

**NOTE TO MARKER(S):**

**AS THE FINAL DOCUMENT WILL BE A PUBLICLY ACCESSIBLE DOCUMENT,  
ONE PARTICIPANT HAS MARKED AS PRIVATE, INFORMATION POTENTIALLY AFFECTING  
SOCIAL STANDING, HAVING LEGAL IMPLICATIONS OR PREJUDICING EMPLOYMENT  
PROSPECTS, OR CONTRIBUTING TO IDENTITY THEFT.**

**SOME NAMES HAVE BEEN REDUCED TO INITIALS, WITH STUDENT NUMBERS ACTING AS  
IDENTIFIERS. THANK YOU FOR UNDERSTANDING.**

**RMIT UNIVERSITY      COSC2196**

**OUA SP2 2019**

**INTRODUCTION TO INFORMATION TECHNOLOGY**

**ASSESSMENT 2: TEAM PROJECT**

**CONTRIBUTORS:**

**CHRISTIAN MUDD s3791190**

**SARAH CHOI s3756411**

**PB s0157832**

**JOSHUA HER s3609764**

**TIMOTHY FORDE S3304381**

**DJORDJE JANOVIC S3750377**

## **TABLE OF CONTENTS**

<u>Section 1 - Team Profile.....</u>	<u>p3</u>
<u>Section 2 - Tools.....</u>	<u>p10</u>
<u>Section 3 - Industry Data.....</u>	<u>p12</u>
<u>Section 4 - IT WORK.....</u>	<u>p19</u>
<u>Section 5 - IT Technologies.....</u>	<u>p25</u>
<u>Section 6 - Project Ideas.....</u>	<u>p40</u>
<u>Section 7 - Feedback.....</u>	<u>p45</u>
<u>Section 8 - Group Reflection.....</u>	<u>p46</u>
<u>References.....</u>	<u>p50</u>

## **SECTION 1 - TEAM PROFILE**

### **Team Name**

Our team name is PRIMA PROGRAMMING.

### **Team Member Personal information**

Name	PRIVATE (PB)
Student number	s0157832
Background	Ex Department of Aviation / Telecom + Telstra / Self-employed / Trainer + Training Coordinator for an I.T. business / Freelance tech writer for Fairfax Media
Hobbies	PRIVATE
IT interest	IT in education. Recently qualified as a Secondary school teacher.
IT experience	Graduate Diploma in Technology Education Diploma of I.T. (Networking)  Hardware Designer using Wiznet(Korean) modules, custom firmware / Programmer / Tech Support / Website designer/Manager 30+ years.  API's + Programming Languages: Assembler, C/C++, C++ BUILDER, PHP, Fortran, SQL, MySQL, HTML, CSS, Javascript, JQuery, Apache Web Server, Windows API, PayPal API  Shareware Author: Windows Applications
Team Name	PRIMACODE

Name	Christian Mudd
Student number	s3791190
Background	<p>Completed a Bachelor of Science at Melbourne University in 1994 and after various jobs in technology and communications sales, I started an IT business in 1999 focussed on providing service to small and medium businesses (networks, desktops, servers, Internet, email etc).</p> <p>In 2009 I merged my business with another similar business to create a larger organisation to focus more on midmarket sized customers and more specifically driving Citrix technologies to deliver wide range of benefits to our clients.</p> <p>In 2015 I sold out of that business to start a career in accounting and finance, joining my family's tax accounting practise and completing an Advanced Diploma of Accounting in 2018.</p> <p>My skills in IT besides management, salesmanship and project management are quite broad from virtualisation and storage area networks (I have skills in HyperV, XenServer and VMware) to mail servers/services and desktop virtualisation (I am an Exchange expert as well as having skills in the Citrix' XenDesktop product range).</p> <p>I still work part time (1 day a week) in IT.</p>
Hobbies	Basketball Coach, Reading, Travelling
IT interest	IT in finance & accounting
IT experience	Multiple industry certifications including Microsoft, Citrix, DataCore HP, Dell EMC.
Team Name	PRIMACODE

Name	Sarah Choi
Student number	s3756411
Background	My major was mathematics and studied the computer programming in early '80s as my sub-major and learned the computer programming for the IBM mainframe.
Hobbies	walking a lot everyday.  Watching the LOL computer games.(not playing.)  Watching Youtube clips about politics/economic and history..
IT interest	During the IT study in RMIT, What kind of e-commerce/m-commerce would have the future potential.
IT experience	I worked in a heavy industry company as an engineering computer programmer.  After I came to Australia, I worked in self-employed e-commerce business.
Team Name	PRIMACODE

Name	Timothy Forde
Student number	S3304381
Background	<p>I have worked in the security industry for many different company's over 13 years, covering a large variety of roles from clubs, events, maritime, control room and corporate sites.</p> <p>I've done about 1.5 years of a mechanical engineering degree many years ago.</p> <p>I was also in the army reserves for a while as a combat engineer.</p>
Hobbies	<p>Live streaming video games and basic video production for about 4 years.</p> <p>Some basic electronics and tinkering including combat robots many years ago.</p> <p>Runnings/cycling when I find the time.</p>
IT interest	<p>I'm planning to use the IT skills I'm learning as a stand alone new career or possibly later in the police if I get in.</p> <p>I also plan to use new knowledge I gain to assist my listed hobbies. Programming will open up many new possible projects for me.</p>
IT experience	<p>Basic computer use in the security industry including some CCTV and access control systems.</p> <p>I build and maintain my own desktops and network at home.</p> <p>I have done some basic website design as part of my live streaming hobby.</p> <p>I have a decent knowledge of the programs, equipment and technology used in that hobby.</p> <p>I have some very basic programming experience from throwing simple code together for tinkering.</p>
Team Name	PRIMACODE

Name	Joshua Her
Student number	s3609764
Background	I'm Korean living in Melbourne, working as a barista at Starbucks.
Hobbies	My hobbies include playing games, watching movies/dramas, cooking and working out.
IT interest	IT gaming industry and marketing.
IT experience	I have no IT experience yet but look forward to experiencing more Throughout my studies to see where it will take me.
Team Name	PRIMACODE

## Team Profile (Tests)

Name/Student#	Test 1	Test 2	Test 3
s0157832	Meyer-Briggs Results: PRIVATE	Results: Psychometric PRIVATE	Results: 5 Types PRIVATE
sc	Meyer-Briggs Results: Logistician - ISTJ-A	Big Five Personality Test Results: O(46) C(92) E(10) A(62) N(40)	Learning Style Test Results: Visual/Tactile style, Auditory 20% Visual 40% Tactile 40%
S3304381/ Timothy Forde Full details/images <a href="https://timothyforde.github.io/Assignment1/Profile.html">https://timothyforde.github.io/Assignment1/Profile.html</a>	Meyer-Briggs Results: The Commander (ENTJ-A)	Big Five Personality Test Results: I(41) II(84) III(45) IV(62) V(34)	Learning Style Test Results: Auditory 20% Visual 35% Tactile 45%
Christian Mudd	Meyer-Briggs Results: The Campaigner (ENFP-AA)	Global Leadership Test Results: Self-Awareness 8 Self-Management 7 Social-Awareness 10 Relationship Management 9	Learning Style Test Results: Auditory: 80% Visual: 0% Tactile: 20%
Joshua Her	Meyer-Briggs Results: The Defender (ISFJ-A)	Creative Test Results: 74.51	Learning Style Test Results: Auditory 20% Visual 60% Tactile 20%

## How this information may be helpful to the group:

Name/Student#	
s0157832	Experience and personality type are useful in determining group roles. Given my experience, I see myself as a likely Project Manager and technical advisor.
Timothy Forde	I tend to be middle of the road on the first two tests and it shows I tend to be rather flexible and calm in any role I take on. I'm happy to fit around what roles suit others. The learning style test shows that I both enjoy and learn better when getting hands on.
Sarah Choi	My three test results are similar and I tend to comply with the team goals and analyse them carefully.
s3609764	Great at listening to others and meld into groups of people with ease. Learns better with visuals to help get a better understanding.



