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THE INTERNET APPLICATIONS

Subject: 805-182 Computer: The Internet and Society

Dr. Norrathep Rattanaivanon

College of Computing, PSU

Courtesy: Dr.Jirawat Thaenthong

Contents

- How the Internet Has Changed Everyday Life
- Online Payment Services
- Entertainment Web Services
- Internet of Things
- Case study of Internet of Things

1. How the Internet Has Changed Everyday Life



Think about when you want to buy something

Is it possible to buy clothes from the Internet?

Is it possible to buy electronic device, such as mobile phone from the Internet?

Is it possible to buy a second hand product from the Internet?

Mobile Computing is Everywhere

- People no longer spend hours gazing at a computer screen after work or class; instead, they use their mobile devices to stay online everywhere, all the time.
- Almost everyone spends more time playing mobile than talking in the family.
- Is it true?

The Internet and Education

- Websites that provide online education
- For example,
 - *lms2.psu.ac.th* ← *PSU education service website*
 - *udemy.com*
 - *www.edx.org*

Instant Messaging Application

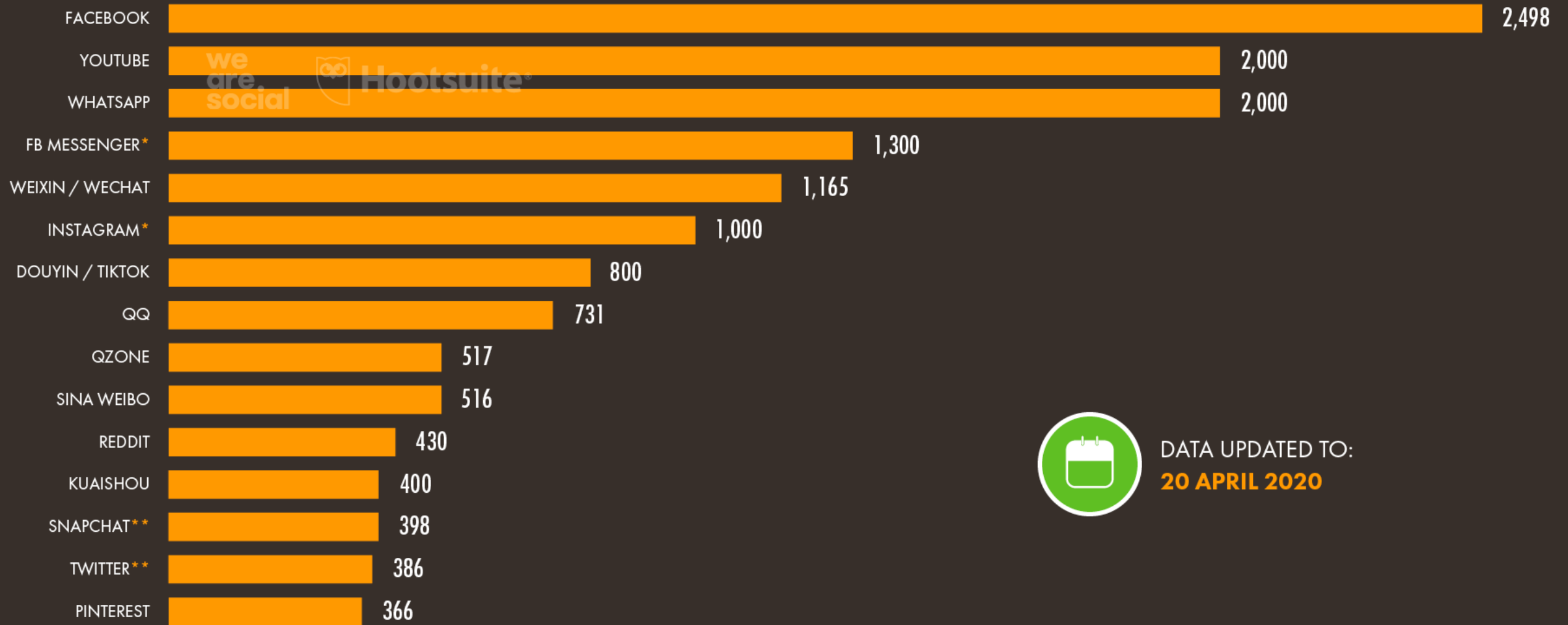
- Applications
 - *QQ Chat*
 - *Facebook Messenger*
 - *WeChat*
 - *Instagram chat*
 - *LINE*
 - *WhatsApp*

- What is the most popular social platform?

