purchase has been confirmed by the airline. No tickets will be mailed. **Airline check-in locations** require government issued photo ID and may request proof of current date travel (such as a printed copy of this itinerary or a printed receipt) to issue a boarding pass. **Airport security checkpoints** may require you to display both your boarding pass and photo ID before proceeding to the gate, so we recommend that you obtain your boarding pass before proceeding to the security

BOOK NOW AND RELAX
Enjoy NO Expedia change or cancel fees!
Learn more

TAKE OFF IN SECONDS,

Traveling to Seattle

Note: Your airport check-in is with Alaska Airlines.

Sun 4-Apr-10

San Jose (SJC)	to	Seattle (SEA)	699 mi (1,125 km)	American Airlines
Depart 6:35 pm		Arrive 8:37 pm	Duration: 2hr 2mn	Flight: 6831
Terminal C				Operated by: ALASKA AIRLINES

Economy/Coach Class (Z9B), Boeing 737

Total distance: 699 mi (1,125 km) Total duration: 2hr 2mn

Traveling to San Jose

Note: Your airport check-in is with Alaska Airlines.

Tue 6-Apr-10

Seattle (SEA)	to	San Jose (SJC)	699 mi (1,125 km)	American Airlines
Depart 3:40 pm		Arrive 5:47 pm	Duration: 2hr 7mn	Flight: 6775
		Terminal C		Operated by: ALASKA AIRLINES

Economy/Coach Class (17F), Boeing 737

Total distance: 699 mi (1,125 km) Total duration: 2hr 7mn

Free and special meals are not available on many flights.
Flight: San Jose to Seattle

What else can we help you with?

Save on hotels in Seattle
- Four Seasons Seattle From $275.00 per night
- Marriott Seattle Sea-Tac Airport From $179.00 per night
- Red Lion Hotel Bellevue From $119.00 per night

Search for more hotels

Save on cars in Seattle
At the airport:
- Economy
- Midsize
- Full Size

Search for more cars

Save on Activities & Services in Seattle
- Sightseeing
- Dining options
- Ground transportation
- Attraction passes

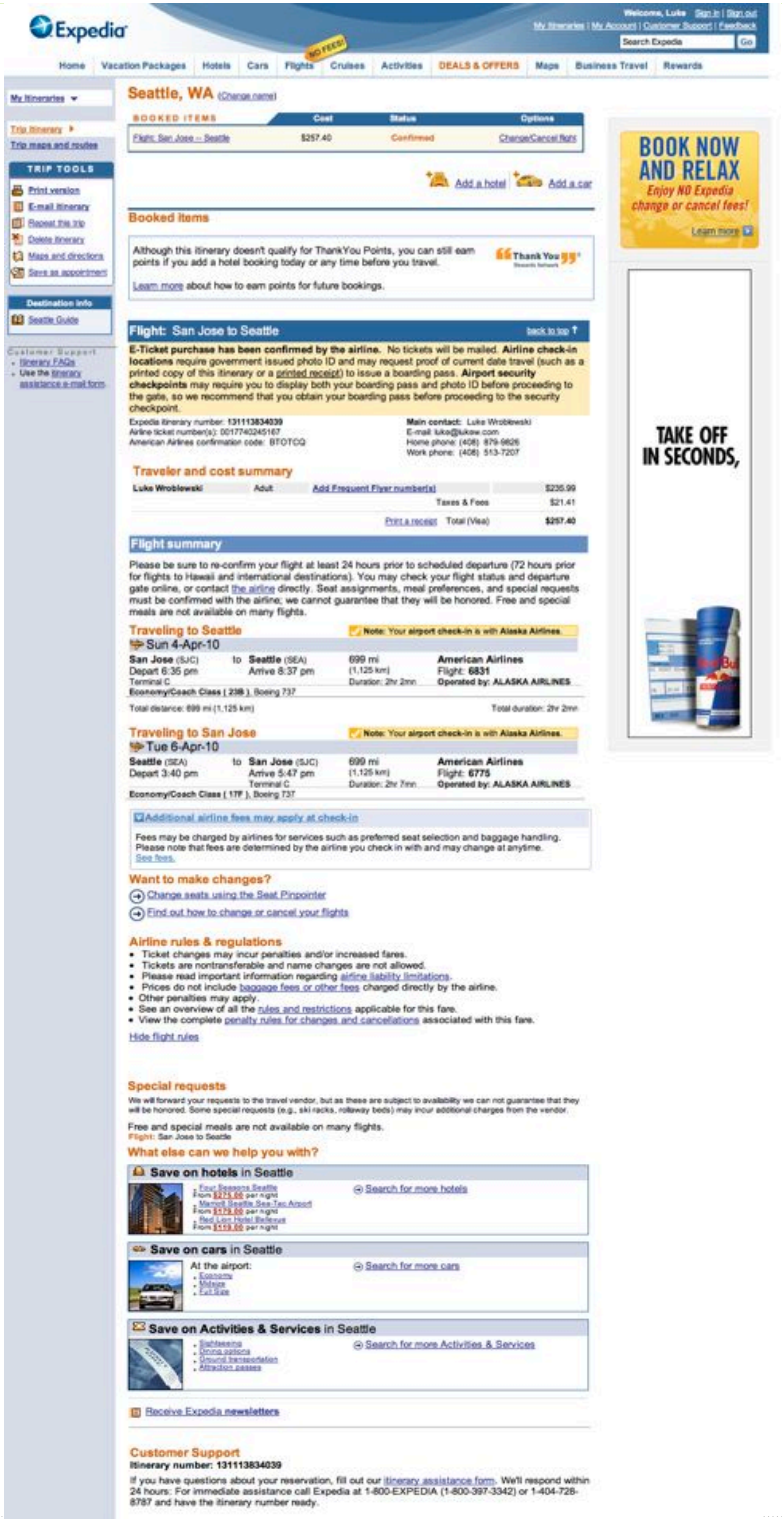
Search for more Activities & Services

Receive Expedia newsletters

Customer Support
Itinerary number: 131113834039

If you have questions about your reservation, fill out our itinerary assistance form. We'll respond within 24 hours. For immediate assistance call Expedia at 1-800-EXPEDIA (1-800-397-3342) or 1-404-728-8787 and have the itinerary number ready.

AT&T
10:57 PM
By Date
By Itinerary
April 4, 2010
American Airlines 6831
Luke Wroblewski
Departs SJC
Norman Y. Mineta San Jose Intl.
6:35 PM
Estimated
Terminal C
Gate --
Scheduled
6:35 PM
Scheduled
Arrives SEA
Seattle - Tacoma Intl.
8:37 PM
Estimated
Terminal --
Gate --
Scheduled
8:37 PM
Trips
Flight Lookup
Shop
More


Expedia
Welcome, Luke Sign In | Sign Out
My Itineraries | My Account | Customer Support | Feedback
Search Expedia
Go
Home
Vacation Packages
Hotels
Cars
Flights
NO FEES!
Cruises
Activities
DEALS & OFFERS
Maps
Business Travel
Rewards
My Itineraries
Trip Itinerary
Trip maps and routes
TRIP TOOLS
Print version
E-mail itinerary
Repeat this trip
Delete itinerary
Maps and directions
Save as appointment
Destination info
Seattle Guide
Customer Support
Itinerary FAQs
Use the itinerary assistance e-mail form
Seattle, WA (Change name)
BOOKED ITEMS
Cost
Status
Options
Flight: San Jose -- Seattle
$257.40
Confirmed
Change/Cancel flight
Add a hotel
Add a car
Booked items
Although this itinerary doesn't qualify for ThankYou Points, you can still earn points if you add a hotel booking today or any time before you travel.
ThankYou Rewards Network
Learn more about how to earn points for future bookings.
Flight: San Jose to Seattle
back to top
E-Ticket purchase has been confirmed by the airline. No tickets will be mailed. Airline check-in locations require government issued photo ID and may request proof of current date travel (such as a printed copy of this itinerary or a printed receipt) to issue a boarding pass. Airport security checkpoints may require you to display both your boarding pass and photo ID before proceeding to the gate, so we recommend that you obtain your boarding pass before proceeding to the security checkpoint.
Expedia itinerary number: 13111834039
Airline ticket number(s): 0017740245167
American Airlines confirmation code: BTOTCQ
Main contact: Luke Wroblewski
E-mail: luke@lukew.com
Home phone: (408) 879-9826
Work phone: (408) 513-7207
Traveler and cost summary
Luke Wroblewski
Adult
Add Frequent Flyer number(s)
$235.99
Taxes & Fees
$21.41
Print a receipt
Total (Visa)
$257.40
Flight summary
Please be sure to re-confirm your flight at least 24 hours prior to scheduled departure (72 hours prior for flights to Hawaii and international destinations). You may check your flight status and departure gate online, or contact the airline directly. Seat assignments, meal preferences, and special requests must be confirmed with the airline; we cannot guarantee that they will be honored. Free and special meals are not available on many flights.
Traveling to Seattle
Note: Your airport check-in is with Alaska Airlines.
Sun 4-Apr-10
San Jose (SJC) Depart 6:35 pm Terminal C
to Seattle (SEA) Arrive 8:37 pm
699 mi (1,125 km) Duration: 2hr 2mn
American Airlines Flight: 6831 Operated by: ALASKA AIRLINES
Economy/Coach Class (Z9B), Boeing 737
Total distance: 699 mi (1,125 km)
Total duration: 2hr 2mn
Traveling to San Jose
Note: Your airport check-in is with Alaska Airlines.
Tue 6-Apr-10
Seattle (SEA) Depart 3:40 pm
to San Jose (SJC) Arrive 5:47 pm Terminal C
699 mi (1,125 km) Duration: 2hr 7mn
American Airlines Flight: 6775 Operated by: ALASKA AIRLINES
Economy/Coach Class (17F), Boeing 737
Additional airline fees may apply at check-in
Fees may be charged by airlines for services such as preferred seat selection and baggage handling. Please note that fees are determined by the airline you check in with and may change at anytime.
See fees.
Want to make changes?
Change seats using the Seat Pinpointer
Find out how to change or cancel your flights
Airline rules & regulations
Ticket changes may incur penalties and/or increased fares.
Tickets are nontransferable and name changes are not allowed.
Please read important information regarding airline liability limitations.
Prices do not include baggage fees or other fees charged directly by the airline.
Other penalties may apply.
See an overview of all the rules and restrictions applicable for this fare.
View the complete penalty rules for changes and cancellations associated with this fare.
Hide flight rules
Special requests
We will forward your requests to the travel vendor, but as these are subject to availability we can not guarantee that they will be honored. Some special requests (e.g., ski racks, rollaway beds) may incur additional charges from the vendor.
Free and special meals are not available on many flights.
Flight: San Jose to Seattle
What else can we help you with?
Save on hotels in Seattle
Four Seasons Seattle From $275.00 per night
Marriott Seattle Sea-Tac Airport From $179.00 per night
Red Lion Hotel Bellevue From $119.00 per night
Search for more hotels
Save on cars in Seattle
At the airport:
Economy
Midsize
Full Size
Search for more cars
Save on Activities & Services in Seattle
Sightseeing
Dining options
Ground transportation
Attraction passes
Search for more Activities & Services
Receive Expedia newsletters
Customer Support
Itinerary number: 13111834039
If you have questions about your reservation, fill out our itinerary assistance form. We'll respond within 24 hours. For immediate assistance call Expedia at 1-800-EXPEDIA (1-800-397-3342) or 1-404-728-8787 and have the itinerary number ready.
BOOK NOW AND RELAX
Enjoy NO Expedia change or cancel fees!
Learn more
TAKE OFF IN SECONDS,

AT&T
11:53 AM
Expedia
TripAssist
Where should you be?
Flip it and see.