## **Ideal Jobs**

Name / Student#	Ideal Job
s0157832	Teacher of I.T. secondary schools, ideally close to home for a quick commute.
Sarah Choi	e-commerce/m-commerce developer
Timothy Forde	Member of the Victoria Police with specialization into an IT focused role after the first 2-4 years. This could cover many ideas so I need a very general IT education till I know where to focus later.
Christian Mudd	Chief Technology Officer
Joshua Her	I.T Marketing (somewhere where I can interact with people)

**Comparing and contrasting the ideal jobs for each person in the group, reveals the following:**

- the outstanding common element is the need for an IT qualification for all jobs.
- there are specialisations, or distinct disciplines, within the whole field of IT, as indicated by the diversity of roles.
- the career plans are highly diverse - as distinctly unique as the individuals who are seeking them. This gives an indication as to the scope of variation and opportunity within the IT industry.

## **SECTION 2 - Tools**

### **Our Team Website**

<https://primacode.github.io/assessment2/index2.html>

### **Group repository**

<https://github.com/primacode/assessment2>

### **Our Personal Websites**

<https://timothyforde.github.io/Assignment1/index.html>

<https://christianmudd.github.io/Assignment1/>

<https://s3756411.github.io/>

[https://wldndgithub.github.io/Assignment\\_1/](https://wldndgithub.github.io/Assignment_1/)

<http://patbrenn.github.io>

### **Our completed work for this assessment**

For this assessment, PRIMACODE members have used a shared online WORD document for content submission, and a shared online spreadsheet to track progress on the individual items of the assessment.

34	Cybersecurity	JH	PLS INSERT A PICTURE WITH CAPTION FOR THIS ITEM IN THE WORD DOC
35	Blockchain and cryptocurrencies	SC	PLS INSERT A PICTURE WITH CAPTION FOR THIS ITEM IN THE WORD DOC
36	Machine Learning	TF	PLS INSERT A PICTURE WITH CAPTION FOR THIS ITEM IN THE WORD DOC
37	Autonomous vehicles	CM	PLS INSERT A PICTURE WITH CAPTION FOR THIS ITEM IN THE WORD DOC
38	Artificial Intelligence and Robotics		

Above: a portion of the online spreadsheet, showing item numbers, tasks and colour-coded member allocations

The WORD document automatically tracked changes and individual contributions accurately.

PRIMACODE members have also researched and reported on various aspects of the IT industry. They have also used self-analysis tools and industry data supplied by Burning Glass, to match their desired jobs to defined titles in industry.

Members have contributed questions to an interview with an IT Professional and the interview answers are included in this report.



Above: an excerpt from our interview with an IT professional

Github has been used as a repository for images and this report is stored there.

SparkPlus has been used to gather and provide mutual feedback.

The group members have reflected upon their unique experiences as team members. Lessons have hopefully been learnt so that future group is even more productive

As mentioned earlier, it was felt that the online WORD document was accurately tracking all activity, revisions and contributions.

When it was discovered in the rubric that images were required, it was recommended that images for the assessment be uploaded to GitHub. This would, at least, give group members an experience of GitHub's capabilities. Results show that GitHub is as efficient as WORD as tracking changes. GitHub activity graphs are a feature WORD does not have.

We believe that GitHub will come into its own once the upcoming IT Project begins - especially when project code (HTML/CSS/JavaScript) has co-authors.

### **SECTION 3 - Industry Data**

#### **Job titles for the group's ideal jobs.**

Name/ID	Title	Rank
Timothy Forde	Systems Engineer - My planned job title is not really listed so at a guess it could be Systems Engineer in long run.	4
Christian Mudd	Chief Technology Officer (IT Manager?)	10
Sarah Choi	e-commerce/m-commerce developer	5
s0157832	Teachers and/or instructors and/or trainers, are not mentioned in the titles. Therefore it is hard to gauge demand.  It would make sense to look under "Education Jobs", rather than IT. That is, in fact, how I search for work.	na
Joshua Her	Lead Program Manager (gaming field)	4

## **IT Specific Skills**

Timothy Forde s330481 – Ideal Job - Police Officer with IT Specialization My job did not list any IT skills so I picked some that would likely be used and relevant.		
IT-Specific Skills	Rank	Notes
Microsoft Windows	4	With heavy PC use these days for reports this would be a given.
Technical Support	11	Every role and most equipment would need some technical support.
Systems Engineering	24	VIC Police would have a complex system in place I'm sure.

Christian Mudd s3791190 – Ideal Job - Chief Technology Officer		
IT-Specific Skills	Rank	Notes
Project Management	5	Extensive experience in delivering projects on time and in budget
Business Management	7	Skills in managing various departments of a business and how they interface with IT
Building Relationships	8	Skills in building and maintaining solid relationships between internal and external stakeholders

Sarah Choi s3756411 - ideal job - e-commerce/m-commerce developer		
IT-Specific Skills	Rank	Notes
Project analysis	4	More concrete detail analyse with pro and con under the given project. Suggestion of problem solving for the predictable negative outcome.
OS(Android, Windows, IOS) handling skills	6	Because of various PC/Mobile use these days, this would be necessary
Java, Sql, javascript, Html...etc	7	To execute actual e-commerce/m-commerce, these skills should be mastered.

S0157832 - ideal job - Teacher of IT		
IT Specific Skills	Rank	Notes
OS: Windows/Mac	1*	Varies by school
Hardware: Laptop, iPad, Desktop environments	1*	Varies by school and school year
Software: MS Office and Publisher	1*	Varies by school and school year
Coding: Dreamweaver, Scratch, Gaming	1*	Varies by school and school year. At my last job interview, I heard about Scratch. Scratch is a new, simple programming language for years 7 and 8. Dreamweaver for years 9 and 10.

\* equally important

Joshua Her s3609764 - Ideal job: Lead Program Manager		
IT-Specific Skills	Rank	Notes
Programming	3	Ability to use and understand programming languages (C++, Java, HTML5 etc.) at an advanced level
Game development	4	Experience in making games; understanding of game engines, sound, rendering and how it all comes together
Other technology	6	Experience and great understanding of other technologies such as AI, high level rendering, APIs, etc.

Timothy Forde s330481 – Ideal Job - Police Officer with IT Specialization		
General Skills	Rank	Notes
Communication Skills	4	No surprise here. This group work has show how important communication is to work effectively.
Working in Team Environments	5	Very few tasks can be finished alone.
Building Effective Relationships	22	Similar enough to the ad listed “Sense Of Community”

Christian Mudd s3791190 – Ideal Job - Chief Technology Officer		
General Skills	Rank	Notes
Communication Skills	1	Excellence required here
Problem Solving	2	Solving challenges when teams become stuck
Writing	4	Report writing for C level audience very important

Sarah Choi s3756411 – Ideal Job - e-commerce/m-commerce developer		
General Skills	Rank	Notes
Communication Skills	7	Good communication skills are essential for every group member
Building/dividing/checking each member's role	6	To complete group work successfully, these skills are necessary according to the individual skills/talent.
Problem Solving	6	Problems always occur and taking efforts to solve those problems is natural.
Writing	9	It occurs very often that each member understands differently during verbal communication time and writing down and sharing them can reduce such a misunderstanding.

s0157832 – Teacher of IT (Secondary schools)		
General Skills	Rank	
Communication Skills	4	Vital to the success of lessons.
Working in Team Environments	5	Develop curriculum solutions collaboratively, and lesson plans
Building Effective Relationships	22	Essential to both the staffroom and classroom.