APR
2020

THE WORLD'S MOST-USED SOCIAL PLATFORMS

BASED ON MONTHLY ACTIVE USERS, ACTIVE USER ACCOUNTS, ADVERTISING AUDIENCES, OR UNIQUE MONTHLY VISITORS (IN MILLIONS)

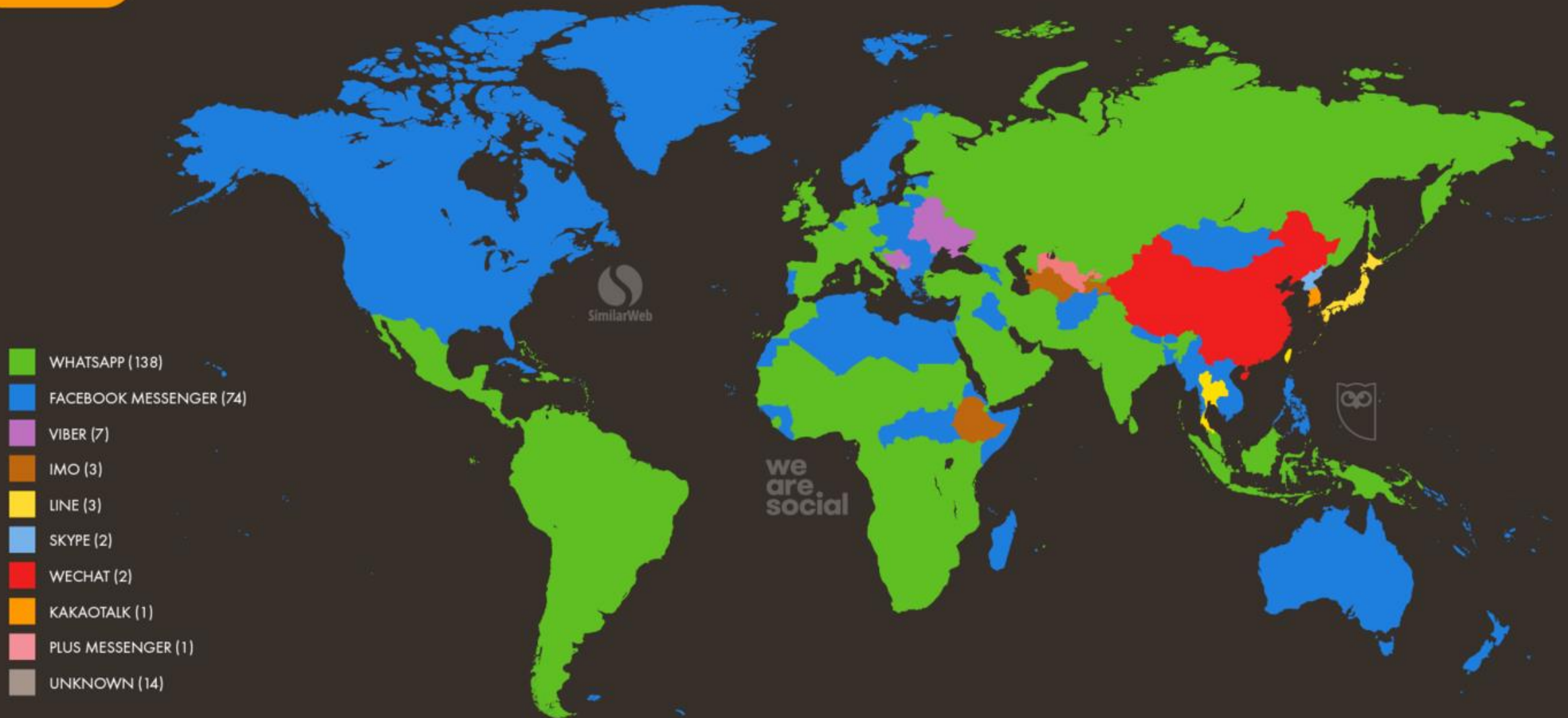


DATA UPDATED TO:
20 APRIL 2020

JAN
2020

TOP MESSENGER APPS AROUND THE WORLD

THE MOST ACTIVE MESSENGER APP* IN EACH COUNTRY OR TERRITORY IN DECEMBER 2019



SOURCE: SIMILARWEB (JANUARY 2020). ***NOTES:** RANKINGS ARE BASED ON MESSENGER APPS WITH THE HIGHEST NUMBER OF AVERAGE DAILY ANDROID APP USERS IN EACH RESPECTIVE COUNTRY OR TERRITORY DURING DECEMBER 2019. FIGURES IN PARENTHESES IN THE LEGEND DENOTE THE NUMBER OF COUNTRIES OR TERRITORIES IN WHICH EACH APP IS THE TOP-RANKED MESSENGER. FIGURE FOR FACEBOOK MESSENGER INCLUDES MESSENGER Lite.

