



E0-245: ASP

Lecture 1: Basic Setup

Dipanjan Gope



# Module 0: Basic Setup

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- Mobile apps vs. desktop software
- Statistics of smart-phone usage
- History of Android
- Examples of popular Android applications
- Android architecture and building blocks
- Android setup on laptop

# References

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- <https://www.udacity.com/course/ud853>: Udacity – “Developing Android Apps”
- <http://dazeinfo.com/2014/06/22/smartphone-apac-market-forecast-2014-2018-india-china-australia-japan-growth/>
- <http://dazeinfo.com/2014/07/11/mobile-internet-india-2014-349-million-unique-mobile-phone-users-70-traffic-mobile-india-shining-infographic/>
- <http://www.slideshare.net/kleinerperkins/internet-trends-2014-05-28-14-pdf>
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# Mobile vs. Desktop Software

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- Battery Life
- Low Processing Power
- Limited RAM
- Smaller screen sizes
- Data Connections: Intermittent/low bandwidth, high latency

<https://www.udacity.com/course/ud853>: Udacity – “Developing Android Apps”

# Mobile vs. Desktop Software

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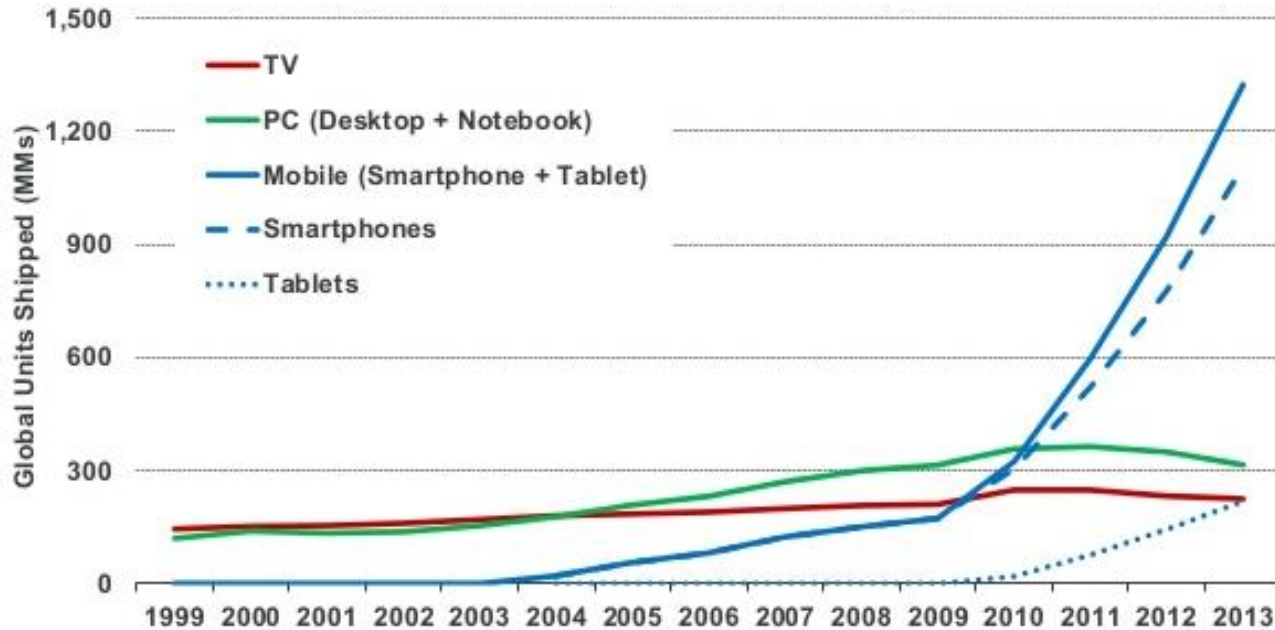
- Penetration of mobile: ubiquitous
- Availability of sensor information:
  - multimedia: camera, microphone, speaker
  - physical: accelerometer, gyroscope, barometer, light and proximity sensor
  - position: GPS, maps

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# Statistics

# Consumer Electronics Statistics

Global TV vs. PC (Desktop + Notebook) vs. Mobile (Smartphone + Tablet) Shipments, 1999 – 2013



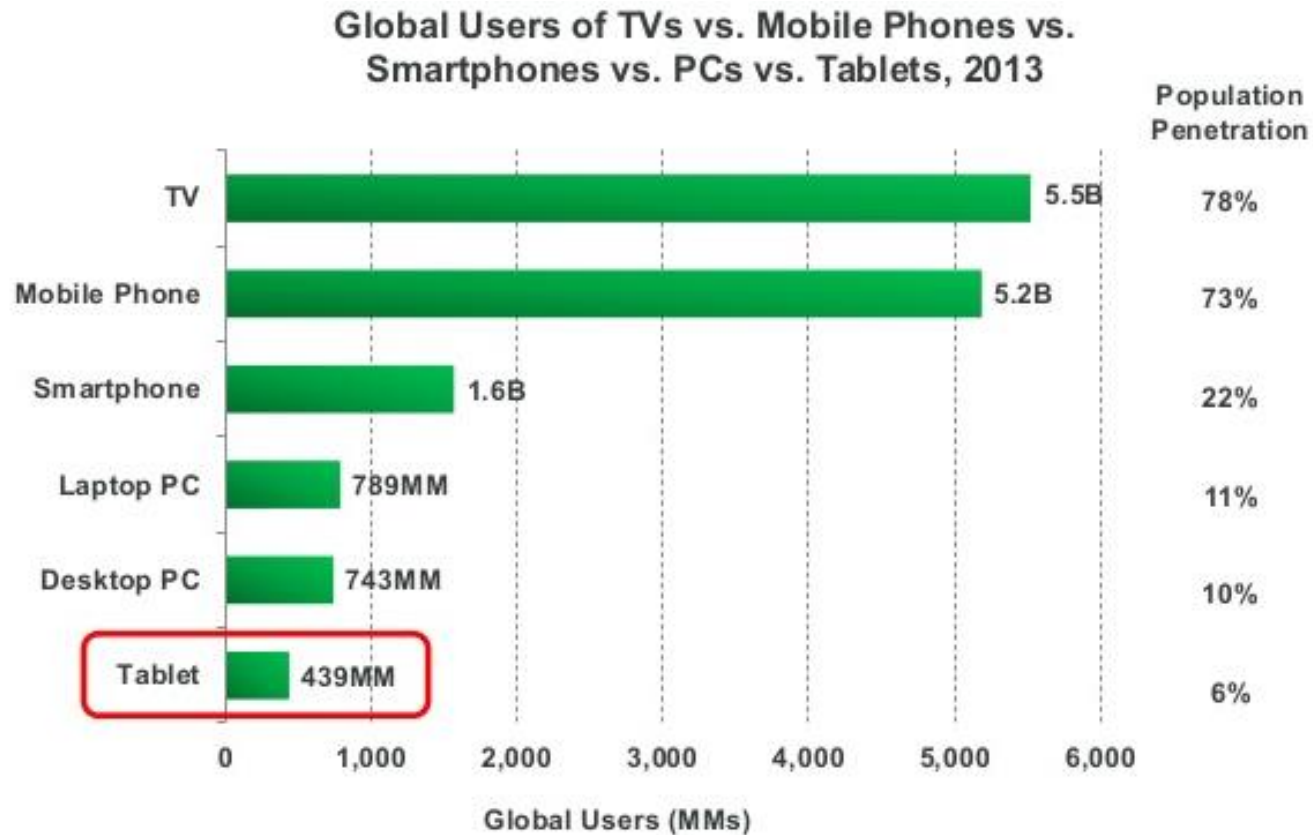
@KPCB

Sources: TV unit shipments per NPD DisplaySearch (2004-2013 data) and Philips (1999-2003 data). PC (laptop + desktop) and smartphone + tablet unit shipments per Morgan Stanley Research.

95

<http://www.slideshare.net/kleinerperkins/internet-trends-2014-05-28-14-pdf>

# User Penetration Statistics



@KPCB

Source: KPCB estimates based on Morgan Stanley Research and ITU data. TV Users is estimate for users with TVs in household, given 1.4B households with TVs in world.

