

Mobile Computing

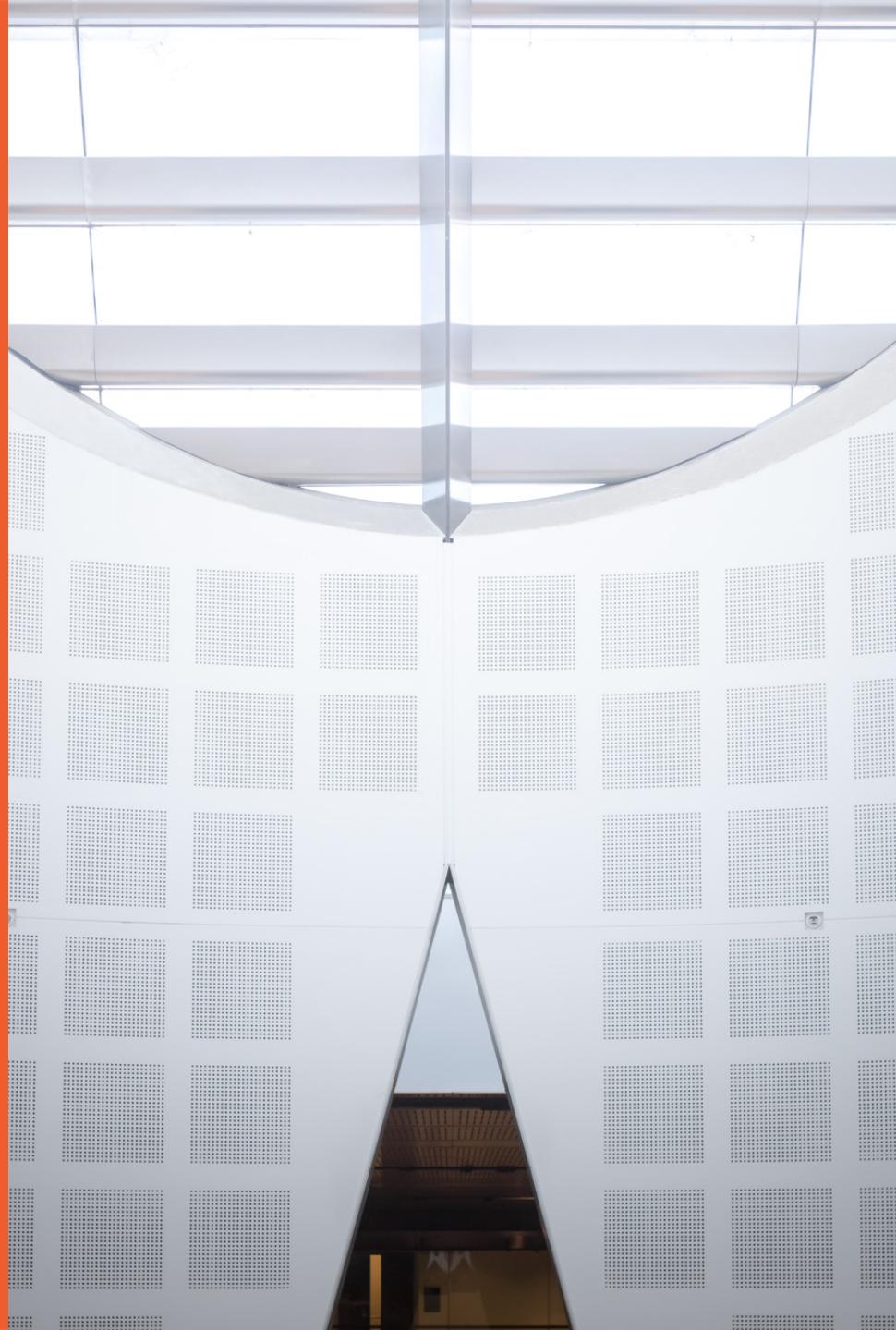
COMP5216

Week 01 - Introduction
Semester 2, 2020

Dr. Kanchana Thilakarathna
School of Computer Science



THE UNIVERSITY OF
SYDNEY



Acknowledgement of Country

I would like to acknowledge the Traditional Owners of Australia and recognise their continuing connection to land, water and culture. I am currently on the land of the Gadigal people of the Eora Nation and pay my respects to their Elders, past, present and emerging.

I further acknowledge the Traditional Owners of the country on which you are on and pay respects to their Elders, past, present and future.

Welcome all to COMP5216...!

Kanchana Thilakarathna

Lecturer in Distributed Computing
School of Computer Science
Faculty of Engineering

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W: <http://sydney.edu.au/engineering/people/kanchana.thilakarathna>



Outline

- Online teaching in the time of COVID
- WHS
- Why this course ?
- Course Logistics
 - Lectures/Tutorials
 - Assessments
 - Expectation and Outcomes
- Mobile Ecosystem
- What is your “role” as students of COMP5216?
- Tutor introduction

Keeping our community safe

We can all help reduce the spread of COVID-19 through following good hygiene practices:

- **Wash hands regularly**, for at least 20 seconds with soap and water, or use an alcohol-based hand rub.
- **Cover your mouth** when **coughing and sneezing** with a tissue or a flexed elbow.
- Maintain a **distance of at least 1.5m** between yourself and others, where possible.
- **Avoid large gatherings**, where possible.
- **Avoid close contact** with anyone **with cold or flu symptoms**, e.g. fever, cough, runny nose or shortness of breath.

Keeping our community safe

- All students and staff who have cold or flu symptoms should **isolate** themselves from others.
- If you are unwell with cold or flu symptoms **please excuse yourself from this class** and we will support you to continue the work remotely.
- Make sure you read the information on **special consideration** in the unit outline.

Keeping our community safe

- The University is following advice from the government and related public health authorities.
- For the latest information, see the [advice on the University website](#).
- In some classes, especially those involving use of shared equipment, please follow additional advice from your coordinators.
- Please take care of each other and yourselves and if you need support reach out to your unit coordinator or the health and wellbeing area of the [Current Students website](#).

Tips for better online lectures

- Remember that you are still in a space with other students.
- Mute your microphone when not speaking.
- Use earphones or headphones - the mic is better and you'll disturb others less.
- If you have a webcam, please switch it on so we can see you!
- If you are speaking to the camera, make eye contact with the camera (and therefore your classmates and teacher).
- Try not to talk over someone else.
- Use the chat function to send messages to the teacher or classmates during class.

Tips for students learning online

- For tips and guides on learning online and the tools you will use, refer to [Learning while off campus resources](#) in Canvas.

The screenshot shows a Canvas course page titled "Learning while off campus". The left sidebar features the University of Sydney logo and navigation links: Home, Modules, Pages (which is the active tab), Recorded Lectures, Dashboard, Courses, Calendar, Inbox, Studio, and OLE. The main content area includes a breadcrumb trail: UNIV_STUDENT_CANVAS_GUIDE > Pages > Learning while off campus. A "View All Pages" button is also present. The page content discusses the unique challenges of learning off-campus and provides tips for staying positive and productive. It lists several sub-topics under "On this page:":

- [How can I keep up to date with my study?](#)
- [How should I access classes like lectures and tutorials?](#)
- [What should I do in a live-streamed class?](#)
- [How can I communicate with my teachers?](#)
- [How can I communicate with my classmates?](#)

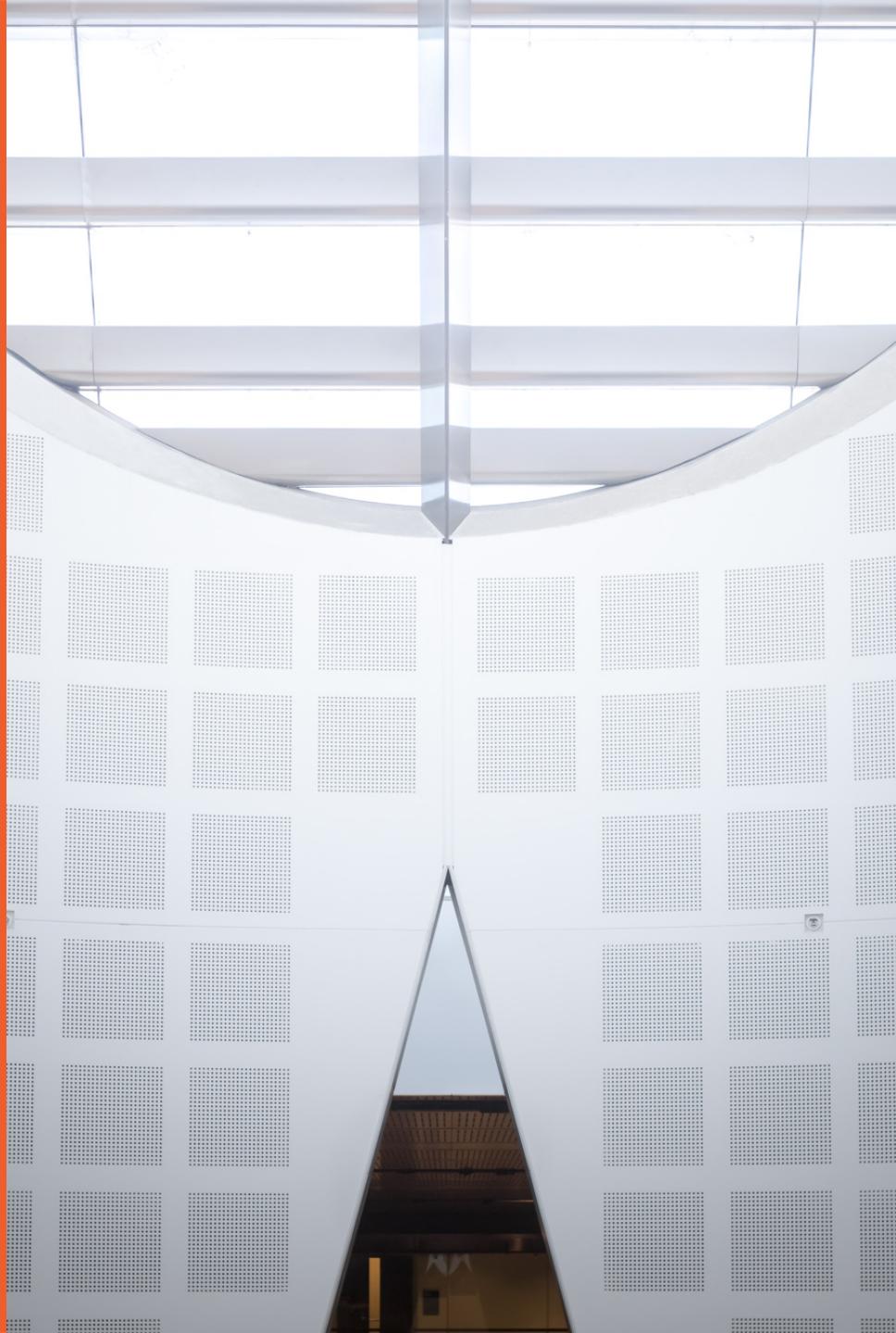
On the right side of the page, there is a photograph of a student sitting on the floor by a window, looking at a laptop screen.