American Airlines 1067
LUKE WROBLEWSKI
Departs DCA
Ronald Reagan Washington National
Arrives DFW
Dallas-Fort Worth Intl.
Estimated
6:25 PM
Terminal B
14A
Scheduled
Estimated
8:40 PM
Scheduled
6:25 PM
Scheduled
8:40 PM
Confirmation #: CLFIRK
Ticket #: 0017907993808

CONSTRAINTS

- Size of Screen
- Speed of Networks
- Modes of Use

AT&T

Reduce Requests & File Size

- Eliminate redirects
- Use CSS sprites to serve multiple images
- Consolidate CSS & Javascript into a single file
- Reduce dependencies on heavy Javascript libraries
- Minify your code

Take Advantage of HTML5, etc.

- Use proper http headers for caching
- Load contents lazily
- Use application cache for local content storage
- Use CSS3 and canvas tag instead of images where possible

100ms delay results in 1% sales loss.
(potential $191M in lost revenue in 2008)

400ms delay results in 5-9% drop in full-page traffic.

500ms delay drops search traffic by 20%. The cost of slower performance increases over time.

1s delay results 4% drop in revenue

Fastest 10% of users stay 50% longer than slowest 10%

Sources: slideshare.net/stubbornella/designing-fast-websites-presentation & slideshare.net/markstanton/speed-matters

CONSTRAINTS

- Size of Screen
- Speed of Networks
- Modes of Use

Big Screen

Power Supply

Consistent Network

Keyboard

Mouse

Chair

Desk

Small Screen

Battery

INTENSELY PERSONAL

Fingers

Sensors

WHERE ARE WE MOBILE?

84% at home
80% during misc. times
74% waiting in lines
64% at work

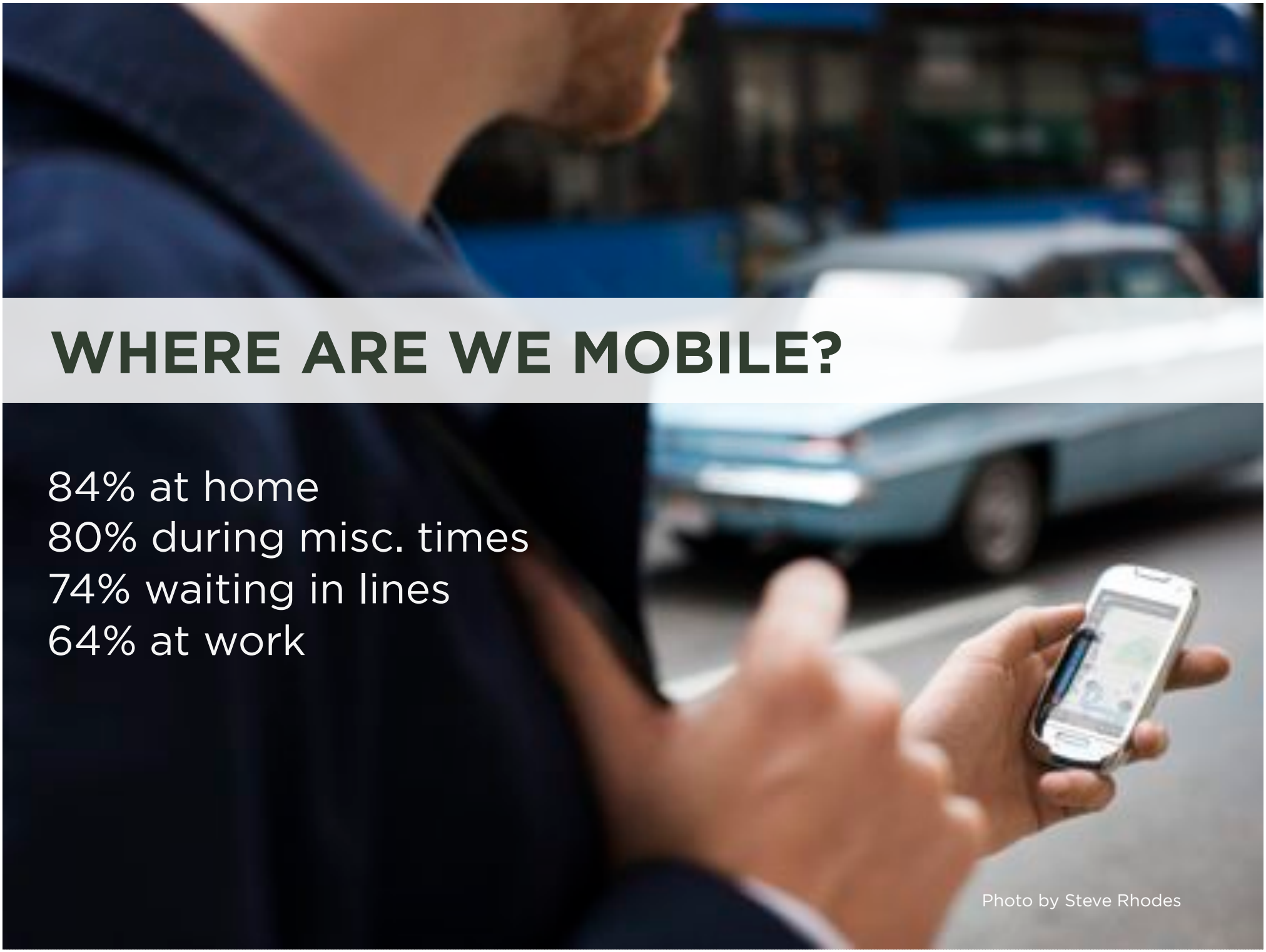
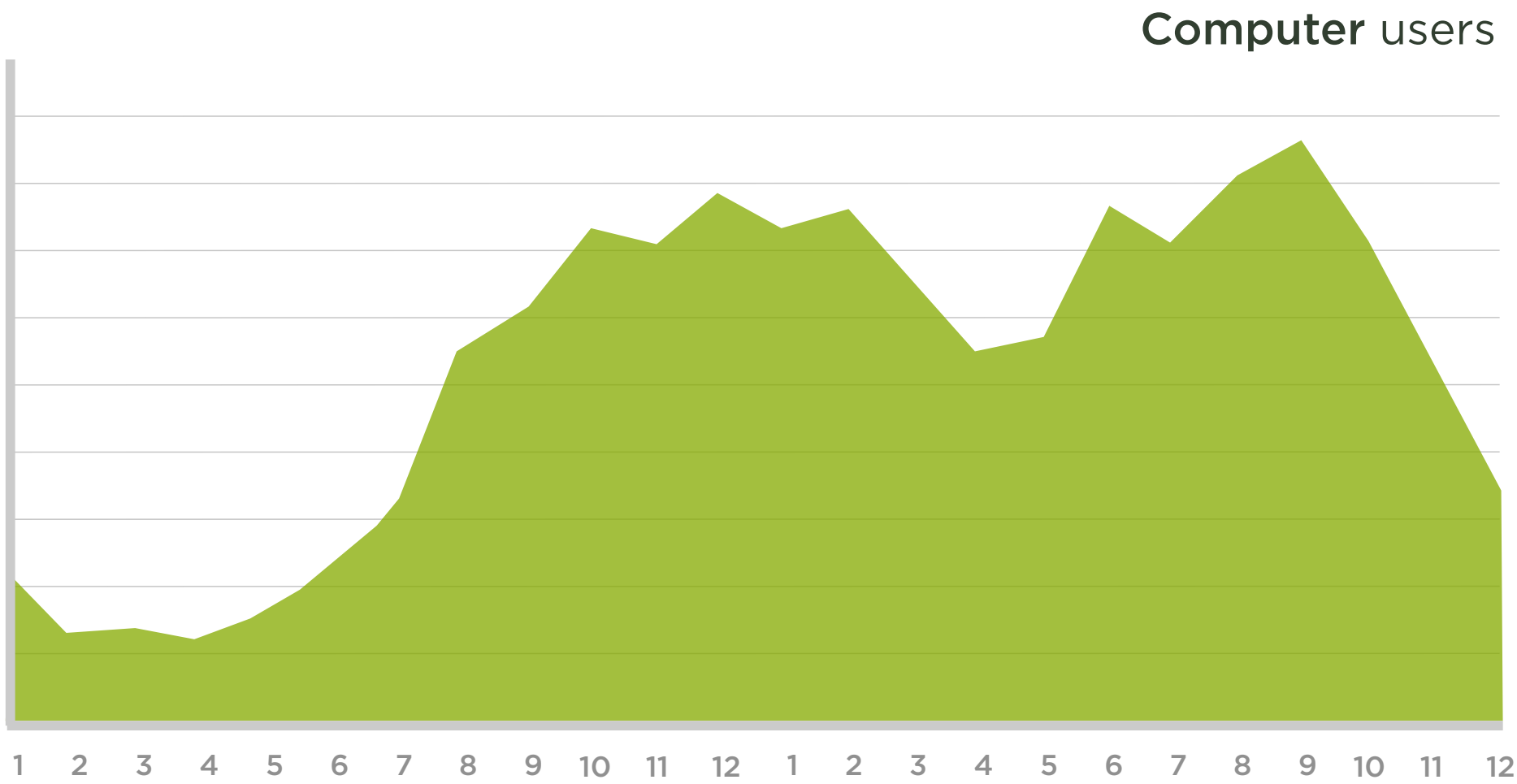


Photo by Steve Rhodes

Partial attention requires focused design

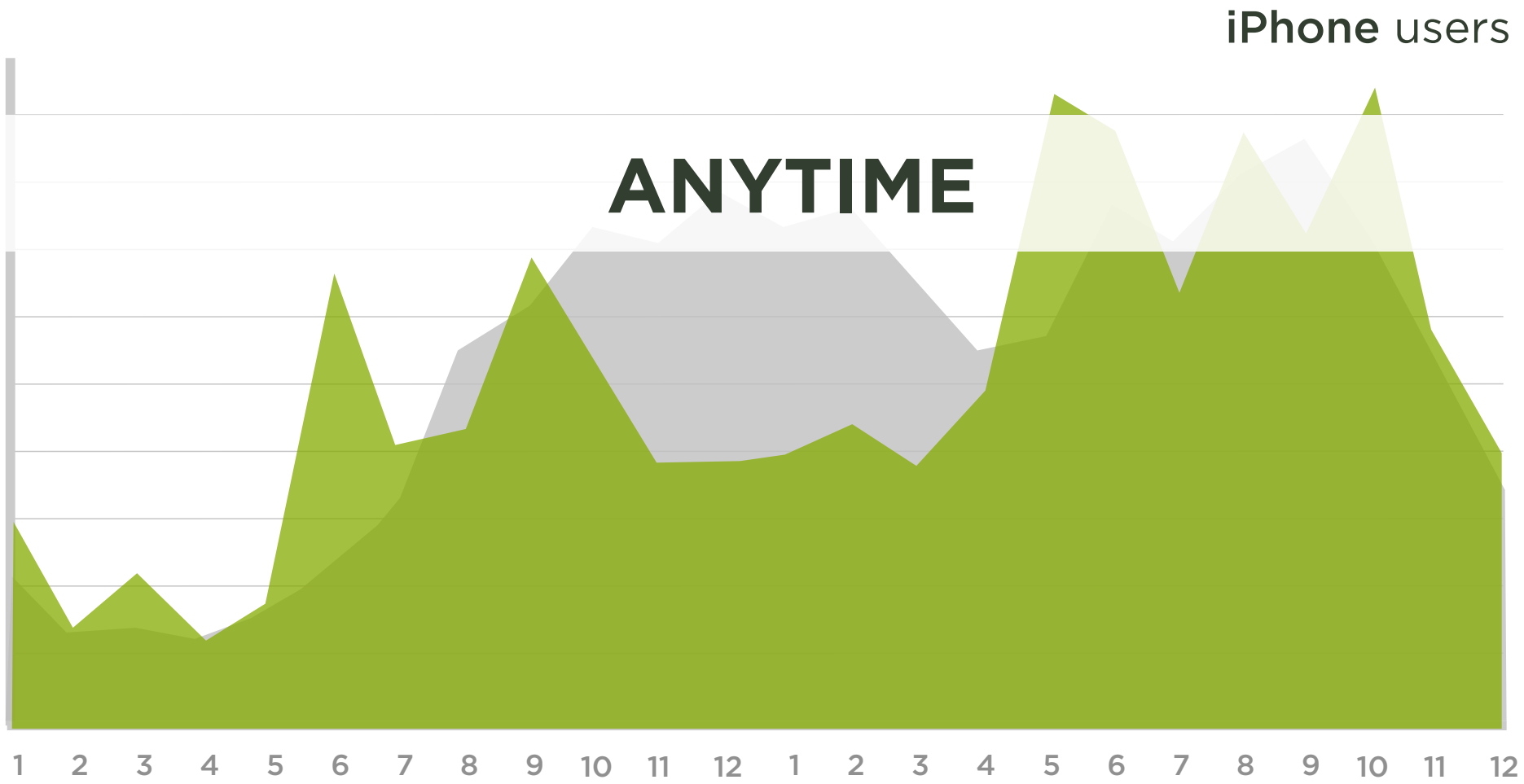
When are we mobile?