7/21/2020

Dr. Norrathep Rattavipanon

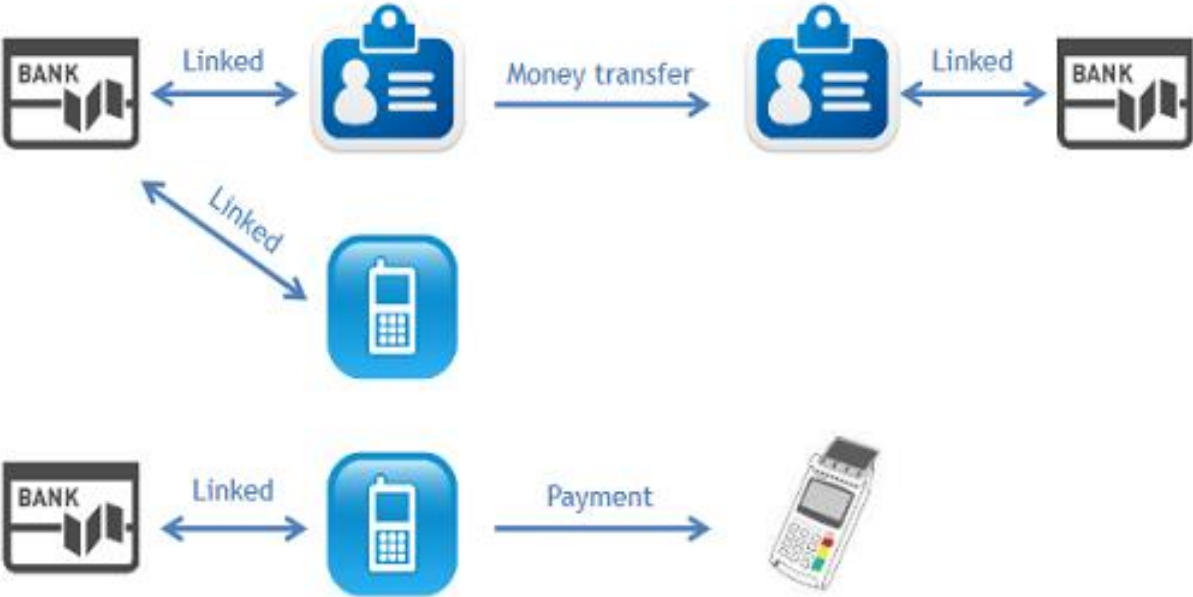
2. Online Payment Services

Can you name applications that provide online payment services?

- _____
- _____
- _____
- _____
- _____

Thailand PromptPay (E-Payment)