Joshua Her s3609764 - Ideal job: Lead Program Manager		
IT-Specific Skills	Rank	Notes
Project management	1	Highly sought out skill in any field. Ability to manage people, helping them do their part as well as helping each other mold into a group.
Communication	2	Ability to communicate with people effectively in both verbal and written. Useful in every job.
Problem solving and analytical skills	4	Ability to find and solve problems/challenges encountered efficiently. Useful in any job



**Highest Ranked IT-specific skills not in your required skill set.**

Name/ID	Skill 1	Skill 2	Skill 3
Timothy Forde	SQL (Rank 1)	JavaScript (Rank 2)	JAVA (Rank 3)
Christian Mudd	SQL (Rank 1)	JavaScript (Rank 2)	JAVA (Rank 3)
Sarah Choi	Information architecture(rank 1)	Metadata design/analys (rank 1)	Web service security(rank 1)
s0157832	SQL (Rank 1)	Javascript (Rank 2)	Java (rank 3)

**Highest Ranked general skills not in your required skill set.**

Name/ID	Skill 1	Skill 2	Skill 3
Timothy Forde	Problem Solving (Rank 2)	Organisation Skills (Rank 3)	Writing (Rank 4)
Christian Mudd	Organisation Skills (Rank 3)	Teamwork / Collaboration (Rank 5)	Troubleshooting (Rank 6)
Sarah Choi	Team Work (Rank 5)	Research(rank 3)	Organisation Skills (Rank 3)
s0157832	Organization Skills Rank 3	Teamwork rank 5	Problem Solving Rank 2

## **How industry data may have changed your mind about your ideal job**

Timothy Forde

Looking at the data has not changed my mind on my ideal job as it is mostly not relevant or suitable for a position in the Victoria Police. The information on the internet job ad is also very limited for this exercise. Some required skills i'm sure are not listed.

It has however given me good insight into the kinds of skills I should be developing to support my backup plan if I don't get into the police or joining the general IT industry. It also has shown several areas have good demand I'm interested in such as Software Engineer, Systems Engineer or various developer jobs.

Christian Mudd

Having looked at the Burning Glass data I am unchanged in my opinion for what is my ideal job. My vast experience in IT in various roles and having run 2 businesses means that I still believe I am ready for a C-suite job. I will bring the skills required for the job and the Burning Glass data has helped to confirm that.

Sarah Choi

The Burning Glass data can be a good reference to me but firstly I want to stick what I want to do because I have experience with my ideal job. And I believe I can manage it eventually after I finish studying this IT course in RMIT.

s0157832

The Burning Glass data does relate, in part, to IT education. IT in education requires teachers to have an in-depth knowledge of the software and hardware being used or taught.

There is also commonality with the Victorian Curriculum required capabilities of critical and clear thinking (useful for problem solving). The IT teacher role remains my ideal job.

Joshua Her

The Burning Glass data is wonderful insight in what i want to do in the future. This is because the ideal job was just a vague idea of what I want to do but in fact I would like more experience in other things as well before deciding my career path. I want to do what I enjoy doing not what pays me well.

## **SECTION 4 - IT WORK**

### **Interview: IT Professional**



Name: Xavier Ho

Employer: CSIRO Data61

CSIRO is a government research agency with Data 61 focused on technology, data, software, robotics, digital humanities, and other similar areas.

Position: Senior Software Engineer

Video interview: <https://youtu.be/X-zgmiwACj0>

#### **What is your formal education?**

A bachelor's degree in software engineering with class 1 honours.

A few weeks away from finishing a PHD in network visualisation.

Also did an internship with a software house. It was using Python language though Xavier's role focused on stress testing and optimising the databases they used.

#### **What was your first job in IT?**

First job was a tutor in the first year, second semester of uni, where he helped with an early programming class. Found it very strange to be in that position so quickly.

#### **How fast does stuff from university go out of date in IT?**

Some things learned in university have never been used and some will never go out of date. Xavier learned programming with Java and C++ but because the basics of writing good code tend to stay the same what he learned then has always been useful.

Key is learning all the basic concepts.

**How much time do you spending learning new and updating current skills?**

Every day at work a least one new thing needs to be learned or updated.

**Most important thing learned from university?**

Don't trust people in groups.

To go into more detail don't count on them getting their work done and have a backup plan.

Not because they are lazy but because things change, and problems can be unpredictable.

It might not be compatible right away, or issues arise and a redesign might be forced.

Though laziness can still be an issue it is very rare in the workplace as they tend not to have the job very long.

**What skill is most lacking from university IT graduates?**

They don't learn enough about communication skills though normally have solid software and engineering knowledge.

Not enough practice writing a reports and explanations, with document structure often being poor and hard to follow.

Coding comments often lacking critical information and don't explain the why.

Just commenting what the code in the line bellow does is not what is needed. More why it was done that way and how it fits into the bigger picture.

**What advice do you have for someone studying IT at university now?**

That an internship is very important. Though you will learn a lot at university it can't compare to the real world when the focus and motivation is results rather than how to get the best marks.

**What software do you most use?**

Slack is used for team organization. It greatly helps maintaining coordination and communication while working remotely from home or on a trip.

Github is used for version control across his team.

### **What languages have you programmed with?**

Javascript is the primary programming language Xavier currently uses.

He used Python in the past for number crunching. Mostly due to the vast scientific and math libraries already made for it.

As a less well known language Xavier also used Elm in the past. A functional front end language for websites.

During university he learned Java and C++.

### **What aspect of their position is easiest?**

The easiest part of software development is the ability to work remotely including from home. It means even when something like a fire alarm happens work can still get done at the local cafe. Flexibility is very useful.

### **What kind of work is done by the IT professional?**

Xavier is primarily a software engineer and team leader of 4 more software engineers.

Half of his day is spent coding and reviewing pull requests (reviewing others code).

The other half of his day is assigning tasks and reviewing/creating the plan for the next 2 weeks for his team.

The team currently works with Java Script though they also cooperate with other teams using Python.

The written code is used for disseminating scientific study results. For example, visualising the smoke pollution, finding out what the next year's crop yield might be given the conditions, or visualising a data network.

Programming has always been his professional focus.

**What kind of people does the IT professional interact with? Are they other IT professionals? Clients? Investors? The general public?**

Xavier first has the most contact with the team of 4 software engineers that he leads. The rest are typically split into 2 halves.

People with an academic focus including researchers, scientists involved with machine learning, and computer engineers with a theoretical/formal focus.

The other half are regular engineers, product managers, legal people, and general business.

The rest is normal interaction with fellow officer workers.

As an occasional task Xavier can speak with a government representative in a similar way to a client.

No real public or investor interaction.

**Where does the IT professional spend most of their time?**

Xavier currently is on a 4 day work week and spends 2 days in the office and 2 days working remotely from home.

During work hours most of the time is spent in front of a computer when not in a meeting.

The amount of time in meeting can change depending on the current situation and they are held in a typical conference room.

The last 2 weeks have had far more meetings than normal at around 30-40% of work hours. This is because one major project was just finished, and his team are planning how to tackle the next.

Normally that figure sits closer to about 20% of the time in meetings.

About once a month Xavier also does a business trip to Sydney to consult with a similar office in that city.

### **What aspect of their position is most challenging?**

Xavier found it hard to pick one aspect but decided to go with the unknowns in IT.

When programming he is often using code libraries that were coded by other unknown software engineers, one reason good comments are so important.

His code is also going to be used on third party systems that he has limited control over and may cause unpredicted issues.

This all makes trying to find the most efficient way to solve a problem something everyone can have a strong opinion about.

When too many options are available it can be hard to select one while weighing up all the possible pros and cons. The future is hard to predict and issues may arise from all the unknowns or the way the code was written may just not work as efficiently as expected.

