Imagine Dragoons

Assessment 2

Team Project

Ryan Williams, Benjamin King, Morgan Cassar, Douglas Baker, Ty Lynch-Palmer, Robert Cross

Team Profile

Each group member's tests that were completed in assignment 1 have been listed below.

Robert Cross

Meyer-Briggs Test

Your Personality Type Code

To get started, let's take a look at the personality types that fit you best. Each of the personality types is described by a four-letter co not sure what these acronyms mean, don't worry about it for now—we'll look at this in more detail later in your report. For now, just at the types that you scored highest for.

The following chart shows your top 3 personality type matches.

ESTJ - The Supervisor

VERY GOOD MATCH

ESTJs are hardworking traditionalists, eager to take charge in organizing projects and people. Orderly, rule-abiding, and conscientious, ESTJs like to get things done, and tend to go about projects in a systematic, methodical way.

ESTP - The Dynamo

VERY GOOD MATCH

ESTPs are energetic thrillseekers who are at their best when putting out fires, whether literal or metaphorical. They bring a sense of dynamic energy to their interactions with others and the world around them.

ENTP - The Inventor

GOOD MATCH

ENTPs are inspired innovators, motivated to find new solutions to intellectually challenging problems. They are curious and clever, and seek to comprehend the people, systems, and principles that surround them.

Unlock your full report to get your exact match scores for all 16 personality types

Personality test

ESTP
The Activists

17%

E EXTRAVERTED
Action oriented, Outgoing, Expressive, Hands-On

36%

S SENSING
Traditional, Realistic, Practical, Detail oriented

23%

T THINKING
Logical, Reasonable, Level headed, Values fairness

7%

P PERCEIVING
Spontaneous, Flexible, Open minded, Adventurous

ESTP Characteristics

ESTPs make up 2.8% of the population

▸ Practical and observant
▸ Fun-loving, exciting, and spontaneous
▸ Risk-takers
▸ Resourceful and adaptable
▸ Charismatic and fun

Numeracy Test

Your result

The numerical reasoning test measures your ability to use quantitative data as a tool to make work-related decisions.

Poor		Low		Average		High			Very High
1	2	3	4	5	6	7	8	9	10

You attempted 8 of 8 questions and answered 6 correctly. Click on each question number below to view a detailed explanation of the correct answer.

❌ ✅ ✅ ✅ ✅ ✅ ✅ ❌

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8

Ryan Williams

Meyer-Briggs Test
https://www.16personalities.com/profiles/2b0ec0d4ce2f1

Virtuoso
Personality
ISTP-A / ISTP-T
(WHAT'S THE DIFFERENCE?)

Learning style Test
https://ryan-williams1.github.io/IIT/Learning_Style_Results.pdf

What's Your Learning Style? The Results

Ryan's scores:

- Auditory: 25%
- Visual: 30%
- Tactile: 45%

You are a **Tactile** learner! Check out the information below, or view all of the learning styles.

Psychometric Test
https://www.carecareers.com.au/quiz/result/id/1354786/token/6f539e2e#.XpmP6JnhWUl

Your Results

Your Colour Personality Is
orange

What Do Your Results Mean?

Your Colour Personality Is Orange

You are a people person! You love interacting with people and do so with empathy, patience and understanding. You value respect, loyalty and patience and enjoy engaging with people on an authentic and human level as you understand the positive impact you can have on people. You connect with people easily and it's as rewarding for you as it is for them.

Keep reading to find out our career suggestions, and then a little but more about yourself!

Our suggestion

Based on your selections, your best fit career seems to be:

- Frontline Support
  Your selections indicate you would enjoy working in a Frontline Support role. As an empathetic person we think you would be great in a Frontline Support role! You have just the kind of personality and the right attitude we are looking for.

Your selections also show a good fit for:

- Frontline Professional
  You would also thrive in a Frontline Professional role if you have the capacity to undertake the necessary training to gain the right qualifications

Benjamin King

Myer-Briggs Test
https://www.16personalities.com/infj-personality

Learning Style test
http://www.educationplanner.org/students/self-assessments/learning-styles-quiz.shtml?event=results&A=7&V=6&T=7

What's Your Learning Style? The Results
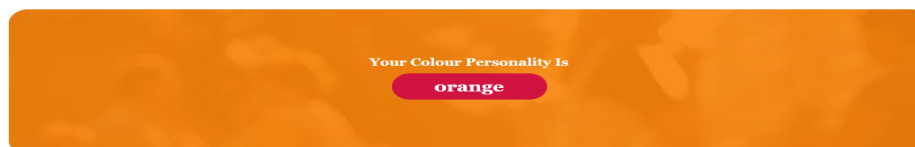
Benjamin's scores:

- Auditory: 35%
- Visual: 30%
- Tactile: 35%

You are an **Auditory/Tactile** learner! Check out the information below, or view all of the learning styles.