How PromptPay works



Source: BOT, MKE-ISR



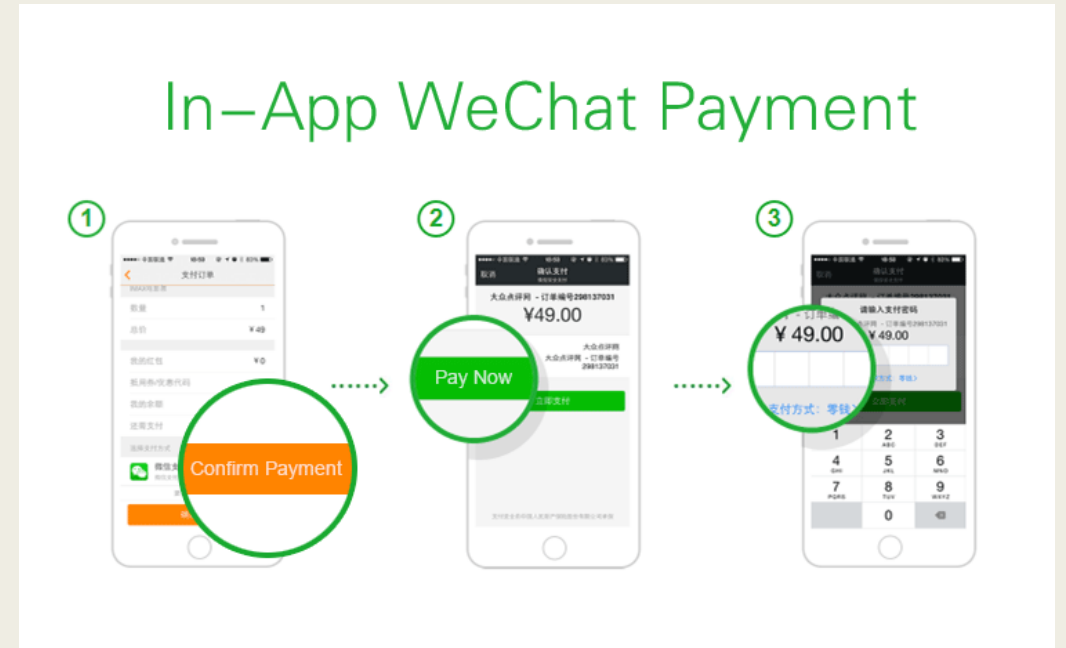
WeChat Payment



WeChat Pay



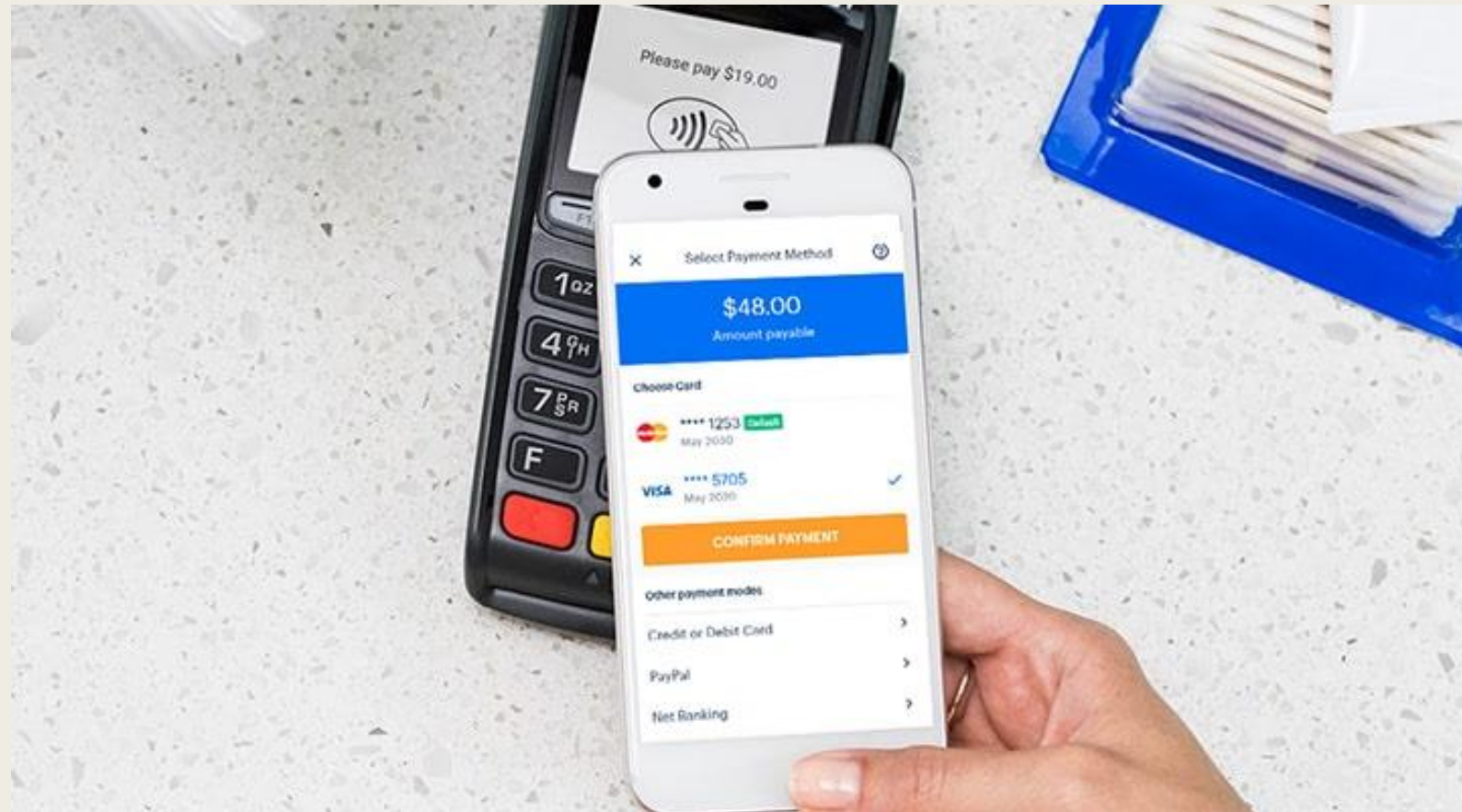
QR Code Payment





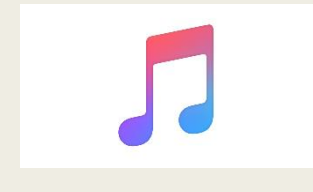
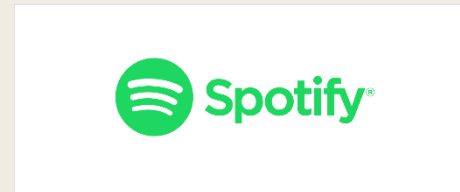
PAYPAL

Pay in PAYPAL via Near-Field Communication (NFC)



3. Entertainment Web Services

- YouTube
- NETFLIX
- Spotify
- Apple Music?



Give an entertainment web service in China

4. Internet-of-Things (IoT)

- Internet + Things
- Internet -> provide an ability to send and receive data from/to anywhere around the world
