MOBILE PLANET

@lukew

AN EVENT APART

LUKE WROBLEWSKI
Earth

3rd planet from sun
7.6B
Global population

2018 population estimates based on 2016 World Bank WDI data
7.6B
Global population

5.6B
Addressable market
(14+ yr olds)

2018 population estimates based on 2016 World Bank WDI data
7.6B
Global population

5.6B
Addressable market (14+ yr olds)

5B
Mobile subscribers

Source: Mobile subscribers https://www.gsmaintelligence.com
7.6B Global population

5.6B Addressable market (14+ yr olds)

5B Mobile subscribers

3.5B Active smartphones

Sources: Apple earnings Q12018, Andreessen Horowitz estimates, Google I/O 2017
7.6B Global population

5.6B Addressable market (14+ yr olds)

5B Mobile subscribers

1.3B Active PCs

3.5B Active smartphones

1.2B Windows
700M Windows 10
100M Mac OS

Sources: Microsoft earnings Q12018, Apple Inc. 2017 https://tcrn.ch/2nzDgGZ
7.6B Global population

5.6B Addressable market (14+ yr olds)

5B Mobile subscribers

3.5B Active smartphones

Sources: Apple earnings Q12018, Andreessen Horowitz estimates, Google I/O 2017
7.6B
Global population

5.6B
Addressable market (14+ yr olds)

5B
Active smartphones by 2023
Global population projected by 2023: 8B

Addressable market (14+ yr olds) by 2023: 5.8B

Active smartphones by 2023: 5B

2023 population estimates based on United Nations data
7.6B Global population

5.6B Addressable market (14+ yr olds)

5B Mobile subscribers

3.5B Active smartphones

Sources: Apple earnings Q12018, Andreessen Horowitz estimates, Google I/O 2017
3.5B
Active smartphones

25%
Active smartphones
1.4B active Apple devices, Q1 2019
100M Mac OS
350M iPads
950M iPhones

75%
Active smartphones
2B active Android devices, 2017 excluding China (est. 550M)
10% tablets

Source: Apple earnings Q12018, Andreessen Horowitz estimates, Google I/O 2017
3.5B Active smartphones

15% Worldwide shipments
4.25 year lifespan, 2018

85% Worldwide shipments
2 year lifespan, 2014

### Active smartphones

- **3.5B**

### Market Penetration

<table>
<thead>
<tr>
<th>MARKET</th>
<th>PENETRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>52%</td>
</tr>
<tr>
<td>India</td>
<td>22%</td>
</tr>
<tr>
<td>United States</td>
<td>69%</td>
</tr>
<tr>
<td>Brazil</td>
<td>38%</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>55%</td>
</tr>
<tr>
<td>Japan</td>
<td>50%</td>
</tr>
<tr>
<td>Germany</td>
<td>69%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>20%</td>
</tr>
<tr>
<td>Mexico</td>
<td>41%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>69%</td>
</tr>
</tbody>
</table>

Source: Newzoo Global Mobile Market Report, April 2017

lots more room to grow
U.S. Retail Shopping

Source: http://bloom.bg/2jrR5q8
U.S. Advertising Revenue

Music Industry Revenues in U.S.

Source: Record Industry of America, 2017
Digital Transitions

US RETAIL SHOPPING

on-line retailers
department stores
3.5B
Active smartphones

• still growing planet-scale opportunity
• with two major platforms
• shifting whole industries to digital
3.5B
Active smartphones

3HR
Spent per day

MOBILE TIME SPENT BY US ADULTS

2.3
HOURS PER DAY
Source: comScore Mobile Metrix, U.S. Age 18+, June 2017

2.8
HOURS PER DAY
Source: Nielsen Total Audience Report, U.S. Age 18+, Q1 2017

3.3
HOURS PER DAY
Source: eMarketer, U.S. Age 18+, Sept. 2017
Average Time Spent Per Day by US Adults

Time spent on mobile has surged while time spent on other media has only slowly declined.

Source: eMarketer, April 2016 (simultaneous multiple device use counted in multiple device categories)
Average Time Spent Per Day, 18+ in US

time spent on mobile has surged

while time spent on other media has only slowly declined

Source: Nielsen, Q1 2017 Total Audience Report
Average Time Spent Per Day by US Adults

Radio listening gradually transitioning to mobile and perhaps video viewing too?