Personality Test

https://www.truity.com/test/big-five-personality-test

Douglas Baker

Myer-Briggs Test
https://www.16personalities.com/istj-personality

Myer-Briggs/Jung test
http://www.humanmetrics.com/

Big 5 Personality Test
https://www.truity.com/test/big-five-personality-test

Ty Lynch

Myer-Briggs Test
https://www.16personalities.com/istj-personality

Logistician
Personality
ISTJ-A / ISTJ-T
(WHAT'S THE DIFFERENCE?)

Learning Style Test
http://www.educationplanner.org/students/self-assessments/learning-styles-quiz.shtml?event=results&A=6&V=9&T=5

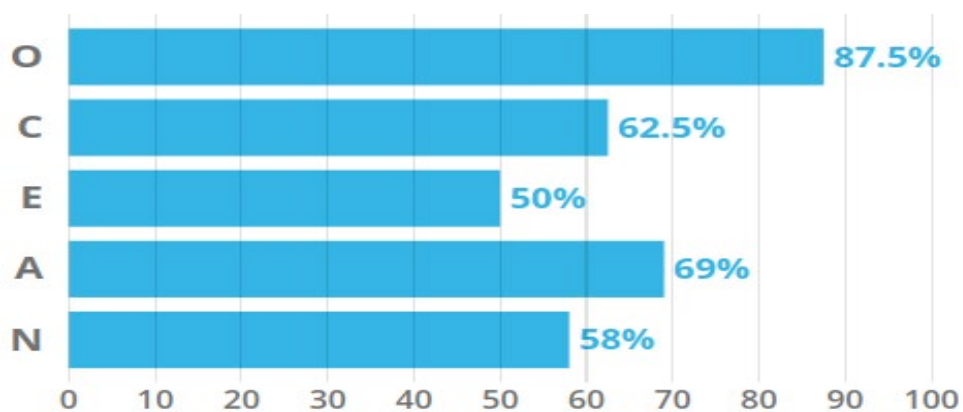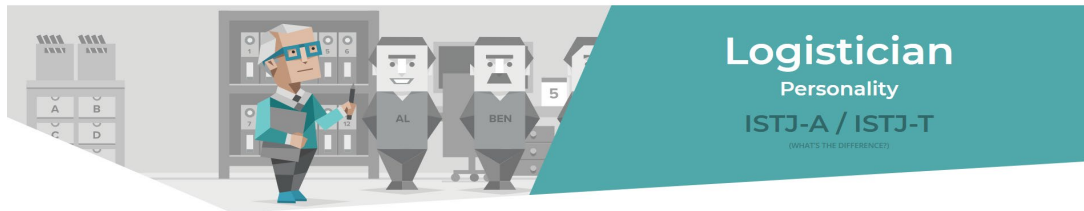### What's Your Learning Style? The Results

Ty's scores:

- Auditory: 30%
- Visual: 45%
- Tactile: 25%

You are a **Visual** learner! Check out the information below, or view all of the learning styles.

Big 5 Personality Test
https://www.scienceofpeople.com/personality-quiz-results/?score=386050647.14

Openness: You are high open

▶ **Low Open "Preserver"**

▶ **Medium Open**

▼ **High Open "Explorer"**

If you are high in openness you love trying new things and having new experiences. You are curious and imaginative. You love coming up with new ideas and new ways of doing things. You thrive off of new! High opens often adventure and are usually the first to try something for the first time.
If you want to maximize your high openness, try:

- Signing up for a new activity every month — it will help you prevent burnout.

- Exercising your imagination and talent for coming up with new ideas at work or with hobbies.

- Finding an adventure buddy to help you exercise your high openness.

Morgan Cassar

Myer-Briggs Test
https://www.16personalities.com/istp-personality

Learning Style Test
http://www.educationplanner.org/students/self-assessments/learning-styles-quiz.shtml?

Your Scores:

- Auditory: 30%
- Visual: 40%
- Tactile: 30%

You are a **Visual** learner! Check out the information below, or view all of the learning styles

The Big Five Personality Test
https://www.truity.com/test/big-five-personality-test
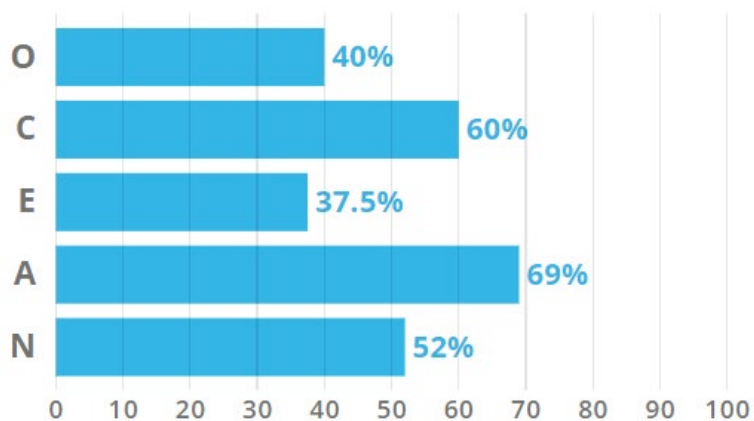
Comments

Robert Cross:

Across the entire group there is a diverse range of personality types as presented in the above results. I feel that in a larger group having a blend of personality and behaviour traits results in better communication overall and a more cohesive group. People will always prefer to work and divide tasks in a way that they feel comfortable doing and will potentially gravitate to different pieces of work depending on their personality trait e.g. web design over documenting a report. I think that given the range of personalities our team has worked well in dividing up the relevant tasks as well as communicating at a high level throughout the project. This may not have been possible if the entire team shared the same personality traits.