WHS Induction

School of Computer Science



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General Housekeeping – Use of Labs

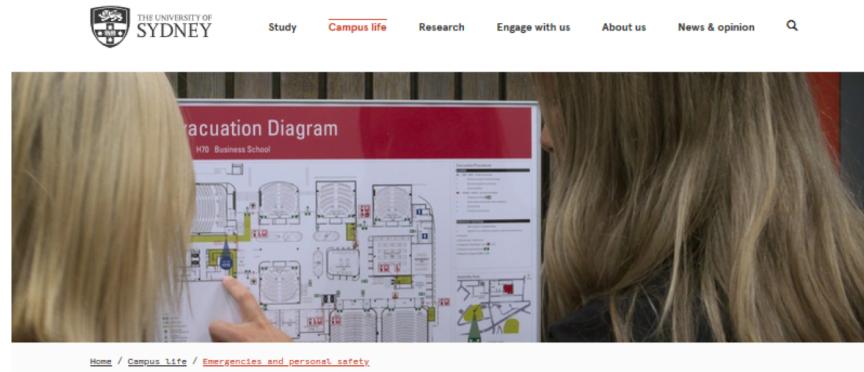
- Keep work area clean and orderly
- Remove trip hazards around desk area
- No food and drink near machines
- No smoking permitted within University buildings
- Do not unplug or move equipment without permission



EMERGENCIES – Be prepared



<https://sydney.edu.au/campus-life/safety-security.html>



← Home

← Campus life

Accommodation

What's on

Health, wellbeing and success

Clubs and societies

Getting to campus

Sports and fitness

Food, shops and bars

Emergencies and personal safety

Maps and locations

Life in Sydney

University_

Emergencies and personal safety

Procedures to follow in the case of an emergency

We're committed to keeping our students, staff and visitors safe.

Emergencies can occur at any time for a variety of reasons. Be prepared to respond independently, particularly if working after hours. Watch our [video on emergency procedures](#) and read our [tips for staying safe on campus](#).

In an emergency

1. Dial triple zero (000) +

2. Call Campus Security on 9351 3333 +

Counselling, support and reporting services

If you have witnessed or been involved in a critical incident, whether on or off campus, and would like to talk to a counsellor:

Students should contact the University's [Counselling and Psychological Services](#) on 8627 8433 or 8627 8437 (9am to 5pm, Monday to Friday).

Share

Safer communities on campus

Our commitment to building a safer campus



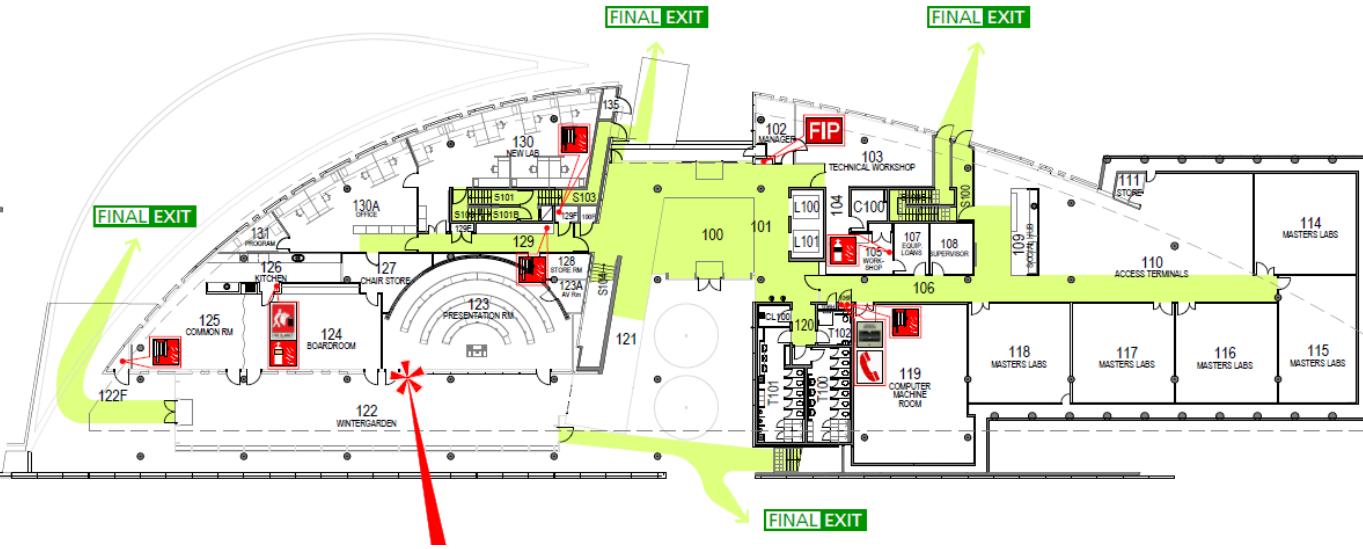
Emergency alerts

Find out about our system

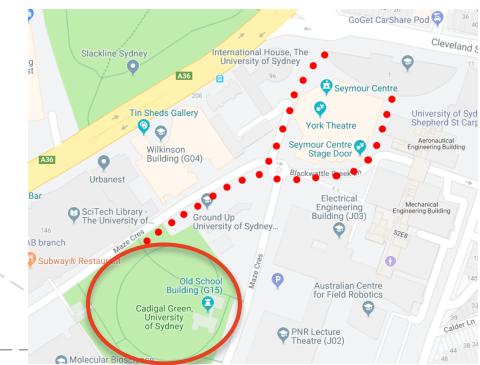


EMERGENCIES

WHERE IS YOUR CLOSEST SAFE EXIT ?



**Assembly Area:
Cadigal Green**



EMERGENCIES

Evacuation Procedures

ALARMS



BEEP... BEEP...

Prepare to evacuate

1. Check for any signs of immediate danger.
2. Shut Down equipment / processes.
3. Collect any nearby personal items.



WHOOP... WHOOP...

Evacuate the building

1. Follow the **EXIT** exit signs.
2. Escort visitors & those who require assistance.
3. DO NOT use lifts.
4. Proceed to the assembly area.

EMERGENCY RESPONSE

1. Warn anyone in immediate danger.
2. Fight the fire or contain the emergency, if safe & trained to do so.
If necessary...
 3. Close the door, if safe to do so.
 4. Activate the **"Break Glass"** Alarm  or 
5. Evacuate via your closest safe exit.  **EXIT**
6. Report the emergency to 0-000 & 9351-3333

Emergency procedures (on campus)

- In the unlikely event of an emergency we may need to evacuate the building.
- If we need to evacuate, we will ask you to take your belongings and follow the green exit signs .
- We will move a safe distance from the building and maintain physical distancing whilst waiting until the emergency is over.
- In some circumstances, we might be asked to remain inside the building for our own safety. We call this a lockdown or shelter-in-place.
- Further information is available at
www.sydney.edu.au/emergency

MEDICAL EMERGENCY

- If a person is seriously ill/injured:

1. call an ambulance 0-000

2. notify the closest Nominated First Aid Officer

If unconscious— send for Automated External Defibrillator (AED)
AED locations.

NEAREST to CS Building (J12)

- Electrical Engineering Building, L2 (ground) near lifts
- Seymour Centre, left of box office
- Carried by all Security Patrol vehicles



3. call Security - 9351-3333

4. Facilitate the arrival of Ambulance Staff (via Security)



Nearest Medical Facility

University Health Service in Level 3, Wentworth Building

First Aid kit – SIT Building (J12)

kitchen area adjacent to Lab 110

School of Computer Science Safety Contacts

CHIEF WARDEN

Greg Ryan
Level 1W 103
9351 4360
0411 406 322



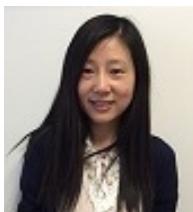
FIRST AID OFFICERS



Julia Ashworth
Level 2E Reception
9351 3423



Will Calleja
Level 1W 103
9036 9706
0422 001 964



Katie Yang
Level 2E 237
9351 4918

**Orally REPORT all
INCIDENTS
& HAZARDS
to your SUPERVISOR**

OR

Undergraduates: to Katie Yang
9351 4918

Coursework
Postgraduates: to Cecille Faraizi
9351 6060
or Keiko Narushima
8627 0872

CS School
Manager:

Priyanka Magotra
8627 4295

Assistance

- There are a wide range of support services available for students: <https://sydney.edu.au/campus-life/health-wellbeing-success.html>
- Please make contact, and get help
- You are not required to tell anyone else about this
- If you are willing to inform the unit coordinator, they may be able to work with other support to reduce the impact on this unit
 - eg provide advice on which tasks are most significant

DISABILITY SERVICES

Do you have a disability?