LUKEW IDEATION + DESIGN

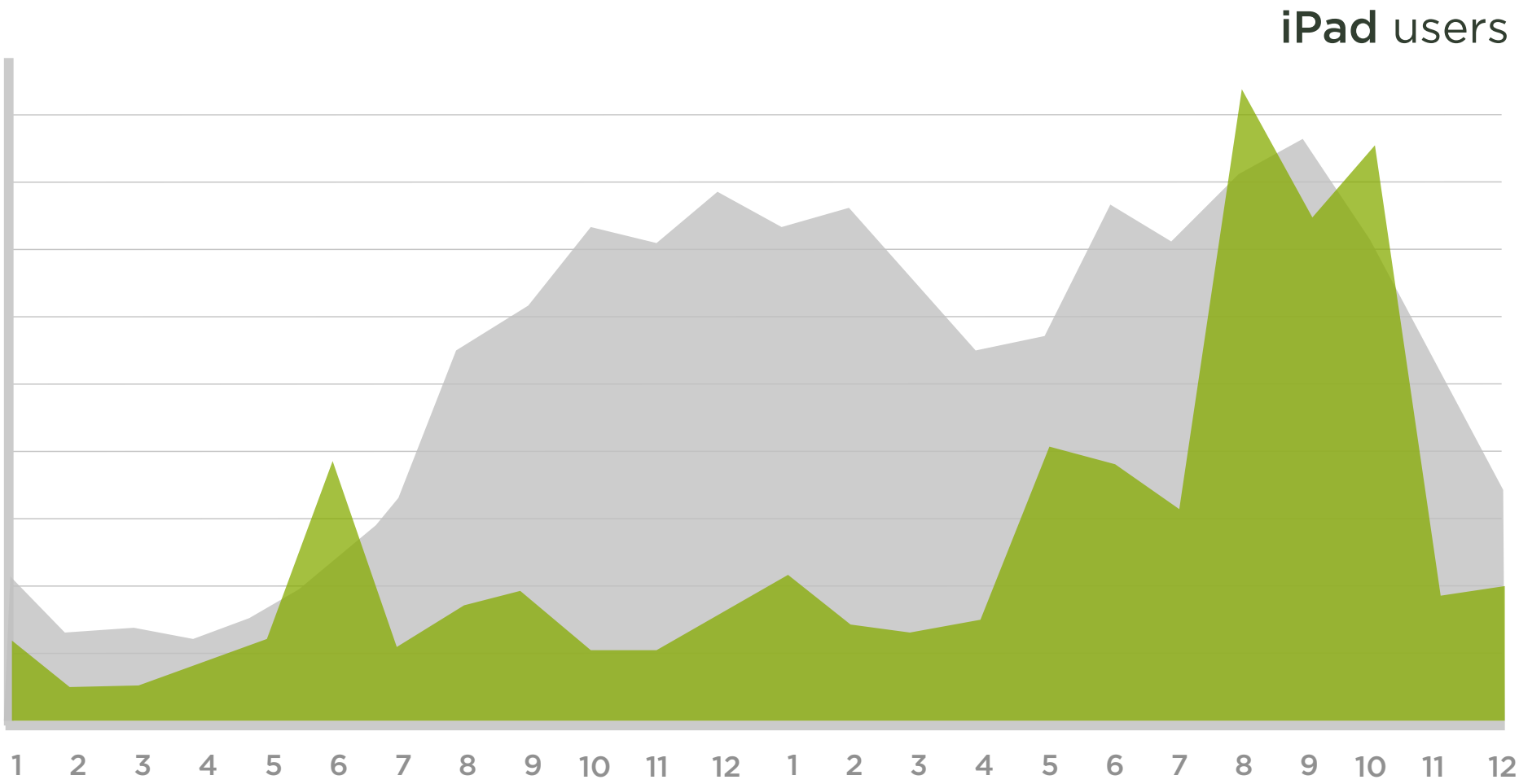
Source: http://bit.ly/hGrQMy

When are we mobile?



Source: http://bit.ly/hGrQMy

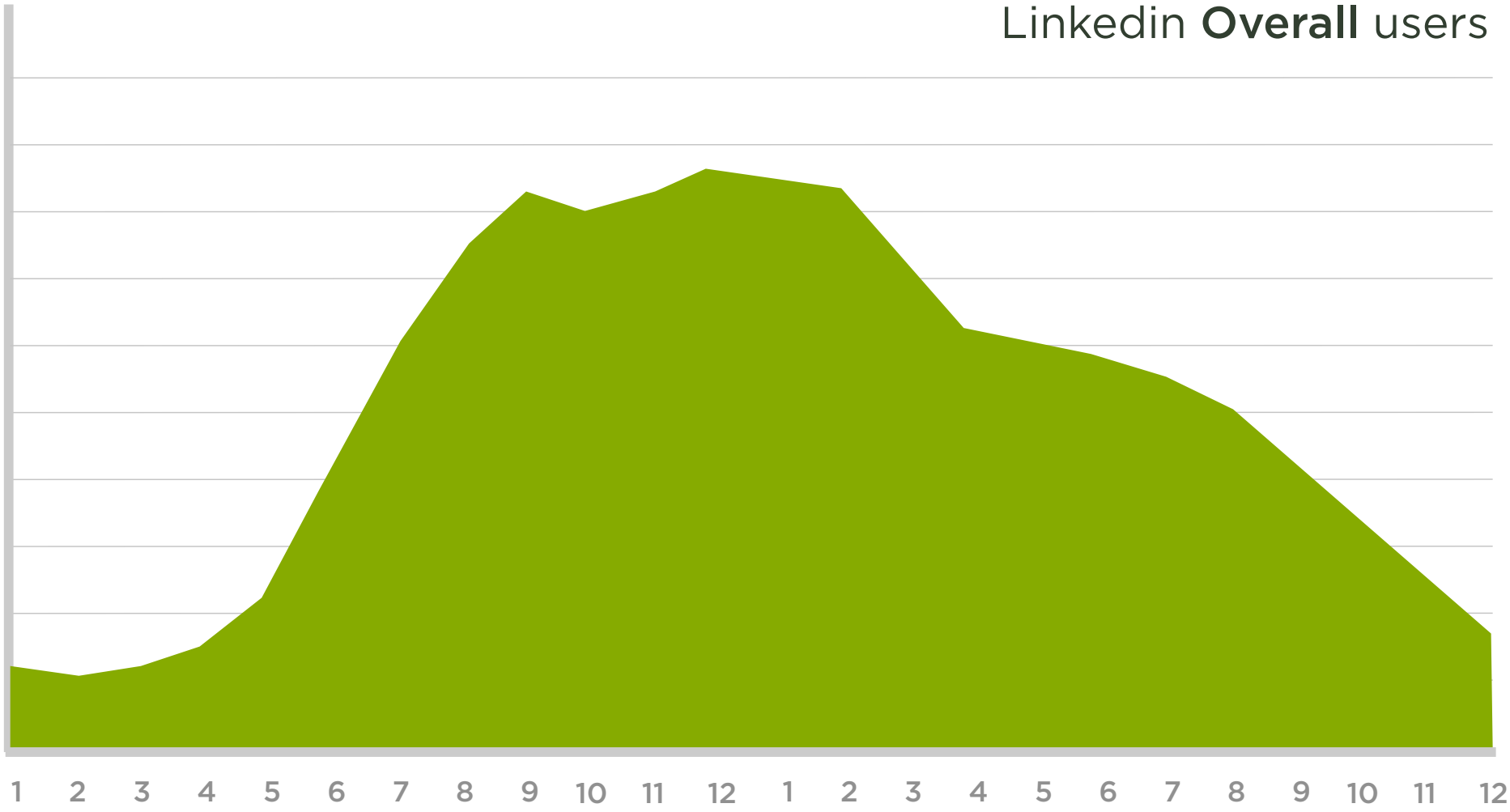
When are we mobile?



LUKEW IDEATION + DESIGN

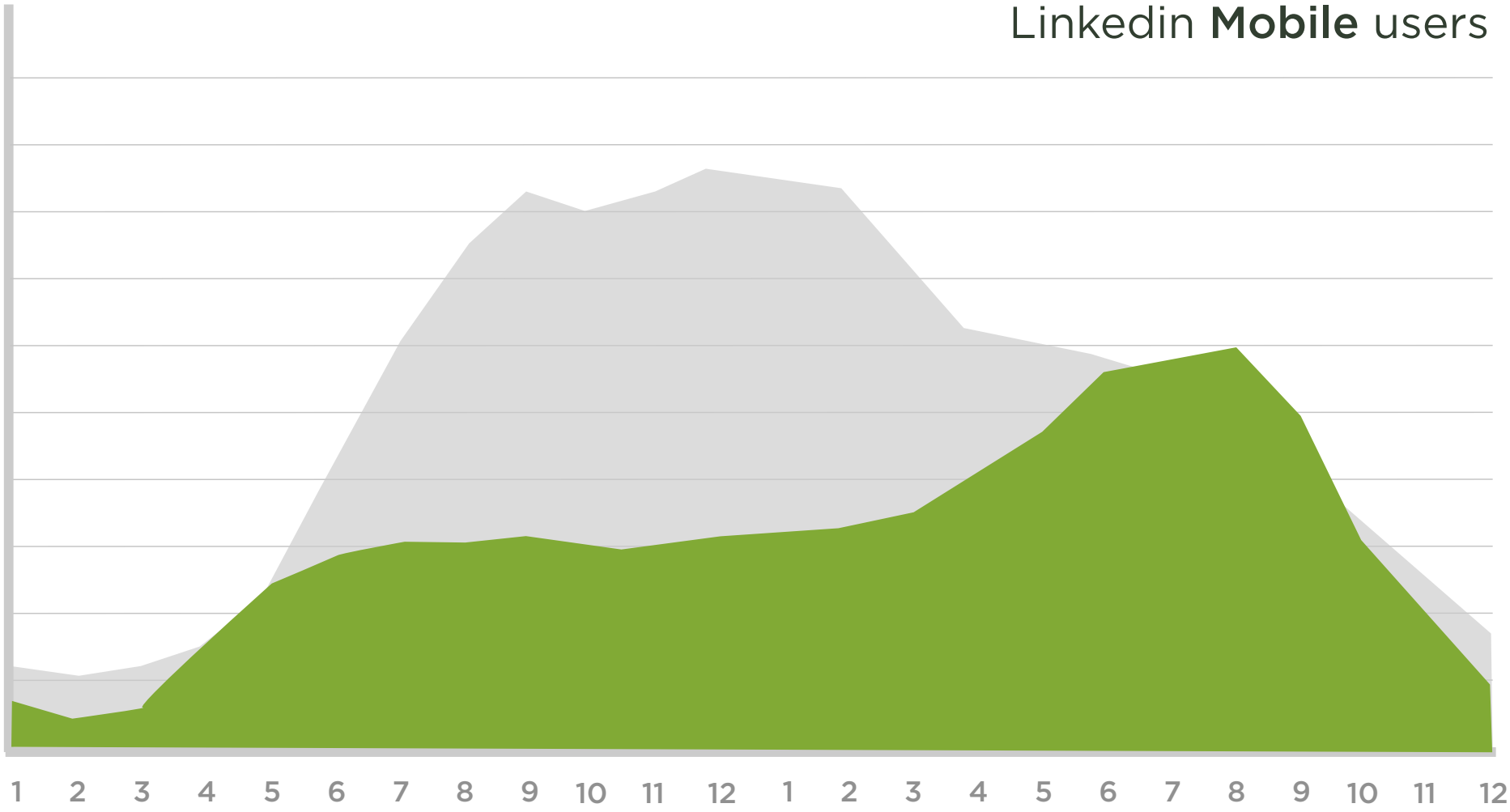
Source: http://bit.ly/hGrQMy

When are we mobile?