### **Extra Questions: Ergonomics**

#### **Do you use any special ergonomic or input devices?**

No special keyboards or input devices. He does use adjustable monitors that he plugs his laptop into at work to keep his head level and not always looking downward.

Requested an office chair with arm rests as he finds that to be the most comfortable for him. Some of his office use sit stand desks but he does not feel the need personally.

#### **Do you use a timer to make sure you get breaks?**

No timer as Xavier finds he does not like the pressure it brings with having a set time to stop work.

He does use time blocking to help keep track on what needs doing, but less about health and it's more flexible. It also gives a good long term view on how his spending his time.

For getting away from the desk he tends to always leave it at least 3 times a day. Once in the morning for coffee, midday for lunch, and in the afternoon for some tea.

**How good is your workplace at general OH&S?**

They tend to do a very good job with things like doctors and ergonomic advisers available and covered by the company when issues arise.

**Do you find it hard to control your weight?**

Not personally. But even in general believes a lack of general exercise is more of an issue than weight gain.



## **SECTION 5 - IT TECHNOLOGIES**

### **Cyber-security (JH)**



(Nairobi Garage. (2018). Reprinted from Cybersecurity Trends to watch out for in 2019. [Website Image]. Retrieved from: <https://nairobigarage.com/cybersecurity-trends-to-watch-out-for-in-2019/>)

#### **What is cyber-security?**

Cyber: Involving, using, or relating to computers (e.g. The internet)

Security: protection against threat

Cyber-security is the process or practice of providing protection against cyber-threat.

Cyber-threats come in various shapes and forms varying from motive to execution of attack. Motives could be for gain (personal/group), influence against/for certain individual or group usually politically motivated and even terror. The most common being attacks targeting confidential information such as personal information or sensitive information of an organization for personal gain. This can be achieved through means such as Ransomware; blocking access of files or system until ransom is paid, Malware; software programs designed to breach security and extract information or sabotage/damage the computer or Phishing; usually done by imitating other organisations/persons to steal information such as credit card details.

Cyber-security first starts at a personal level with people being aware and educated about cyber-security and how to take advantage of it; referred to as defensive computing, and cyber-threats and its dangers and tricks. This is important as attackers like to prey on the

unaware and cause panic. Alongside education and awareness larger organisations such as governments and big companies implement threat management processes that prevent, detect and respond to cyber-attacks. The forefront of cyber-security processes currently would be the NIST CSF (cyber security framework) developed by the National Institute of standards and Technology under the previous U.S president Obama's Executive order (NIST, 2018).

The other intrinsic part of cybersecurity is the technology. Technology combating and preventing cyber-threats as well as recovery options are all things that are evolving. Norton or McAfee anti-virus programs are examples of technology effective for defence in the smaller scale like personal computing but for larger scale protection these programs are not enough to stop a cyber-attack which is sophisticated and personalised. Nowadays multiple programs and technologies are implemented simultaneously to achieve maximum protection. Technologies include, but not limited to:

- Encryption
- Network Security Perimeters
- Sandboxing
- Monitoring

Data encryption is example of a common technology implanted for security where data converted into ciphertext and cannot be understood without a specific key. Another example is network security perimeters where the part of the network is isolated by means like a firewall which blocks and allows things to get through depending on the algorithms/rules. Sandboxing refers to the running of programs in a virtual environment. If by chance a malicious program was to be run in this sandbox it could easily be discarded, and no harm would be done otherwise. Monitoring is the act of observing and checking. Monitoring in cyber-security could be done by person checking for abnormalities or even programs doing the same job and creating logs (Spacey, 2017).

An example of an emerging technology being implemented in cyber-security is Deep Learning hand in hand with behavioural analytics. The AI technology is designed to take external data that it is fed as well as its own data learnt from its experiences to make decisions regarding security with the absence of human input (Delgado, 2018). Development of this technology an omnipresent defence system ready to react at all times unlike the human counterpart which requires physical labour and isn't always ready to act.

### **What are the likely impacts of cyber-security?**

As the years progress, technology and IT has become increasingly important. So much so that it is impossible for the modern world to function anymore without it. With this heavy reliance on technology cyber-crimes has become more and more intelligent and the need for better ways to combat it has become a huge factor to modern society.

There is no perfect solution for cyber-threat. This is due to the fact that cyber-security and cyber-threat both evolve and become increasingly diverse and intelligent in its approach. The advancement of technology will create new jobs as much as it replaces or makes redundant. In terms of cyber-security, job prospects are increasing in demand as it affects everyone in the modern society.

Further development of Artificial Intelligence and Deep Learning will create job opportunities as specialists to develop this technology will always be needed due to the nature of this technology. But AI and Deep Learning is a double-edged blade as this technology can be implemented to attack instead of defending.

### **How does cyber-security affect me personally?**

Cyber-security is very important in my daily life. As a person who uses the internet daily it is important that I am proactive about my protecting my personal information. Defensive computing is something I strive to do during my computer and sessions and while using social media on my phone. I'm especially very aware about posting things on social media platforms as it can reveal personal information about a person such as location and valuables.

For older generations like my parents who are slow to pick up technological advancement, defensive computing is harder. This means educating my family and friends is something aim to do. Attackers attack the vulnerable which means my parents who have little knowledge to newer and more clever attacks using social engineering can very much be a threat.

## **Blockchain and Cryptocurrencies** (SC)



(from: Blockchain and cryptocurrency trends for 2019 at

<https://www.computerworlduk.com/it-business/blockchain-cryptocurrency-trends-for-2019-3689745/>)

accessed on 13/April/2019

### **What do “Blockchain and Cryptocurrencies” do?**

Blockchain and by extension cryptocurrencies is a relatively new technology that has gained a lot of popularity during this present decade. The blockchain technology itself dates back to the early 90's but this technology was never been put to use until a mysterious man called 'Satoshi Nakamoto' created 'bitcoin' which is digital currency that is based on the blockchain. According to Wikipedia, blockchain is a growing series of data records called blocks which are linked together by a cryptographic chain which is referred to as a hash ('Blockchain', 2016).

Blockchain consists of 3 main components which are the data which stores records, hash which is a unique cryptographic key and previous block hash. The previous block hash is the chain that links each block together which in turn creates a 'blockchain'.

The key feature of a blockchain and what makes it unique is decentralization via a p2p network comprising of millions of computers and data centers worldwide. Most data centers that comprise the backbone of all the goods and services that we use together use a centralized system of data which is more vulnerable to security hacks, more expensive to maintain and is generally less efficient.

By being decentralized, a blockchain network can deliver the same level of data storage and record keeping but without the risks of a traditional centralized network.

It is virtually impossible for anyone to hack a p2p network in order to tamper with data records and transaction costs for each new block added to the chain are free.

Cryptocurrencies are a relatively new phenomenon which took off during the start of this decade. It is considered as a digital currency or commodity and it is used as an online payment system to facilitate a medium of exchange as an alternative to conventional currencies that are issued by the government. Cryptocurrencies are based on the blockchain system to store and manage transactions and as a general ledger system ('Cryptocurrency', 2016).

Advocates believe that one day cryptocurrencies can replace conventional currencies because it does not have to face regulatory barriers for transactions that a typical currency must face when dealing across borders and everyday transactions cost are significantly cheaper because it is based on the blockchain.

All this is ever more possible because of the never-ending digitalization of our world. Cryptocurrencies are accessible to all those who have an internet connection and the developments in blockchain have reduced the financial costs to a point where the idea of connecting everyone in the world is now becoming a reality.

### **What is the likely impact?**

For people in developed and wealthy countries like Australia, the implications of the developments in blockchain will be more beneficial for every facet of our society as opposed to cryptocurrencies.

Blockchain offers serious competition to all traditional back-office data systems because it is much more efficient and secure. This results in significant reduction in transaction costs which means everyday people can enjoy more goods and services and paper work and data storage will be simplified because of the decentralized nature of the blockchain.