Source: eMarketer, April 2016 (simultaneous multiple device use counted in multiple device categories)
3.5B
Active smartphones

3HR
Spent per day

169min
MOBILE APPS

11min
MOBILE WEB BROWSERS

comScore 2017 U.S. Mobile App Report
Native Mobile Apps

2.2M in Apple App Store

2.8M in Google Play Store

nearly 2 smartphone apps are downloaded every month per human being on Earth

MOBILE APPS
Native Mobile Apps

but people only use one-third to one-half of the apps on their phone per month

Native Mobile Apps

- 25% are abandoned after first time use
- 34% are opened 11 times or more
- -77% AVG. DAILY ACTIVE USER LOSS IN 1ST 3 DAYS OF INSTALL
- -95% AVG. DAILY ACTIVE USER LOSS 90 DAYS AFTER INSTALL

Native Mobile Apps

**AVG. DAILY ACTIVE USER LOSS IN 1ST 3 DAYS OF INSTALL**

-77%

**AVG. DAILY ACTIVE USER LOSS 90 DAYS AFTER INSTALL**

-95%

The graph shows the mobile app retention rate over time, with a significant drop in daily active users within the first 3 days after installation, and an even more drastic decrease after 90 days. The situation gets worse over time, as indicated by the downward trend in the graph.
Native Mobile Apps

MOBILE APP RETENTION

so to improve retention apps usually turn to...

PUSH NOTIFICATIONS
APP ONBOARDING

Source: https://bit.ly/2dvndVz
PUSH NOTIFICATIONS

Messages that pop up on a mobile device. Can be sent any time as people don’t have to be in on app/device to receive them.
SIX MONTH APP RETENTION RATES

PUSH NOTIFICATIONS

MONTH 0  MONTH 2  MONTH 4  MONTH 6

higher with push notifications

WITH PUSH

WITHOUT PUSH

WITH PUSH

LUKEW
IDEATION + DESIGN

31
APP ONBOARDING

Overview of features and/or list of benefits
Customers felt lost & weren’t sure which option they should choose first.
How SmartPayroll Works

1. You enter your worker’s hours and other wages

2. We do the math & show you what to pay your worker

3. You pay via check, or via direct deposit (for a small fee)

4. View your check history and payroll taxes at any time

Get Started

Source: http://j.mp/1nRsiZi
INTRO TOUR

No one read the screens. They immediately skipped over them.
Comments included: “I just want to make this get out of my way.”
JUST-IN-TIME TIP

Customers had a good sense of what was available to them and a clear first step.

Source: http://j.mp/1nRsiZi
ALL NEW REAL-TIME FEED
Watch your daily favorites and custom playlists in a constantly updated feed.

VEVO TV - NEW CHANNELS!
Pop, hip-hop, and country fans will love the mix on HIT, FLOW, and NASHVILLE. Don’t like what’s on? Change the channel.

CUSTOM FIT TO MATCH YOUR TASTES
Match artists and songs from your iOS music library to VEVO videos. Create and share playlists with your friends.

SIGN IN FOR A BETTER VIDEO EXPERIENCE.

10% INCREASE IN SUCCESSFUL LOG INS
6% INCREASE IN COMPLETED SIGN UPS

41%

Source: https://www.slideshare.net/kendrickapp/hotel-tonight-mobile

15% INCREASE IN CONVERSIONS
Ruthlessly edit. Even when you have the slimmest funnel, cut again.

Amanda Richardson, Hotel Tonight
BEFORE

AFTER

get people to core value
as soon as possible
get people to core value as soon as possible

this, of course, requires knowing what your core value/action is
BEFORE

AFTER

get people to core value as soon as possible
Customers had a good sense of what was available to them and a clear first step.
tooltip overlay

integrated UI
We see overlay avoidance consistently in the research we conduct with mobile users. Especially when people are task focussed. Then when they do come to use a new function they can’t find the help and don’t recall seeing the help previously.

Lisa Duddington
Co-founder, Keep It Usable
We saw this all the time at Facebook. People very often, instinctively, dismiss tooltips. On occasion even accidentally. By the time they realize the message may have been helpful, it’s already gone and there’s no way to recover it.

Tanner Christensen
Product Designer, Facebook
"We made our "scan" button huge and different color from the rest of the nav menu and users entirely ignored it."