Source: http://bit.ly/hGrQMy

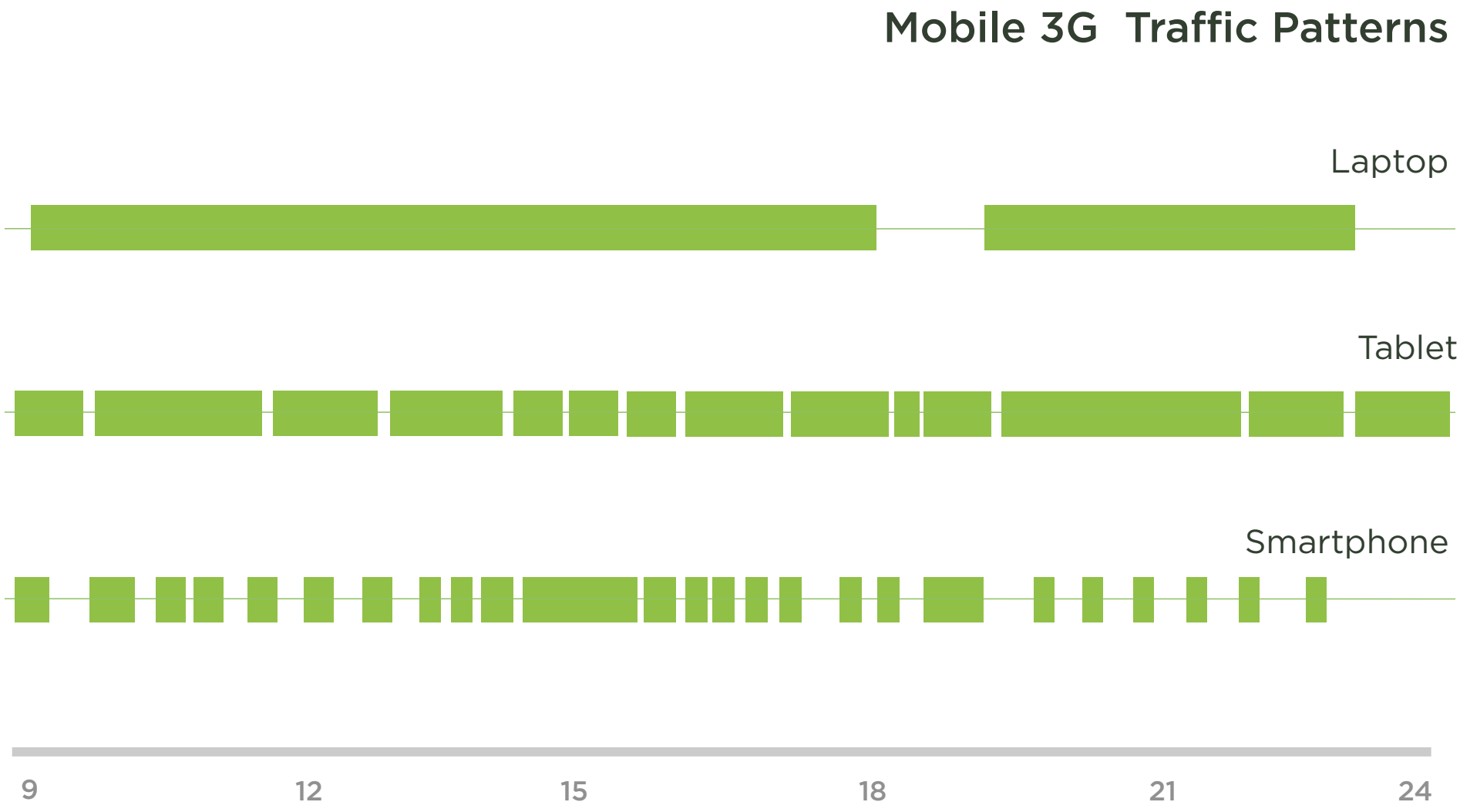
When are we mobile?



LUKEW IDEATION + DESIGN

Source: http://bit.ly/hGrQMy

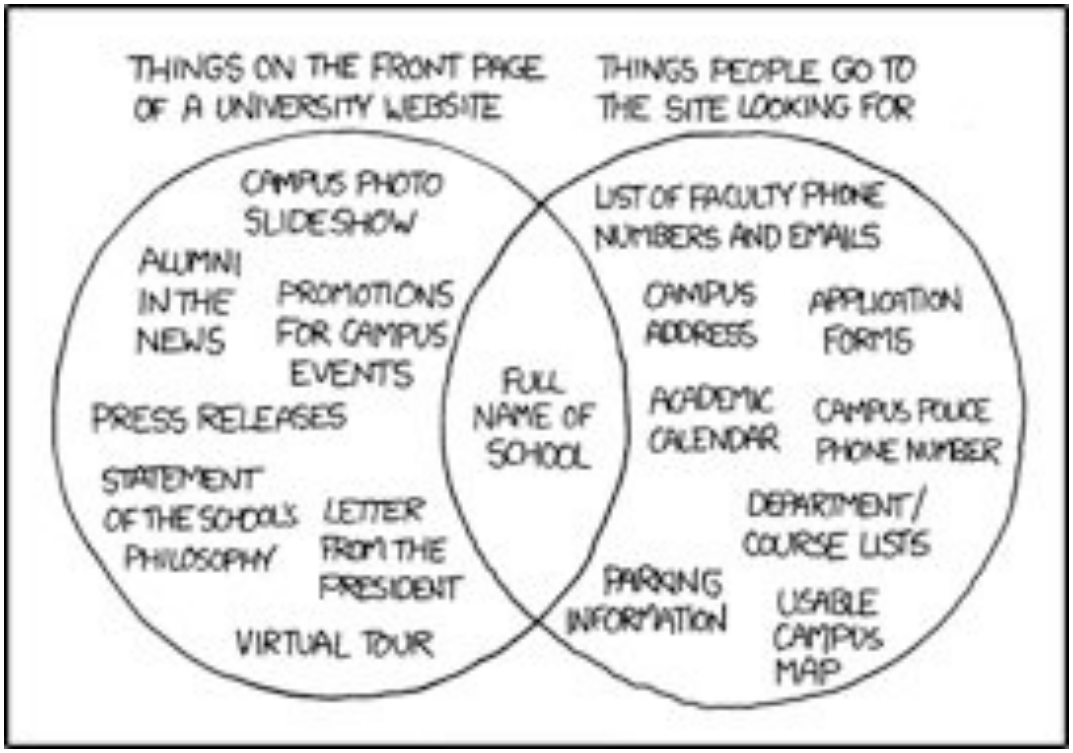
When are we mobile?



Source: http://bit.ly/qL5NdX

CONSTRAINTS

- Size of Screen
- Speed of Networks
- Modes of Use



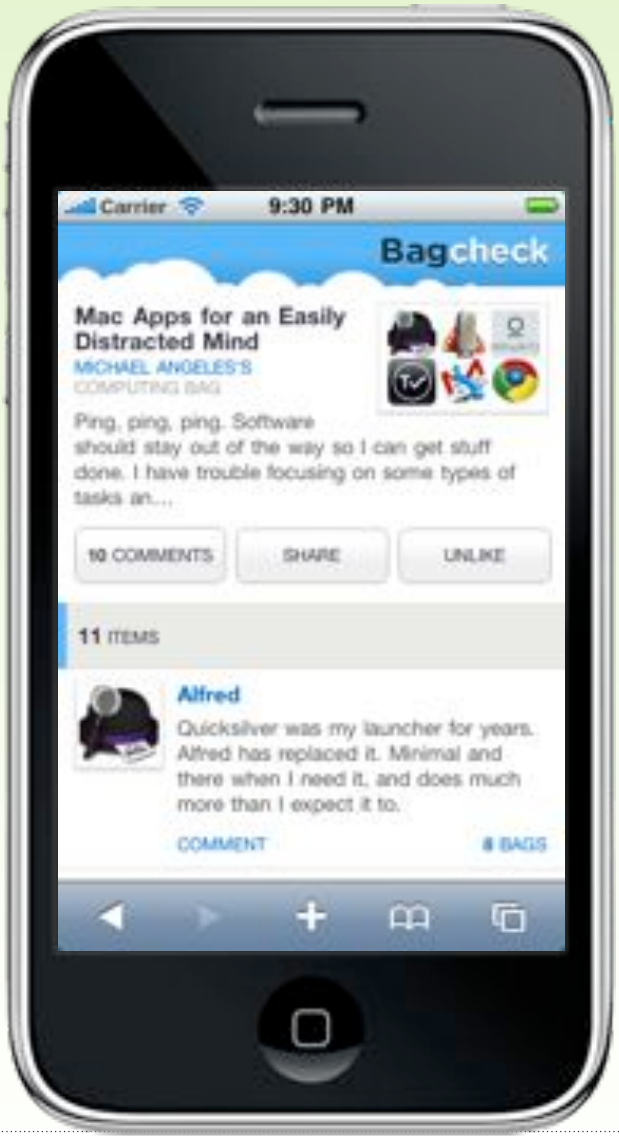
"I was looking at **the right side** of the Venn diagram I thought, 'That looks like a lot of the current and planned content for **our mobile site**.' I think the only thing we don't have are the admissions application."

Source: XKCD http://xkcd.com/773/ & http://www.dmolsen.com/mobile-in-higher-ed/?p=197

MOBILE FIRST

1. GROWTH = OPPORTUNITY
2. CONSTRAINTS = FOCUS
3. CAPABILITIES = INNOVATION

Landscape Mode



Landscape Mode

Safari Gyroscope Access

Source: http://bit.ly/gAXCeL

TOUCH

- 1.03M touchscreen phones sold per day (2009)
- 88K iPads sold per day (2011)
- 194K iPhones sold per day (2011)
- 500K Android devices activated per day (2011)
- What about RIM & Nokia?