A great example of this what is happening in the real estate sector where a start-up company Fluidity which is based in New York is using the blockchain to tokenize the entire cost of a building into affordable tokens that cost as little as a dollar per token. By doing so,

the blockchain eliminates all the back-office systems in the current status quo – lawyers, banks and middlemen. This results in an efficient process where buyers can buy property with only a few dollars and the time saved because the tokens are stored in the blockchain (Wolfson 2018).

Cryptocurrencies offer a lot of value for those living in the underdeveloped and poorer parts of the world. It is usually in these countries where the governments are corrupt, their currencies are unstable and isn't worth very much.

Cryptocurrencies offer everything that a stable currency from a wealthy country offers which is the medium of exchange and a stable unit of value, but corrupt governments cannot deny access to its citizens because all that is required is an internet connection.

What is going on Venezuela illustrates this clearly. The government is incredibly corrupt, and their Peso is basically worthless, suffering from the worst inflation in the world.

Cryptocurrencies is empowering local citizens by giving them a stable unit of value, so they can buy everyday goods they need to survive a very troubling period in their history (Chandler 2018).

There are obvious costs for these developments likewise with all changes, some people will lose their jobs because of the blockchain. However, these transitions may be painful for some but beneficial for the society at large and should be considered a net-positive.

### **How will this affect me?**

The rise of blockchain will affect me and my family in many ways.

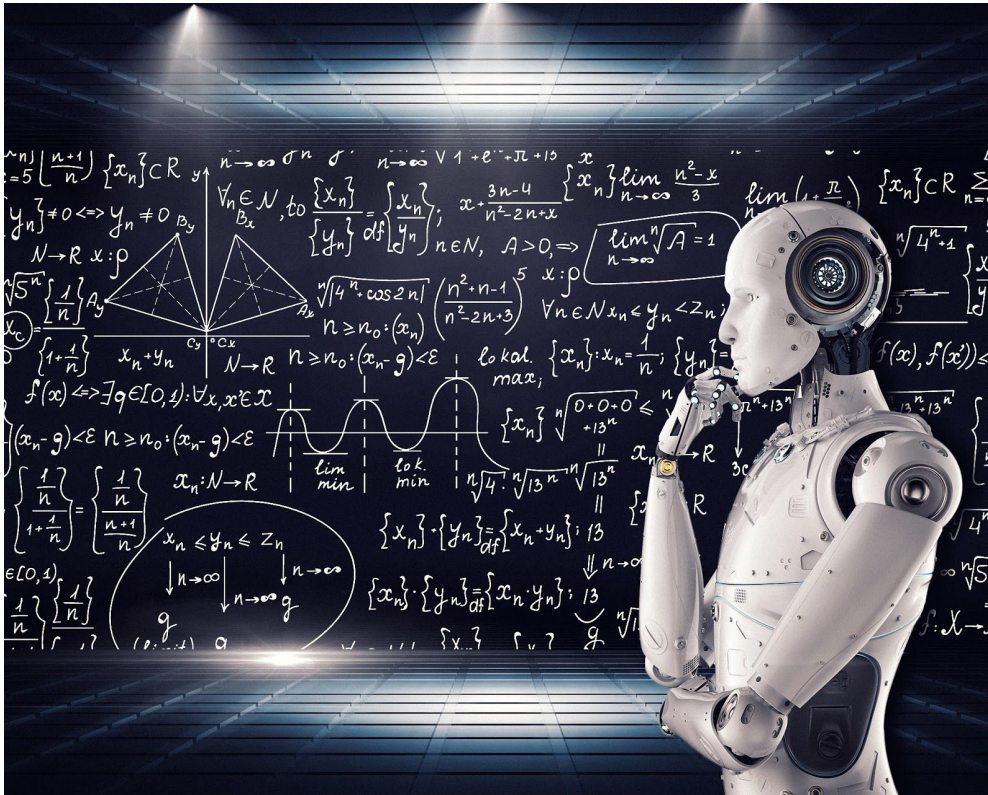
Reductions in transaction costs and the removal of many layers of middle-men in society will mean ever greater access to all sorts of products and services that were previously impossible.

I will be able to invest in multi-million-dollar complexes that weren't affordable to me before with just a fraction of a costs and record keeping at all levels such as government titles, bank records and receipts will all be simplified.

The cumulative amount of time and money saved because of the reduction of transaction costs from the blockchain means that this will free up so much time for my family which means we could spend that time doing other productive things to enjoy life in general.



## Machine Learning (TF)



Can a machine learn and program itself to function more effectively? Image (MacKenzie 2018)

### What does it do?

Machine Learning is a branch of Artificial Intelligence. One where the program is designed to learn from new data or its own past experience and adjust its own code to give better results over time. This is very similar in many ways to how the human mind functions. It allows programs to be tested and refined to a much greater degree than any human ever could.

Machine learning is not actually a new technology with a Pioneer in the field, Arthur Samuel being credited for developing the world's first self-learning computer program. During his time at IBM (1949-1966) he developed a program that played the board game checkers helping lay much of the ground work in the field (Lee n.d., para. 4).

Machine Learning has been seeing much more attention lately and has started to be used to a much great degree than in the past. This is largely due to developing technology increasing the computing power available and allowing the complexity of the programs and



what they can do to grow. Powerful GPUs are being repurposed to run parallel calculations and allow programs that were only theoretical in the past to come to life.

This has allowed advances such as deep learning, where multiple layers of calculations are run, each layer making the computing requirements exponentially more difficult. This has in turn increased what the programs can do and their reliability.

Machine learning are already used in any many real-world applications very effectively from search engines, photo adjustment, credit card fraud detection, face or speech recognition, or just how YouTube displays your recommended videos.

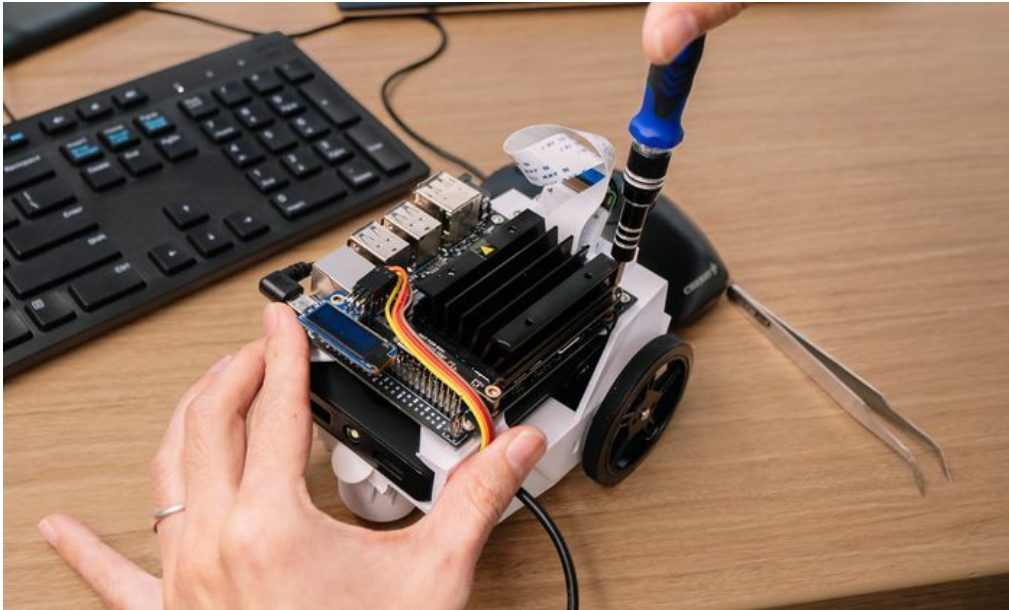
It was also famously or maybe more infamously used to provide highly targeted political ads using personal information harvested Facebook in the Cambridge Analytica story.