- Things -> computing devices such as laptops, PC, supercomputers, smartphones, or embedded devices

Definition of IoT

- System of interconnected computing devices that exchanges data over a network (e.g., internet)
- Usually when talking about “things” in IoT, we refer to small “things”, i.e., embedded devices
 - *Big “things” (PCs, laptops or even smartphones) are not interesting*
- IoT turns normal (mechanical) devices into “smart” devices

What features make it “smart”?

Watch



Smartwatch



What features make it “smart”?

Door lock



Smart Door Lock



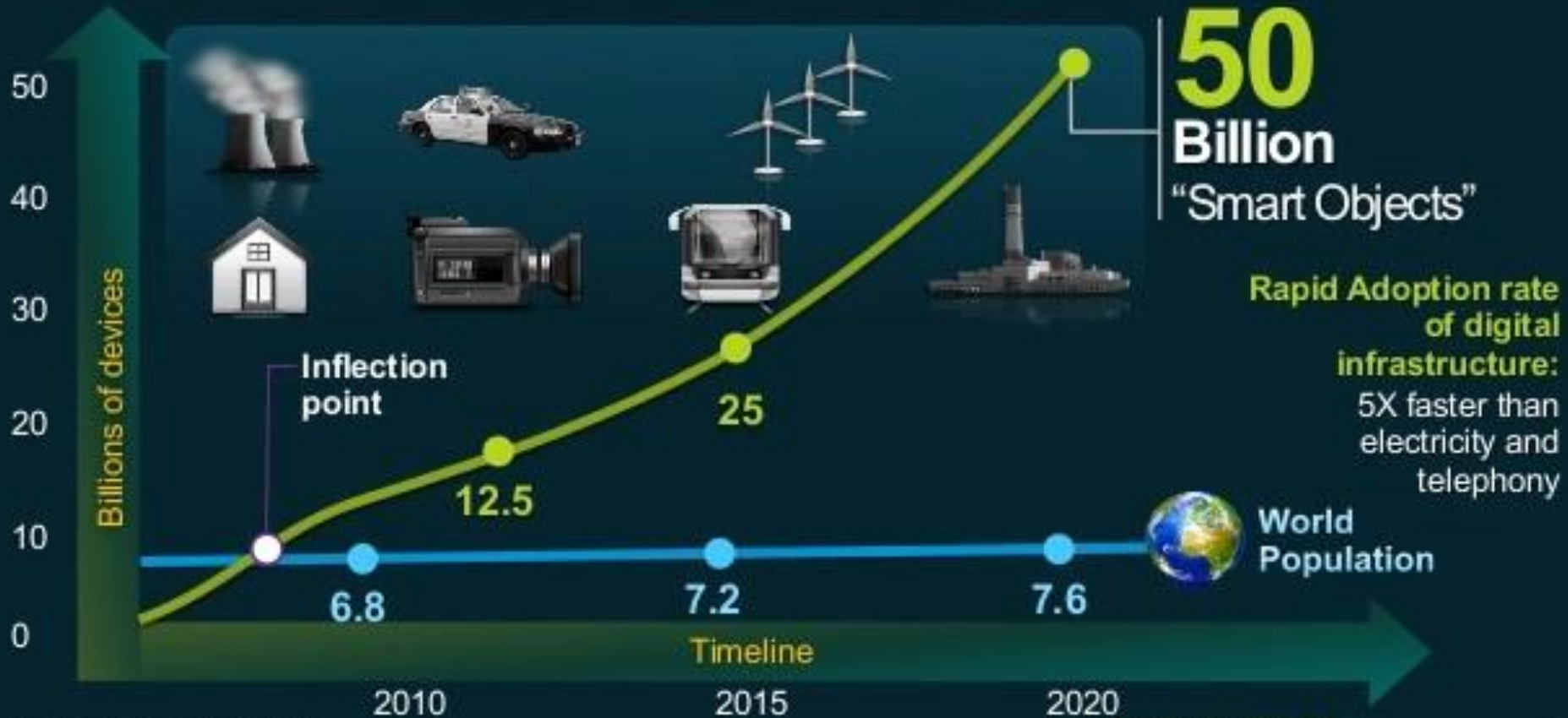
What features make it “smart”?