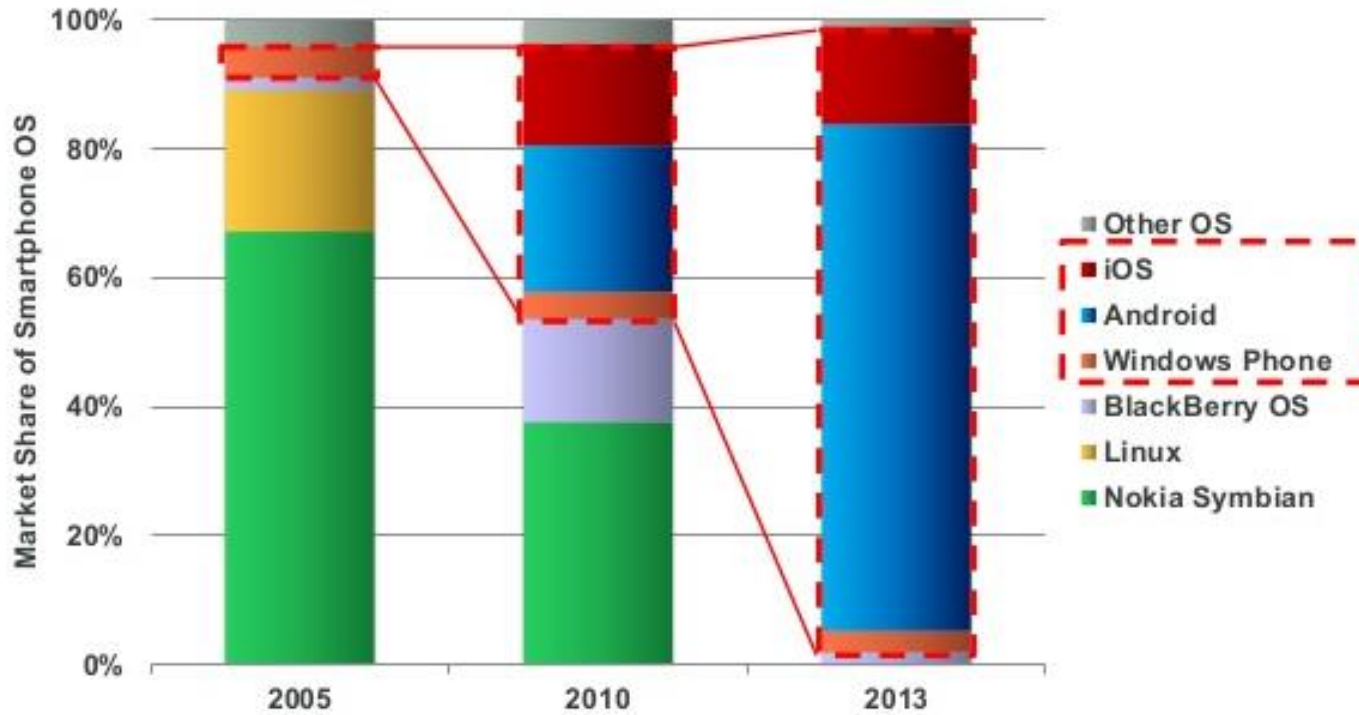
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<http://www.slideshare.net/kleinerperkins/internet-trends-2014-05-28-14-pdf>



# Android Market

Global Smartphone Operating System Market Share  
(by Units Shipped), 2005 vs. 2010 vs. 2013



@KPCB

Source: 2005 & 2010 data per Gartner, 2013 data per IDC.

10

<http://www.slideshare.net/kleinerperkins/internet-trends-2014-05-28-14-pdf>

# India Market Figures: Overview

JUL  
2014

## INDIA OVERVIEW



349 million unique users

**1,255,777,000**

TOTAL POPULATION



31%

URBAN

69%

RURAL

**243,199,000**

INTERNET USERS



we  
are  
social

19%

INTERNET PENETRATION

**106,000,000**

ACTIVE SOCIAL MEDIA USERS



8%

SOCIAL MEDIA PENETRATION

**886,300,000**

ACTIVE MOBILE SUBSCRIPTIONS



70%

MOBILE SUBSCRIPTION PENETRATION

**92,000,000**

ACTIVE MOBILE SOCIAL USERS



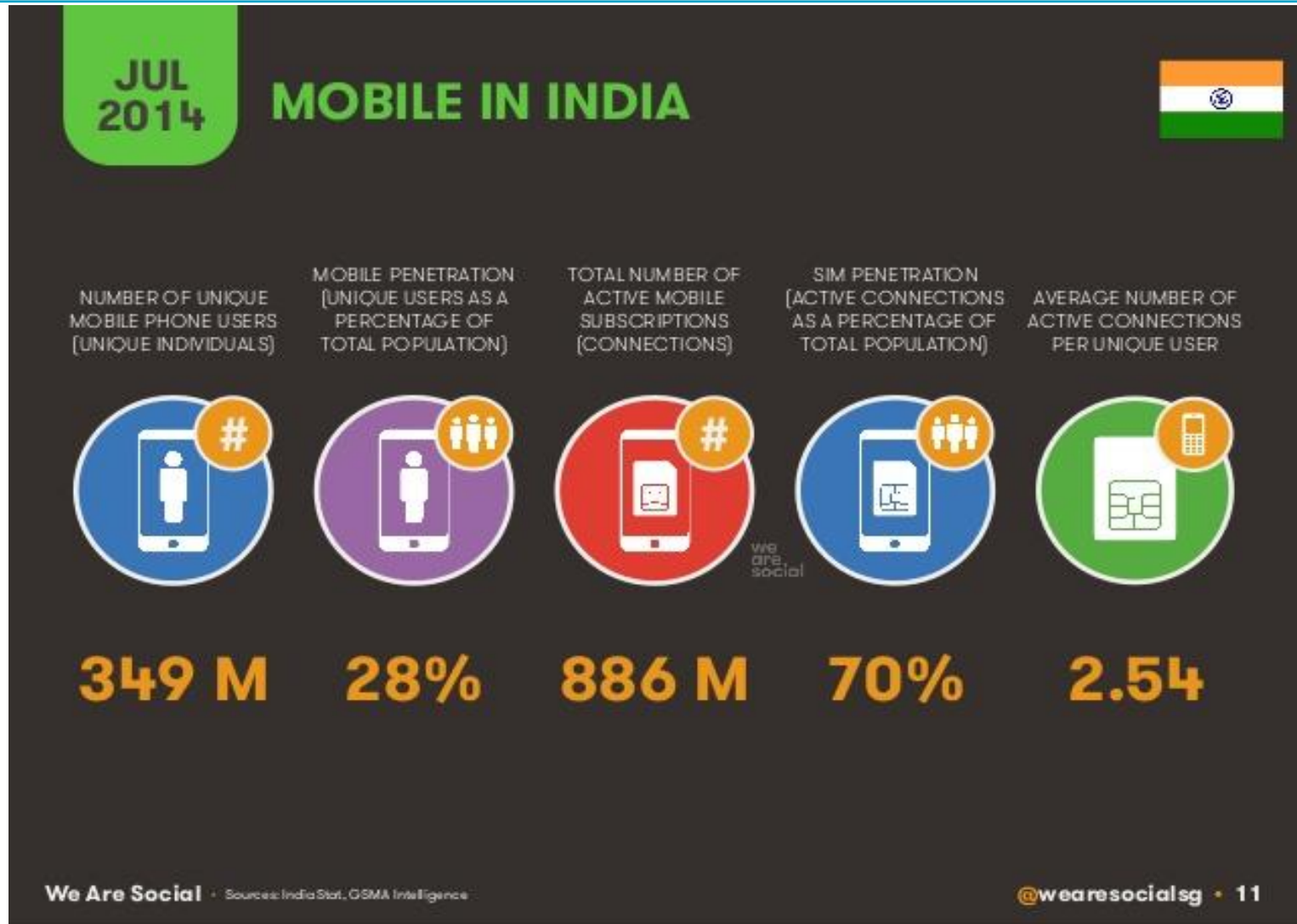
7%

MOBILE SOCIAL PENETRATION

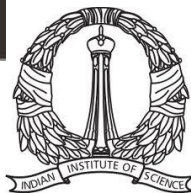
<http://dazeinfo.com/2014/07/11/mobile-internet-india-2014-349-million-unique-mobile-phone-users-70-traffic-mobile-india-shining-infographic/>