Most of the development likely to be seen in the next few years is a refinement of already existing products and technologies and its use being applied in more ways. For example self-driving cars may become more accepted and common as it becomes safer and better understood over time. More businesses may try to automate more tasks for the increased efficiency and cost saving possible.

O'Reilly did a survey in 2018 that showed only 15% said their organizations were sophisticated users of Machine Learning. With 36% early adopters and 51% just looking. (Lorica & Nathan 2018, pg 4) This was also taken by people already investigating the topic meaning the number of companies using Machine Learning now is likely very low showing there is plenty of room to grow.

To make advances possible and increase adoption will be three main reasons.

First the continued development of hardware to support to new field. Nvidia for example has seen the demand for Machine Learning computation and is partly branding it's GPU's to appeal to the scientific community as well as supporting the field. They are even making specialised hardware designed purely for Machine Learning. For example, you can buy a hobby micro computer called the "Jetson Nano" allowing almost anyone to build complex AI into robots or other hobby projects.



Above: the Jetson Nano built into a small autonomous robot, giving it a basic ability to use Machine Learning. (Nvidia n.d.)

Second is the availability of what is known as Big Data with the booming internet. This refers to the huge amount of information that is digitized into forms that a program can access. The more information you can feed into a program generally the better it can learn and fine tune it's algorithms.

The last is simply experience. Being such a new field, much is still being learned everyday about how actually make these new Machine Learning AI and as I showed before adoption is still low in many fields. Current programs can already be so complex that humans really don't know what happening inside the program fully showing we still have so much to learn. Given we will keep making these programs more and more complex we may always be learning as *'The workings of any machine-learning technology are inherently more opaque, even to computer scientists'* (Knight 2017, par. 13)

### **What is the likely impact?**

The impact all of this will have on society as this point is hard to predict, partly because it's not clear what society will even allow as new ethical questions are raised. I believe however that change is going to come, or in fact already has, and the only question now is the scale of that change. The benefits are too great to bring this technology to a complete halt.

If we can adjust the overall effect should be positive as more simple work gets replaced with AI. This could bring down the cost of many services from transport, to finance, or even medical. Other services may open up to people for the first time, in the past only rare people had a personal assistant or a maid. Yet with personal assistant AI and more intelligent robotics that might not always be the case if they improve to the point of matching or even surpassing the human equivalent.

I suspect the changes will most benefit those is the lower to middle class, allowing them to gain services that would never have been possible before. Though on a darker side it could also allow those in power to gain even more control over the same lower classes. A possible example of this might be China's Social Credit System that to some feels like it's from a science fiction dystopia, though to others it could help build the perfect society (Kobie, 2019). Again it comes back to those ethics questions.

To jobs overall, I expect the development of Machine Learning AI to have a similar effect to what automated manufacturing had to factory production lines. Many lower skill jobs such as taxi driver, telemarketers, or data entry will likely go away.

Like automated manufacturing they will be replaced with fewer but higher skilled technical jobs that must build and maintain the complex systems. One thing's for sure and that's *'with the speed at which technology is advancing, we are only barely scratching the surface when it comes to the possibilities of tomorrow.'* (Koh 2018, par. 4)

### **How will this affect you?**

I work in the security industry and expect the field to change greatly with the developing Machine Learning in turn driving better and better AI.

Control room operators directly monitoring camera video feeds will likely becoming something of the past. Machine Learning has proven itself well suited to analyzing video and cameras will likely automatically pick up on events such as aggressive body language, someone in medical distress, trips/falls/liquid spills or even facial recognition of previous offenders.



Above: a complex control room with more cameras than one or two sets of eyes can watch at once.  
A powerful enough computer on the other hand could handle them all. (Activconsole n.d.)

At higher security sites the same facial recognition might even identify everyone on site and log their movement as well as tag staff who need a welfare check in dangerous environments. Other biometric identification technology is also becoming more reliable to help control access that's to Machine Learning. Security officer roles will likely then become more focused on checking the events AI tag and responding to those as required.

Another area I will be directly affected is transport. I don't currently own a car and do my best to get around on public transport. Self-driving cars becoming common will no doubt allow self-driving taxis, giving me an affordable way of getting around when public transport due to the location or time is not available. This will also help my aging parents stay mobile who find it harder to drive safely every day.

My parents will also find that AI personal assistants become more power and easier to use. Due to their limited knowledge of computers and technology this will help them stay in touch with the new digital age that is only growing. Even I use a personal assistant for some tasks and I'm sure will more as they develop.

These are only some of the changes I see as inevitable. I'm sure there are many others I can't even predict yet.

## Autonomous Vehicles

According to [Wikipedia](#) the definition of an autonomous vehicle is a vehicle that can guide itself without human conduction. Furthermore, this kind of vehicle has become a concrete reality and may pave the way for future systems where computers take over the art of driving. An autonomous car is also known as a driverless car, robot car, self-driving car or autonomous car. There are generally recognized six categories or levels of autonomous cars as follows;

- Level 0: No automation.
- Level 1: Driver assistance - The vehicle can control either steering or speed autonomously in specific circumstances to assist the driver.
- Level 2: Partial automation - The vehicle can control both steering and speed autonomously in specific circumstances to assist the driver.
- Level 3: Conditional automation - The vehicle can control both steering and speed autonomously under normal environmental conditions, but requires driver oversight.
- Level 4: High automation - The vehicle can complete a travel autonomously under normal environmental conditions, not requiring driver oversight.
- Level 5: Full autonomy - The vehicle can complete a travel autonomously in any environmental conditions., each level being assigned a number with 5 being fully autonomous (no assistance from passenger)

To answer the question "What does it do?" ...let's put self-driving cars or autonomous vehicles (AV) into context. There are three major problems that this industry is trying to solve. The first problem is access. Whether it be age or accessibility challenges or other issues relating to access, AV aims to widen access to mobility to include as much of the community as possible. Secondly AV is aiming to improve the efficiency of mobility. This could mean cheaper running vehicles, it can also mean less traffic, or car parking spaces returned for other purposes. Lastly but probably most importantly the AV industry is trying to save lives. Every 20 seconds a human being is killed in a motor car accident somewhere in the world. The autonomous vehicle ultimately aims to reduce or eliminate this statistic.

So where are we currently at with autonomous vehicles? According to [Lex Fridman of MIT](#) this is typically measured in millions of miles of driving. We are mainly dealing with two categories here. Autonomous and semi-autonomous. Waymo (an AV leader) reached the 10-million-mile mark in October 2018 for fully autonomous driving, a stunning achievement. More impressive however is the semi-autonomous driving milestone of 1 billion miles recently achieved by Tesla. On the flip side an important measurement in this industry is the number of fatalities occurring under autonomous and semi-autonomous driving. 3 fatalities in total have been recorded (2 related to autonomous driving and 1 relating to semi-autonomous driving) in history thus far. To put this into context, manually driven cars result in a fatality every 80-100 million miles driven. So as a very crude direct comparison we can say that semi-autonomous driving is roughly 3 times safer than manually driven cars.

Several companies in the US now offer semi-autonomous taxi services that are small in scale;

- Voyage (Villages, Florida)
- Optimus Ride (Union Point, Massachusetts)
- Drive.ai (Arlington, Texas)
- May Mobility (Detroit, Michigan)
- Waymo One (Phoenix, Arizona)
- Nuro (zero occupancy grocery deliveries in Scottsdale, Arizona)
- Uber (Pittsburgh, Pennsylvania)
- Aptiv (Las Vegas, Boston, Pittsburg, Singapore)
- Aurora (San Francisco, Pittsburgh)
- Cruise (San Francisco, Arizona, Michigan)

These trials are at low speed, in restricted areas and always feature a safety driver in the front seat to take over if required.