Miles Skorpen
Head of Business Development, Red Laser
make primary action “pop”

primary action integrated with UI
foreign to app UI so almost instantly dismissed

visual/interaction fit with app UI
SUCCESSFUL ONBOARDING

Get to product value as fast as possible—but not faster

Source: https://bit.ly/2skdEAc
SUCCESSFUL ONBOARDING

Remove all friction that distracts the user from experiencing product value

Source: https://bit.ly/2skdEAc
SUCCESSFUL ONBOARDING

Don’t be afraid to educate contextually but do so with integrated UI

Source: https://bit.ly/2skdEAc
Product onboarding

- Get to product value asap—but not faster
- Ruthlessly edit distractions from product value
- Teach in the moment with integrated UI
3.5B
Active smartphones

3HR
Spent per day

169min
MOBILE APPS

11min
MOBILE WEB BROWSERS
comScore 2017 U.S. Mobile App Report

- **Mobile Apps**: 169 min
- **Most Used App**: 82.8 min (49% of time spent)
- **Next 4 Most Used Apps**: 49 min
- **Next 6 Most Used Apps**: 30.4 min
- **All Other Apps**: 6.8 min
- **Mobile Web Browsers**: 11 min

- 78% of time spent is in top 5 apps
- 96% of time spent is in top 10 apps

58% of time is spent in the most used app, with the next four apps accounting for another 21% of time spent.
Monthly Unique Visitors

MOBILE APP  4.0M

MOBILE WEB  11.4M

It’s easier to build large audiences on the Web

Source: comScore Mobile Metrix, U.S., Age 18+, June 2016
It’s easier to build large audiences on the Web.

But native app users spend 20x more time.

Source: comScore Mobile Metrix, U.S., Age 18+, June 2016
It's easier to build large audiences on the Web

But native app users spend more time
It’s easier to build large audiences on the Web

But native app users spend more time
3.5B Active smartphones

3HR Spent per day

- are additive & mostly within native apps
- where onboarding can help retain users
- and the Web can help attract them
3.5B
Active smartphones

3HR
Spent per day

80x
Times used per day

80x
per day, people log into their iPhones

76x
separate phone sessions a day (Android study)

Source: Apple Computer Inc. | http://dailym.ai/1GPs1mm | http://bit.ly/29mTe1f
### AVG. SLEEP TIME GLOBALLY

<table>
<thead>
<tr>
<th>Country</th>
<th>Hours per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>530</td>
</tr>
<tr>
<td>United States</td>
<td>518</td>
</tr>
<tr>
<td>Spain</td>
<td>514</td>
</tr>
<tr>
<td>New Zealand</td>
<td>513</td>
</tr>
<tr>
<td>Turkey</td>
<td>512</td>
</tr>
<tr>
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</tr>
<tr>
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<td>508</td>
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<td>503</td>
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<td>Norway</td>
<td>501</td>
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<tr>
<td>Japan</td>
<td>498</td>
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<tr>
<td>South Korea</td>
<td>492</td>
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<tr>
<td>Japan</td>
<td>486</td>
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<tr>
<td>Germany</td>
<td>483</td>
</tr>
<tr>
<td>Norway</td>
<td>470</td>
</tr>
<tr>
<td>Turkey</td>
<td>469</td>
</tr>
</tbody>
</table>

### Source:
Organization for Economic Cooperation and Development, 2009

**3.5B**
Active smartphones

**3HR**
Spent per day

**80x**
Times used per day
AVG. SLEEP TIME GLOBALLY

8.3

HOURS PER DAY
Source: Organization for Economic Cooperation and Development, 2009

<table>
<thead>
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<td></td>
<td>512</td>
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<tr>
<td></td>
<td>507</td>
</tr>
<tr>
<td></td>
<td>505</td>
</tr>
</tbody>
</table>

12

WAKING MINUTES PER USE

<table>
<thead>
<tr>
<th>Country</th>
<th>MWK/MIN</th>
</tr>
</thead>
<tbody>
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<td>United Kingdom</td>
<td>503</td>
</tr>
<tr>
<td>Mexico</td>
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<td>470</td>
</tr>
<tr>
<td>South Korea</td>
<td>469</td>
</tr>
</tbody>
</table>
more than half of sessions are 30secs or less

of smartphone app usage lasts less than 15sec.

Sources: http://bit.ly/29mTe1f
Contextual Experience Sampling of Mobile Application Micro-Usage
What do you dislike most when browsing Web on mobile?