Ryan Williams:

Having the same personalities test result can go either way, I feel having a mix of strong personality types has helped the team, being able to respect and understand opinions has been the foundation of this team, without everyone's input the team would not have achieved what we did. Regardless of test results or personality tests, if the team is respectful and focused, they can meet all the goals set out. Our team has worked as a well-oiled machine (in between other life commitments) with no apparent issues.

Benjamin King:

Any team is capable of working with differing types of personalities provided respect is shown by all members. Our team has shown that a range of personality types can work together well to achieve a common goal. I believe that our driving force was not so much our differing personality types, rather it is our interest and passion for all things IT related. It became very apparent quickly that we were all on the same page and that we had a good team on our hands.

Douglas Baker:

From my experience any differing personalities in a team can work together if all the members make a decent attempt to work with each other. I have also found for myself if I can work with someone with some similar traits to myself it is often handy to highlight things that I may have overlooked.

Ty Lynch:

I think that it is interesting that Douglas and I share the same results in the 16 personalities test which means we could either but head or work together quite well. Morgan and Ryan seem like they will make good team members willing to get in there and lend a hand where they can while also allowing others to have their freedom and collaborate on their tasks also. Benjamin's 16 personality test mentions him being soft-spoken but from what I have seen so far, he is quite the leader organising the group in a fair and orderly manner. While it also seems Robert will make a good leader from his Myer-Briggs style test and his selection of job role.

Morgan Cassar:

The fact that me and Ryan share the same result on our 16 personalities test means that I think we would work well together due to our personality type, being someone who is willing to work together on things towards a goal. Douglas and Ty, also share the same personality result, they are responsible people, and from what I can gauge from what they have done for this assignment, they have been very responsible, calm and practical and worked well with everyone in the group. Robert seems to have the personality who is dedicated, which he has shown through this assignment. Bens personality describes him as insightful and decisive, which he has shown throughout this assignment.

Compare and contrast ideal jobs

The ideal jobs that were identified by each member of Imagine Dragoons although varying somewhat have a number of key high-level skills and knowledge required that is common across all 6 of these examples. The Information Technology field provides quite a large number of job opportunities across various skillsets; however, most have some key fundamental traits which are highlighted when comparing the different ideal job roles that have been selected by each group member.

Ideal Jobs

- **Ty Lynch:** Senior C++ Engineer (Video Games)
- **Benjamin King:** Cyber Warfare Officer (CWO) in RAAF
- **Douglas Baker:** Systems & Network Engineer
- **Morgan Cassar:** Cyber Security Manager
- **Ryan Williams:** Senior Software Engineer
- **Robbie Cross:** Chief Technical Officer

Roles that are primarily programming focused (Senior C++ Engineer & Senior Software Engineer) both require extensive knowledge in a programming language to be considered. However, the similarities are only common at a high level as one role will require Java expertise whilst the other will need to applicant to be proficient in C++ and Python. Both roles also take key criteria from some of the other roles including database management and information systems knowledge.

The issue of IT security heavily defines the requirements for both the Cyber Welfare Officer & Cyber Security Manager roles outlined above. Defining and maintaining security procedures and benchmarks across information technology platforms is key criteria – however although seemingly similar both roles are in quite different businesses. Working in an Air Force position for the military is quite unique in the group of roles provided by team which only highlights the extensive need for IT positions across a multitude of companies and industries.

The Systems & Network Engineer role provides an opportunity to work with a growing IT infrastructure and provide the autonomy to improve various aspects as well as work with a wider team to assign tasks and responsibilities to these team members.

Finally, a more business/organisational role is relevant for the Chief Technical Officer role which requires a focus on an overall IT roadmap for a business and setting (and meeting) organisation role. This role will require some knowledge across a range of IT skills including a mix of technical (programming) and managerial (company roadmaps).

Key Differentiators

There are some key differentiators between the selection of jobs when contrasting all 6 roles, but generally we can break them down into the following areas:

- Security, Systems & Networking
- Programming/Software Development
- Business/Organisational

The range of ideal roles provided by the team both from a technical and IT standpoint as well as the assortment of companies and industries that these roles are available in provide a glimpse of the impact and importance of robust and innovative information technology systems in the job market. This is only a small sample size of hundreds of IT jobs available in Australia over the last few weeks, comparatively these roles may seem similar in regards to accreditation and expertise required – however upon a deeper dive it is clear that even roles across similar areas (as outlined above) have quite different responsibilities.

Common Elements

As already outlined each ideal job does vary significantly across required skills and background required as well as individual industries and business. However, all being in the IT sector there are some common elements that can be attributed to all the roles listed.