Begs the question ...When will **fully** autonomous vehicles become mainstream? The following companies each have their own prediction;

- Tesla 2019
- Nissan 2020
- Honda 2020
- Toyota 2020 (highways only)
- Renault-Nissan 2020 (urban only)
- Hyundai 2020 (highways only)
- Volvo 2021 (highways only)
- BMW 2021
- Ford 2021
- Fiat-Chrysler 2021
- Daimler 2020-25

So we can see that industry has predicted that autonomous vehicles will become mainstream fairly soon. Industry experts however are a little soberer when predicting when manually driven cars will become illegal, and this date is 2045 or beyond. The challenge is removing the human from the loop in such a way that the vehicle no longer needs to resort to a human for assistance.

### **What is the likely impact?**

The autonomous vehicle industry has the potential to impact a great many areas of our lives. It will become no longer necessary to own a car. This is a significant financial burden alleviated for most households. Mobility will simply become a service that we can access wherever and whenever it is convenient. Also we will be able to make longer distance drives with fewer stops, as an AV does not get tired. Eventually parking will become a thing of the past and parking spaces in major cities will be repurposed. Our children will never learn to drive a car. Once considered a rite of passage, this phase of life will be eliminated completely.

Driving will become available to people of much younger age as well as people much older too. No longer restricted to people who can demonstrate the ability to control a

car manually, driving will be accessible to almost everyone. Since nobody will need to own a car simply to access transport, the number of cars on the road will be significantly reduced and this will help to reduce or even eliminate traffic congestion, as well as a significant proportion of greenhouse gas emissions. Driving will become safer. Many deaths on country roads happen simply because the driver is drowsy and nods off. An AV does not get tired, it never dozes off and therefore is significantly safer than a human at the wheel. We can look forward to reduced road death tolls.

The driver's license will become an artefact of history. In time it will become illegal to manually drive a car on public roads simply because it will be recognised as less safe than an autonomously driven car. Major spending by government on infrastructure projects in the future to widen roads or add highways to eliminate traffic congestion can be repurposed.

### **How will Autonomous Vehicles Affect Me Personally?**

Within my lifetime I believe AV will come into mainstream which will hopefully mean that my commute to work will become somewhat safer, certainly require little or no attention from me. I can then free my attention to reading the news or my favourite novel, perhaps even take in a movie. I believe that as a family we will be able to reduce the number of cars we own and maintain.

I see a future wherein I will be able to access transport independently to a much older age without the assistance of other human beings, same would go for my wife. My two children will never have to learn to drive a car. My wife who hates driving in the city due to the congestion (she avoids it at all costs), will find it easier to access transport to the city without the stress of driving into the city, so this will give her a degree of freedom that she did not have previously.

My son, diagnosed on the autism spectrum, may not have been able to drive a car by himself due to his learning difficulties and challenges associated with passing the



driver's license testing. AV will free him from a requirement to have a driver's license in order to access mobility.

My parents, who live in country NSW and will often commute to Melbourne to visit their family, will be able to be commuted autonomously and this will alleviate some worry we have as a family for their welfare whilst driving country highways. Ultimately I will feel safer on the roads knowing that AV is making decisions for me based on billions and billions of miles of data in its coffers and this will bring me a great deal of peace of mind.

## **SECTION 6 - PROJECT IDEA(S)**

### **PRIMAFOOD : Online food ordering with delivery options**

The online food ordering revolution is upon us. The PRIMACODE group have elected to join the revolution by developing an online food ordering application, with delivery options. It is to be called PRIMAFOOD, a name obviously derived from the group name.

The application will be a web based order form. Online credit card payments will be handled securely by PayPal.

#### **Research**

The most successful online food ordering applications will be researched. The common and advanced features that make these sites successful will be identified and imitated.

Suitable, existing website templates will also be examined .

#### **Use of existing group member skills**

Given that two members have previously been involved in e-commerce, combined with the fact that eastern European, Australian, Chinese and Korean nationalities are present, we believe we can, together, create an international menu. An appealing selection of starters, mains and desserts, along with a selection of beverages, is needed.

#### **Client Side Requirements**

In the absence of a suitable pre-existing template, some coding in HTML, CSS, and Javascript will be required. Even with a template, customisations will require coding.

#### **Images**

High quality images will be a requirement. If necessary, thumbnails may be used with image rollovers, activating larger images.

#### **Browser compatibility**

The final project will be tested with the most common browsers versions, to verify compatibility.

### Server Side Requirements

The beauty of PayPal is that it provides the entire server side (backend) for the project. There really is nothing to do, except to ensure that the front end conforms to the specifications outlined in the PayPal Websites Integration, Application Programming Interface (API) document.

This document outlines the form variables needed for each item for sale. Other form variables relate to vendor identification and payment amounts and currencies.

The other outstanding feature of PayPal is the secure credit card payments processing it performs - for a commission, of course. This usually 2.4 % + 30 cents of the total transaction fee.

The ability to issue full refunds from PayPal is another essential feature. Orders may be accidentally placed from outside the designated delivery area, requiring refunds.

PayPal also allows delivery costs to be scheduled as either fixed price, or as a percentage of the total transaction.

### Challenges

The major challenge will be to make the site as appealing as competing sites in the same area. The menu and look and feel of the sight must be professional and encourage usage.

There are also security challenges. Orders may be spoofed (faked), or the price data tampered in the HTML form before transmission to the server. This will necessitate checking that payments are both made, cleared and correct, before sending out orders.

Chargeback fraud is another threat. It occurs when a buyer falsely claims that the goods they ordered were never received (or delivered), requesting a return of their funds. This leaves the burden of proof with the vendor. PayPal may freeze the funds in a vendor account upon receiving a complaint.

For this reason, it is recommended normal business practice that funds be transferred from PayPal to the vendor's bank account, hourly, or even more frequently if time permits. This

results in a minimum of funds being frozen, in the case of an chargeback-initiated account freeze.

To avoid becoming a victim of chargeback fraud, a foolproof receipt system (Eg. signature upon delivery) must be implemented.

## **Section 7 - Feedback**

### SparkPlus

Note: one group member had to leave the state before SparkPlus access was enabled.

## **Section 8 - Group Reflection**

Christian Mudd

What went well	<p>From my perspective this group has functioned quite well. We have had 2 fantastic leaders in the group in Tim and PB and I think that this leadership has allowed others in the group the freedom to simply focus on and complete the individual work requirements.</p> <p>Many groups go through a storming process early on and we seemed to have bypassed that drama and got down to work almost straight away.</p> <p>I have been very happy with this group and its functioning, which seems to have happened without the need for multiple group meetings.</p> <p>Almost all of our collaboration has been via email and 2 documents hosted on Google Drive which I think has worked extremely well.</p> <p>PB had put in process a spreadsheet to track every item required of the assessment and doing this has allowed each member to focus on their contribution.</p>
What could be improved	<p>Perhaps one thing we could have done better was to hold at least one meeting wherein all members were required to "show up".</p> <p>I would say that if the opportunity arose to work with these individuals again (at least the ones that showed up) I would have no hesitation in doing so.</p>
At least one thing that was surprising	<p>Surprisingly have been a couple of members who have been completely absent as far as I can tell, but this has not held back the group from meeting its obligations.</p>
At least one thing you have learned about groups	<p>One thing I have learned is that you cannot guarantee input from every group member.</p>