- Waiting for slow pages to load: 46%
- Being shown interstitials: 16%
- Encountering unplayable videos: 14%
- Getting redirected to the homepage: 13%
- Other: 11%

Experiencing mobile delays

Standing at the edge of a virtual cliff

Watching a melodramatic TV show

Waiting in line at retail store

Solving a math problem

Watching a horror movie

Source: Ericsson ConsumerLab, Neurons Inc. 2015

The level of stress caused by mobile delays is comparable to watching a horror movie.
progress indicator

skeleton screens

Focus on the progress


Not the indicator
Skeleton Screens

FACEBOOK

SLACK

MEDIUM
videos are annotated with icon & length

grid reflects proportions of images before they load
 fade-in preview as images load

content loading changes dynamically (loads where you’re scrolling to, not from)
3.5B
Active smartphones

3HR
Spent per day

80x
Times used per day

- many short sessions per day
- so speed really matters
- show progress not progress indicators
3.5B Active smartphones
3HR Spent per day
80x Times used per day
32 Touches per use

2.6K phone touches (keystrokes, taps) per day

Source: https://blog.dscout.com/mobile-touches
average user
2,617 average daily touches
145 average daily minutes

heavy user
5,427 average daily touches
225 average daily minutes

Source: https://blog.dscout.com/mobile-touches
pretty much all day
Number of Apps per Active Session

Once again focused in very few apps.
Number of Apps per Active Session

- Mobile Apps: 169 min
- Most Used App: 82.8 min
- Next 4 Most Used Apps: 49 min
- Next 6 Most Used Apps: 30.4 min
- All Other Apps: 6.8 min

49% of time spent is in most used app.

Source: https://blog.dscout.com/mobile-touches
Smartphone Posture

90% you're dealing with a thumb
Global Device Orientation

Smartphones
3”-7” SCREENS
90% PORTRAIT

Small Tablets
7”-9” SCREENS
52% PORTRAIT

Large Tablets
9”-12” SCREENS
60% LANDSCAPE

Source: ScientiaMobile, Q2 2017
as phone size increases getting to controls on top is harder

OPERA TOUCH

Designed to let you explore the web using just one hand.
3.5B
Active smartphones

3HR
Spent per day

80x
Times used per day

32
Touches per use

• one-handed/one-thumb use
• in portrait mode on large screens
• design accordingly
7.6B
Global population

1.3B
Active PCs

5.6B
Addressable market (14+ yr olds)

5B
Mobile subscribers

3.5B
Active smartphones
Devices and the Product Lifecycle

- **Emergent**: Many Players, still working out biz models
- **Growth Market**: Double digit growth, Ends with consolidation
- **Mature Market**: Slow Migration, Brand Allegiance
- **Declining Market**: Disruptor

Model: Tom Chi, 2008
Emergent

Many Players, still working out biz models

Growth Market

Double digit growth, Ends with consolidation

Mature Market

Slow Migration, Brand Allegiance

Declining Market

hand computers (smartphones, tablets)

desk computers (desktops, laptops)

Model: Tom Chi, 2008
Worldwide Device Shipments

Source: Gartner, Worldwide Devices Shipments & IDC Worldwide Smartphone + Tablet Shipments
Devices and the Product Lifecycle

- **Emergent**
  - Many Players, still working out biz models

- **Growth Market**
  - Double digit growth, Ends with consolidation

- **Mature Market**
  - Slow Migration, Brand Allegiance

- **Declining Market**
  - desk computers
    - (desktops, laptops)
  - hand computers
    - (smartphones, tablets)
  - wrist computers
    - (smartwatches)
  - voice computers
    - (smart speakers)

Model: Tom Chi, 2008
Smartwatch vs. Smartphone Daily Usage

smartwatches are used more often per day than smartphones

smartwatch sessions are shorter and more frequent

smartphone sessions are longer and less frequent

Source: Quantifying Sources and Types of Smartwatch Usage Sessions, 2016
Daily Usage of Screen Time

small screens are used more frequently but for shorter periods of time

big screens are used less frequently but for longer periods of time

Source: Quantifying Sources and Types of Smartwatch Usage Sessions, 2016

Source: Device Use and Engagement, Verto Analytics 2017
## Apple Watch

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>% OF USAGE</th>
<th>% OF TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watch Face</td>
<td>50%</td>
<td>20%</td>
</tr>
<tr>
<td>Notification</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>Unknown*</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td>Workout Timer</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>Notification Center</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>Activity</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>Workout</td>
<td>2%</td>
<td>4%</td>
</tr>
</tbody>
</table>