- You may not think of yourself as having a 'disability' but the definition under the **Disability Discrimination Act** is broad and includes temporary or chronic medical conditions, physical or sensory disabilities, psychological conditions and learning disabilities.
- The types of disabilities we see include:
- anxiety, arthritis, asthma, asperger's disorder, ADHD, bipolar disorder, broken bones, cancer, cerebral palsy, chronic fatigue syndrome, crohn's disease, cystic fibrosis, depression, diabetes, dyslexia, epilepsy, hearing impairment, learning disability, mobility impairment, multiple sclerosis, post traumatic stress, schizophrenia , vision impairment, and much more.
- Students needing assistance must register with Disability Services –
 - it is advisable to do this as early as possible.
- <http://sydney.edu.au/study/academic-support/disability-support.html>

Do you have a disability?

You may not think of yourself as having a 'disability' but the definition under the **Disability Discrimination Act**

(1992) is broad and includes temporary or chronic medical conditions, physical or sensory disabilities, psychological conditions and learning disabilities.

The types of disabilities we see include:

Anxiety // Arthritis // Asthma // Autism // ADHD

Bipolar disorder // Broken bones // Cancer

Cerebral palsy // Chronic fatigue syndrome

Crohn's disease // Cystic fibrosis // Depression

Diabetes // Dyslexia // Epilepsy // Hearing impairment //

Learning disability // Mobility impairment // Multiple sclerosis // Post-traumatic stress // Schizophrenia //

Vision impairment
and much more.

Students needing assistance must register with Disability Services. It is advisable to do this as early as possible. Please contact us or review our website to find out more.



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Disability Services Office
sydney.edu.au/disability
02-8627-8422

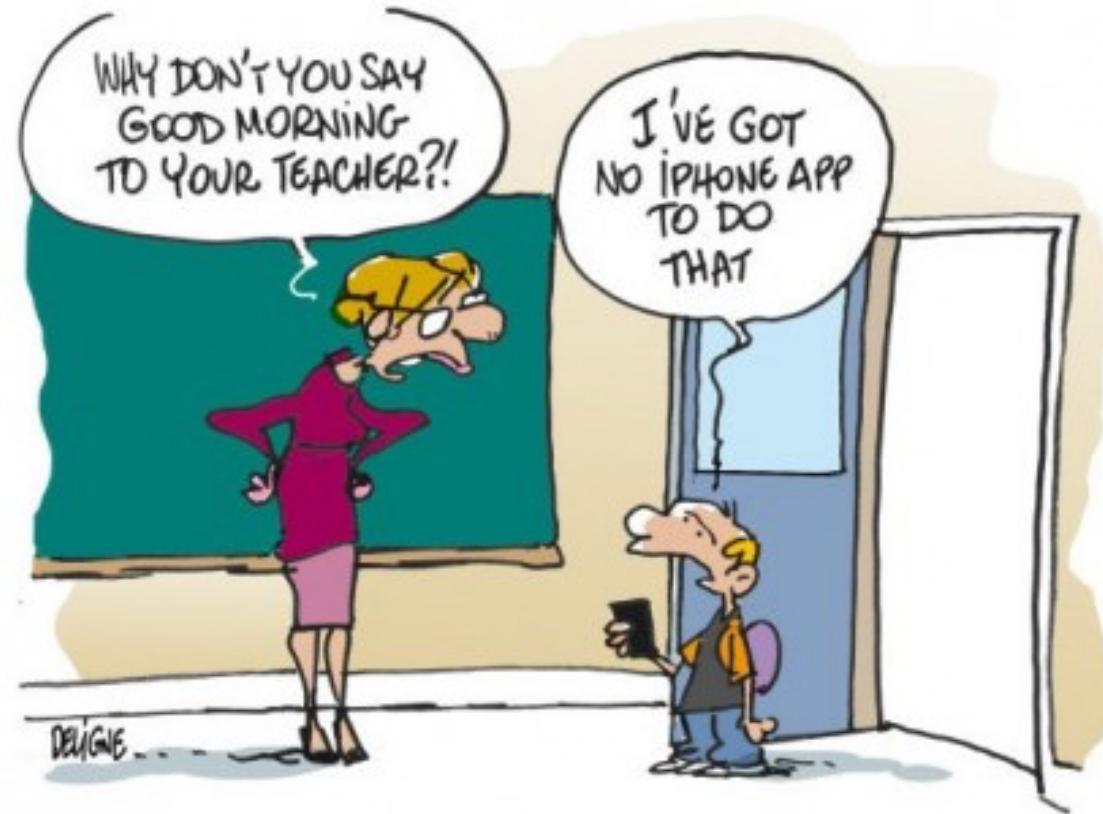


Other support

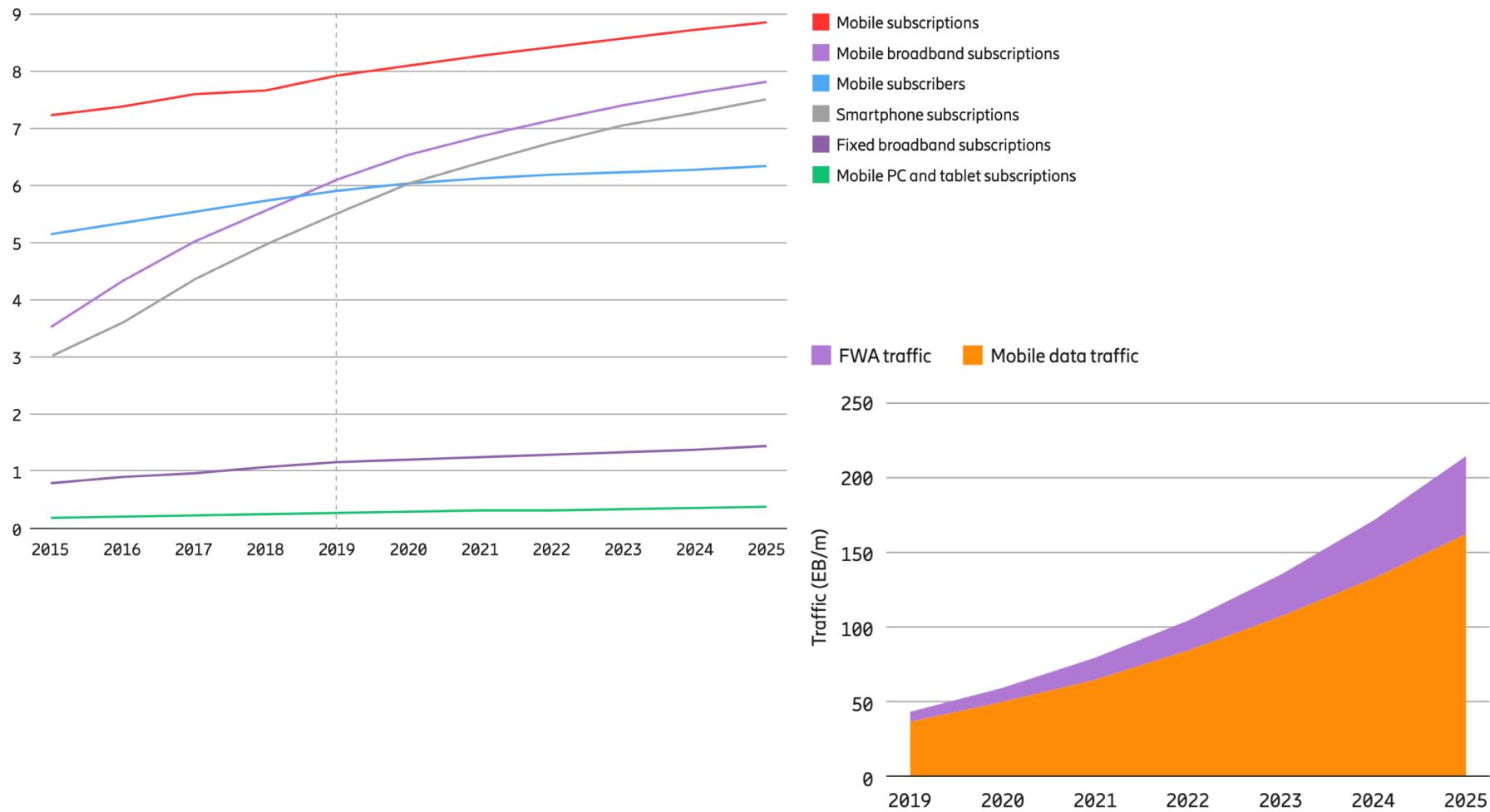
- Learning support
 - <http://sydney.edu.au/study/academic-support/learning-support.html>
- International students
 - <http://sydney.edu.au/study/academic-support/support-for-international-students.html>
- Aboriginal and Torres Strait Islanders
 - <http://sydney.edu.au/study/academic-support/aboriginal-and-torres-strait-islander-support.html>
- Student organization (can represent you in academic appeals etc)
 - <http://srcusyd.net.au/> or <http://www.supra.net.au/>
- Please make contact, and get help
- You are not required to tell anyone else about this
- If you are willing to inform the unit coordinator, they may be able to work with other support to reduce the impact on this unit
 - eg provide advice on which tasks are most significant

Why “Mobile Computing” ?

Got an “App” for everything...

