FACTS & FIGURES

Where are we now?
ON DEVICES & INTERNET
SMART DEVICE PENETRATION: ASIA PACIFIC

JAN 2015

DIGITAL IN ASIA-PACIFIC
A SNAPSHOT OF THE REGION’S KEY DIGITAL STATISTICAL INDICATORS

TOTAL POPULATION
ACTIVE INTERNET USERS
ACTIVE SOCIAL MEDIA ACCOUNTS
MOBILE CONNECTIONS
ACTIVE MOBILE SOCIAL ACCOUNTS

4,021 MILLION
1,407 MILLION
1,065 MILLION
3,722 MILLION
879 MILLION

URBANISATION: 45%
PENETRATION: 35%
PENETRATION: 26%
vs. POPULATION: 93%
PENETRATION: 22%
MOBILE CONNECTIONS

MOBILE CONNECTIONS BY DEVICE
BASUED ON THE TOTAL NUMBER OF SMARTPHONE CONNECTIONS AROUND THE WORLD

TOTAL NUMBER OF GLOBAL MOBILE CONNECTIONS
TOTAL NUMBER OF SMARTPHONE CONNECTIONS
SMARTPHONE CONNECTIONS AS A PERCENTAGE OF TOTAL CONNECTIONS
TOTAL NUMBER OF FEATURE PHONE CONNECTIONS
FEATURE PHONE CONNECTIONS AS A PERCENTAGE OF TOTAL CONNECTIONS

7.1B
2.7B
38%
4.1B
58%

Source: Ericsson Mobility Report, Q1 2014. Note that other devices such as tablets account for 390 million connections (5% of total).
MOBILE USERS VS CONNECTIONS

TOTAL NUMBER OF MOBILE USERS (UNIQUE INDIVIDUALS) 3.65B
MOBILE PENETRATION (UNIQUE USERS AS A PERCENTAGE OF TOTAL POPULATION) 51%
TOTAL NUMBER OF MOBILE SUBSCRIPTIONS (CONNECTIONS) 7.09B
AVERAGE NUMBER OF MOBILE SUBSCRIPTIONS PER UNIQUE USER 1.94
GLOBAL DATA GROWTH

GLOBAL MOBILE DATA GROWTH
TOTAL MONTHLY GLOBAL MOBILE DATA TRAFFIC (UPLOAD & DOWNLOAD), IN PETABYTES (MILLIONS OF GIGABYTES)

AVERAGE MONTHLY MOBILE DATA PER USER: 900MB

We Are Social | Source: Ericsson Mobility Report, Nov 2014
DIGITAL PENETRATION IN SINGAPORE

JAN 2015

DIGITAL IN SINGAPORE
A SNAPSHOT OF THE COUNTRY’S KEY DIGITAL STATISTICAL INDICATORS

TOTAL POPULATION
ACTIVE INTERNET USERS
ACTIVE SOCIAL MEDIA ACCOUNTS
MOBILE CONNECTIONS
ACTIVE MOBILE SOCIAL ACCOUNTS

5.47 MILLION
4.45 MILLION
3.60 MILLION
8.30 MILLION
3.20 MILLION

URBANISATION: 100%
PENETRATION: 81%
PENETRATION: 66%
vs. POPULATION: 152%
PENETRATION: 59%

Sources: WorldPop, Internet Live Stats, Internet World Stats, Facebook, Tencent, VKontakte, LiveInternet, GSMA Intelligence
AVERAGE TIME SPENT ON DEVICES

**Time Spent with Media**

- **Average Daily Use of the Internet via a PC or Tablet (Internet Users):** 4 hours 41 minutes
- **Average Daily Use of the Internet via a Mobile Phone (Mobile Internet Users):** 2 hours 18 minutes
- **Average Daily Use of Social Media via any Device (Social Media Users):** 2 hours 27 minutes
- **Average Daily Television Viewing Time (Internet Users who Watch TV):** 1 hour 53 minutes

Survey-based data: Figures represent users' own claimed/reported activity. Note that average times are based solely on people who use each medium and do not factor non-users.
AVERAGE TIME SPENT ON THE INTERNET

JAN 2015
INTERNET USE
BASED ON REPORTED ACTIVE INTERNET USER DATA, AND USER-CLAIMED MOBILE INTERNET USE

TOTAL NUMBER OF ACTIVE INTERNET USERS
INTERNET USERS AS A PERCENTAGE OF THE TOTAL POPULATION
TOTAL NUMBER OF ACTIVE MOBILE INTERNET USERS
MOBILE INTERNET USERS AS A PERCENTAGE OF THE TOTAL POPULATION

we are social
we are social
we are social
we are social

4.45M  81%  3.54M  65%
MOBILE PHONE PENETRATION

MOBILE PHONES
BASED ON THE NUMBER OF CELLULAR SUBSCRIPTIONS / CONNECTIONS [NOT UNIQUE USERS]

TOTAL NUMBER OF MOBILE SUBSCRIPTIONS

MOBILE SUBSCRIPTIONS AS A PERCENTAGE OF THE TOTAL POPULATION

PERCENTAGE OF MOBILE CONNECTIONS THAT ARE PRE-PAID

PERCENTAGE OF MOBILE CONNECTIONS THAT ARE POST-PAID

PERCENTAGE OF MOBILE CONNECTIONS THAT ARE BROADBAND (3G & 4G)

8.30M

152%

42%

58%

70%

We Are Social • Source: GSMA Intelligence, Q1 2019, Wikipedia for population data

@wearesocialsg • 26
WHAT DO THE NUMBERS TELL US: GO MOBILE GO!