### Source:
Mobile Life Research Centre, University of Stockholm
* Screen not seen in study (by camera)

## Amazon Echo

<table>
<thead>
<tr>
<th>ACTION</th>
<th>% ~USE WEEKLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Timer</td>
<td>56%</td>
</tr>
<tr>
<td>Check Weather</td>
<td>55%</td>
</tr>
<tr>
<td>Play Song</td>
<td>52%</td>
</tr>
<tr>
<td>Control Lights</td>
<td>44%</td>
</tr>
<tr>
<td>Set Alarm</td>
<td>30%</td>
</tr>
<tr>
<td>Connect Music</td>
<td>27%</td>
</tr>
<tr>
<td>News</td>
<td>24%</td>
</tr>
</tbody>
</table>

### Source:
Voice Assistant 2.0 Research Study, June 21, 2017
http://creativestrategies.com/research-study-voice-assistant-2-0/

## Google Home

<table>
<thead>
<tr>
<th>ACTION</th>
<th>% ~USE WEEKLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Play Song</td>
<td>59%</td>
</tr>
<tr>
<td>Check Weather</td>
<td>51%</td>
</tr>
<tr>
<td>Set Timer</td>
<td>48%</td>
</tr>
<tr>
<td>Connect Music</td>
<td>46%</td>
</tr>
<tr>
<td>Search Internet</td>
<td>40%</td>
</tr>
<tr>
<td>Control Lights</td>
<td>30%</td>
</tr>
<tr>
<td>News</td>
<td>28%</td>
</tr>
</tbody>
</table>

### Source:
Voice Assistant 2.0 Research Study, June 21, 2017
http://creativestrategies.com/research-study-voice-assistant-2-0/
“...and we are calling it Apple Watch.”
Amazon Echo Evolution

AMAZON'S FIRST GEN VOICE UI

input: voice

output: screen

AMAZON'S NEXT GEN VOICE UI
Devices and the Product Lifecycle

- **Emergent**
  - Many Players, still working out biz models

- **Growth Market**
  - Double digit growth,
    Ends with consolidation

- **Mature Market**
  - Slow Migration,
    Brand Allegiance

- **Declining Market**
  - Hand computers
    (smartphones, tablets)
  - Desk computers
    (desktops, laptops)
  - Wrist computers
    (smartwatches)
  - Voice computers
    (smart speakers)
  - Face computers
    (AR/VR glasses, HMDs)
VR  VIRTUAL REALITY
MR  MIXED REALITY
AR  AUGMENTED REALITY

DIGITAL WORLD
DIGITAL OBJECTS

REAL WORLD
DIGITAL OBJECTS

REAL WORLD & OBJECTS
DIGITAL INFORMATION & ACTIONS
Bleach as needed
Tumble dry, low heat
Iron or steam, medium heat
Do not dryclean
Simple Linear Equations (A)

Solve for each variable.

1. $3z + 4 = 34$
   \[ z = 10 \]
2. $2u + 10 = 22$
   \[ u = 6 \]
3. $2y + 1 = 17$
4. $3x + 2 = 5$
   \[ x = 1 \]
5. $3z + 5 = 8$
   \[ z = 1 \]
6. $2a + 4 = 14$
   \[ a = 5 \]
7. $2x + 5 = 23$
8. $2c + 6 = 18$
9. $2t + 3 = 23$

LUKESW
IDEATION + DESIGN
“convert”
“listen”
“order more”
31 min biking for 170 calories

31 min biking to burn 180 calories
press ring on index finger...

...to activate voice command mode

low physical effort due to close thumb proximity & range of motion, visually discrete, minimal unintended/accidental actions
Devices and the Product Lifecycle

Emergent
- Many Players, still working out biz models

Growth Market
- Double digit growth, Ends with consolidation

Mature Market
- Slow Migration, Brand Allegiance

Declining Market
- End with consolidation

- **face computers** (AR/VR glasses, HMDs)
- **wrist computers** (smartwatches)
- **voice computers** (smart speakers)
- **hand computers** (smartphones, tablets)
- **desk computers** (desktops, laptops)
7.6B Global population

5.6B Addressable market (14+ yr olds)

5B Mobile subscribers

3.5B Active smartphones

Sources: Apple earnings Q12018, Andreessen Horowitz estimates, Google I/O 2017
8B  
Global population projected by 2023

5.8B  
Addressable market (14+ yr olds) by 2023

5B  
Active smartphones by 2023

2023 population estimates based on United Nations data
3.5B
Active smartphones

3HR
Spent per day

80x
Times used per day

32
Touches per use

- it’s a mobile planet
- design for actual usage/behaviors
- prep for what’s next
THANKS

@lukew