From a high-level perspective I've identified some key traits or requirements that are either shared across multiple or all roles – keep in mind this is based on the feedback from each team member and the individual job applications. Below is a graph that shows some of the key areas of each role and how they apply to each:

	Cyber Welfare Officer	Senior C++ Engineer	Cyber Security Manager	Senior Software Engineer	Systems & Network Engineer	Chief Technical Officer
Teamwork	✓	✓	✓	✓	✓	✓
Programming		✓		✓		✓
Security	✓		✓		✓	
DB Management	✓	✓		✓	✓	
Business Management						✓
IT Systems / Infrastructure	✓	✓	✓	✓	✓	✓

Figure 1 High Level Comparison between required skills/knowledge for each ideal job

A common theme across all job descriptions is the ability to be able to work in a team – this is regardless of the company and detailed job description. This is possibly a skill that is overlooked in

the IT sector with a lot of focus generally being on the somewhat niche skills that may be required for a role, such as:

- Programming in a certain language (Java, C++)
- Being proficient on a certain database environment   (MSSQL, Oracle)
- Maintaining a specific network environment (Windows, Unix)

It is clear from all the job roles provided that the ability to work in teams is highly sought after – and perhaps could be defined as an absolute requirement.

Another fundamental requirement is also knowledge of IT systems and infrastructure – applicants for all these IT roles (and assumingly IT roles in general) are expected to have experience and knowledge of a range of IT systems and to have been exposed to various IT infrastructures in order to be a successful applicant.

How similar or different are career plans for group?

Generally, the range of career paths for the group are quite diverse although as explored previously do share some fundamental skills that applicants would need.

- Software Development as a career plan for the Senior C++ Engineer & Senior Software Engineer roles
- A Cyber Security career path is a career plan envisioned for the Cyber Warfare Office & Cyber Security roles.
- IT Systems & Network management specialising in automation of tasks is related to the Systems & Network Engineer role
- An Organisational Management path would be defined as the career plan for the Chief Technical Officer Role.

All the positions that have been targeted as an ideal job are quite senior and would take some time to gain the relevant qualifications, certifications and experience in order to be a successful candidate. This means that the career path for most of these positions would start with a potential entry-level role such as a junior developer or support desk analyst. Becoming proficient then specialising in a certain area (IT Security for example) would then provide the opportunity to reach these career goals that have been outlined.

These roles that have been studied and provided by each team member are quite different when considering the day-to-day tasks and expectations for someone within these positions – which is encouraging and shows the diversification of roles and positions currently available in the IT sector. Taking this sample size of ideal jobs and therefore relevant areas of interest from each group member would result in a range of skills, knowledge and expertise that would be shared across multiple areas of a business or in this case a group project.

Tools

We as a team used Microsoft Teams and GitHub to collaborate this project, Microsoft Teams was a valuable tool that enabled the team to communicate effectively. GitHub is was amazing and allowed a central file version which was updated by each member as needed, we also had a channel in Microsoft Team that was used for GitHub push and pull notifications to reduce possible push conflicts. The team assessment was broken into parts and our team opted for the divide and conquer approach, this allowed each member to have a small part then upload and communicate their findings.

The audit trail on GitHub reflects the teams work to a degree, it only shows when data was pushed to GitHub and does not reflect the work that each person put in, an example of this would be the interview, Douglas put in a lot of preparation time and gathered the questions from the team using Microsoft Teams but on GitHub it only shows a very small snapshot of that work in the audit trail. As a team we feel that relying on the audit trail is not a good measure of the work that everyone has put into the assessment.

Links to the team resources:

Team Website - https://imagine-dragoons.github.io/RMITA2G15/

Team GitHub - https://github.com/Imagine-Dragoons/RMITA2G15

Industry Data

Groups Ideal Jobs

Benjamin King: Cyber Warfare Officer

Douglas Baker: Systems & Network Engineer

Morgan Cassar: Cyber Security Manager

Ryan Williams: Senior Software Engineer

Robbie Cross: Chief Technical Officer

Ty Lynch: Senior C++ Engineer

The Burning Glass Top Occupations data set was used to rank each job title.

Roberts job title was not directly included in the data as such, he has been considered as a Computer Systems Engineer for this task.

1. Ryan Williams and Ty Lynch
2. Robert Cross
3. Douglas Barker
4. Benjamin King and Morgan Cassar

Source: Labour Insight Jobs (Burning Glass Technologies)

Top Burning Glass Occupations (BGTOCCs)

Mar. 01, 2017 - Feb. 28, 2018
There are 121,997 postings available with the current filters applied.
There are 0 unspecified or unclassified postings.