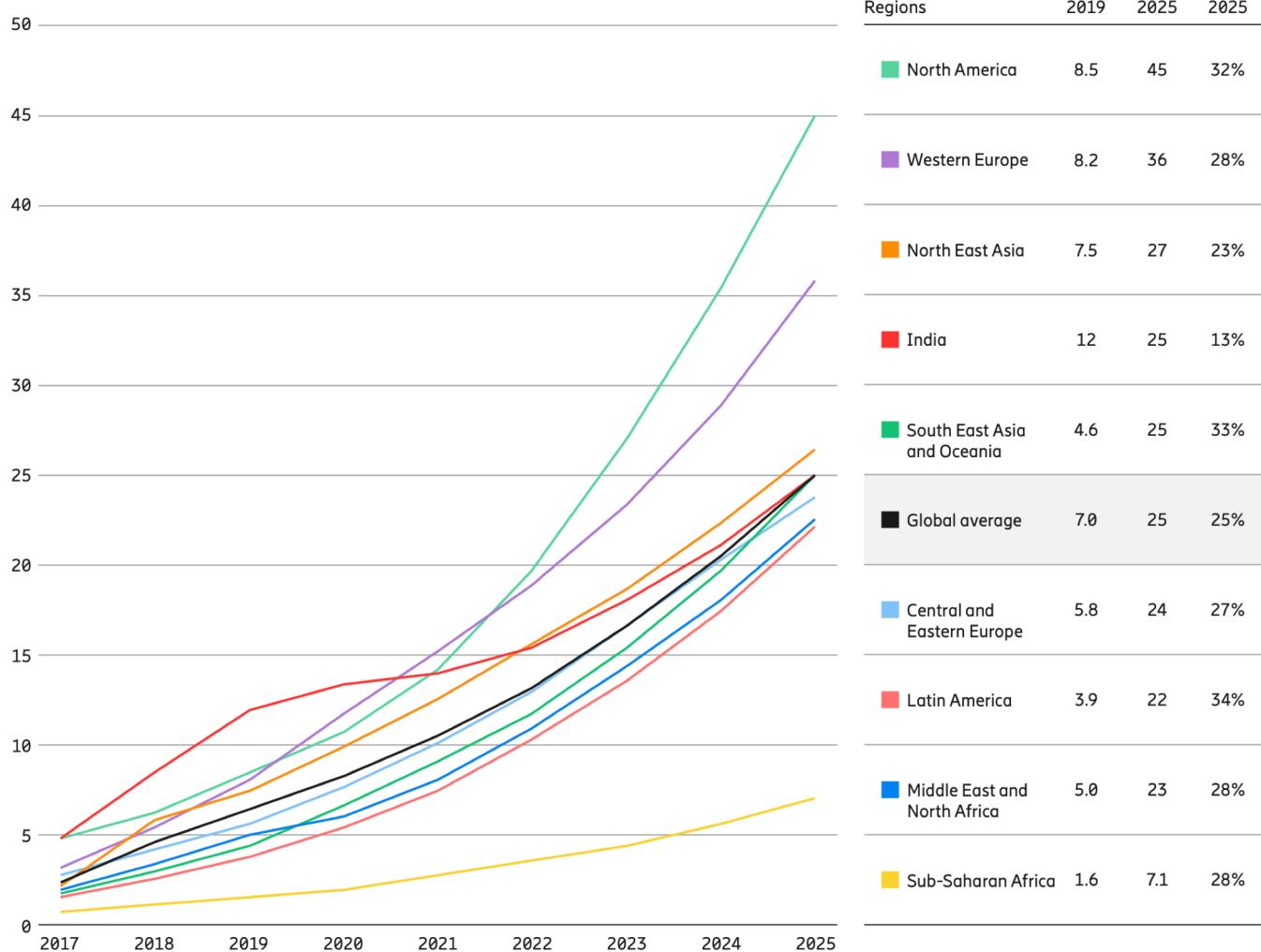


Mobiles are everywhere ... !

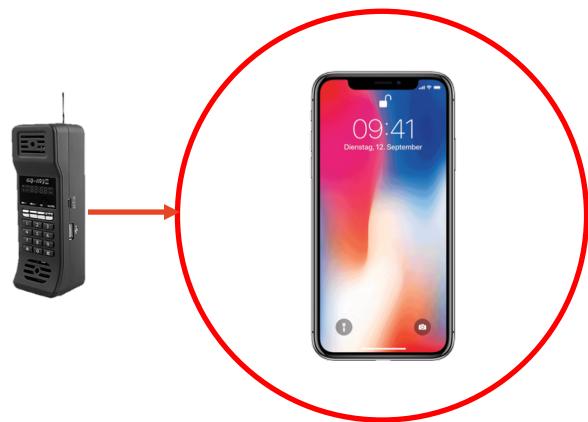


Mobiles are everywhere ... !

Figure 19: Mobile data traffic per smartphone (GB per month)



Revolution of mobile devices



Revolution of mobile devices



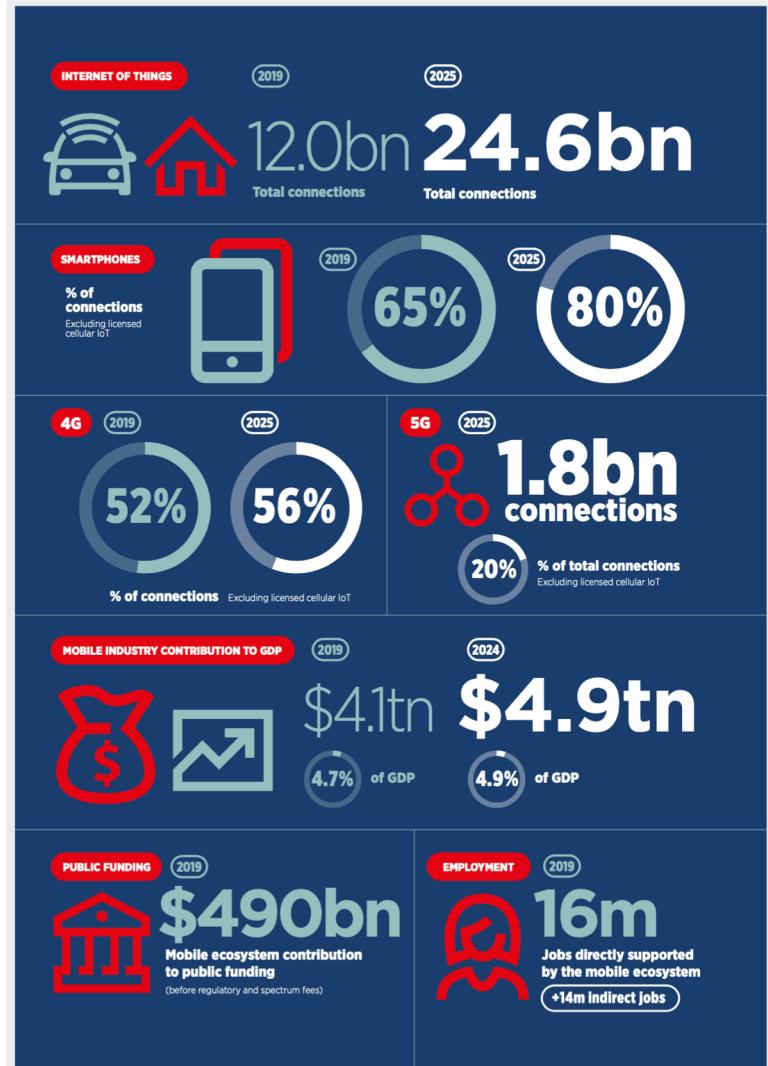
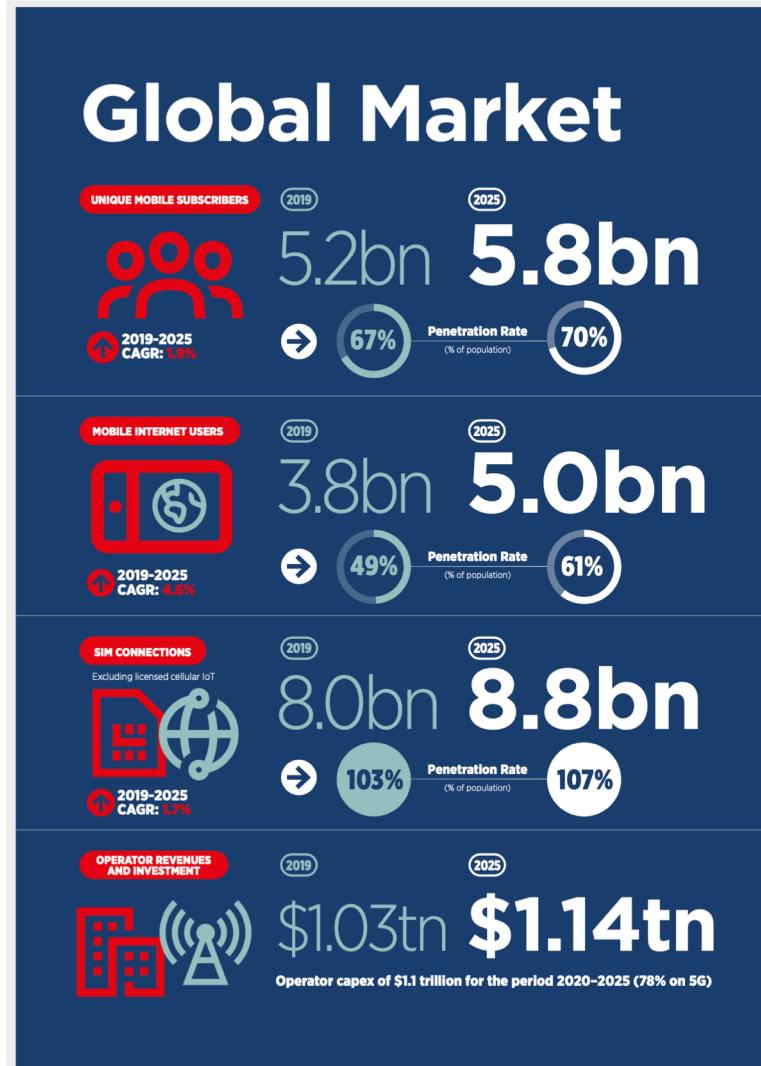
Ever increasing capabilities of mobiles

- Variety**
 - Multiple screen sizes, from \$xx - \$xxxx,
- Multiple input modalities**
 - Type, touch, swipe, speech, gestures
- Connectivity**
 - Cellular (4G), WiFi, Satellite, Bluetooth, NFC
- Sensors**
 - Accelerometer, GPS, temperature,...
- Camera**
 - Ultra-HD video, HDR, depth sensing,...
- Computing power**



Mobility

Ever growing mobile market... !