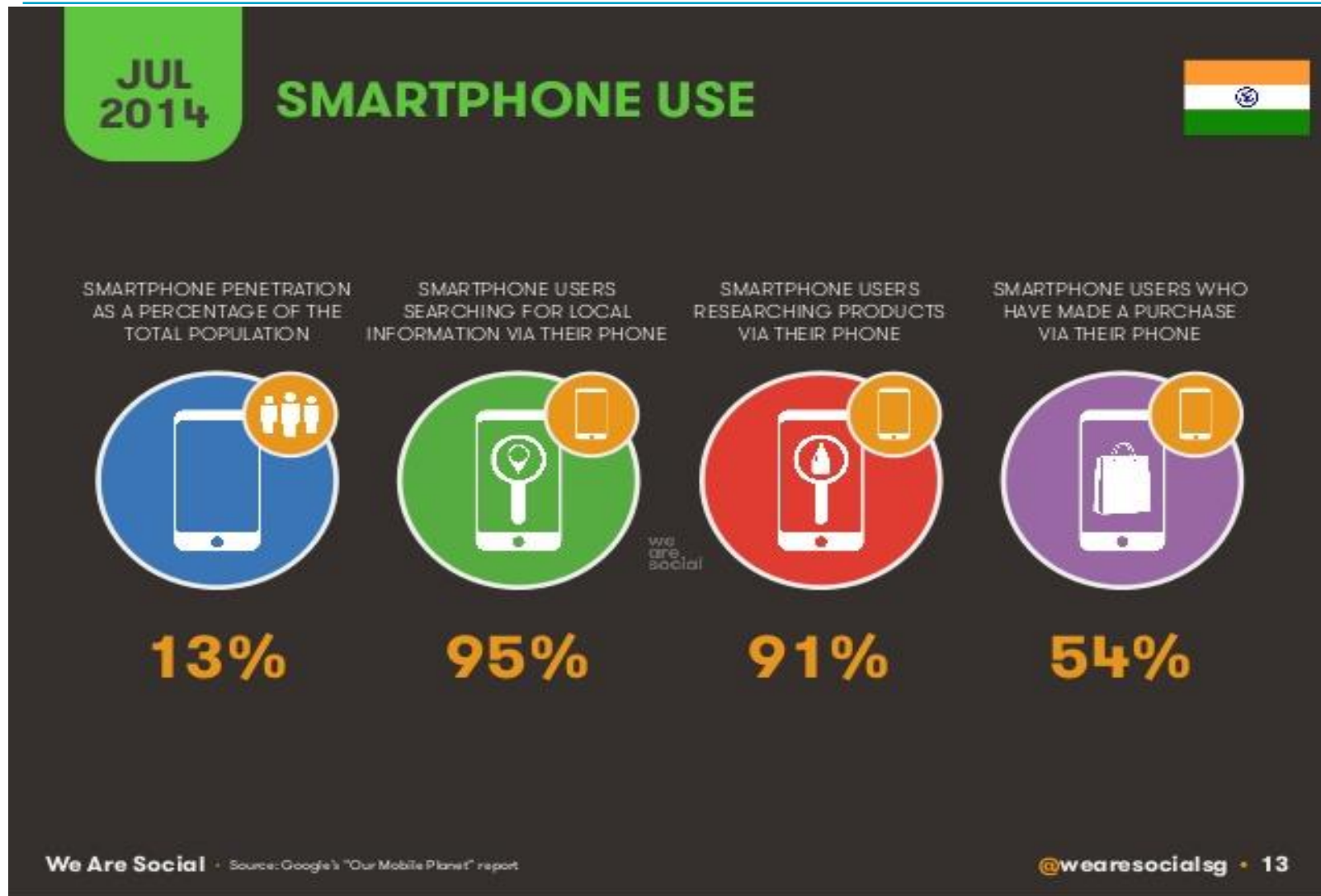
# India Market Figures: Mobile



<http://dazeinfo.com/2014/07/11/mobile-internet-india-2014-349-million-unique-mobile-phone-users-70-traffic-mobile-india-shining-infographic/>



# India Market Figures: Smart Phone



<http://dazeinfo.com/2014/07/11/mobile-internet-india-2014-349-million-unique-mobile-phone-users-70-traffic-mobile-india-shining-infographic/>

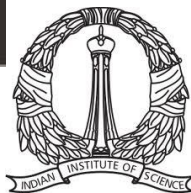




# Indian Market Figure: Applications



<http://dazeinfo.com/2014/07/11/mobile-internet-india-2014-349-million-unique-mobile-phone-users-70-traffic-mobile-india-shining-infographic/>

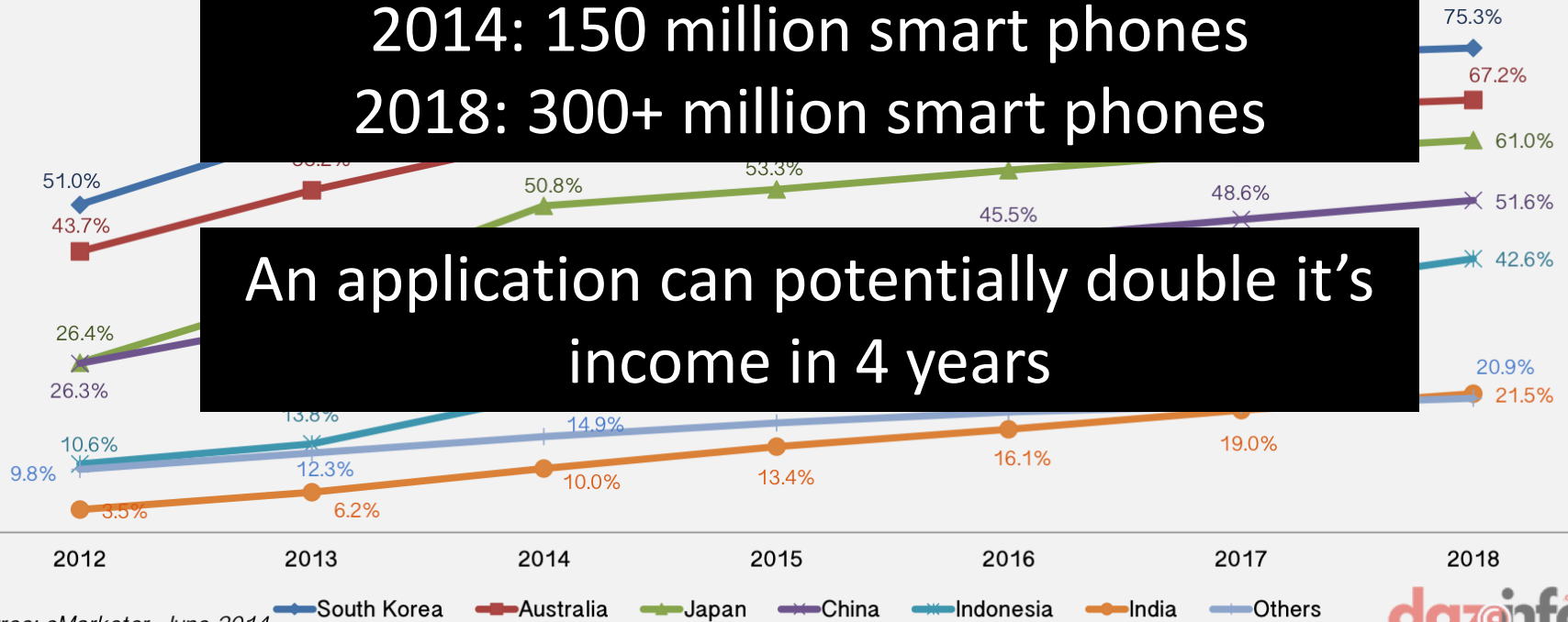


# India Market Figure: Projection

**SMARTPHONE USER PENETRATION APAC 2012 - 2018**  
(% of Population)

**2014: 150 million smart phones**  
**2018: 300+ million smart phones**

**An application can potentially double it's income in 4 years**



Source: eMarketer, June 2014



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# What is Android?



# What is Android?

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- **OS** + Middleware + Apps
- Linux-based
- Open-Source
- Built for touchscreen actions like swipe, tap, pinch, reverse-pinch
- Developed by Open Handset Alliance (OHA) led by Google