Indirect Manipulation

TRACKBALL
KEYBOARD

TRACKPAD
KEYPAD

Direct Manipulation

TRACKPAD

Nokia smartphone mix

Keypad

Qwerty Only

Touch INCLUDES QWERTY + TOUCH

2008

2009

2010
PROJECTED

Source: Nokia –deices sold. Nokia Capital markets day 2009.

Windows
phone
NOKIA

Touch Target Sizes

44px/pt

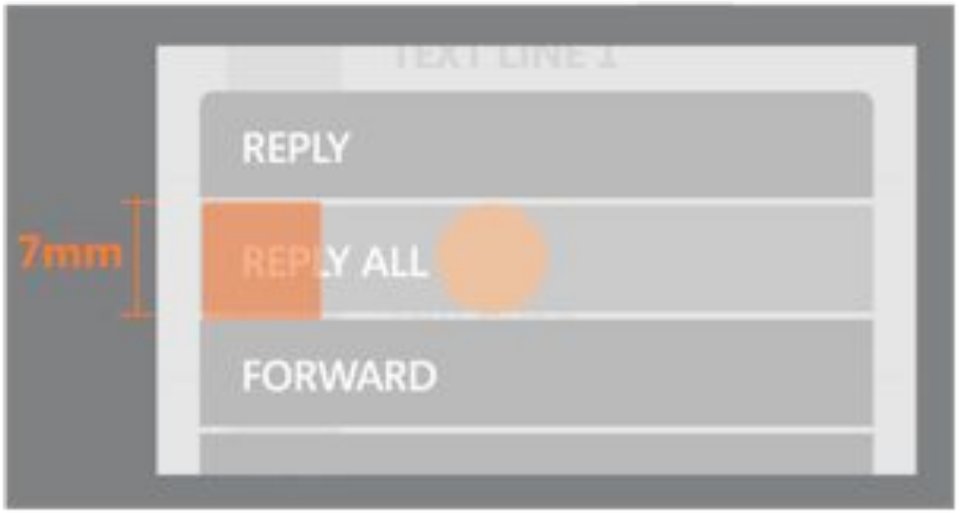
44px/pt

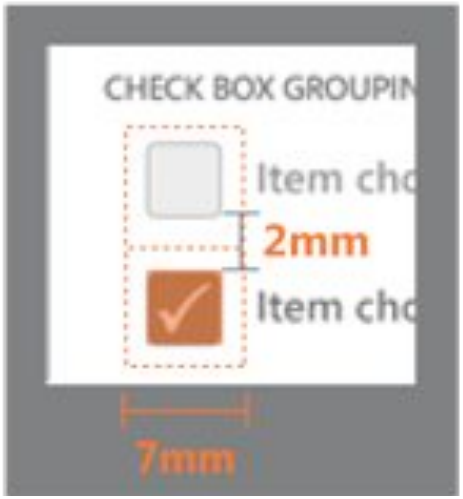
Recommended touch target size is **9mm/34px**

Minimum touch target size is **7mm/26px**

Minimum spacing between elements is **2mm/8px**

Visual size is **60-100%** of the touch target size





Windows Phone

Touch Targets

Bigger then you're comfortable with

MOTOROLA
5:30 PM
Quora
Login to Quora
Email Address:
Luke@lukew.com
Luke Wroblewski
Digital product design
Password:
Forgot your password?
Let me login without a password on this browser
Cancel or
Login
verizon

Touch Gestures

Tap

Double Tap

Drag

Flick

Pinch

Spread

Press

Press & Tap

Press & Drag

Rotate

Platforms

iPhone OS

Android

Web OS

Windows Phone 7

OS X

Windows 7

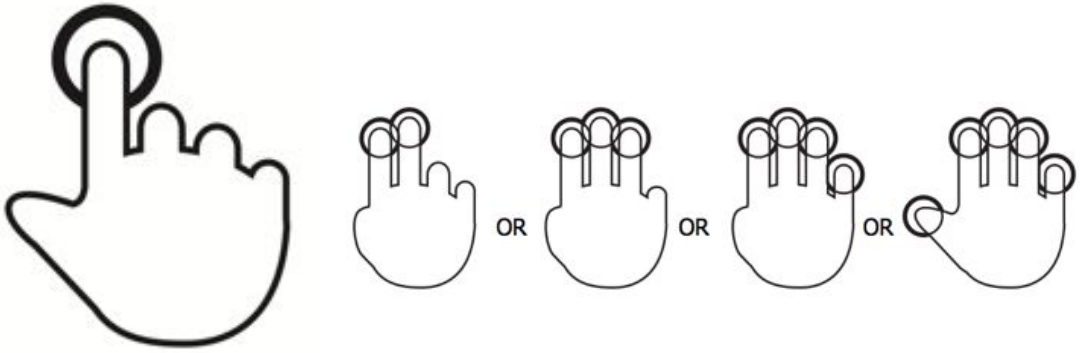
RIM 6.0

Ubuntu

And more...

Tap

Briefly touch surface with fingertip.

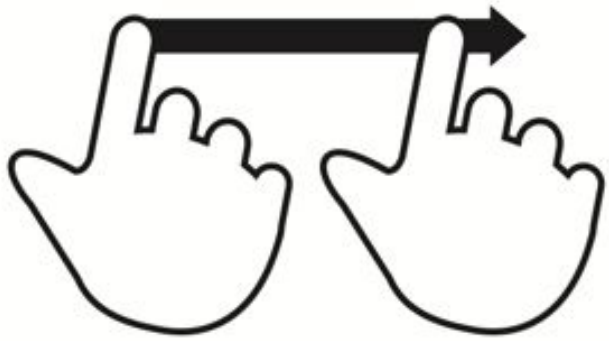


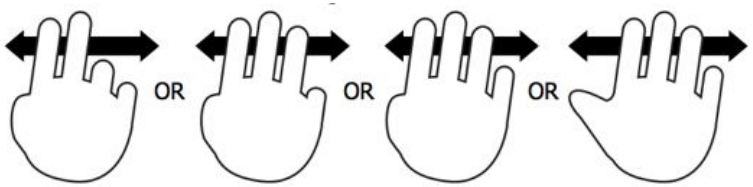
Double Tap

Rapidly touch surface twice with fingertip.

Drag

Move fingertip over surface without losing contact.



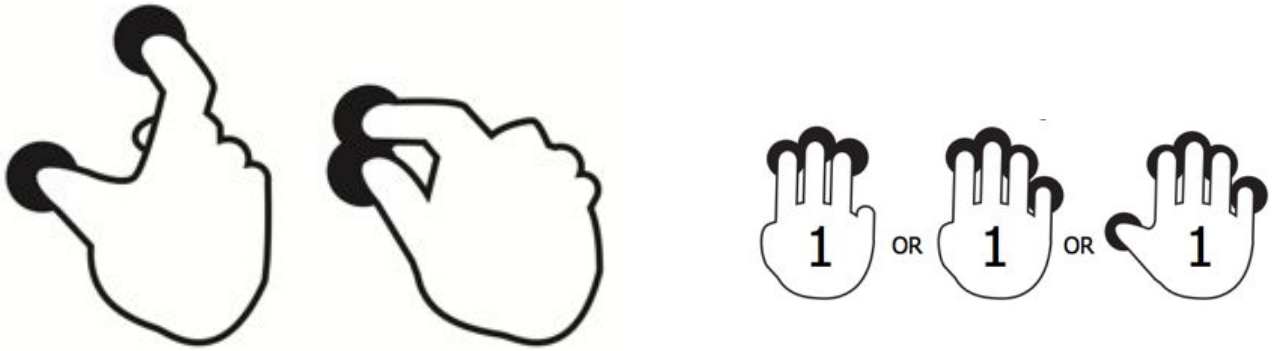


Flick

Quickly brush surface with fingertip.

Pinch

Touch surface with two fingers and bring them closer together.



Spread

Touch surface with two fingers and move them apart.

Press

Touch surface for extended period of time.

Press & Tap

Press surface with one finger and briefly touch surface with second finger.

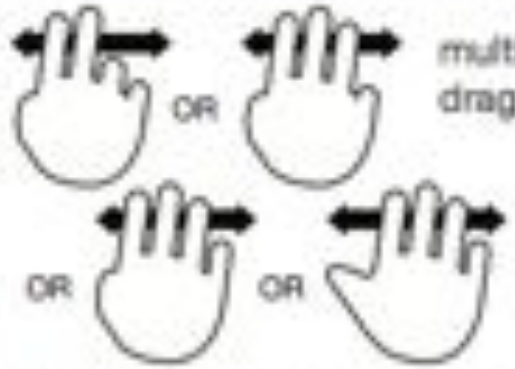
Press & Drag

Press surface with one finger and move second finger over surface without losing contact.

Rotate

Touch surface with two fingers and move them in a clockwise or counterclockwise direction.

user action	gesture	description
Change mode	press	Touch surface for extended period of time
Open	double tap	Rapidly touch surface twice with fingertip
Select	tap	Briefly touch surface with fingertip

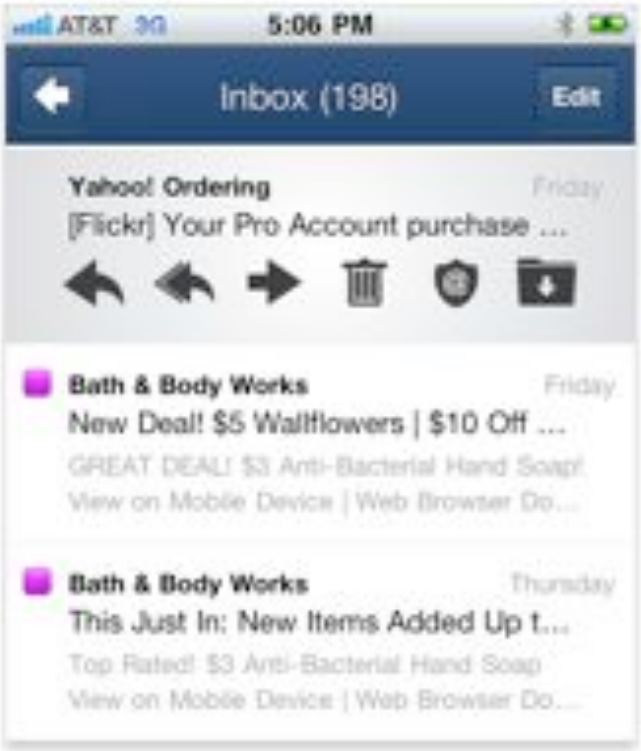
user action	gesture		description
Delete		drag (across item or off-screen)	Move fingertip over surface without losing contact
Duplicate		tap (source and destination)	Touch object, then touch elsewhere on surface
Move		drag (and drop)	Move fingertip over surface without losing contact
		multi-finger drag	Move two to five fingertips over surface without losing contact