➤ Singapore has one of the highest smartphone penetration rates in the world.

➤ Singaporeans are comfortable and fairly prolific in using their phones to interact and transact with the world.

➤ Mobile devices are well embedded in our lives.

➤ Growth is exponential

➤ RESISTANCE IS FUTILE!
Mobile Device Adoption in the Health Sector

Mobile Device Adoption Continues to Expand

6.4 Mobile Devices
Average Number Clinicians Use Per Day¹

66% of Doctors Use iPads or Other Tablets for Medical Purposes²

70% of Physicians Use Their Smartphones to Research Medications at Least Once a Week³

http://www.cdwcommunity.com
70% of patients are comfortable communicating with their healthcare providers via text, e-mail or video, in lieu of seeing them in person.*

*NTT Data, Trends in Telehealth (2014) Survey: 75% of Patients Would Choose Telehealth Over Human Contact
MOBILE APP IN THE HEALTH SECTOR

MOBILE APP USE IS ALSO GROWING IN POPULARITY

93% OF PHYSICIANS BELIEVE THAT MOBILE HEALTH APPS CAN IMPROVE PATIENTS' HEALTH AND OUTCOMES

90% OF PHYSICIANS WOULD LIKE TO SEE APPS GIVE PATIENTS THE ABILITY TO UPLOAD DATA INTO THEIR PERSONAL EHR FILES

89% OF PHYSICIANS WOULD RECOMMEND AN APP TO A PATIENT IN THE FUTURE

http://www.cdwcommunit.com
Mobile health apps

71% of millennials would like their doctor to use a mobile app.*

*2015 State of the Connected Patient, Salesforce, February 2015
HEALTH APP TRENDS

The sports, fitness, and wellness mobile app market is projected to nearly quadruple in size from 2010 to 2016.

2010 = $12 million
2016* = $40 million

*Predicted numbers

Downloads of these apps are expected to grow to nearly 1 billion by 2016.

The majority of this growth will come from mobile's ability to connect with wearable devices that can provide in-depth and personalized fitness information.

By 2017, researchers expect shipments of wearable fitness devices to reach 90 million units.
MOBILITY AND SMART HEALTHCARE

$5.4 Billion

CLINICAL MOBILITY SPENDING IN THE U.S. IS EXPECTED TO INCREASE

$2.9 Billion

GROWTH WILL BE ACCELERATED BY THE ADOPTION OF MEANINGFUL USE TECHNOLOGIES INCLUDING:

• ELECTRONIC HEALTH RECORD SYSTEMS
• ELECTRONIC PRESCRIBING
• COMPUTERIZED PHYSICIAN ORDER ENTRY
• HEALTH INFORMATION EXCHANGES

http://www.cdwcommunit.com
Electronics health records

71% of physicians have adopted an electronic health record (EHR), and 85% of adopters have an EHR certified for meaningful use.*

*Physician Motivations for Adoption of Electronic Health Records, ONC Data Brief, December 2014
WHAT DO THE NUMBERS TELL US?

➤ Smart health is an inevitability

➤ There is huge enthusiasm and momentum to develop more health related channels of engagement, interaction and transaction.

➤ Adoption rate is high and rising.

➤ Mobile devices in healthcare seems to be one of the primary means of communication.
SMART HEALTH & SECURITY
More than 65% of consumers said data security was more important to them than convenient access to imaging and test results, doctors’ notes, diagnoses and prescriptions.

*2015 State of the Connected Patient, Salesforce, February 2015*
DATA SECURITY IN THE HEALTHCARE SECTOR

SECURITY IS STILL AN INTEGRAL CONSIDERATION

81% OF HEALTHCARE PROVIDERS STORE PERSONAL HEALTH DATA ON MOBILE DEVICES

ONLY 46% OF HOSPITALS HAVE A SECURITY STRATEGY TO REGULATE THE USE OF MOBILE DEVICES

1 IN 20 USERS HAS LOST OR HAD STOLEN A DEVICE THAT CONTAINS WORK-RELATED DATA

http://www.cdwcommunit.com
PATIENT PRIVACY AND PROTECTION

UNITED STATES

$12 billion total cost for US hospitals from data breaches
Per hospital: $2 billion

1,769 lost or stolen records per average breach

60% of hospitals suffered at least 2 breaches

Top 3 causes of data breach
1. Employee action
2. Lost or stolen computing devices
3. Third-party error

38% of hospitals informed nobody of the breach

70% hospitals say protecting patient data is not a priority

41% of breaches were discovered by patient complaint

PATIENT PRIVACY AND PROTECTION

CANADA

81% of medical professionals are aware of legal obligations concerning patient information.