PHONES

TABLETS

WEAR

TV

AUTO



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# History of Android

# History of Android



Android Inc.  
Andy Rubin

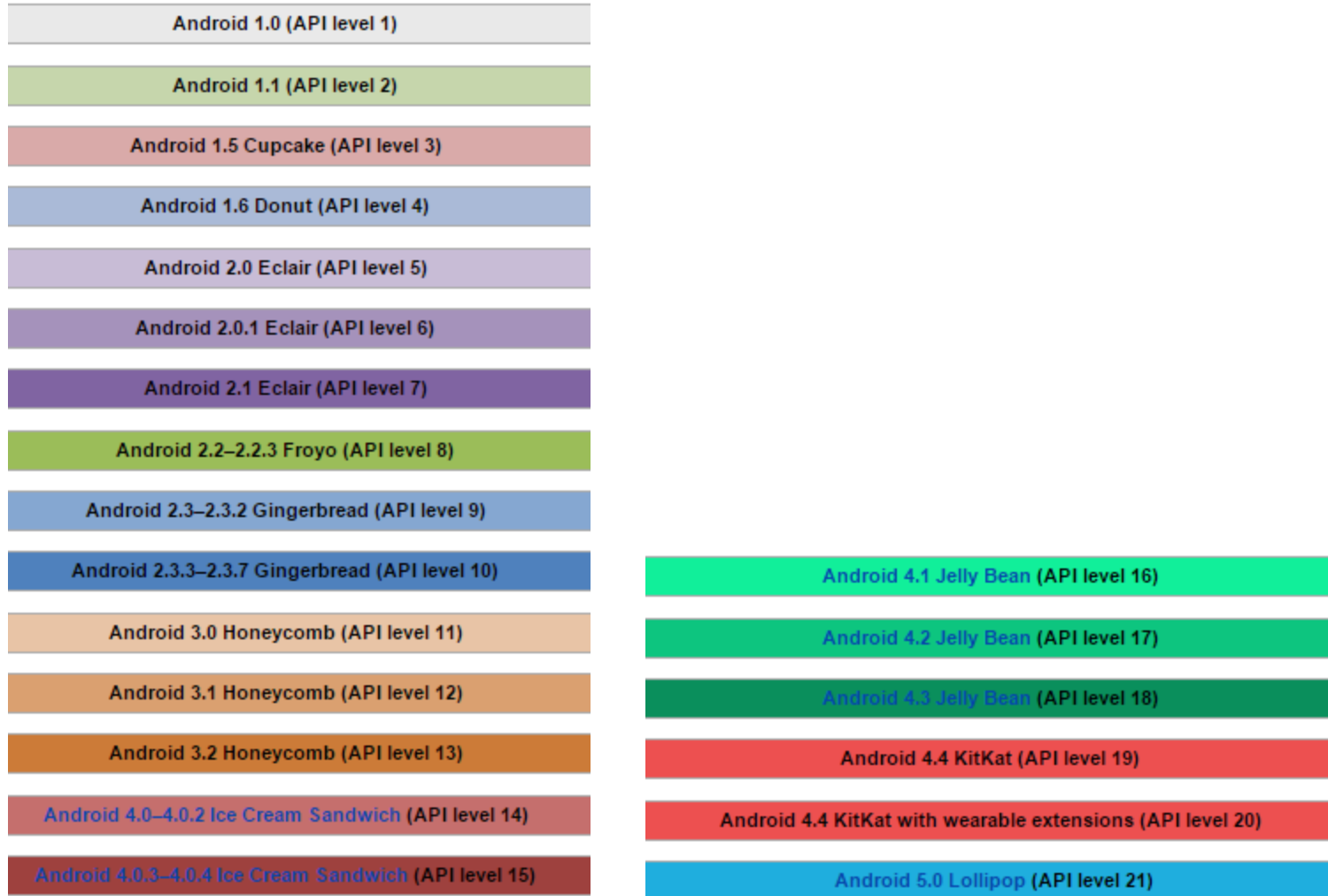
Google  
Acquisition

OHA

HTC Dream

1 billion devices

# Android Versions


















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# Popular Android Applications

# Popular Android Apps

## Top Free in Android Apps

 <p>1. Trivia Crack Etermax</p> <p>★★★★★ FREE</p>	 <p>2. Messenger Facebook</p> <p>★★★★★ FREE</p>	 <p>3. Facebook Facebook</p> <p>★★★★★ </p>	 <p>4. Candy Crush Soda King King</p> <p>★★★★★ FREE</p>	 <p>5. Pandora® internet Pandora</p> <p>★★★★★ FREE</p>	 <p>6. 360 Security - Antivirus Qihoo 360 (NYSE:QIHU)</p> <p>★★★★★ FREE</p>	 <p>7. Instagram Instagram</p> <p>★★★★★ FREE</p>
 <p>8. Snapchat Snapchat, Inc.</p> <p>★★★★★ FREE</p>	 <p>9. Netflix Netflix, Inc.</p> <p>★★★★★ FREE</p>	 <p>10. Super-Bright LED Surpax Technology Inc.</p> <p>★★★★★ FREE</p>	 <p>11. Subway Surfers Kiloo</p> <p>★★★★★ FREE</p>	 <p>12. Dumb Ways to Die Metro Trains</p> <p>★★★★★ FREE</p>	 <p>13. Kik Kik Interactive</p> <p>★★★★★ FREE</p>	 <p>14. Clash of Clans Supercell</p> <p>★★★★★ FREE</p>

[https://play.google.com/store/apps/collection/topselling\\_free?hl=en](https://play.google.com/store/apps/collection/topselling_free?hl=en)

# Instagram



Launched

3 Engineers



15 million users



100 million users

13 employees

\$1 billion acquisition



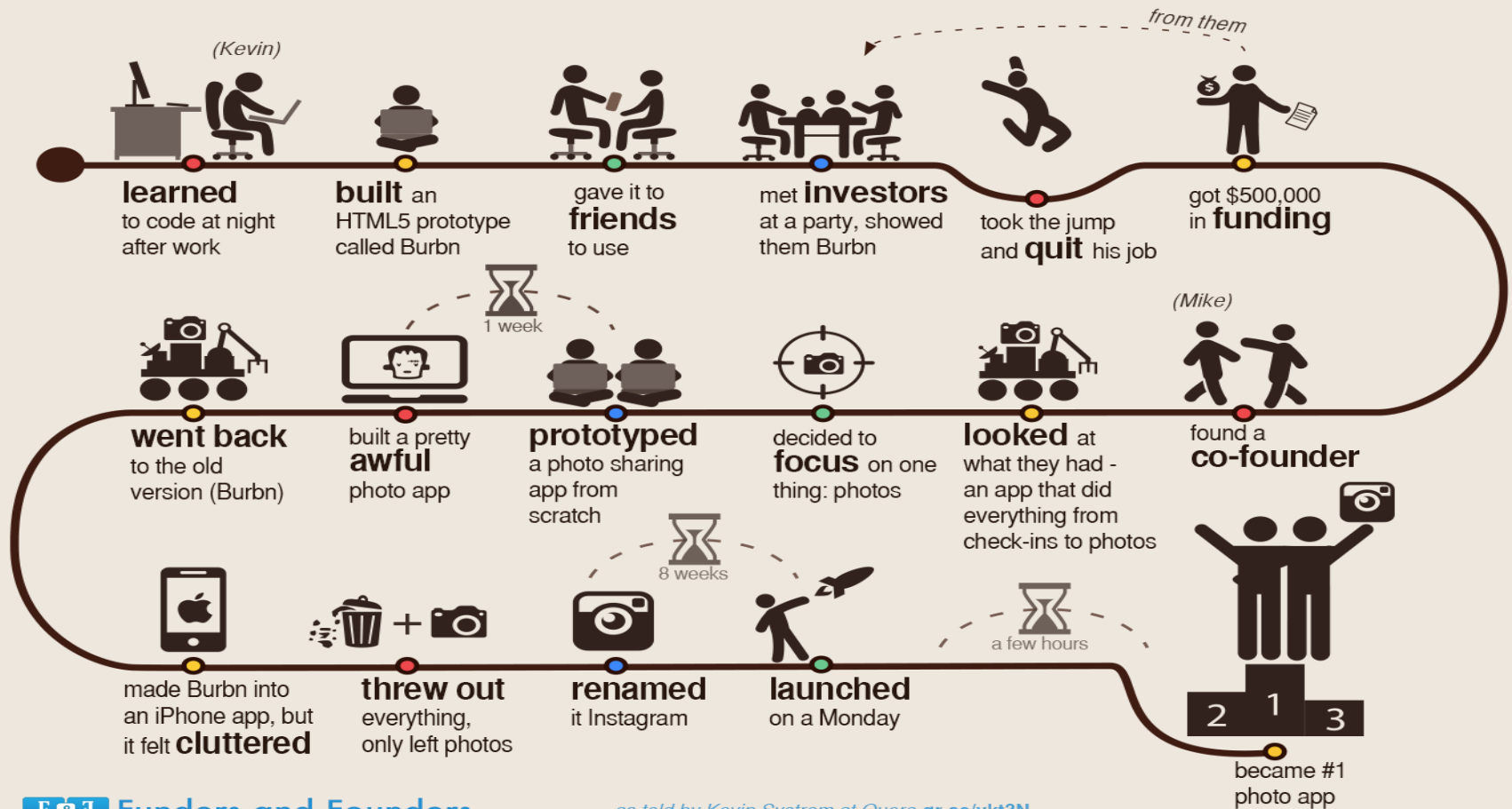
<http://www.slideshare.net/iammutex/scaling-instagram>