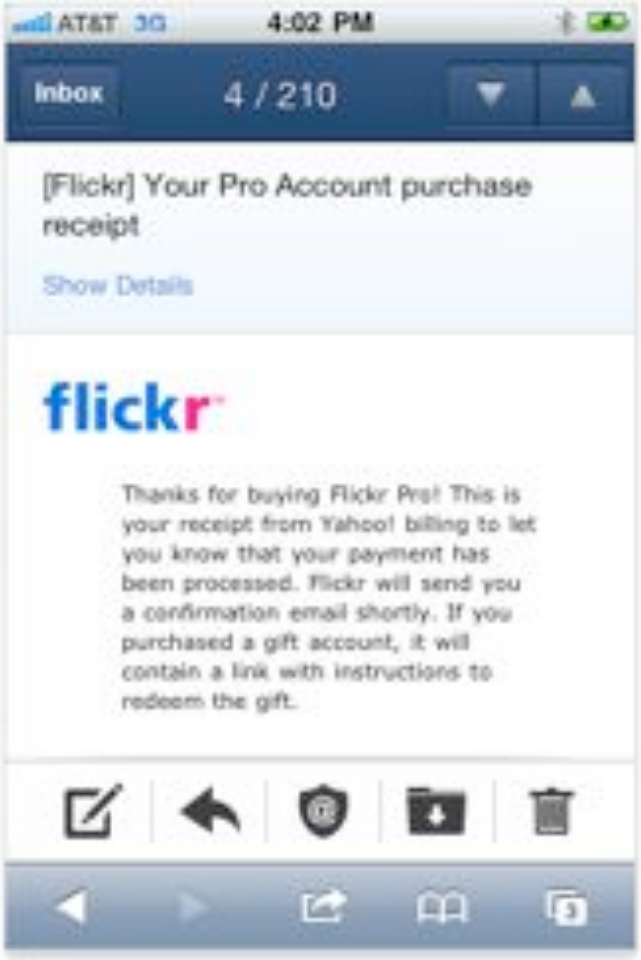
user action	gesture	description
Pan	drag hand	Move fingers and palm of one hand over surface without losing contact
Scroll	drag	Move fingertip over scrollbar without losing contact
	two-finger drag	Move two fingers up or down across surface
	press	Touch scrollbar for extended period of time
Scroll (fast)	flick	Quickly brush surface with fingertip in the direction you want to scroll

www.lukew.com/touch

Drag to Reveal

AT&T 3G
5:06 PM
Inbox (198)
Edit
Yahoo! Ordering
Friday
[Flickr] Your Pro Account purchase r...
Thanks for buying Flickr Pro! This is your receipt from Yahoo! billing to let you know...
Bath & Body Works
Friday
New Deal! $5 Wallflowers | $10 Off ...
GREAT DEAL! $3 Anti-Bacterial Hand Soap!
View on Mobile Device | Web Browser Do...
Bath & Body Works
Thursday
This Just In: New Items Added Up t...
Top Rated! $3 Anti-Bacterial Hand Soap
View on Mobile Device | Web Browser Do...


AT&T 3G
5:06 PM
Inbox (198)
Edit
Yahoo! Ordering
Friday
[Flickr] Your Pro Account purchase ...
Bath & Body Works
Friday
New Deal! $5 Wallflowers | $10 Off ...
GREAT DEAL! $3 Anti-Bacterial Hand Soap!
View on Mobile Device | Web Browser Do...
Bath & Body Works
Thursday
This Just In: New Items Added Up t...
Top Rated! $3 Anti-Bacterial Hand Soap
View on Mobile Device | Web Browser Do...


AT&T 3G
4:02 PM
Inbox
4 / 210
[Flickr] Your Pro Account purchase receipt
Show Details
flickr
Thanks for buying Flickr Pro! This is your receipt from Yahoo! billing to let you know that your payment has been processed. Flickr will send you a confirmation email shortly. If you purchased a gift account, it will contain a link with instructions to redeem the gift.

Drag to Refresh

Drag to Reveal

Drag to Reveal

- Feature overview

Natural User Interfaces (NUI)

"NUI exploits skills that we have acquired through a lifetime of living in the World" –Bill Buxton

- Content is the UI (the action)
- Reduce the distance as much as possible between user & content
- Enable direct manipulation of objects & content
- Guessable, predictable, physical, realistic
- Reduce Visuals that are Not Content

Source: http://www.lukew.com/ff/entry.asp?770

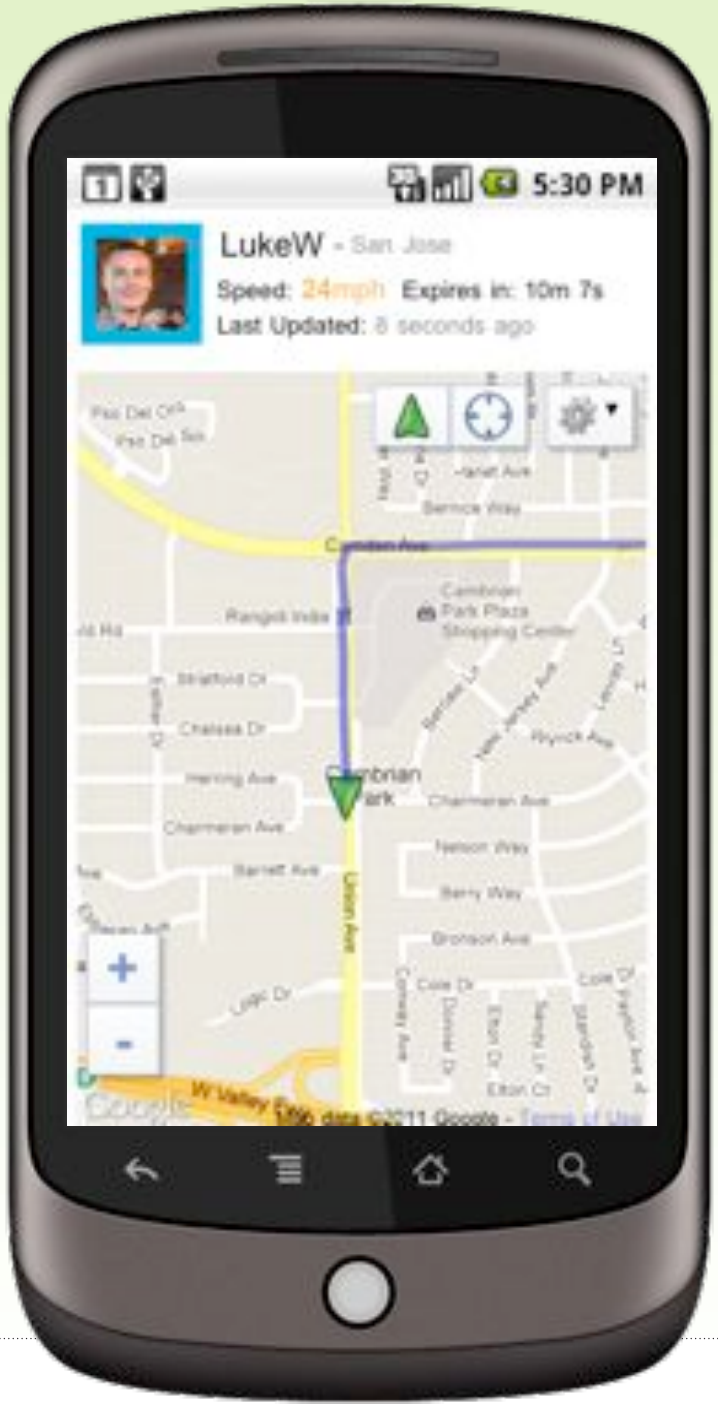
Location Detection

Location Systems

	Accuracy	Positioning Time	Battery Life
GPS	10m	2-10 minutes (only outdoors)	5-6 hours on most phones
WiFi	50m (improves with density)	Almost instant (server connect & lookup)	No additional effect
Cell tower triangulation	100-1400m (based on density)	Almost instant (server connect & lookup)	Negligible
Single Cell Tower	500-2500m (based on density)	Almost instant (server connect & lookup)	Negligible
IP	Country: 99% City: 46% US, 53% Intl ZIP: 0%	Almost instant (server connect & lookup)	Negligible

Smartphones: hybrid of GPS, Wifi, and cell tower triangulation

Laptops/desktops: WiFi, IP, rarely GPS

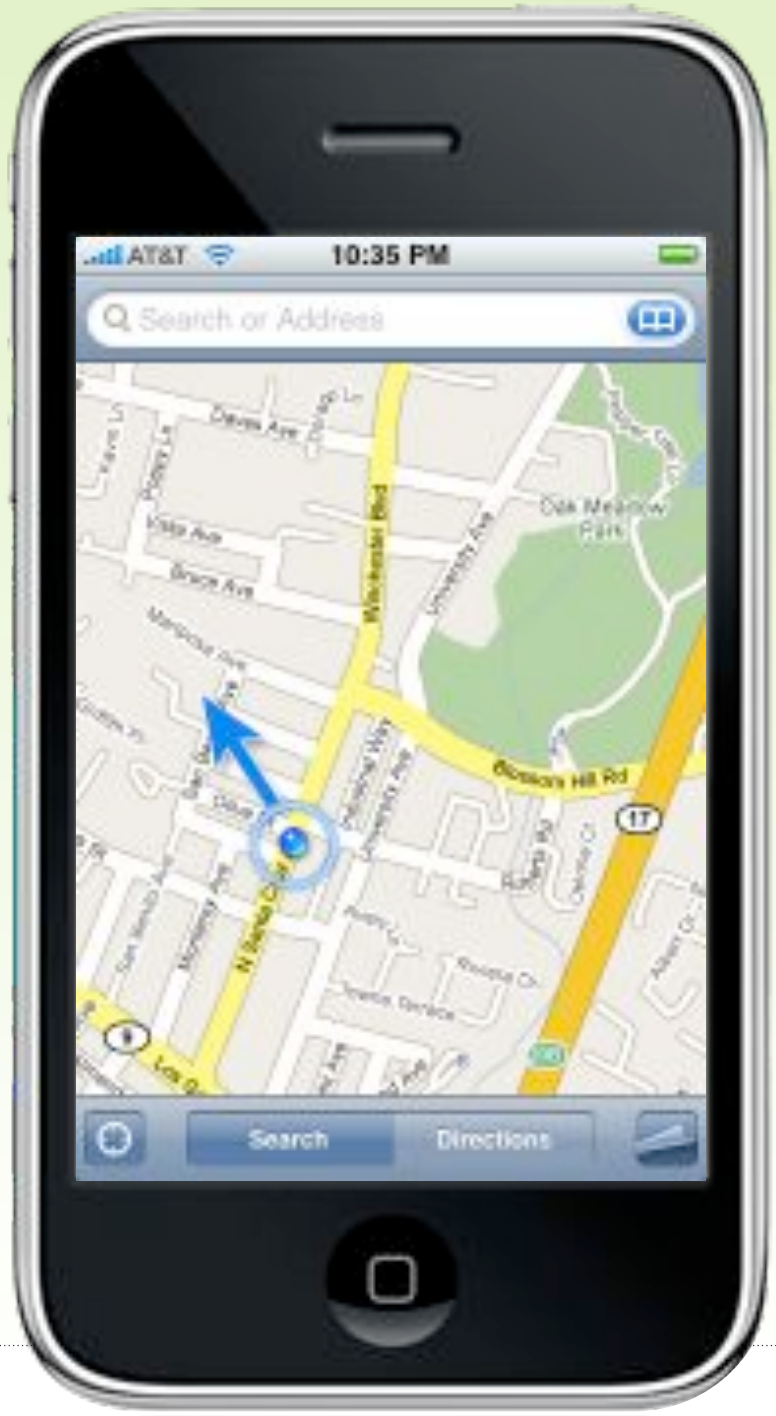


Location Detection

Mobile Device Capabilities

- Device positioning & motion: from an accelerometer
- Gyroscope: 360 degrees of motion
- Location detection
- Multi-touch sensors
- Orientation: direction from a digital compass
- Video & image: capture/input from a camera
- Dual cameras: front and back
- Audio: input from a microphone; output to speaker
- Device connections: through Bluetooth between devices
- Proximity: device closeness to physical objects
- Ambient Light: light/dark environment awareness
- NFC: Near Field Communications through RFID readers

Direction Detection



Location Detection

Transport for London

Accessibility · Help & Contact · Sitemap

Search: Search

Home | Live travel news | Getting around | Tickets | Road users | Corporate | Business & partners

London Underground

Proposed strike action

The RMT and TSSA unions plan a strike which may disrupt Tube services on 3 and 4 October. Check before you travel

- Press release
- Live travel news
- Journey Planner

- Transforming the Tube
- Tube map
- Accessibility
- Planned works
- Art on the Underground
- Refunds
- Oyster
- First and last Tube
- Contact us

Google gadgets

Now add the Tube service updates Journey Planner to Google homepage

Ticket office changes

Find out more about our plans for Tube ticket office opening hours

- Tube
- River
- Cycling
- Rail
- Assisted travel
- Walking
- Buses
- Trams
- Coaches
- DLR
- Driving
- Taxis & minicabs

Service updates

Last update: 17:39

Now | Later, | This weekend

Bakerloo	Good service
Central	Good service
Circle	Good service
District	Good service
H'smith & City	Good service
Jubilee	Good service
Metropolitan	Good service
Northern	Good service
Piccadilly	Minor delays
Victoria	Good service
Waterloo & City	Good service
DLR	Good service
Overground	Good service

More: Buses, Roads, River...