Car

??



The Internet of Things is Already Here



<https://delta2020.com/component/content/article?id=150:an-accelerating-iot-adoption-rate-will-benefit-the-digital-economy>

IoT Applications



Smart Home



Smart Office



Smart City



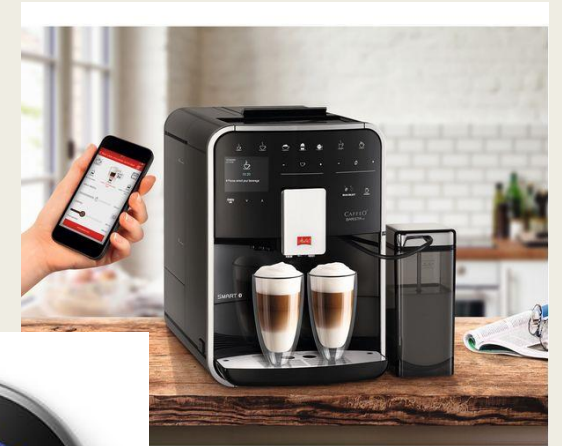
etc.

Live Demo for (Smart) Home Automation

Smart Home: Imagine your life at home

When you wake up

- Curtain is open automatically
- Heater/AC adjusts temperature in your bedroom
- Coffee is freshly brewed and ready to drink



During the day

- Control speakers and lights using voice
- Food supplies are restocked automatically
- Vacuum cleaner automatically runs when you are not around






CES 2019

smart home tech



CASE STUDY

**Smart city services for Phuket
By Huawei and others**



Background

- The report, titled “SMART CITY FRAMEWORK AND GUIDANCE FOR THAILAND: SMART CITY SERVICES FOR PHUKET”, was developed to discuss *how Phuket can benefit by using IoT to transform itself into a “smart city”*
- The report was created by Ministry of Digital Economy and Society, Digital Economy Promotion Agency (depa), and Huawei in collaboration with Roland Berger

<https://www.huawei.com/th/industry-insights/technology/smart-city-framework-and-guidance-for-thailand-smart-city-services-for-phuket>

<https://www.thephuketnews.com/phuket-smart-city-beating-pain-points-with-tech-72876.php>

Four Problems in Phuket

1. Bad transportation, e.g., parking spots, traffic
2. Not enough electricity and clean water production
3. Receive less allocated national budget than it should
 - *Because the number of registered residents in Phuket does not reflect the actual number of inhabitants and visitors*
4. Competition from other tourist destinations

