Mobile is eating the world

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May 2015
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MOBILE IS EATING THE WORLD

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May 2015
Mobile is making technology universal
Growth into the bubble

Billion people online

Source: ITU, a16z
Growth since the bubble

Billion people online

Source: ITU, a16z
Growth into the future - everyone

Another 1bn people will come online, all due to smartphones

Source: ITU, a16z
The end of the unconnected

Smartphones drive much greater internet penetration

Source: a16z, World Bank, Apple, Google, Nokia
The world in 2020

By 2020 80% of adults on earth will have a smartphone

Source: World Bank, GSMA, a16z
An iPhone 6 CPU has 625 times more transistors than a 1995 Pentium.

iPhone 6 launch weekend: Apple sold ~25x more CPU transistors than were in all the PCs on Earth in 1995.

Everyone gets a pocket supercomputer.

Source: Apple, Intel, a16z
Yes, everyone

The utility of mobile increases as income falls

Sub-Saharan Africa population coverage

<table>
<thead>
<tr>
<th>Service</th>
<th>Coverage</th>
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</thead>
<tbody>
<tr>
<td>Cellular coverage</td>
<td>70%</td>
</tr>
<tr>
<td>3G coverage now</td>
<td>20%</td>
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<tr>
<td>3G coverage by 2019</td>
<td>50%</td>
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<tr>
<td>Improved water</td>
<td>40%</td>
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<tr>
<td>Electricity</td>
<td>25%</td>
</tr>
<tr>
<td>Mobile users</td>
<td>80%</td>
</tr>
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</table>

Source: Ericsson, McKinsey
$35 Android takes computing everywhere

Cost of power and connectivity becomes as material as the cost of the device

Source: Barclays Capital, Apple, a16z
We go from this...

Source: James Cridland (https://www.flickr.com/photos/jamescridland/612782641)
... To this

Source: Alan Knott-Craig
Mobile remakes the tech industry
The smartphone industry dwarfs PCs

4bn people buying phones every 2 years instead of 1.6bn buying PCs every 5 years

Source: Gartner, Apple, Google, a16z
Phones have scale that’s unique in tech

The first tech product to be bought by almost everyone on earth, every 2-3 years

Unit sales, 2014 (bn)

Source: CIPA, Displaysearch, Gartner, companies, a16z
Mobile scale eats consumer electronics

Smartphones & tablets are now close to half of the consumer electronics industry

Source: GfK, a16z
Shift away from Microsoft

Microsoft’s near-absence from mobile has ended its dominance

Microsoft share of personal computing device sales*

* Smartphones, tablets, PCs & Macs. Source: Gartner, Apple, Google, Microsoft, Nokia, Blackberry, a16z
China is the biggest smartphone market

Historic dominance starting to shift

Source: CNNIC, US Census Bureau, Eurostat
Chinese handset players growing fast

Chinese brands are stronger than any foreign company – except Apple

What phone brands do Chinese teenagers want? (Q4 2014)

- iPhone, 34%
- Xiaomi, 20%
- MEIZU, 11%
- Samsung, 8%
- Huawei, 4%
- Other, 23%

Apple has 15% of the overall market (same as global) - but much stronger brand appeal

New Chinese OEMs with premium positioning are growing fast

Source: Baidu
Tech center of gravity moves from Seattle and Finland (and Japan)

<table>
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<tr>
<th></th>
<th>Old</th>
<th>New</th>
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<tbody>
<tr>
<td>Computing platform</td>
<td>Microsoft</td>
<td>Apple &amp; Google</td>
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<tr>
<td>Chips</td>
<td>Intel</td>
<td>ARM, Qualcomm, Mediatek</td>
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<tr>
<td>Mobile</td>
<td>Nokia &amp; DoCoMo</td>
<td>China, San Francisco</td>
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</table>
Mobile supply chain dominates all tech

The size of the smartphone business means it is driving into every other part of tech:

- Augmented Reality,
- Virtual Reality,
- Wearables,
- Internet of Things,
- connected cars,
- connected home,
- drones etc

The challenge is vision and route to market.

Flood of smartphone components – Lego for technology

Contract manufacturers can assemble those components into anything

Hardware tech for almost anything is on the shelf
Mobile remakes the internet
The growth of post-PC devices

Smartphones and tablets taking half of browsing and a third of purchasing

Mobile share of 'Black Friday' ecommerce

Source: IBM, a16z
“Mobile” doesn’t really mean mobile

Mobile devices are used everywhere, not just when people are ‘mobile’

Where do you use the internet on your phone? (UK, Q1 2014)

- Both at home and outside: 66%
- Mainly at home: 16%
- Mainly out of home: 9%
- Only out of home: 1%
- Only at home: 8%
For 20 years, ‘internet’ meant web browsers, mouse and keyboard. Mobile ended that.