Single fare finder

Get fares for Tube, DLR and Rail services

Maps

ADD TO

Journey Planner

From

Station or stop

To

Station or stop

Advanced options | Leave now

ADD TO

MAYOR OF LONDON · Freedom of information · Jobs · Media · Terms and conditions

© Transport for London

Maps

Tube

- All Tube maps
- Standard tube map (PDF 0.21MB)
- Large pr…be map (PDF 0.41MB)
- Step-fre… guide (PDF 0.20MB)
- Interactive …

Bus

- Bus maps

Searchable map showing bus stops and bus routes

- Bus spider maps

Simplified bus spider maps by area

DLR

- All DLR maps
- DLR System map (PDF 0.12MB)

Cycling

- All Cycling maps
- Barclays Cycle Hire
- Cycle Journey Planner
- Free local cycle guides

Tram

- All Tram maps
- Tramlink user guide (PDF 1.78MB)

Rail

- All Rail maps
- Oyster rail services map (PDF 0.26MB)

Visitors and tourists

- All Visitor and

River

Journey Planner

From

Station or stop

To

Station or stop

Advanced options | Leave now

ADD TO

Results by Yell.com

Rock Wine Bar & Restaurant
A Fine Afro-Caribbean Restaurant In Croydon, London, Specialise In Grill Food.
Croydon & Sutton

Frere Jacques
Authentic French Cuisine - In The Heart Of Kingston - Beautiful River Views
Kingston - Inc. Wimbledon & Esher

Egham Indian Takeaway
Full Indian menu restaurant, quality takeaway service, licensed bar
Richmond & Twickenham

Masala Lounge
12345
Enfield & Barnet

Jasper Littman Tailoring
Bespoke Visting Tailors, Savile Row Quality, Using The Finest Fabrics, At Home or Office
London Central

Tube map

Key to lines
Check before you travel
MAYOR OF LONDON
tfl.gov.uk
020 7222 1234
Transport for London

Source: AcrossAir

When discovered by users boosted their sustained traffic by 40 to 50 percent.

“It was sort of beyond our expectations. We had no idea.”

Yelp CEO,
Jeremy Stoppelman

Native App

- Location detection
- Device orientation
- Digital compass
- Video camera access

Mobile Web

- Location detection
- Device orientation
- Digital compass

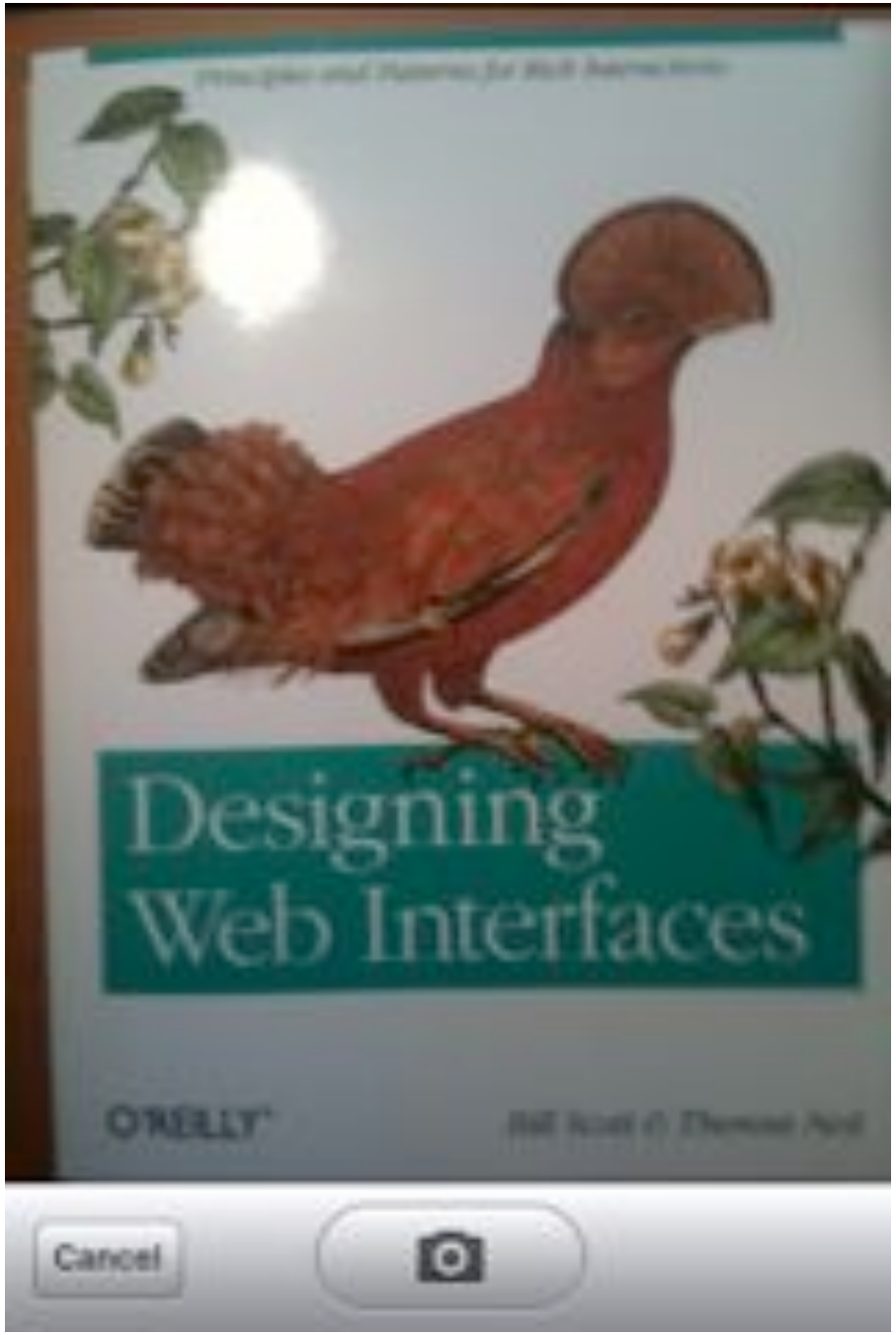
Android 3.0 (ish)

HTML Media Capture
Allows web applications to access audio, image and video capture capabilities of the device.

SCAN TO CHECKOUT

Flickr photo by Nokia Point & Find

LUKEW
IDEATION + DESIGN


Designing
Web Interfaces
O'REILLY
Cancel

AT&T
5:12 PM
My Snaps
SnapTell
More
Designing Web Interfaces: Principles and Patterns for Rich Interactions (Paperback)
(15)
Online prices (2) from $31.49
Local prices (1) from $35.99
Amazon.com
Google
Wikipedia
eBay

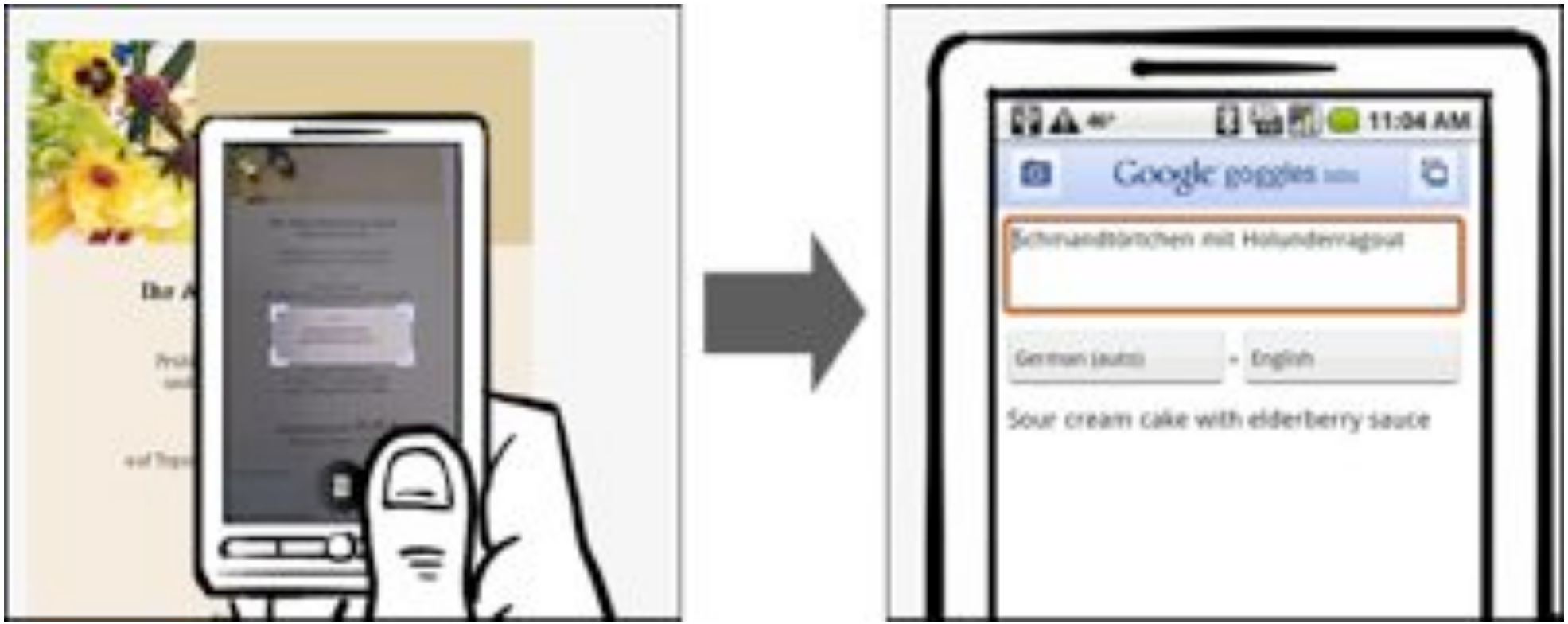
Google maps
We're a
Favorite
place
on Google

Cancel

AT&T
5:10 PM
Google Web Images Local more
Kasa Indian Restaurant - Indian Food Delivery
4001 18th Street
San Francisco, CA 94114
www.kasaindian.com - web site
14 reviews
KASA
"Kasa was a nice take on Indian 'fast food'." ... "San Francisco likes Indian food." ... "The portions were very generous and tasted really good." ... "And besides, who needs ambiance with an idea this good?" ... "I'm a little obsessed with Kasa...it's that good!" ... "I am hooked!"
insiderpages.com, citysearch.com
(415) 621-6940
Map »
Details
Hours Of Operation: Monday: 11:00AM - 10:00PM,