# Instagram

## HOW INSTAGRAM STARTED

by Anna Vital

Or How Two Guys Made an App in 8 Weeks



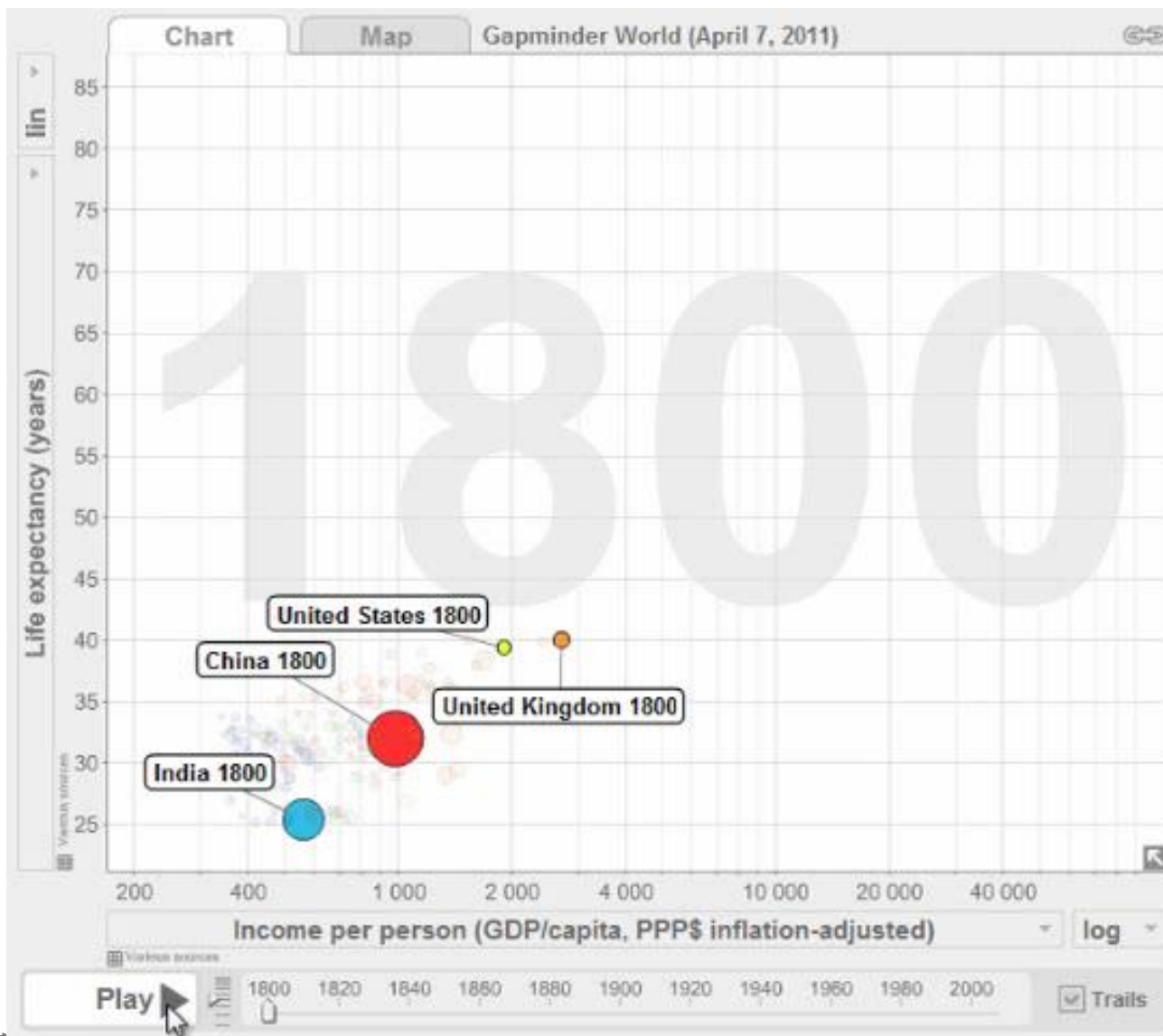
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**Some apps from NICE:**

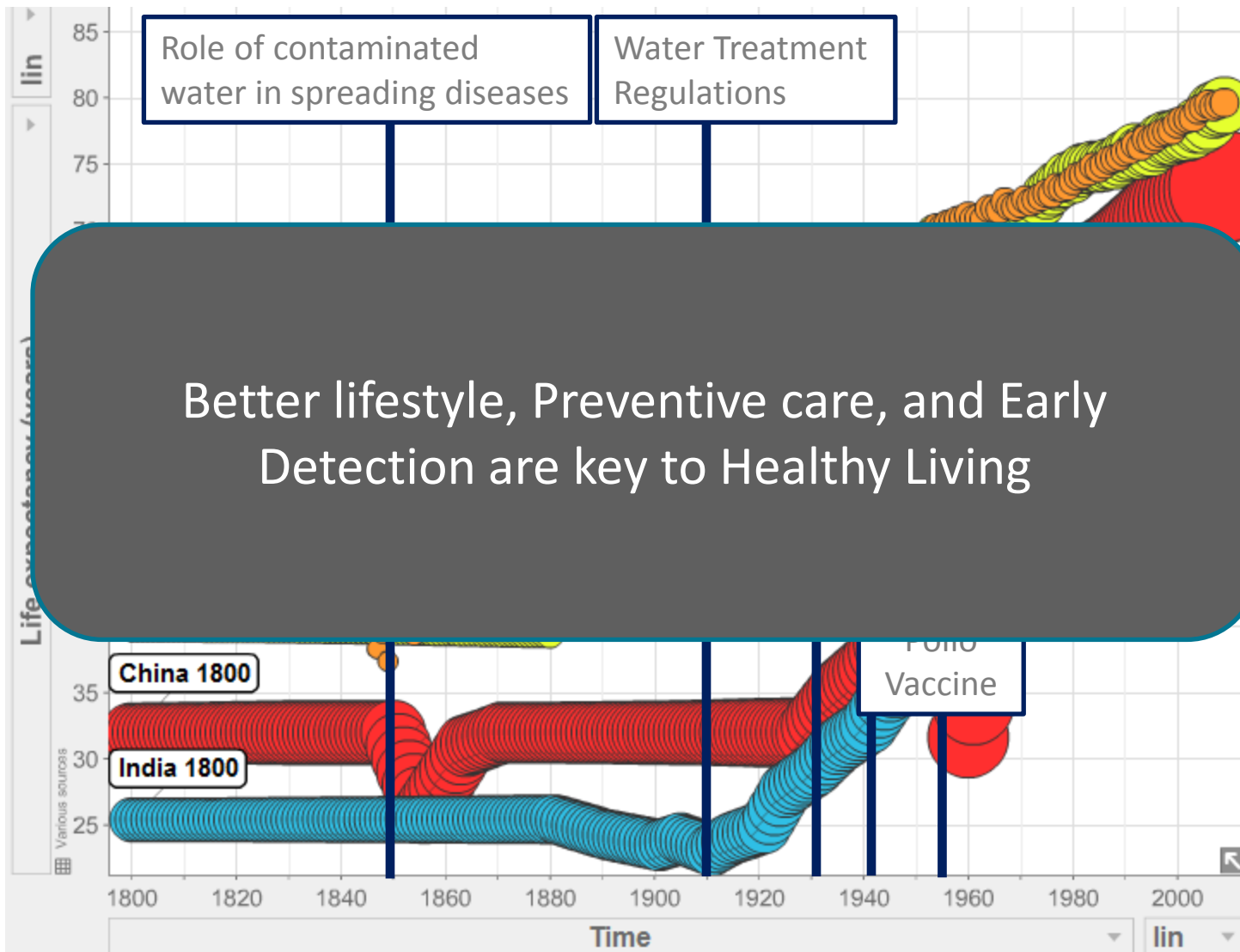
**HealthyMe**



# Prof. Rosling: Wealth and Health of Nations

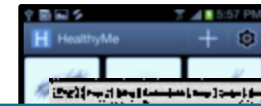
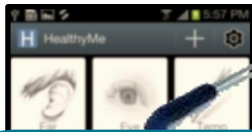


# Life Expectancy Trend



# HealthyMe

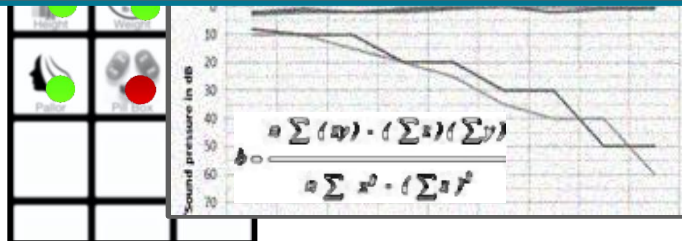
Personalized Health Monitoring using Mobile Sensors  
- "Maintenance Required" indicator for Health



Continuous Health Monitoring not only Enables **Early Detection** but also Motivates **Healthy Habits and Living**