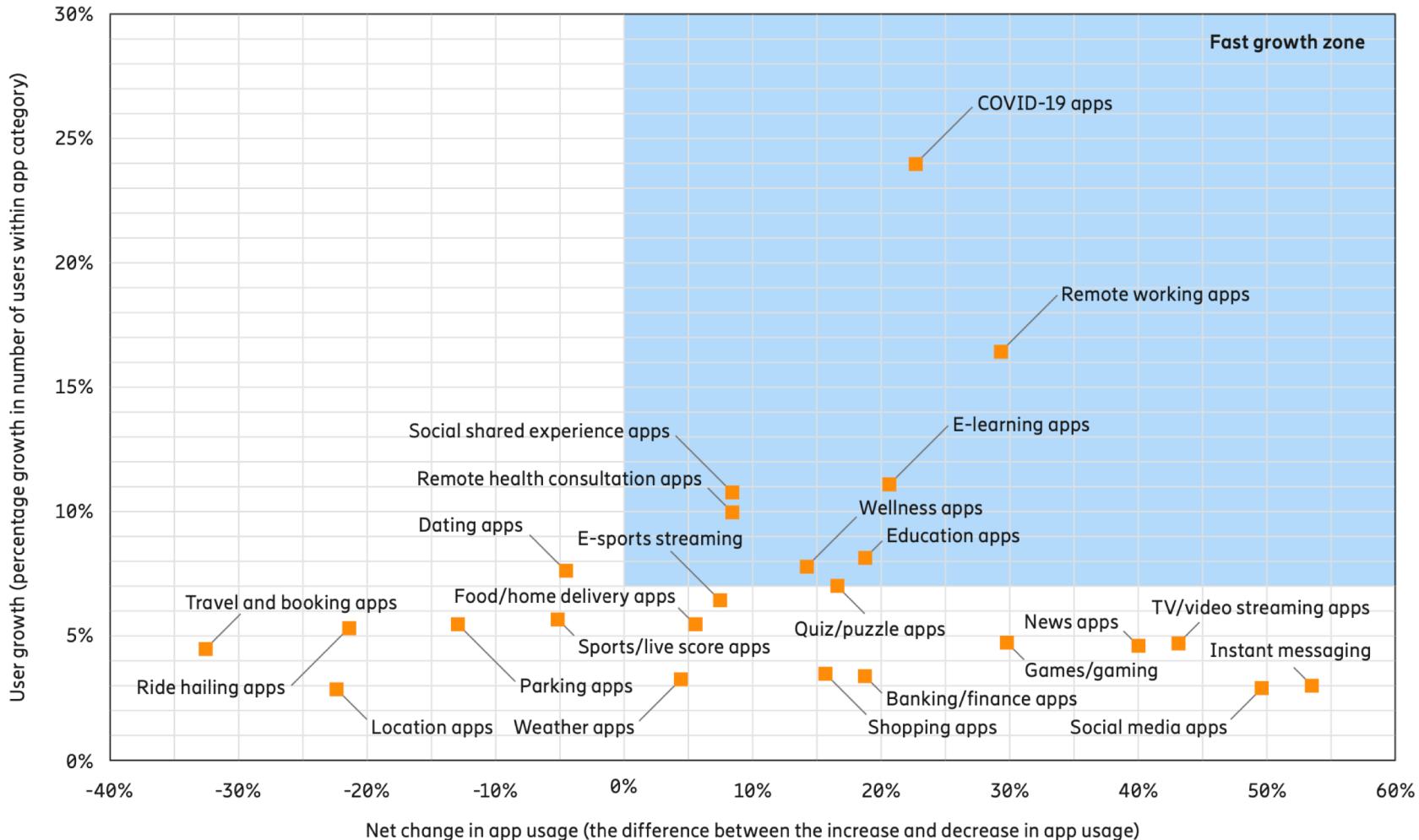
The Mobile Economy 2020, GSM Association.
<https://www.gsma.com/mobileeconomy/>

Impact of Mobile Computing

- **Commerce and Business**
 - Amazon, eBay, Taobao, ...
- **Networking (Social)**
 - Facebook, Twitter, WhatsApp, WeChat, ...
- **Education**
 - Anytime, anywhere, anybody
- **Entertainment**
 - Game, video, mixed reality, ...
- **Tourism**
 - Augmented reality, Maps, ...
- **Health**
 - Fitbit, Apple health kit, Google Fit, ...

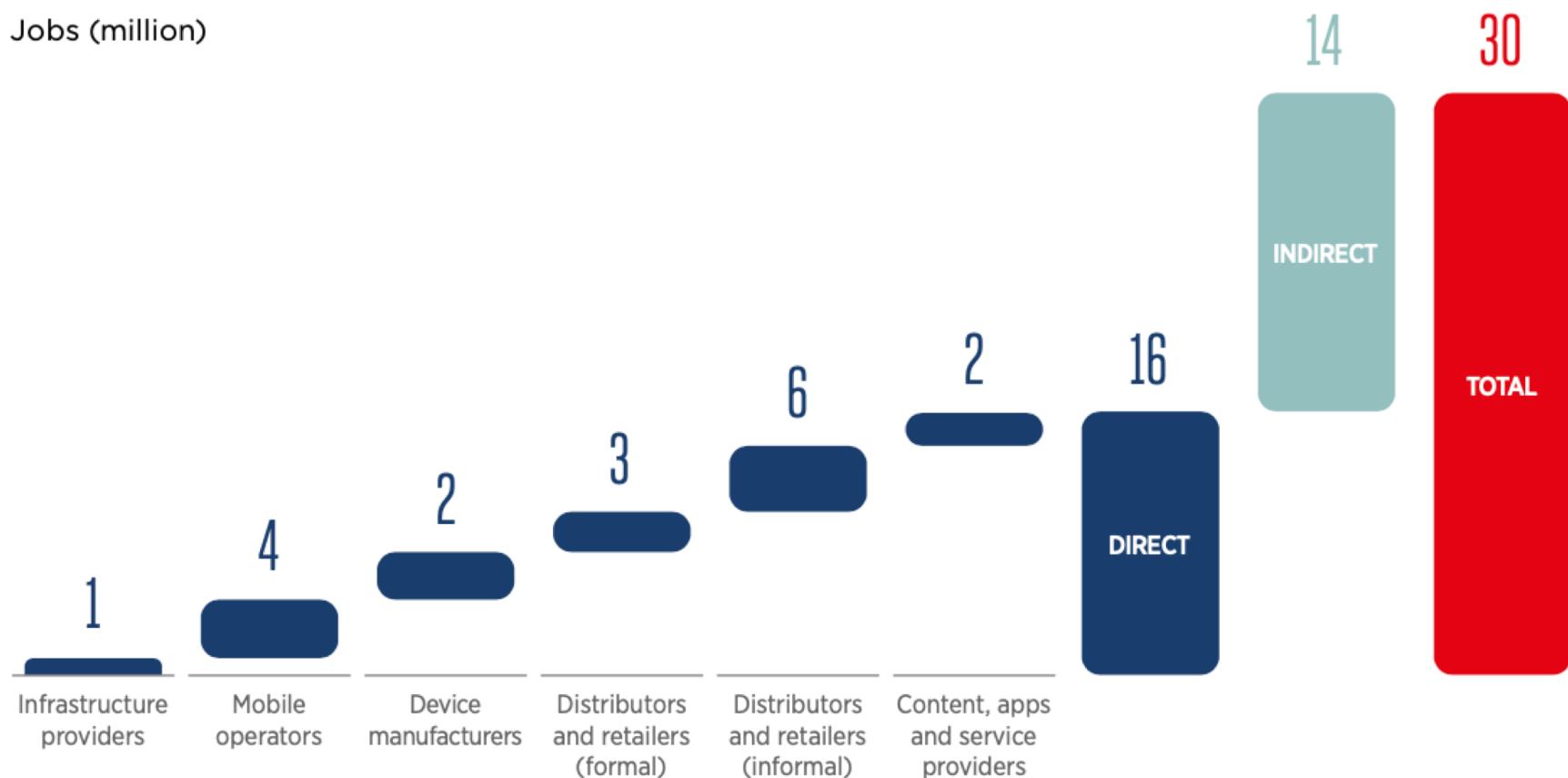
Impact of Mobile Computing

Figure 4: Smartphone apps – user growth and net change in usage during COVID-19 lockdown restrictions



Employment Impact of mobile ecosystem

The global mobile ecosystem directly employs 16 million people, plus another 14 million indirectly through adjacent industries



Course Logistics

COMP5216

Online version: S2, 2020

COMP5216
Week 01 - Introduction
Semester 2, 2020



COMP5216 – Course Description

“Mobile computing is becoming a **mainstream** for many IT applications, due to the availability of more and more powerful and affordable mobile devices with rich sensors such as cameras and GPS, which have already significantly changed many aspects in business, education, social network, health care, and entertainment in **our daily life**. Therefore it has been critical to equip students with sufficient knowledge of such new computing platform and necessary skills. The unit aims to provide an in-depth overview of existing and **emerging mobile computing techniques and applications**, the **eco-system** of the mobile computing platforms, and its key building components. The unit will also train students with hand-on experiences in developing mobile applications in a broad range of areas.”