Active Selections
Last 12 months AND Australia OR New Zealand AND (BGTOCC Family : Information Technology)

Occupation	Count
Software Developer / Engineer	29,458
Computer Systems Engineer / Architect	13,111
Systems Analyst	11,452
Network / Systems Administrator	9,830
Help Desk Officer	9,415
Web Developer	5,990
Graphic Designer / Desktop Publisher	5,162
Computer Programmer	4,436
Software QA Engineer / Tester	4,261
IT Manager	3,749
Database Administrator	3,622
Network Support Officer	3,246
Cyber / Information Security Engineer / Analyst	2,974
UI / UX Designer	2,848
Network Engineer / Architect	2,478
Technology Consultant	2,291
Information Security Analyst	1,716
Data Architect	1,510
Multimedia Designer / Animator	1,316
Mobile Applications Developer	1,005
Business Intelligence Architect / Developer	683
Telecommunications / VOIP Engineer	562
Web Designer	424
Website Administrator	314
Computer Operator	162

The skillset we have identified from the ideal jobs in assignment one has been divided into to two skill categories; General and IT-specific these are as follows:

General

- Teamwork
- Communication Skills
- Leadership
- Team Management
- Organizational skills
- Problem Solving
- Troubleshooting
- Planning
- Meeting Deadlines
- Presentation Skills
- Writing
- Research
- English
- Business Management

IT-Specific

- Java
- JavaScript
- Python
- Postgres (SQL)
- Oracle
- Windows
- Linux
- Databases
- System Design
- Systems Engineering
- Software Engineering
- Technical support
- Project Management
- Customer Service

Skills in Greatest Demand (Specialised Skills)

Dec. 24, 2017 - Mar. 23, 2018 (Data not available after Mar. 21, 2018)
There are 27,435 postings available with the current filters applied.
There are 3,686 unspecified or unclassified postings.

Active Selections
Last 90 days AND Australia OR New Zealand AND (BGTOCC Family : Information Technology)
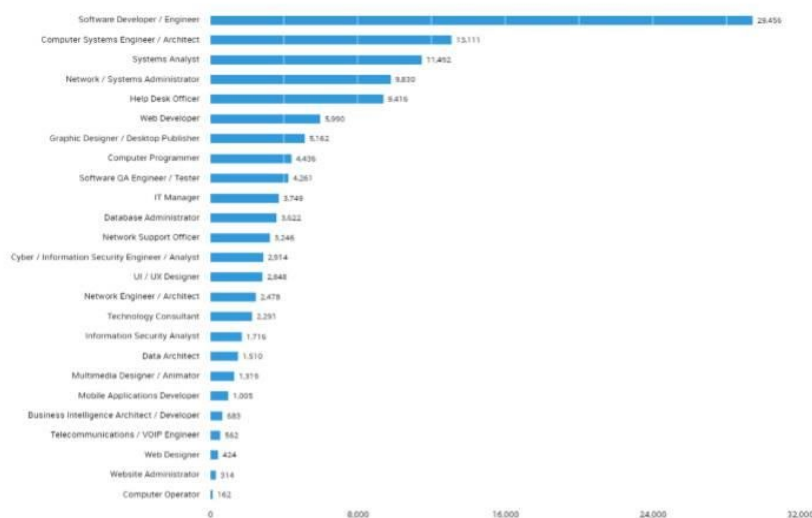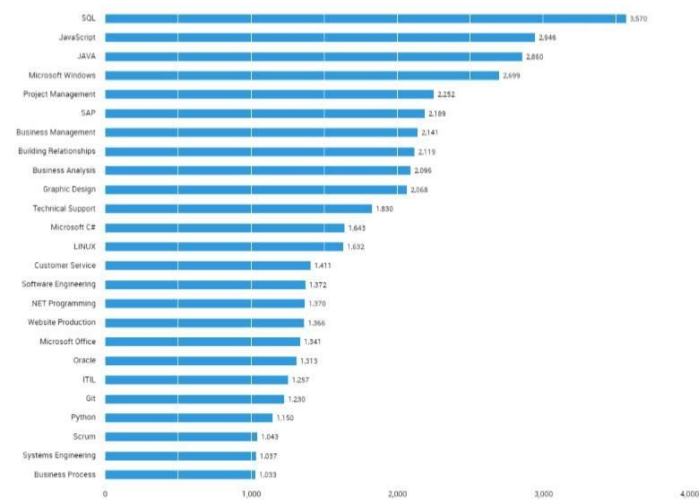
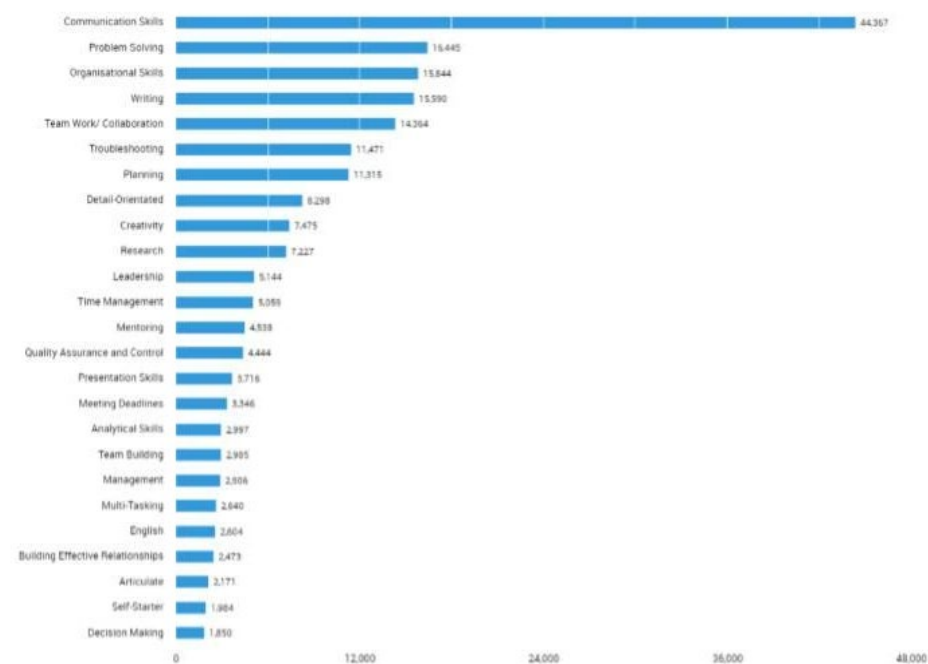**Skills in Greatest Demand (Baseline Skills)**