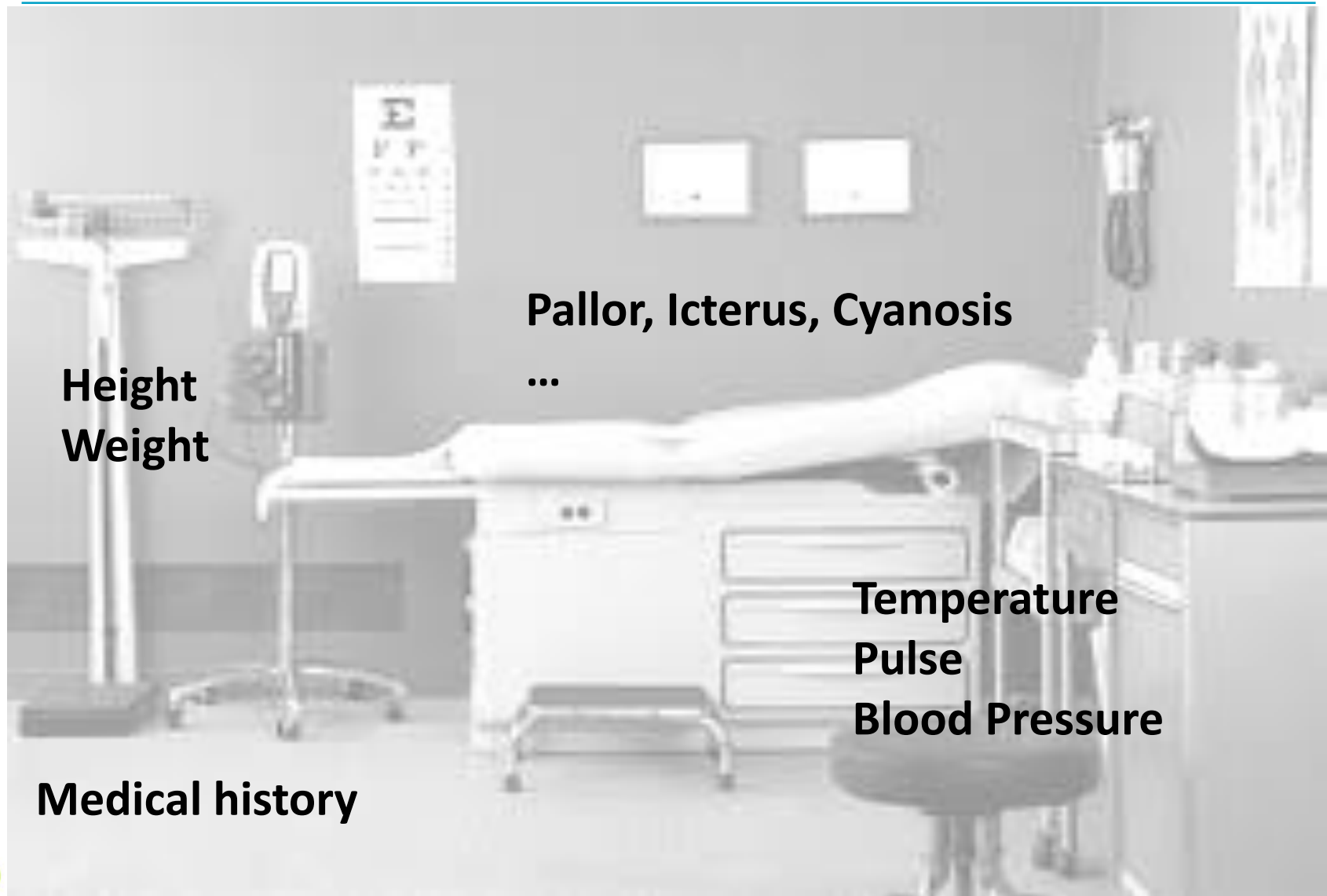
Regu

records



Predictive Analytics, Health Score

# What if the waiting room ...



**Height  
Weight**

**Pallor, Icterus, Cyanosis  
...**

**Temperature  
Pulse  
Blood Pressure**

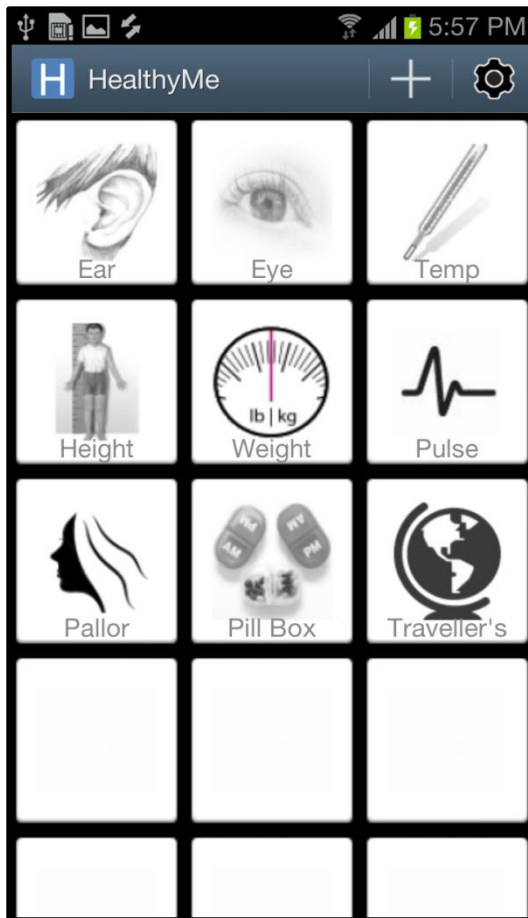
**Medical history**

# Is replicated in your home !!!



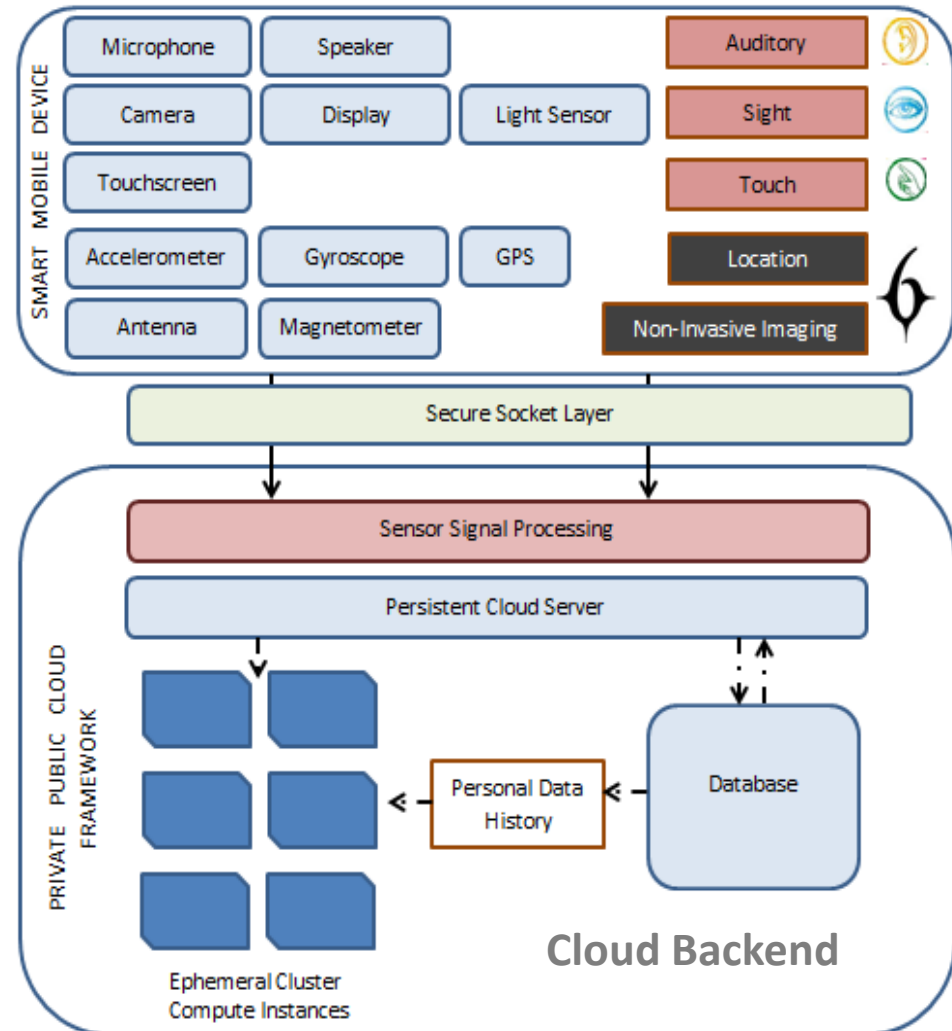