Course Logistics

- Course Website
 - Canvas: <https://canvas.sydney.edu.au/courses/25953>
- Lectures
 - Week 01 – 12: **Mondays 5:00pm to 7:00pm**
 - Online via Zoom. Refer to Canvas for schedules.
 - Recorded lectures will be made available.
- Labs/Tutorials
 - M19A , M19B, M19C - **Mondays 7:00pm to 8:00pm**
 - T17A, T17B, T17C - **Tuesdays 5:00pm to 6:00pm**
 - **Refer to your timetable for the allocated tutorial room**
 - Android app development with Android Studio
 - Encouraged to experiment with an Android smartphone (if available)

COMP5216 - Schedule

Week	Lectures	Labs/Tutorials	
1	Introduction	Android basics	
2	Mobile App Development 1 – Basics	Handling Interactions	
3	Mobile App Development 2 - Capabilities	Local data storage	
4	Mobile App Development 3 - Challenges	Cloud service	
5	Mobile Networking	Media access	
6	Mobile Security & Privacy	AR/VR	
7	Mobile Cloud & Energy	User management	
8	Mobile Innovation: Beyond Smartphones	Access to sensors	
9	Mobile Innovation: Industry Guest Lecture	Location access	
10	Cross-platform App Development	App analytics and publishing	
11	Demo Day		
12	Course Review	Exam Review	

Schedule
may
Change

Assessment - Assignments

- **Two Assignments** along with the labs/tutorials

Task	Release	Due	Marks
Assignment 1	Week 2	Week 4	5%
Assignment 2	Week 5	Week 8	5%

- Each assignment contains app development exercises
- You need to demonstrate the working app on the due date during the tutoring class

Assessment – Group Project

- Build a Mobile App
- **Group size is 5 (I will confirm the group size on Week 2)**
- Project guidelines will be released on Week 2

Task	Release	Due	Marks
Proposal	Week 2	Week 6	10%
Final (Report, Video, Demo, Presentation)	Week 2	Week 11	30%

- Groups will be created and linked to tutorial classes in Canvas.
 - Try to join to a group linked to your tutorial.
 - Change of tutorial class will be approved if there is enough space.
- **Try to solve a real-world problem that you have**
- Two project help-desk sessions during the semester
- Start thinking now !

Assessment – Final Exam

- **Online final exam**
- Exam type: Take-home short release
- Exams are set up on exam-specific Canvas site
- Exams are taken synchronously during the formal exam period

Task	Due	Marks
Project	Week 6, 11	40%
Assignments (2)	Week 4, 8	10%
Final Exam	Formal Exam Period	50%

- To **Pass** this course, you must
 - Score at **least 50% overall**, and
 - Score at **least 40% in the final exam**

Special Consideration

- In case of **Illness or Misadventure**
 - You can apply for special consideration
- The first thing you do should be
 - **Let the coordinator know** (best by email and while still sick)
 - **Submit your assignment**
- Follow proper bureaucratic procedures
 - Have professional practitioner sign special USyd form
 - Submit application for special consideration online, upload scans
 - Note you have only a quite short deadline for applying
- No special consideration for missing out a few days or being on holiday etc.
 - Take the responsibility of your time management
- University Policy:
http://sydney.edu.au/current_students/special_consideration/index.shtml

Assessment - Late submission policy

- Suppose you hand in work after the deadline:
- If you have not been granted special consideration or arrangements
 - **A penalty of 5% of the maximum marks will be taken per day (or part) late.**
 - **After ten days, you will be awarded a mark of zero.**
 - e.g. *If an assignment is worth 40% of the final mark and you are one hour late submitting, then the maximum marks possible would be 38%.*
 - e.g. *If an assignment is worth 40% of the final mark and you are 28 hours late submitting, then the maximum marks possible marks would be 36%.*
- Warning: submission sites get very slow near deadlines
- Submit early; you can resubmit if there is time before the deadline

Academic Dishonesty & Plagiarism

- Academic Integrity
 - Plagiarism: NO
 - Outsourcing: NO
 - See more details on the course website in Assessment section
- “The University of Sydney is unequivocally opposed to, and intolerant of, plagiarism and academic dishonesty.
 - Academic dishonesty means seeking to obtain or obtaining academic advantage for oneself or for others (including in the assessment or publication of work) by dishonest or unfair means.
 - Plagiarism means presenting another person’s work as one’s own work by presenting, copying or reproducing it without appropriate acknowledgement of the source.” [from site below]
- Submitted work is compared against other work (from students, the internet, etc)
 - Turnitin for textual tasks (through Canvas), other systems for code
- **Penalties for academic dishonesty or plagiarism can be severe**
- University Policy: <http://sydney.edu.au/elearning/student/EI/index.shtml>

Different levels/types of Academic Integrity practice

- Source:
 - Different types of **sources of help** are accepted for **different academic levels** (Junior, Intermediate, Senior, Postgraduate)
- Nature of Help:
 - Different types of help are accepted for **different types of assessment**.
- Two slides explaining “Source” and “Nature” of help allowed
- **You can adjust the chart to suite the academic integrity requirement for your assessments.**

Example 2: Intermediate/Senior level specialist UoS

Source of Help

Lecturer	Teaching Assistants / Tutors	Classmates	Private tutors	Online forums/ Online tutors	Students outside course/UoS	Hired coders Tutorial Company outside University	Relatives	Other
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- Individual assessment
- A student needs to gain an understanding of high level knowledge/skills
- A student needs to gain skills to find, evaluate and apply existing knowledge/solutions

- Encouraged
- Attribution required
- Not acceptable
- Ask Lecturer/Coordinator

Example 2: Intermediate/Senior level specialist UoS

Types of Help

Understanding General Concepts	Explained using similar material (not assignment)	Sharing approach/concept to derive assignment solution	Designing code/solution	Implementing code/solution
--------------------------------	---	--	-------------------------	----------------------------

- Individual assessment
- A student needs to gain an understanding of fundamental knowledge/skills
- It is important to master the knowledge/skills themselves
- Students are encouraged to obtain help through relevant teaching material and practices

- Encouraged
- Attribution required
- Not acceptable
- Ask Lecturer/Coordinator

Expectations

- **COMP5216 is not a programming course.**
- **Pre-requisites**
 - Knowledge in a high level programming language
 - Android programming is based on JAVA
 - Many books in the university library
 - External resources
 - <https://itunes.apple.com/us/itunes-u/introduction-to-programming/id548675644>
 - <https://www.udemy.com/java-tutorial/>
 - <https://itunes.apple.com/us/course/introduction-to-java/id551000192>
 - To understand **Concepts and Principles**
 - To be skillful in **Programming**
 - To practice **Problem Solving**
 - To be **Creative**

Outcomes

- Pursue your passion
- Exercise your creativity
- Gain rewarding experiences
- Understand mobile computing techniques
- Thorough knowledge of mobile app based eco-system

At the end of the course;

- You will be able to develop your own mobile app
- May be you will be able to publish it in the app store
- May be you will be able to start your own business
- Participate and win an App Competition

Mobile Ecosystem

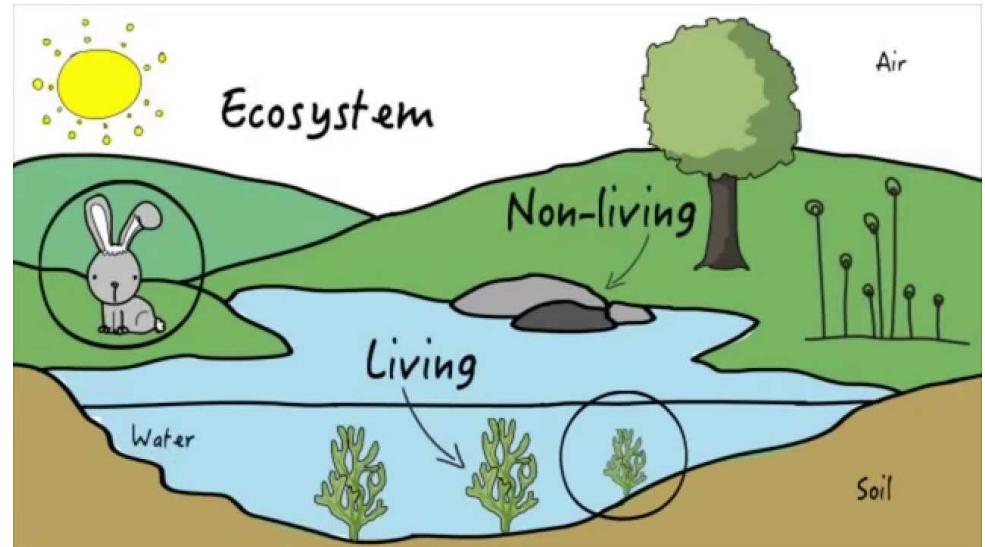
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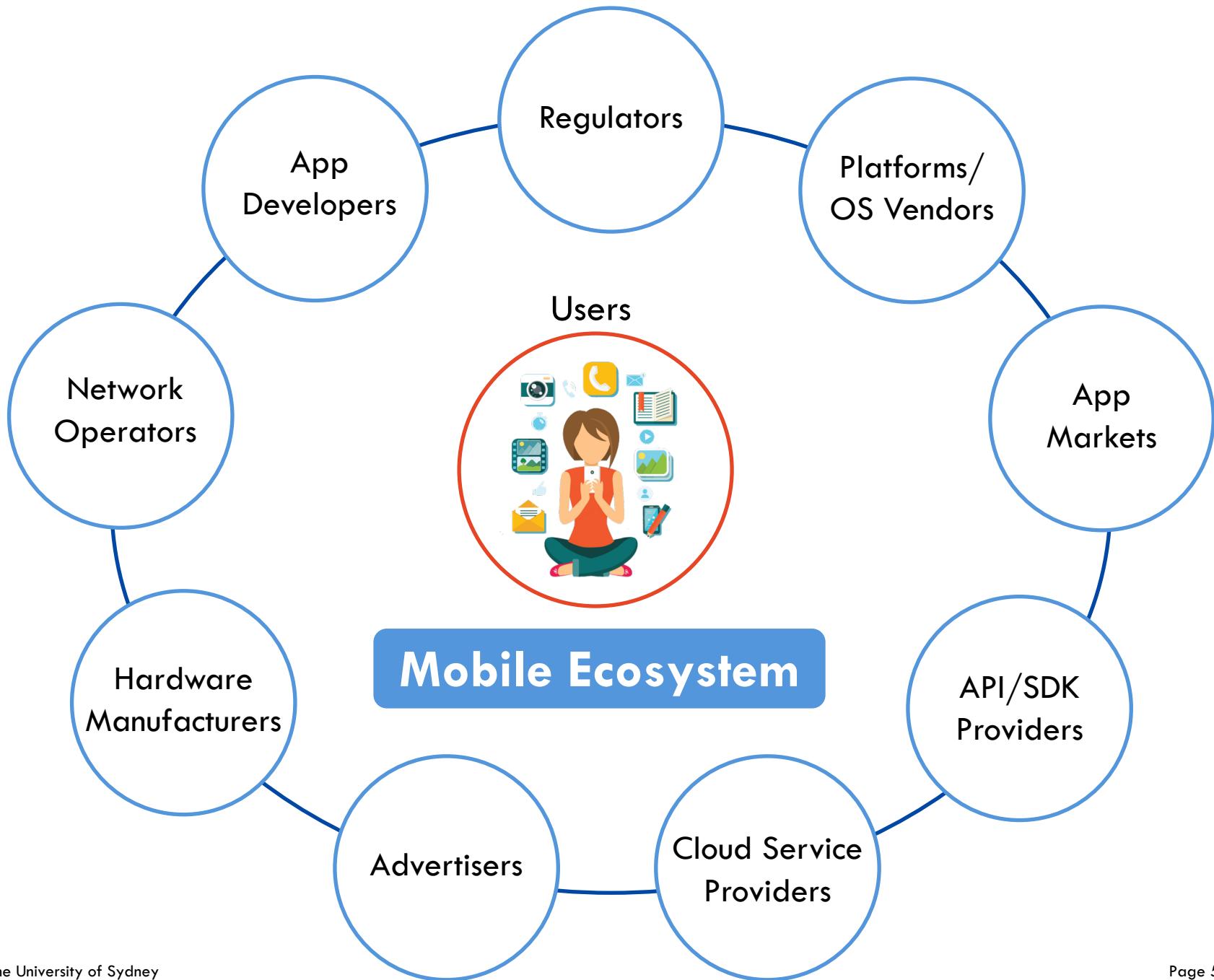