55% do not regularly train staff on proper security protocols.

29% lack an employee dedicated to document security management.

21% have never conducted a medical security audit.

55% do not utilize document destruction services.

SECURITY BREACHES IN 2015

Breaches in 2015 so far...
How has the Healthcare sector been affected?

Take a look at all the breaches in 2015 divided by sectors:

- Educational 8.7%
- Government/Military 7.7%
- Banking/Credit/Financial 9.3%
- Medical/Healthcare 34.9%
- Business 39.4%

http://hin.com/blog/category/health-information/
CAUSES OF HEALTHCARE DATA BREACHES


- Criminal Attacks: 32%
- Lost/Stolen Devices: 31%
- Employee Errors: 29%
- Malicious Insider: 8%

Source: Ponemon Institute, May 2015
SECURITY BREACH IS OFTEN INNOCUOUS

➤ Doctors are interacting with other healthcare providers over unsecured channels like whatsapp.

➤ Have your doctor emailed you medical data over an unencrypted channel or via a cloud service owned by someone else.
WHAT’S YOUR MEDICAL RECORD WORTH?

Your medical record is worth more to hackers than your credit card

NEW YORK/BOSTON | BY CAROLINE HUMER AND JIM FINKLE

➤ Worth 10x more than Credit details
➤ New focus of cyber criminals
➤ Reliant on aging computer systems
➤ Breaches in 2014 affected 7.4m people in USA alone

http://www.reuters.com/article/2014/09/24/us-cybersecurity-hospitals-idUSKCN0HJ21I20140924#7ojo8lEOTkBgZ0j.97
VALUE OF YOUR HEALTHCARE RECORDS

➤ More valuable than credit data because the data has more lasting value compared to, say, credit data.

➤ Permanence of medical data

➤ Credit cards and bank accounts can be closed down, you cannot change your health status.

➤ Health data impacts things with monetary value like insurance

➤ Costs an average of $13500 and 200 hours for victims to rectify, if possible.

➤ Access to payment details anyway

WHAT DO THE NUMBERS TELL US?

➤ There is a distinct and unstoppable momentum for smart health.
➤ Take up rate is fairly robust and increasing
➤ There is a disjunct between privacy expectation and security capacity
➤ Healthcare sectors have been generally ill equipped to cope with the high demand for more ehealth interactions
➤ Cost of breach is high and long reaching.
CROSS SECTOR SECURITY LESSONS

What the healthcare sector can learn from the financial sector
BANKING SECURITY: SINGLE – DOUBLE – MULTI FACTOR

single factor
1. Something you know

two factor
1. Something you know
2. Something you have

multi factor
1. Something you know
2. Something you have
3. Something you are
HOLY TRINITY OF SECURITY

➤ What does it mean for a process to be secure:
  ➤ Verify that patient is a bona fide patient.
  ➤ Channel of communication has got to be secure
    ➤ Data is unaltered
    ➤ Channel is unbreachable
  ➤ Data at rest is secure
WHAT HAVE WE LEARNT?

➤ User fatigue
  ➤ From high friction authentication
  ➤ From owning multiple devices
  ➤ From having multiple identities

➤ Security is reactionary

➤ PUSH FOR CONVENIENCE
  ➤ Email instructions for high net worth clients
  ➤ Low level security for fund transfer like peer-to-peer fund transfer on mobile app
BE PREPARED,
YOU MUST.

On enthusiasm & convenience
WHAT IS NEEDED?

FUNCTIONAL

EASY

SECURE
MOBILE AS THE MOST LOGICAL PLATFORM

➤ Already embedded in your life style
➤ Critical element in your life
➤ Knows where you are
➤ Can identify itself from hardware, user, location perspective
➤ Already a gateway for many functions
➤ Can be secured
PATIENT AS GROUND ZERO

POLICY

MOBILE PLATFORM
PATIENT EMPOWERMENT = EDUCATED + ENABLED + EASY

Healthcare

Government

Tech providers

Patient

robust multi-factor mobile authentication
The greatest threat to security is not privacy but convenience…

If I send an email unencrypted, for example, I do so because I don't want to bother with encryption; for this convenience, I compromise both security and privacy…

…The sloppy use of many technologies of convenience reduces our privacy, which, in turn, leaves us more vulnerable to such serious (security) threats…

The problem is not with the technologies themselves but with our unwillingness to take the requisite precautions when using them.

-The Cost of Convenience: A Faustian Deal. Security and Privacy, IEEE. Vol 2, issue 2 (page 84-87)
THE END.