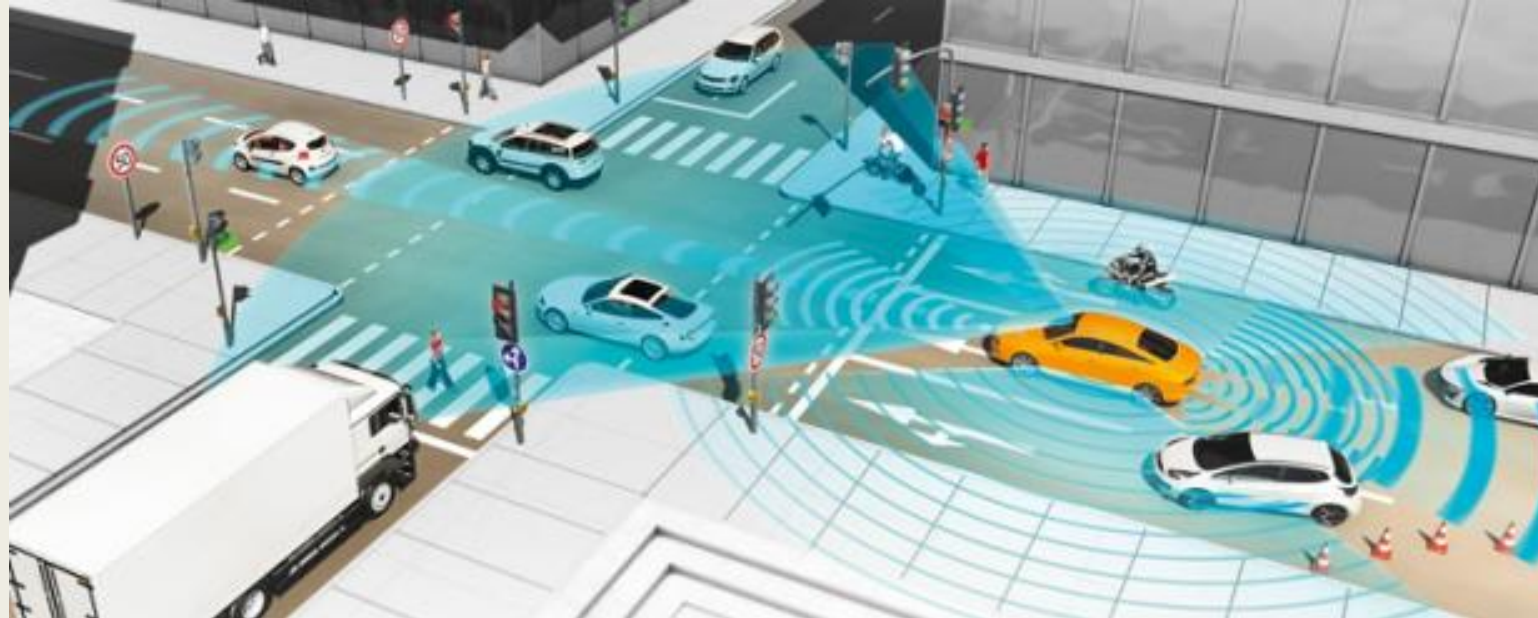
Fixing “transportation” issue: Smart Parking

- Providing real-time information on parking space availability
- Each parking spot has a sensor indicating whether it is taken or not.
- People can check online (using the internet) in advance to see if there is any parking spot available.



Fixing “transportation” issue: Smart Traffic Lights

- Adjust traffic light based on current traffic conditions
- Reduce travelling time from traffic jams