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Mobile Ecosystem

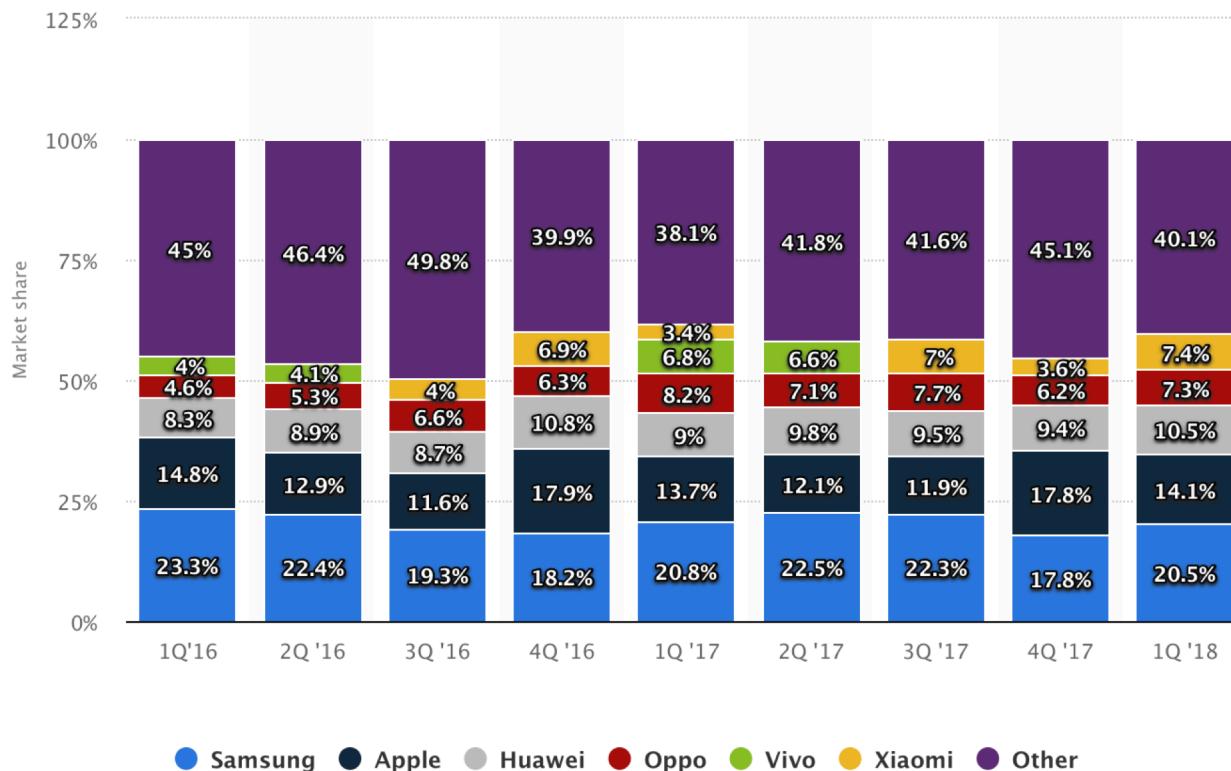
- Number stakeholders interact as a system to provide or consume hardware and software related to smartphones, each having different benefits (financial or non-financial).
- Example stakeholders,
 - Manufacturers
 - Distributors
 - Infrastructure providers
 - Advertisers
 - Users





Hardware Manufacturers

- Hardware:
 - Google, Apple, Samsung, Nokia, Huawei, HTC, ...



— Smartphone unit sales - <https://www.statista.com>

Platforms/OS Vendors

	OS	Maintained By	OS Details	Hardware Vendors	Development Tools
	Android	Google	Unix-like	Samsung HTC Motorola	Android Studio Eclipse Java
	iOS	Apple	Unix-like	Apple	Xcode Swift (Used to be Object C)
	Windows	Microsoft	Windows	Microsoft HTC (Nokia)	Visual Studio C#
	Blackberry	RIM	Unix-like	RIM	Momentics IDE C/C++

Many other small players



Smartphone platforms

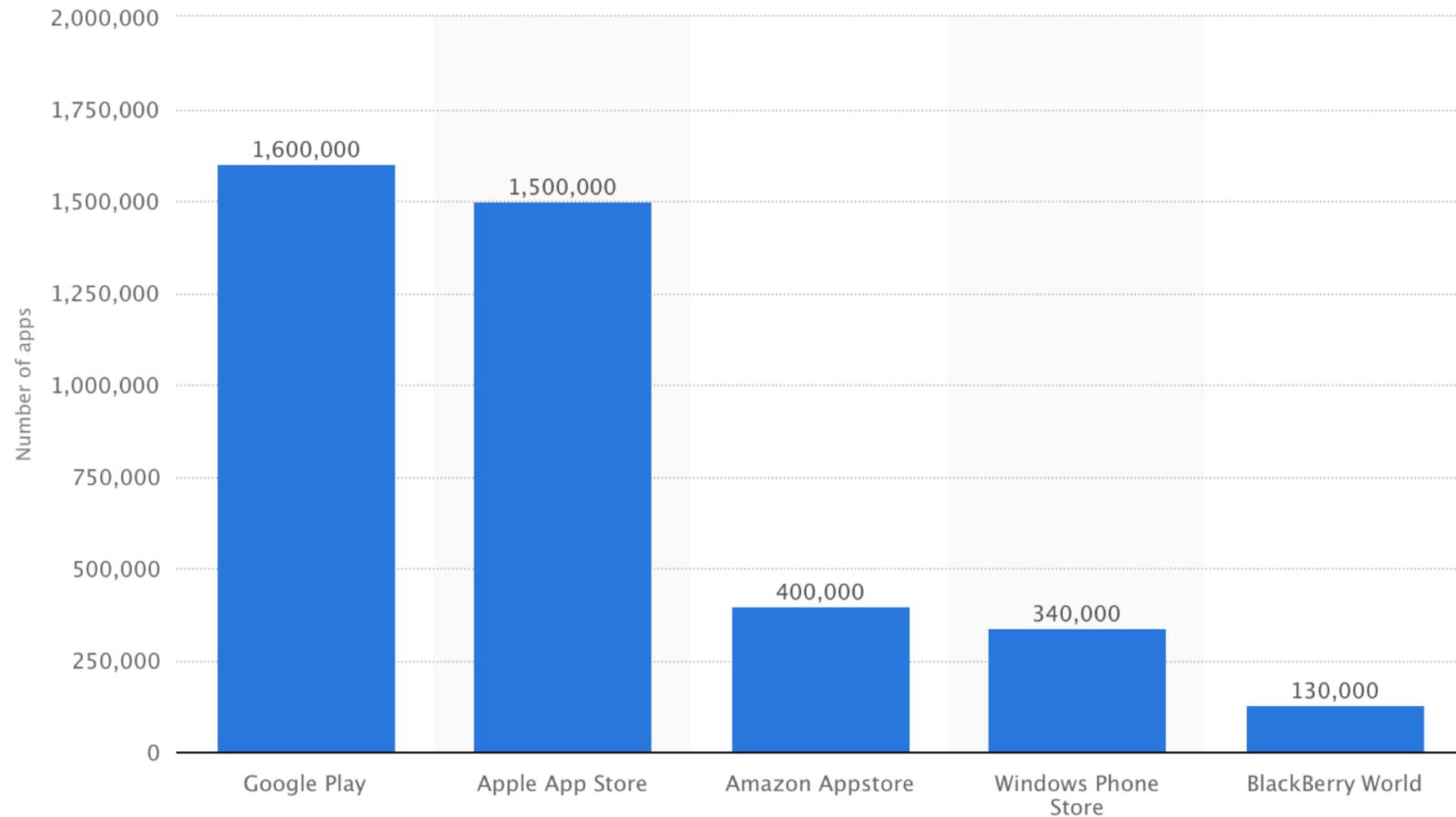
	OS	Maintained By	OS Details	Hardware Vendors	Development Tools
	Android	Google	Unix-like	Samsung HTC Motorola	Android Studio Eclipse Java
	iOS	Apple	Unix-like	Apple	Xcode Swift (Used to be Object C)
 Windows Phone	Windows	Microsoft	Windows	Microsoft HTC (Nokia)	Visual Studio C#
	Blackberry	RIM	Unix-like	RIM	Momentics IDE C/C++

Many other small players



Firefox OS

App Markets



<https://www.statista.com>

Smartphone apps

- **Free:** Users can download and use these apps without any direct cost. However, most of the time these apps contain in-app advertisements.
- **Paid:** In the case of paid apps, users are required to make a payment before the app can be downloaded. Subscription based apps involve a recurring payment to get continuous access to the services offered.
- **Freemium:** These apps are offered for free as well. However, a user only has access to a limited set of features or levels of the app, and the rest is locked.