Half of all time spent online in the USA is in smartphone apps.

Post-Netscape, post-PageRank.
Interaction models are totally unsettled

Rapid innovation and change continues

“I installed an app on my Android smartphone”

“Installed” an “app”? Web apps, APIs, push notifications, messaging, Google Now...

“Android”? Chrome, Xiaomi...

“Smartphone”? Watches, Glass, wearables, TV, tablets...
Platforms are more complex

Ecosystem dynamics depend on where you are and what you’re doing

Mobile platform share, Q4 2014

Source: Facebook, Apple, Google, Gartner, Akamai, a16z
Phones are more sophisticated than PCs

Proliferation of sensors creates far more capability and sophistication than PCs

A computer shouldn’t ask anything that it should know

Sensors profoundly change what a computer can know

Every new sensor creates a new business
Mobile’s multiplier effect

Increased sophistication from mobile is as important as the increase in scale

2-3x more smartphones than PCs by 2020

Personal
Taken everywhere
Frictionless access
Sensors, cameras
Location
Payment
Social platform
Much easier to use

= Vastly bigger opportunity
Facebook’s mobile ad explosion

Mobile ads are now 68% of revenue and brought in $7.4bn in 2014

Source: Facebook, a16z
Global SMS: 20bn messages a day.

WhatsApp: 30bn messages a day.

(with just 40 engineers)

Source: GSMA, WhatsApp
Fundamental change in opportunity

Mobile leverage plus collapse of development costs

- 2000
  - 100 staff
  - 1m users
  - $10m raised

- Today
  - 10 staff
  - 10m users
  - $1m raised

- ?
  - 1 engineer
  - 1m users
  - $0 raised
Mobile dominates our attention
Screens dominate our lives

More than half our time awake is spent on media and communications

Source: Ofcom
Glass is eating the world

Close to a square foot of screen sold for every adult on earth

Source: Corning
TV sets are in the minority
Computing devices used for video now far outnumber actual ‘televisions’

“By the summer of 2012, the majority of the televisions you see in stores will have Google TV embedded”

- Eric Schmidt

Source: Apple, Google, Nokia, Blackberry, Displaysearch, a16z
What would children miss the most? Mobile

Mobile dwarfs legacy media platforms

‘Media you would miss most’, UK aged 11-15, 2014

Source: Ofcom
Comms are going pure digital, pure mobile

Email is for grandparents

Share of communication activity, UK, 2014

Source: Ofcom

2014 – 800bn photos shared on social networks.

More iPhones & Android phones sold than Japanese cameras ever.

More photos taken this year than taken on film ever.

Source: Kodak, Companies, CIPA, a16z
Digital gives and it takes away

Digital’s convenience led to a surge in camera sales, but then smartphones took over.
Tech outgrows tech
Three phases of technology deployment

- Companies that make technology
- Companies that buy technology
- Companies that are built around technology
Companies that buy technology

Tech has become part of every office

Like plants, tech is part of facilities

But is the business built around it?
Building companies around new technology

The really important new businesses are native to new technologies

<table>
<thead>
<tr>
<th>Trucks &amp; highways</th>
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<th>Web &amp; Smartphones</th>
<th>Smartphones</th>
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<tbody>
<tr>
<td>McDonald’s</td>
<td>Wal-Mart</td>
<td>Airbnb</td>
<td>Uber / Lyft</td>
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<tr>
<th>Food</th>
<th>Retail</th>
<th>Travel</th>
<th>Transport</th>
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Amazon: a retailer built around tech

Amazon is building the Sears Roebuck of the 21st Century – not a tech company

Amazon since launch ($bn)

Source: Amazon
And Amazon is only 1.5% of the way

Amazon still only has 1.5% of US retail revenue

* Excludes automobiles & parts, gasoline and food service. Source: BLS, Amazon, a16z
Amazon versus Wal-Mart

(Why would you stop to take profits?)

Source: Bloomberg
Mobile scale allows far more Amazons

Most tech is bought and paid for, not used to create new businesses

Scale of mobile, software mean the opportunity is vastly bigger

10 years ago, AirBnB would have sold software to Hilton

More and more companies following Amazon, Uber, AirBnB to disrupt existing industries with tech

Uber would have sold software to taxi companies
When tech is fully adopted, it disappears

Source: Google
Steel

Frequency of ‘Steel’ in Google Books

Source: Google
Computerization

Frequency of ‘Computerization’ in Google Books

Source: Google
Software

Software is changing the world just as much

Source: Google
Software is eating the world

Tech is outgrowing the tech industry