Images as Input

Google goggles labs

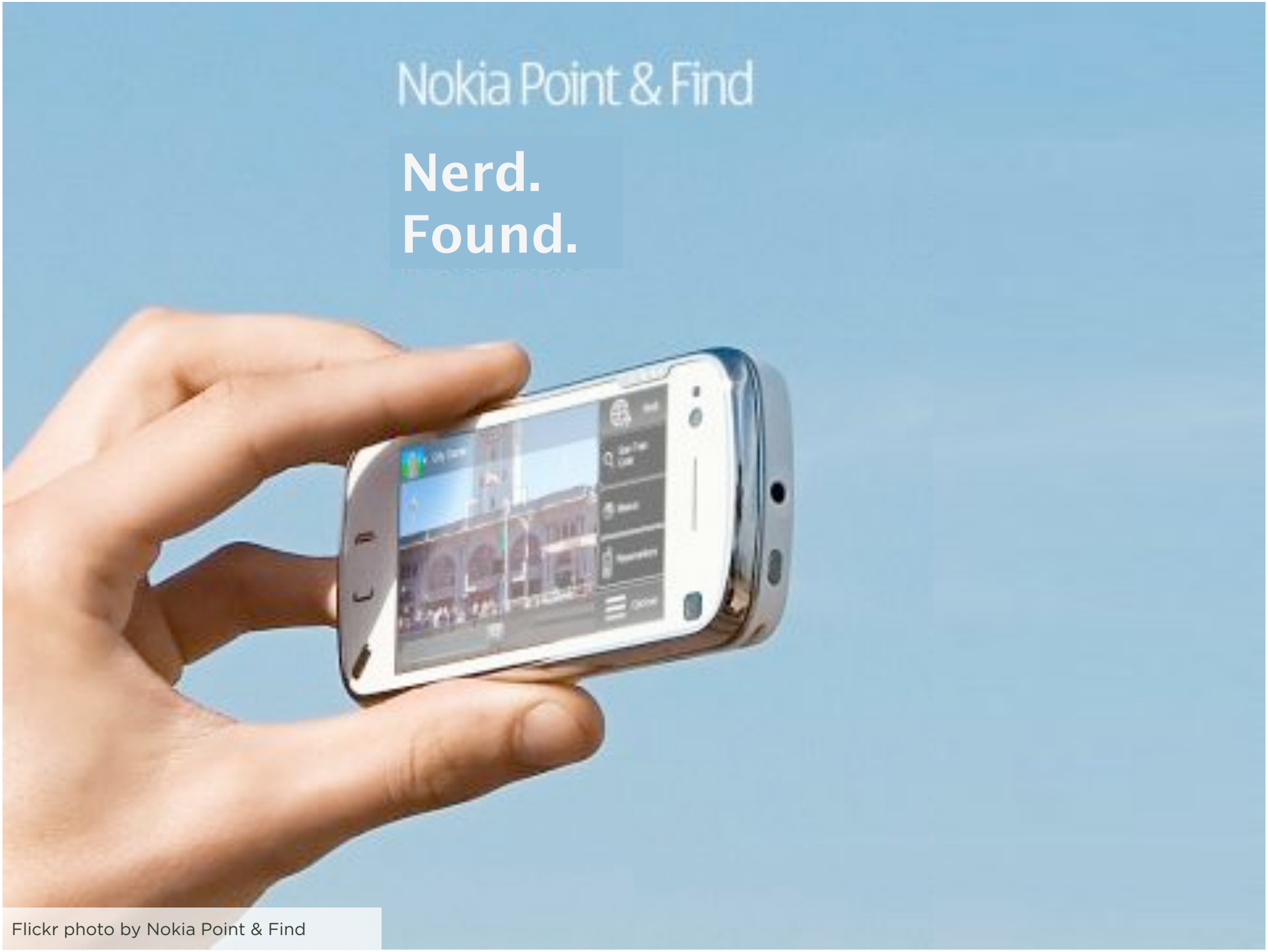


Images as Input & Output

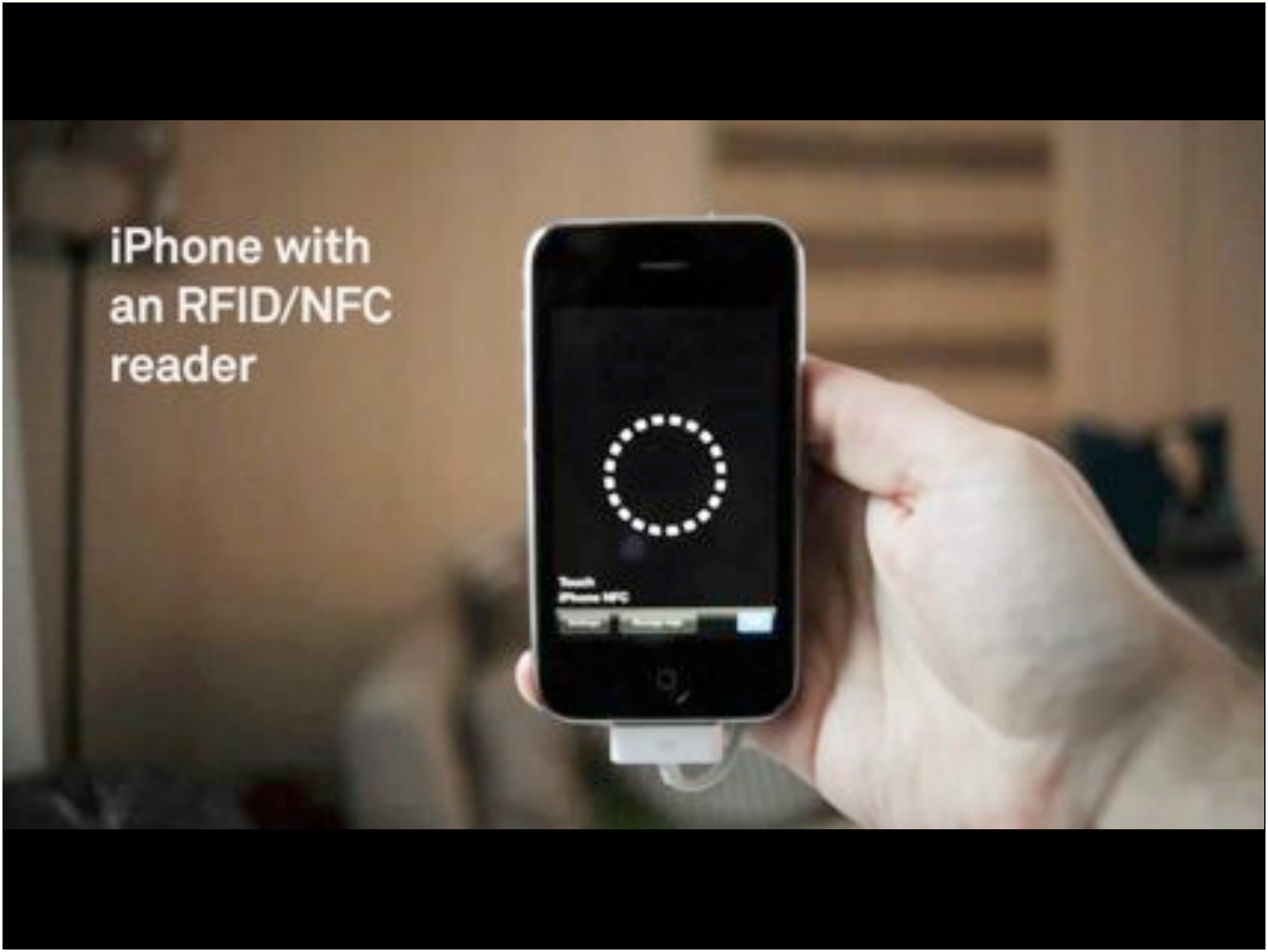
Images as Input

card.io

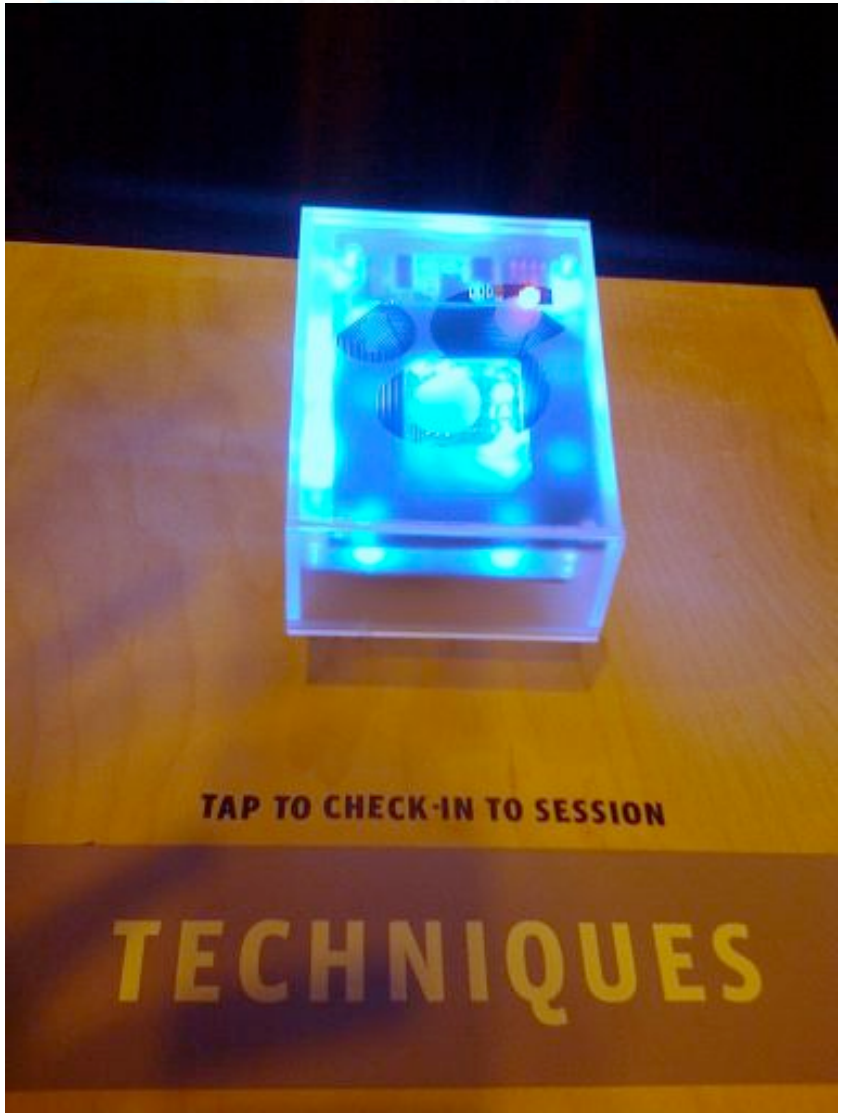
Images as Input



Flickr photo by Nokia Point & Find


iPhone with
an RFID/NFC
reader

Link your token with your Facebook account
Enter number on back of Token:
Enter Token number...
841266923
Link Token


TAP TO CHECK-IN TO SESSION
TECHNIQUES

Mobile Device Capabilities

- Device positioning & motion: from an accelerometer
- Gyroscope: 360 degrees of motion
- Location detection
- Multi-touch sensors
- Orientation: direction from a digital compass
- Video & image: capture/input from a camera
- Dual cameras: front and back
- Audio: input from a microphone; output to speaker
- Device connections: through Bluetooth between devices
- Proximity: device closeness to physical objects
- Ambient Light: light/dark environment awareness
- NFC: Near Field Communications through RFID readers

MOBILE FIRST

1. GROWTH = OPPORTUNITY
2. CONSTRAINTS = FOCUS
3. CAPABILITIES = INNOVATION

MOBILE FIRST

- @lukew
- www.lukew.com

Mobile First!

- abookapart.com

LUKEW
IDEATION + DESIGN