Third Party API/SDKs Providers

- Advertising (Provides In-App advertisements)



- Analytics (Collect data from users for analytics)



- Bug Tracking (Assist developers identify problems/bugs)

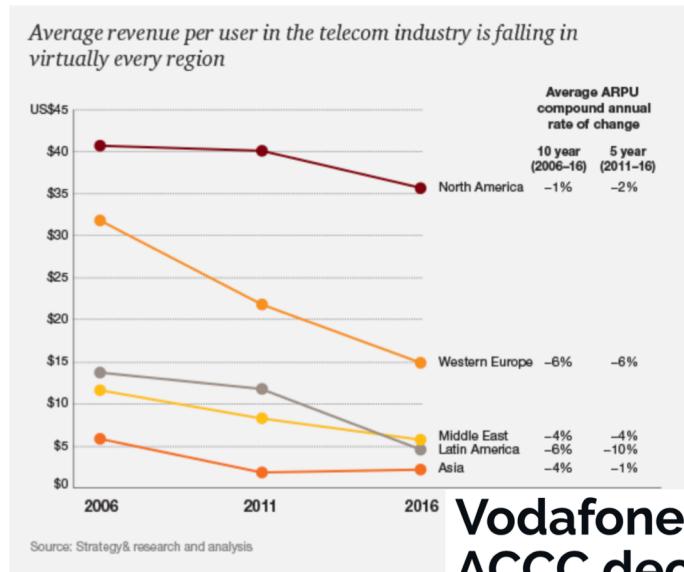


- Payments (Provides capabilities to support in-app purchases)



Network Operators

- Provides the “pipe” to all the applications
- Capacity crunch (Access network and Backhaul bottlenecks)
- Slightly left out of the food-chain
- Inefficient app designs cause network overloads



Global mobile revenues to decline for first time in 2018



Written by [Dawinderpal Sahota](#) | 14 October 2013 @ 11:25



Vodafone revenue down to AU\$3.4b on ACCC decision

e revenue

Vodafone Australia reported a net loss of AU\$2418 million on revenue of AU\$3.35 billion thanks to the AU\$470 million impact of the regulator's decision to cut the rates for mobile termination.

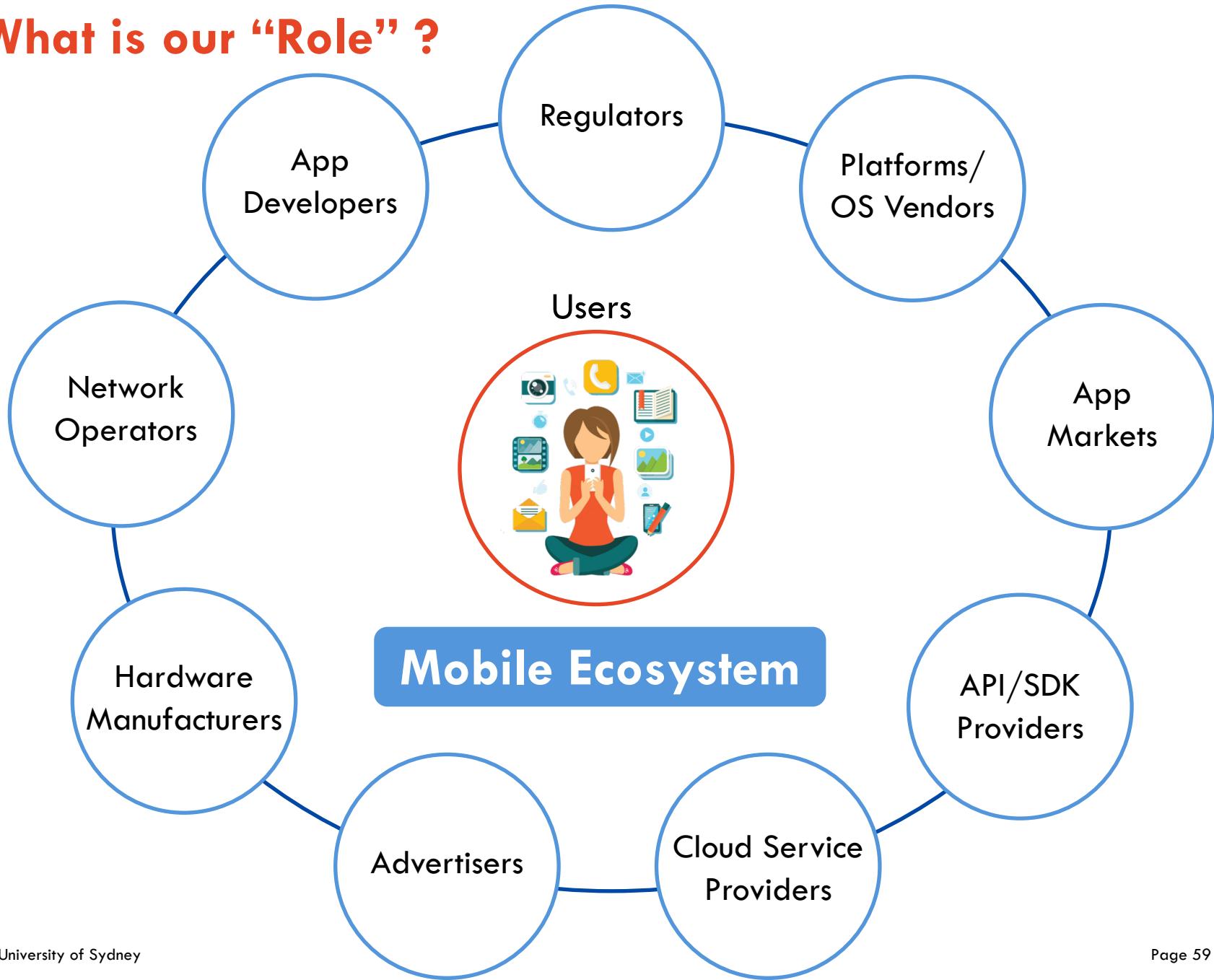


By [Corinne Reichert](#) | February 23, 2017 -- 05:38 GMT (16:38 AEDT) | Topic: [Telcos](#)

Regulators

- Government Regulations
 - Australian Consumer Rights
 - <https://www.accc.gov.au/consumers/consumer-rights-guarantees>
 - EU General Data Protection Regulation (GDPR)
 - <https://www.eugdpr.org>
 - NIST – National Institute of Standards and Technology
 - <https://www.nist.gov>
- Industry standards
 - ISO standards, IEEE standards
- Human ethics
 - USYD Research Ethics and Integrity
 - <https://intranet.sydney.edu.au/research-support/ethics-integrity/human-ethics.html>

What is our “Role” ?



What is your “Role” ?
As students of COMP5216

COMP5216
Week 01 - Introduction
Semester 2, 2020



What is our “Role” ?

As students of COMP5216

Role: Uncovering the true potential of mobile devices

→ **Mobile Computing (App developers)**



Challenges

- Sensitive personal data
 - Storage, management, sharing
- Resource utilization
 - Computation, network, power, storage
- User interaction
 - Voice, text, touch, gestures

- Your work will impact all stakeholders on the chain.

Background

- Does computer programming limited to Computer Science students ?

Background does not matter

- Does computer programming limited to Computer Science students ?
- **Mobile Computing is becoming a commodity**
- Mobile computing is for everyone !
- Knowledge and experience in mobile computing will be useful;
 - For your final year thesis project
 - To improve your productivity
 - Pursue your passion as a hobby
 - Just for Fun !
 - **Improve your chances of getting a better job**

Get Help...!

- Consultation
 - 4:00pm on Mondays, or by appointment
- **Know your Tutors !**
 - **Teaching Assistant:** Iwan Budiman - iwanbud@gmail.com
 - **Tutors:**
 - M19A, T17A - Sandareka Fernando sandarekaf@gmail.com
 - M19B, T17B- Chamara Kattadige ckat9988@uni.sydney.edu.au
 - M19C, T17C - Kshitiz Bhargava kbha5940@uni.sydney.edu.au
- Separate Ed discussion forums for each tutorial
 - Get help for tutorial/programming matters from tutors
- Two project help-desk sessions during the semester

What's Next ?

- Labs/Tutorials starts at Monday 7:00pm and Tuesday 5:00pm
- Tutorial 1 – Android Basics
 - Programming environment setup
 - “Hello World” Android app
- Metacognition
 - Pay attention to the learning outcomes in Canvas
 - Self-check that you are achieving each one
 - Think how each assessment task relates to these
- Time management
 - Watch the due dates
 - Start work early, submit early
- Networking and community-formation
 - Make friends and discuss ideas with them
 - Know your tutor, lecturer, coordinator
 - Keep them informed, especially if you fall behind
 - Don’t wait to get help !
- Enjoy the learning!