What went well	<p>Most participants seemed to understand the workflow arrangements.</p> <p>Tim Forde took the initiative many times without waiting for approval.</p> <p>There is a lesson here: group productivity is maximised when we don't wait, but take the initiative BUT keep everyone informed.</p> <p>The collaborative documents meant we rarely came into conflict over items. Everyone could see what everyone else was doing; help could be offered to those needing it.</p>
What could be improved	<p>Initially, my communication plan failed. I scrambled for everyone's email address (using their student number prefix) before discovering the group email feature in CANVAS. D'oh.</p> <p>It was smooth sailing, after that.</p> <p>References were not in correct HARVARD style AND alphabetical order OR put in the section provided in the WORD document.</p> <p>Sparkplus problems have only been resolved in the last day or so. One member had to go away (travelling) before that time, so is unable to use it. Not fair.</p>
At least one thing that was surprising	<p>...was the extensive capabilities of the online documents rivalling their desktop-based equivalents. That was amazing. Not to mention the cherry on top - collaboration and a professional version control system.</p>
At least one thing you have learned about groups	<p>Groups are sometimes not really groups. In this assessment we were mainly working as individuals.</p> <p>At the outset, particular items were allocated to individuals - not pairs, or groups of three etc.</p>

Timothy Forde

What went well	<p>When communication was established tasks were planned well and the project took shape quickly.</p> <p>The google document/sheet that PB set up and maintained proved to be very useful for keeping track of work and the current situation.</p>
What could be improved	<p>Communication was a major issue for this group. I'm guessing largely as this is a first subject for many and so people are still getting their bearings.</p> <p>An example was a missing group member not communicating their situation or the work they intended to complete. I had to divert my time from other tasks to write an essay in case their work does not arrive.</p> <p>A better program to assist with real time communication may have helped in the long run. Maybe even Slack as suggested by our interviewed IT professional.</p> <p>A group meeting at the start of the project would have also helped greatly and made sure everyone was aware of the plan.</p>
At least one thing that was surprising	<p>Not hearing from group members for a large percentage of the assignment.</p>
At least one thing you have learned about groups	<p>To help make a group run smoother talking about expectations for quality of work and the time frame for getting work done should have been done before the group was formed.</p>



Sarah Choi

What went well	<p>Fortunately we have two members showing leadership and they always encouraging us to keep up with the group work smoothly. They are PB and Timothy.</p> <p>All other members actively involved communication as well as their individual works.</p> <p>PB has always showed me good guideline how/what to work and answered my questions quickly even though relatively I am very new in these kind of group work</p>
What could be improved	<p>I had no experience with these kind of work and was at a loss what to do. Now I overcome my nervousness.</p> <p>But I feel I am on the right track of the team work.</p>
At least one thing that was surprising	<p>The group work over the internet can be very possible if only every member of the team has the enthusiasm to do actively. It is same as offline group work, maybe can be more effective than the offline group work because every can work on their convenient time.</p>
At least one thing you have learned about groups	<p>Having good leader in a team is very important as it encourages every members to work in a positive way,</p>

## **References**

Activconsole n.d. *Control room after*, photograph, viewed April 13, <<https://activconsole.com/wp-content/uploads/2018/09/Control-Room-after.jpg-007-Large.jpg>>.

'Blockchain' (2016) *Wikipedia*. Available at <https://en.wikipedia.org/wiki/Blockchain> (Accessed: 10 April 2019)

'Cryptocurrency' (2016) *Wikipedia*. Available at <https://en.wikipedia.org/wiki/Cryptocurrency> (Accessed: 10 April 2019).

Chandler, S. (2018), 'How Venezuela Came To Be One of the Biggest Markets for Crypto in the World', *Cointelegraph*, 2 September, accessed 10 April 2019, <<https://cointelegraph.com/news/how-venezuela-came-to-be-one-of-the-biggest-markets-for-crypto-in-the-world>>

CISCO. (2016). Cisco and the NIST Cybersecurity Framework: Benefit from a Fresh and Innovative Approach to Cybersecurity. Retrieved from: [blogs.cisco.com/security/cisco-and-the-nist-cybersecurity-framework-benefit-from-a-fresh-and-innovative-approach-to-cybersecurity#](https://blogs.cisco.com/security/cisco-and-the-nist-cybersecurity-framework-benefit-from-a-fresh-and-innovative-approach-to-cybersecurity#)

CISCO. (n.d.). What Is Cybersecurity? Retrieved from: [www.cisco.com/c/en/us/products/security/what-is-cybersecurity.html](https://www.cisco.com/c/en/us/products/security/what-is-cybersecurity.html)

'Cryptocurrency' (2016) *Wikipedia*. Available at <https://en.wikipedia.org/wiki/Cryptocurrency> (Accessed: 10 April 2019). (Item#: 35)

Kaspersky. (n.d.) What is Cyber-Security? Retrieved from: [www.kaspersky.com/resource-center/definitions/what-is-cyber-security](https://www.kaspersky.com/resource-center/definitions/what-is-cyber-security)

Knight, W (2017), *The Dark Secret at the Heart of AI*, MIT Technology Review, viewed 11<sup>th</sup> April 2019, <<https://www.technologyreview.com/s/604087/the-dark-secret-at-the-heart-of-ai/>>.

Kobie, N (2019), *The complicated truth about China's social credit system*, WIRED, viewed 12<sup>th</sup> April 2019, <<https://www.wired.co.uk/article/china-social-credit-system-explained>>.

Koh, R 2018, *We've barely scratched the surface with AI*, The Business Times, viewed 11<sup>th</sup> April 2019, <<https://www.businesstimes.com.sg/hub/empowering-enterprise/weve-barely-scratched-the-surface-with-ai>>.)

Lee, J. n.d., *Arthur Lee Samuel*, Institute of Electrical and Electronics Engineers Inc., viewed 11<sup>th</sup> April 2019, <<https://history.computer.org/pioneers/samuel.html>>.

Lorica, B & Nathan, P 2018, *The State of Machine Learning Adoption in the Enterprise*, O'Reilly Media, Sebastopol, CA

MacKenzie, M 2018, *Artificial Intelligence & AI & Machine Learning*, Image, viewed April 13 2019, < <https://www.flickr.com/photos/mikemacmarketing/30212411048/> >. [CC BY 2.0](#)

MIT Self-Driving Cars: State of the Art (2019)  
<https://www.youtube.com/watch?v=sRxMDDMWQQ>

Nairobi Garage. (2018). Cybersecurity Trends to watch out for in 2019. [Website Image]. Retrieved from: <https://nairobigarage.com/cybersecurity-trends-to-watch-out-for-in-2019/>

NIST. (2018). History and creation of the framework. Retrieved from: [www.nist.gov/cyberframework/online-learning/history-and-creation-framework](http://www.nist.gov/cyberframework/online-learning/history-and-creation-framework)

Nvidia n.d. *Jetson Nano*, photograph, Jetson Nano viewed 13 April 2019, < <https://nvidianews.nvidia.com/file?fid=5c8f2f182cfac253616c851b>>.

Spacey, J., Simplicable. (2017). 18 Examples of Cybersecurity. Retrieved from: [simplicable.com/new/cybersecurity](http://simplicable.com/new/cybersecurity)

Symantec. (n.d.). What is cybersecurity? What you need to know. Retrieved from: [us.norton.com/internetsecurity-malware-what-is-cybersecurity-what-you-need-to-know.html](http://us.norton.com/internetsecurity-malware-what-is-cybersecurity-what-you-need-to-know.html)

Tripwire. (2018). 3 Emerging Innovations in Technology that Will Impact Cyber Security. Retrieved from: <https://www.tripwire.com/state-of-security/featured/emerging-technology-cyber-security/>

Wikipedia - Vehicular Automation [https://en.wikipedia.org/wiki/Vehicular\\_automation](https://en.wikipedia.org/wiki/Vehicular_automation)

Wolfson, R 2018, 'A First For Manhattan: \$30M Real Estate Property Tokenized With Blockchain', *Forbes*, 3 October,  
<<https://www.forbes.com/sites/rachelwolfson/2018/10/03/a-first-for-manhattan-30m-real-estate-property-tokenized-with-blockchain/#3d3c1b9c4895>>. (Accessed: 10 April 2019).

----- END OF DOCUMENT -----