HealthyMe

## Sensors in Mobile Devices to Aid Regular Monitoring

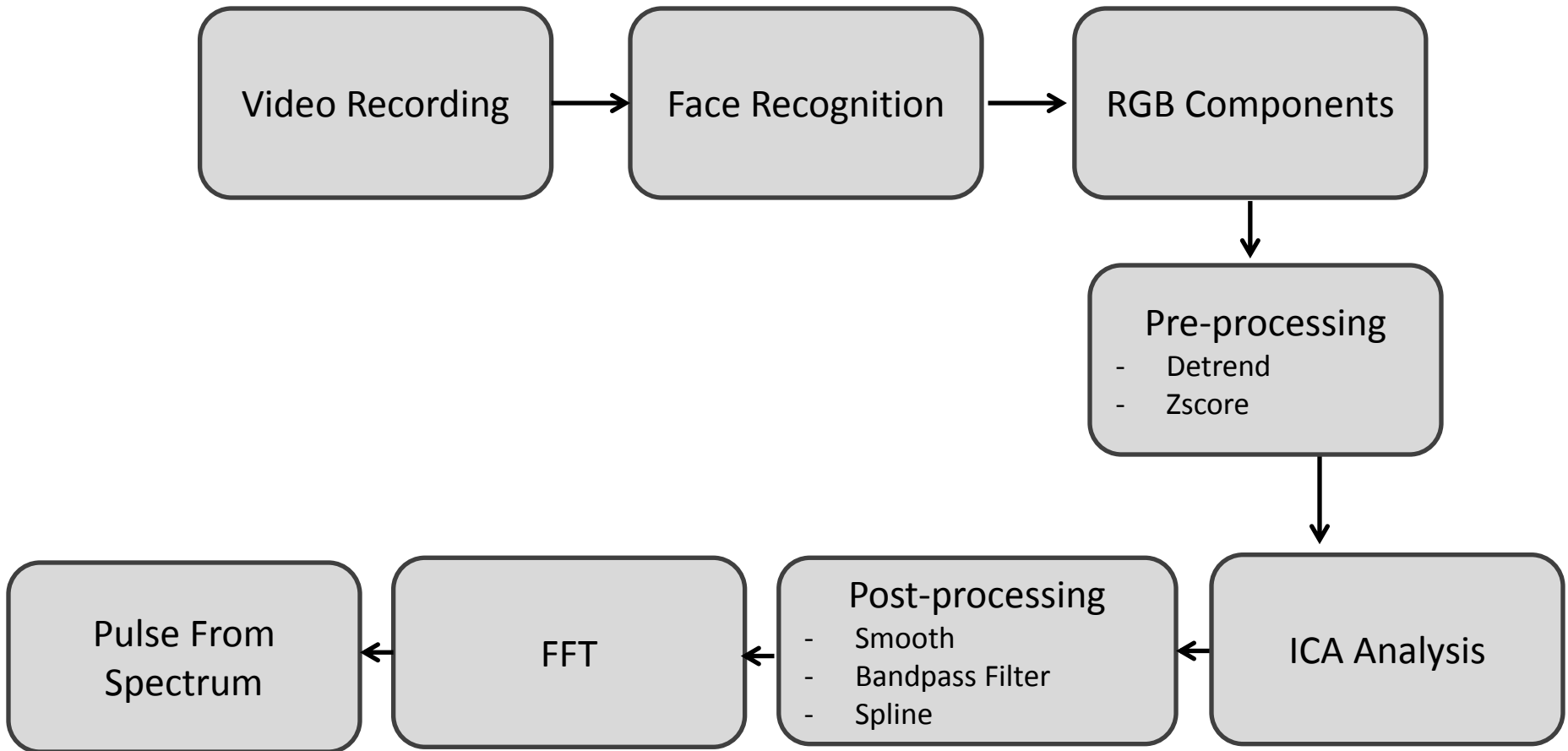


Mobile Interface

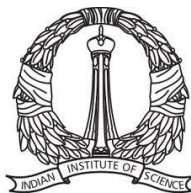
Dipanjana Gope



# Pulse Detection from Mobile Phone

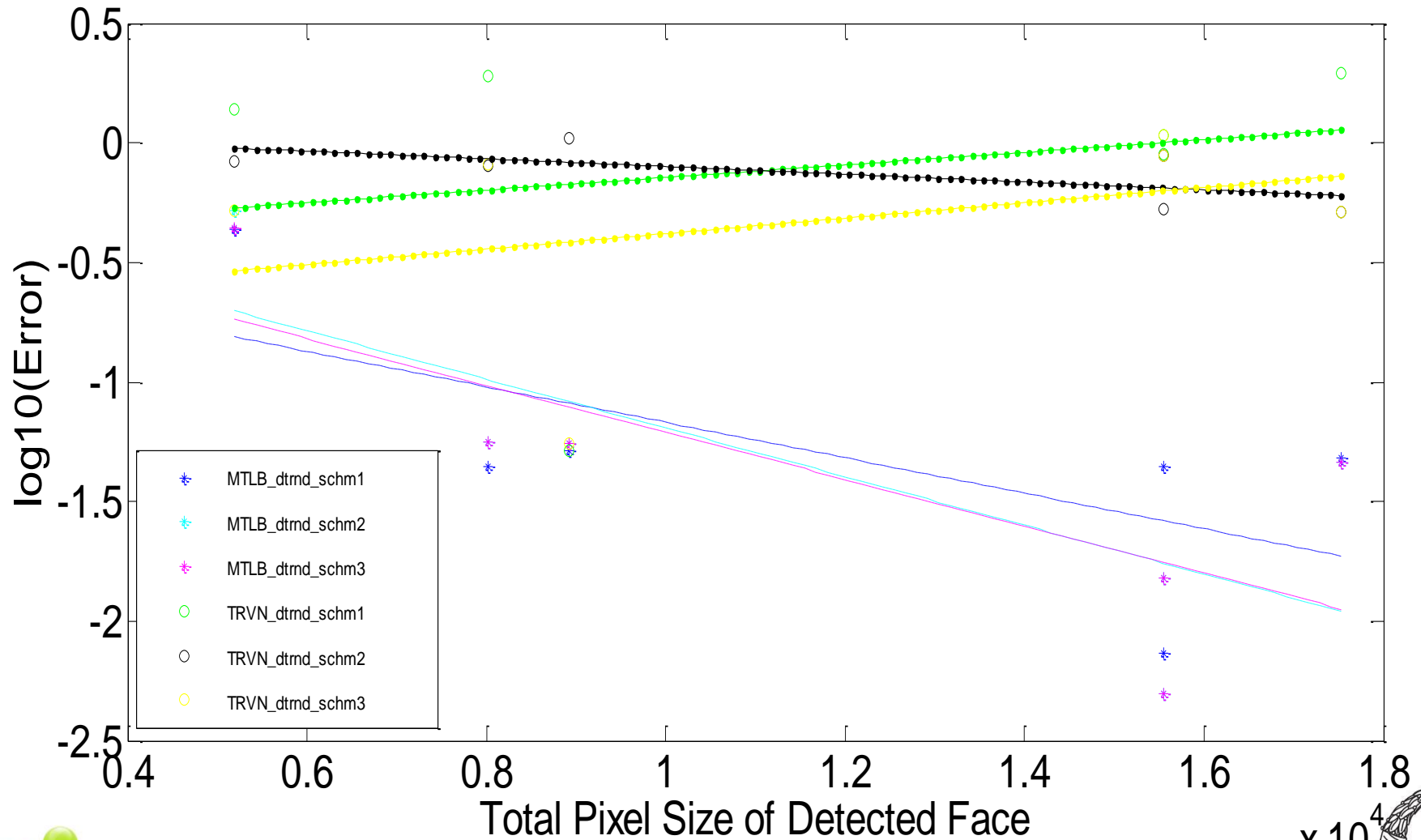


M.Z. Poh, D.J. McDuff, R.W. Picard, Opt Express. 18(10) pp. 10762–10774, 2010.