Mar. 01, 2017 - Feb. 28, 2018
There are 121,997 postings available with the current filters applied.
There are 16,729 unspecified or unclassified postings.

Active Selections
Last 12 months AND Australia OR New Zealand AND (BGTOCC Family : Information Technology)

We think the skills our team members possess rank quite well in IT-specific skills when comparing to the data. Our team covers the top 5 skills and covers over half the skills in greatest demand. We are a very well-rounded group and because of this, we would be able to tackle a varied range of projects in a variety of different programming languages.

The team meets the top 6 highest-ranking skills in the general skills category. We meet half the required skills in this category. With all team members job roles requiring teamwork and communication skills we think we would make a great team.

The three highest-ranked IT-specific skills our team is missing are:

- SAP
- Building relationships
- Graphic Design

The three highest-ranked general skills that our team is missing are:

- Detail-Orientated
- Creativity
- Mentoring

Has your ideal job changed after looking at the Burning Glass data?

Benjamin King:
After analysing the burning glass data my opinion of my dream job has been reinforced. Although the job title itself does not appear in the list I see that its equivalency is ranked high.

It is disappointing to see that the skill of using Linux isn't ranked higher as I thought it would have been for a Cyber Warfare Officer, but I am still pleased to see it in the middle range. The skills of leadership, teamwork, research and communication skills are surprising in their rankings, but they still give my chosen role a high median. Overall, I am pleased with the demands made by industry for my chosen job.

Ryan Williams:
After analysing the burning glass data my dream job has not changed, but maybe the specific language would be different. My dream job was a Java programming job but as the industry changes frequently it would be best to remain fluid with the industry and get experience in multiple languages. Regardless in how highly a specific programming language ranks in the data I still think that if you enjoy a job and the job compensation is enough to live comfortably, then that is all that counts.

Morgan Cassar:

After looking at the burning glass data, I think I would still be interested in the job I researched in Assignment 1. It uses a lot of highly ranked general skills, such as communication skills and writing. It does not however rank as highly in IT-specific skills, with skills in Microsoft Windows being the only high ranked skill. Due to the nature of the job, cyber security, I do believe that it is an important field and that jobs will be in demand. It could however leave me out of the IT side of the industry as it only requires high levels of Microsoft Windows knowledge but leaves out a lot of other IT-specific skills. Pursuing this career, although may have lots of opportunities, it might stop me from branching out into a more IT-Specific job.

Robert Cross:

After analysing the burning data, I feel that the choice for my ideal job would remain unchanged. There is several specialised and general in demand skills outlined about that are relevant to a CTO position. It is also reassuring that having experience across a number of skills in the IT industry could also result in a change of direction in career paths or jobs in the future if I find another niche or skillset that may be more appealing e.g. software design or project management.

Douglas Baker:

Reviewing the data there is really nothing I would be changing about my ideal job. Being a Systems and Network Engineer does cover a wide breadth of skills and challenges that suits my personality. While it may be interesting to chase the high demand of Software Engineering, or to specialize in an area such as database administration, the skills that I do have are better tailored towards a generalist role.

Ty Lynch:

From analysing the burning glass data, I think my opinion has changed about the job that I would like to pursue. This is because the job I used in assignment one does not require the knowledge in most of the categories listed and the few that is does, it ranks quite poorly in the IT-specific field. It also requires hardly any skills in the general category although some skills may possibly be used that had not been listed in the advertisement. Following this career path may leave me in a niche industry, while it is a specialized industry and a passion of mine to work with games, it may close the door to other opportunities in the future. This could leave me stranded in that type of work, as it could possibly be difficult to branch out to another sector of the IT industry.

IT Work

Interview Transcript

Interviewer – Douglas Baker – Imagine Dragoons, Team Member

Interviewee – Tom Gibson – LiveBetter, Network Engineer

Douglas: Ok I'm Interviewing Tom Gibson, who's a network engineer at LiveBetter. Tom, if you could tell us about your IT work and what you do during your day, and how that compares to your actual job description?

Tom: Yeah no worries. So as a network engineer at LiveBetter I am responsible for managing and maintaining the network, infrastructure, and connectivity between sites and employees to their services that they require to do their job. And I also act as an escalation point for service desk on any issues specifically relating to the network, but also some more generally IT troubleshooting. And then we also participate in project work and improvements and discussions and input on the strategic direction of IT in the business.