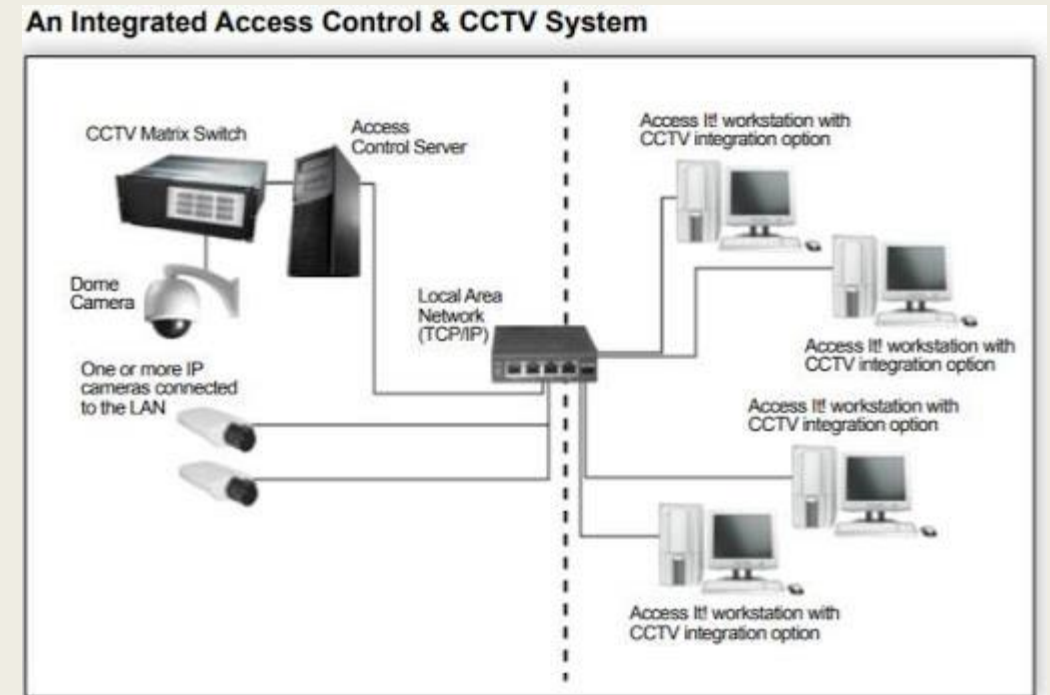
Fixing “not enough electricity/water” issue: Smart Lighting

- Only turn on street lights when there are movements (e.g., people or vehicles)
- Reduce energy consumption



Fixing “budget allocation” issue: Integrated CCTV System

- Real-time monitoring to identify suspects on the street
- Increase in safety
- Can accurately capture number of residents staying in Phuket



Fixing “tourism” issue: Smart Tourism

- Provide mobile application that shows the most interesting events, up-to-date information and relevant information for tourists



NicoElNino/Shutterstock.com

Expected Outcome

- Boost local economy by 4.5% in the next 5 years
- The city is more efficient
 - *Reduce electricity/water cost*
 - *Reduce time to travel using public transportation*
 - *Increase in safety*
 - *Easier to navigate/travel around the city*

Applying what I have learned from this case study to other cities

- Similar concept can be used in other cities in Thailand
- For example:
 - *Smart public transportation for Chiangmai, where public transportation is not very good*
 - *Integrated CCTV system should be used in Bangkok, where safety is and has been a problem*
 - *Smart tourism should be applied to all tourism-based cities, e.g., Chiangmai, Bangkok or Krabi*

Smart cities require more than just IoT

- IoT => many small devices generating a lot of data
- Big Data
- Big Data Analytics: Machine Learning
- Big Data Protection: Security and Privacy
- Better network communication => 5G or better
- Etc.



Smart Cities

SHIFT

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IOT IN DIFFERENT SETTINGS?



WHAT I AM
CURIOUS TO
SEE: HOW CAN
IOT BE USED IN
DIVING
INDUSTRIES??
MAYBE VR IN
DIVING?

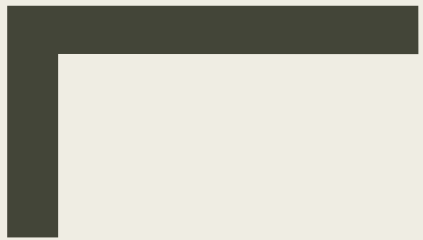
Reminder

- Homework presentation on Thursday, July 23rd. Case study of IoT's impact to society.
- No class next Tuesday, July 28th.
- Midterm is coming up in 2 weeks: August 5th.
- Quiz is due 3pm next Tuesday, July 28th.

Quiz

- Will become available after class on LMS
- Open book, open internet, open lecture slides. No talking about questions with other people.
- 11 questions, 10 points total.
- You only need to do the first 10 questions and may skip 11th question (about cloud computing); 11th question hasn't been covered in class and contains no point for this quiz.
- “Justify your answer” => explain your reasoning for your answer.
- **Answer with no justification receives 0 point.**
- If you are not confident with your English writing skills, answer in BOTH CHINESE and ENGLISH. I will first grade your English answer and if you lose points because of language issues, you may appeal and I will grade your Chinese answer.
- **REMEMBER ZERO-TOLERANCE POLICY FOR CHEATING; cheating will result in 0 point for the quiz and may result in failing this course!!!!!!!**

Group Presentation



Q/A