# Accuracy Worsens With Distance

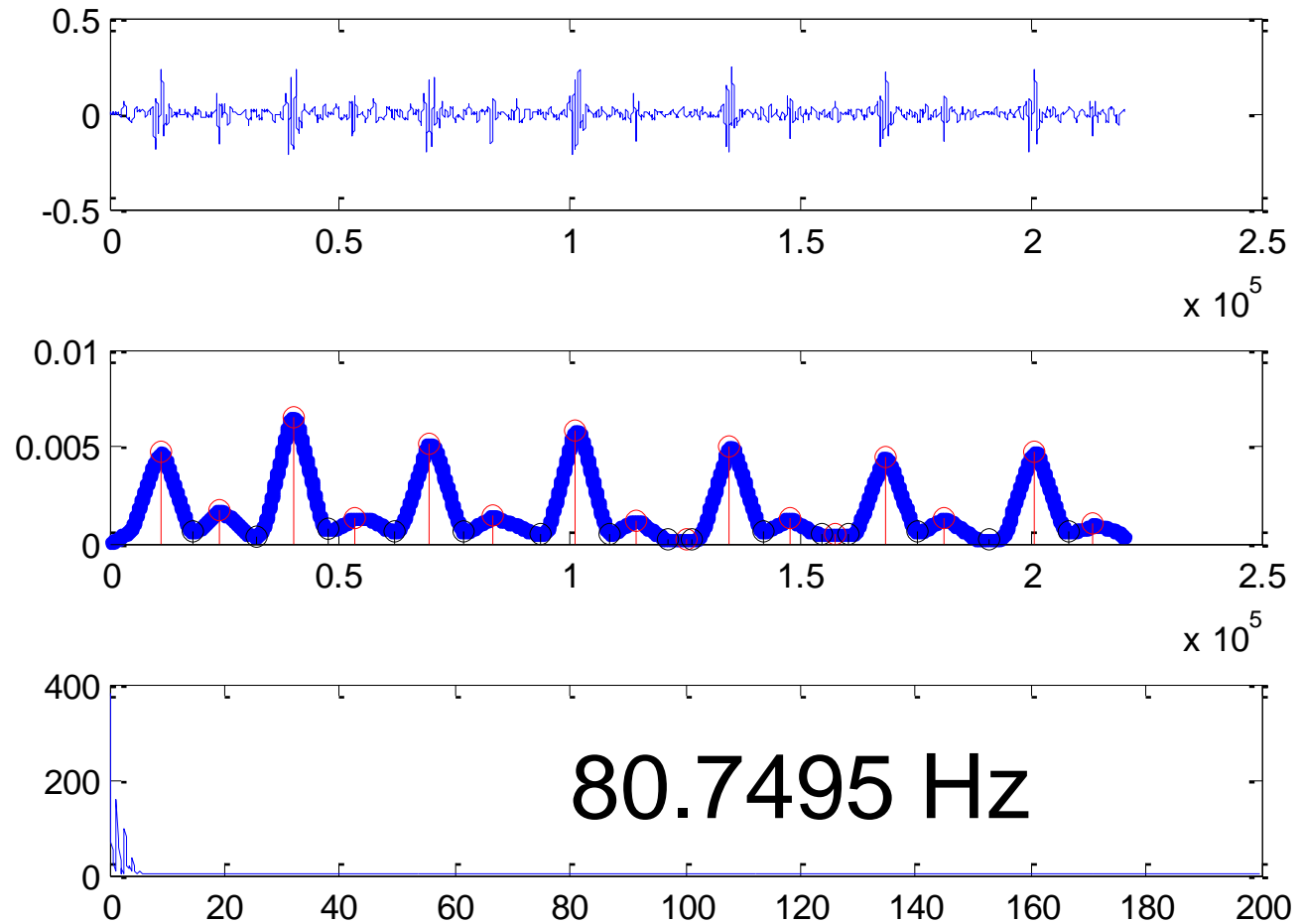
## WebCam Results



# Heart Rate Detection



Recorded Heart Sound:





# Color Variation Symptom Checker

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- Pallor (reduction in redness)
  - Anemia, Mal-nutrition, TB
- Icterus (increase in yellowness - bilirubin)
  - Hepatitis
- Cyanosis (lack of oxygen in the blood)
  - Pneumonia, Asthma, COPD

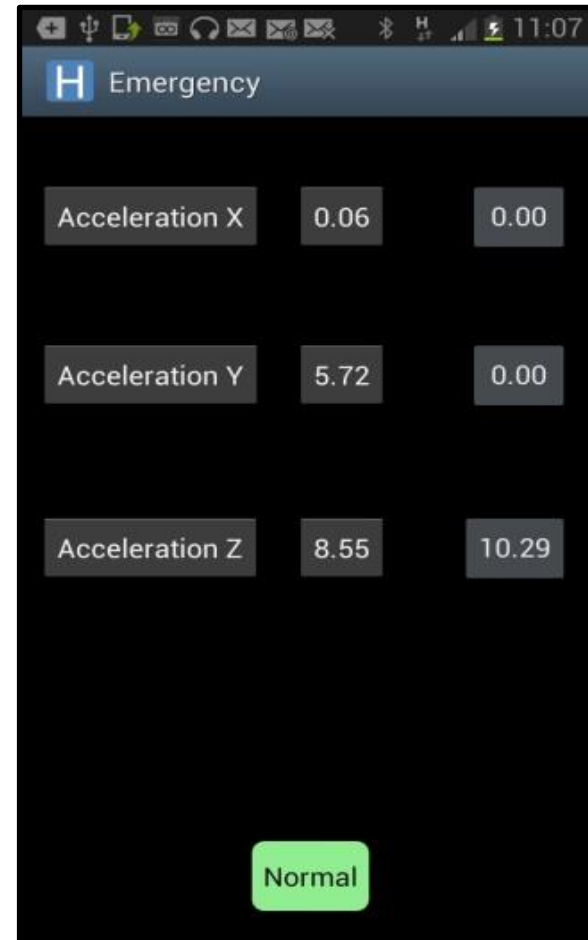
# Emergency Care



Accelerometer/Gyroscope

GPS

Email/SMS



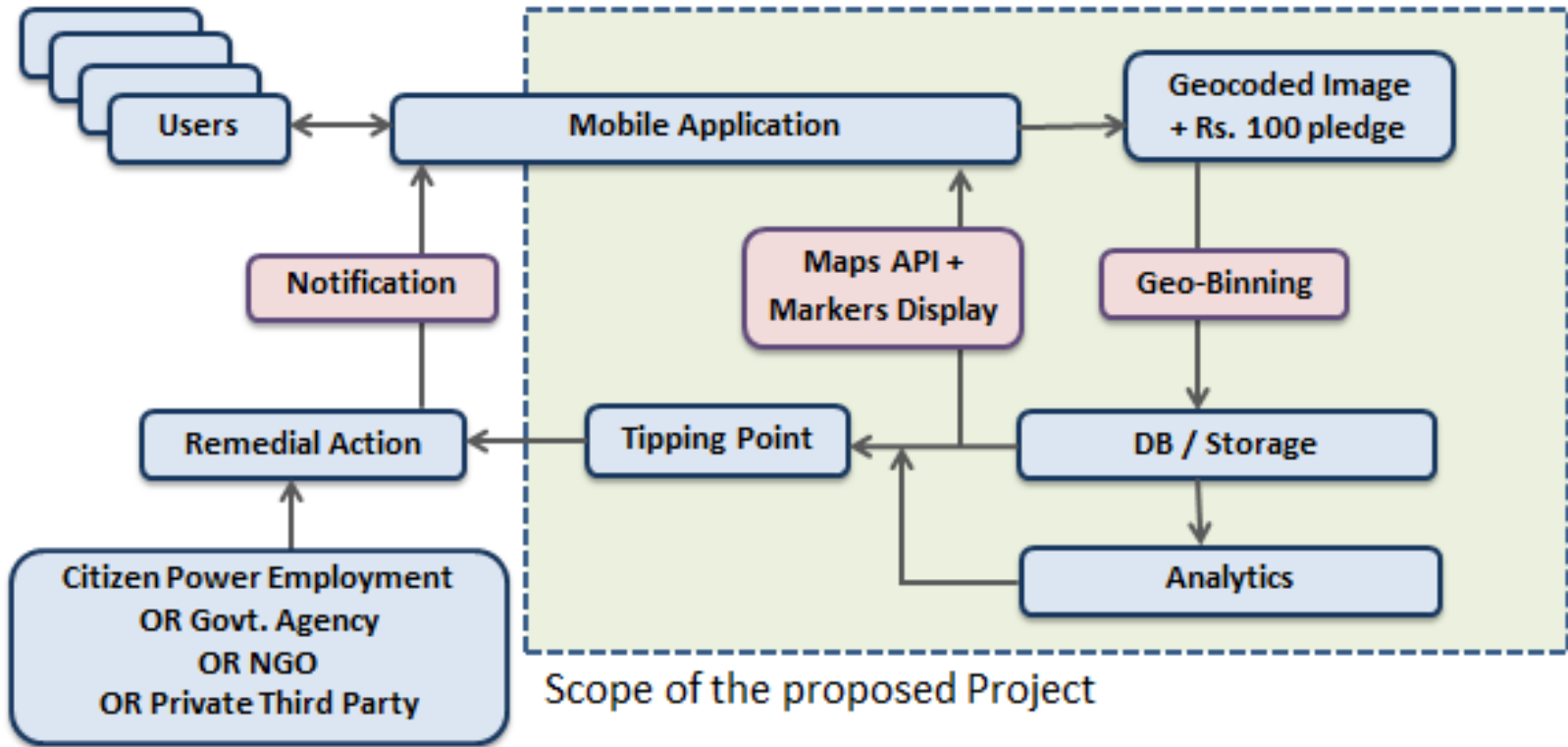
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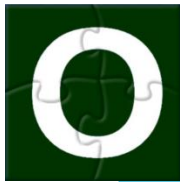
# Some apps from NICE:

## Ourum



# Ourum





# Ourum