And, I guess yes it compared to my job description, I had a bit of a flip through that earlier on today just to check out what was in there and what I've been doing so. Yeah, I don't touch Azure as much as I thought I might, I guess, but I have been sort of touching that a little bit more recently there's less networking configuration in Azure now that our express-route links and everything are essentially already set up, so there's not a lot to play with in there. It's more systems management sort of setup, but other than that it lines up pretty spot on with the listed responsibilities.

Douglas: Yep, and how does it really compare to what people think that you do during the day?

Tom: Uh, yeah, not at all. Mention you are working IT to anybody, they just assume that you know you can fix their iPhone or their iPad or sort of any basic troubleshooting. Uhm, yeah, a lot of people that I talk to about it, especially people that don't have the strong IT background, just assume it's general "You know, my computer won't load this web page. Can you fix it for me?"

Douglas: "Have you tried turning it off and back on again?"

Tom: Yep. That's the classic one

Douglas: Can you tell us about the actual industry that LiveBetter is in, and how it compares her other

industries that you've been involved with, with your IT work?

Tom: Yeah, so Live Better itself is an NDIS provider as well as they do Aged Care services and another Community Services as well. It's yeah significantly different from other industries I've worked in. I previously came from a managed service provider, so we ourselves were small business that

provided services to multiple other small businesses, and they were typically small retail stores or sort of logistics companies and consultancy organizations and things like that.

Uhm, yeah, so its.... It's the work in LiveBetter is, more about, I guess managing a much more static and a stable network and one large, large corporate network servicing lots of disparate locations versus previously I was managing multiple smaller networks that didn't really interconnected in anyway.

Douglas: Yep, and other than, your real IT style of tasks that you have to do, what other things do you have to encounter during your day-to-day work?

Tom: Yes, as I touched on earlier the bulk of my work is around the project based stuff and the high end network, network engineer specific jobs. But, being that I'm located in Wagga and I'm the only IT person there I also do a little bit of service desk work I guess. There's some small administrative stuff, around company credit card purchases and things, but, yeah, I'd say the vast majority is just pure IT work.

Douglas: What are the sort of different people that you have to interact with on a day-to-day basis, both inside LiveBetter and external to LiveBetter?

Tom: Yes, starts at the top of it, I

guess. So you've got there our executive members that are in charge of the Strategy Department of which IT sits inside LiveBetter, and that goes down the line from IT manages, to department managers

I guess you'd call it and team leaders, as well as colleagues, two other engineers at our level and there's a Service desk that sits beneath us and then down to the customers, clients, employees. End users that are having the issues. Yeah, like the clients of the company as well are often still wandering around inside the Wagga office. And then there is also third party companies, people that they provide services to us or we get services from them. So postal office or shipping companies or people that are involved in providing our Internet connections.

Douglas: Yep. So what aspects of work do you spend the most time on?

Tom: Yeah, so I'd say typically the aspects take up the most time would be the project based work that we have. So there's a lot of sort of planning to either implement changes or improvements to the network, and there's a lot of time spent ensuring that those changes go smoothly, so there's a lot of planning and project work based around that. That, so depending on what project we're working on at any given time, that would take up the most amount. Closely followed

by escalations and things from the service desk, where issues have become greater than, the sort of first level knowledge, so we sort of chip in and help out with that.

Douglas: And that, in the project work, the change management side of things is quite a structured process there?

Tom: It is yeah. So um any, even off the back of service work I guess like if there's an issue that's been discovered and needs to have something significant changed inside the network to address it,

then the whole process, starts up with, you know, submission of change requests, providing all the required information around that, and goes to a change management board meeting. They discuss the change and sort of highlight anything that needs to be addressed or, more information provided on. And then once that's approved, if it's approved, and then it goes into a big planning phase to

make sure that any changes to the network don't cause anymore issues than were trying to solve.

Douglas: Yep, and also I guess, that includes the communication of when the changes happening and how it's going to impact the users and so on.

Tom: Yeah, that needs to get pushed out to all stakeholders, so that'll be if for example, we needed to swap a piece of hardware or upgrade bit of hardware it would be anyone who's having any contact with the network from employees on site at that point to all the systems engineers that would have applications that sort of run through and utilize that equipment as well.

Douglas: Which aspects of that project work do you find the most challenging?

Tom: At times, the most challenging part is the meetings, based around that work. There's a lot of I find myself, that actually gathering together all the requirements and the details and making sure you've thought of everything or that you've got everything covered. This is certainly, probably the most challenging part. The actual implementation of it, once you're confident that everything is planned out, is, generally pretty breezy.

Douglas: Yeah, so several hours of work for a few minutes worth of results.

Tom: Yeah. A few minutes worth of play. That's it.

Douglas: Are there any aspects of stuff that you'd rather spend less time on?

Tom: Yeah, look, I don't, despite the fact that the change management stuff takes a lot of time, but I probably wouldn't like to spend less time it. Because if I did I would be spending more time sweating as I try and fix things up. And I would probably say, Documentation is always a thing. Both before, during and after everything that you do, I'm always trying. Yeah, keep it, always try and keep everything that you do documented, but it be nice to be able to spend less time on it.

Douglas: Yeah, and when you are doing that work, are there any frameworks or methodologies that you try and work within to keep it structured and repeatable?

Tom: Yeah, so the main project, methodology, framework, I guess you could call it that we use is based around agile so, and we do lots of, sort of sprints. Yes, and any work that we've got allocated to a certain Sprint, will assign story points to, to give us an idea of workload at a current time and. We will go through numerous catch up meetings, standups during the week to get an idea of what work everyone's gotten, the progress of that work.

Douglas: Yep, and also I guess to accommodate the things that

change during that Sprint process as well.

Tom: Yeah, there's being sort of attached, symbiotic, I guess relationship with the service desk in that

where often fielding escalations from them. There's, some it can be very hard to plan for static events and block out all your time for certain tasks 'cause at any moment you could sort of be called upon to push that aside and address a critical issue.

Douglas: Now overtime, how have you found your work has changed?

Both in recent years as technology has shifted, and also with the recent shift of rather

than being in offices in, work from home, environments?

Tom: Yeah, I guess for me the biggest change is just sort of between employers. I guess I've been with Live Better for just over a year now and previous job was definitely, more structured around being in the office and making sure you're at this location, sort of sitting there with a team of people all the time.

At the moment, with Live Better. It's being the only IT person in Wagga, it's much more of a distance I'm

sort of feeling, so a lot of the meetings that I have, 90% of the

meetings that I have are via Teams, and so have been for awhile. Just because, you know, the core IT teams in a different location. So with the recent Corona, Corona pandemic that's been happening and there's a shift for people to be working at home from that its actually made it pretty easy transition for me, 'cause it's not really a lot has changed day today for me. It's just the location in which I sit it's a little bit different.

Douglas: So yeah, and most of the items that you're actually working on, you're remote from anyway, so...

Tom: Yeah, a lot of the tools that we have, you know a lot of our server access is set up in Azure. We use Office 365 for a lot of stuff, so a lot of that's cloud based anyways.

Douglas: Now where do you see the next big change in your field, in particular is networking, where do you see that changing in the next few years and how will that affect the IT industry as a whole?

Tom: Yeah, look I think, networking specifically is, it's going to change with, sort of virtualized networks and uptake of SD WAN. So I think a lot of people, once they get all of their, network connection endpoints into the cloud based environment, being able to manipulate a lot of that, the framework I guess around those devices and having things template it out and. And having things. I don't know, I guess, a bit more centralized control and easily, easy to manipulate, on mass is going to change a lot, of the, of the networking side of computers and I think it's going to change it a lot for the better in that things will become more standardized and templated out and a lot easier to rollback changes if they need to be.

Douglas: Again on the IT industry. Is there an aspect of the industry that you'd like to change? And why would you like to change that, that aspect?

Tom: Yeah, maybe, um. Maybe a bit of the mystery and the elitism that can sort of happen a bit. There's a lot of. Um? There can be a lot of odd sort of, you have seen it a little bit in previous work

places of people that have knowledge and don't generally like to share it as much. They like to hold on to the knowledge that they have in. I don't know, but whatever their ego gets out of that, but I'd like to see a lot more, openness and sharing of information to hopefully sort of demystify a bit of what people do, and help everybody out I guess.

Douglas: I guess finally, can you share an example of the work that you do that best captures the essence of the IT industry? That sounds like a contains a lot of buzzwords for me "of the essence of the IT industry."

Tom: What is the essence of the industry? I guess, as far as like the essence of a network engineer goes, an example of work that I do like. If I were to tell someone, you know if you're going to be a network engineer, this is the type of, stuff to look forward to. It's probably, setting up VLANs, configuration of switches and stuff with SSH. Doing all that remotely and interlinking different network sites I guess.

Douglas: Yep, so if we want to throw in some more buzzwords facilitation of the communication.

Tom: Yeah, that works good with some, uh, addressing the shifting paradigms.

Douglas: Yes, yes we need to include the word paradigms. OK, well I guess that, uh, that wraps it up. Thank you for your time and I'll let you go back to your normal day to day.

Interview Video

Video file is located on the team GitHub page –

https://imagine-dragoons.github.io/RMITA2G15/interview.html

IT Technologies

Blockchain Technology

The State of the art for Blockchain technology can be seen in the changes to the Ethereum platform that are being developed and rolled out starting in 2020, primarily to try and increase the number of transactions per second that the platform can achieve. In "Blockchain: State of the art" [4] From 2017, the author concludes that they will be watching for technical developments in proof of stake and sharding, as well as the formalized recognition of crypto currencies and the development of projects to use blockchains.

The launch of Ethereum 2.0 is currently expected around July 2020 [5] and features several changes to make the platform more robust and scalable. In an interview with cointelegraph.com one of the co-founders of Ethereum, Vitalik Buterin, outlined the two phases of introducing Ethereum 2.0 [6] The first phase will involve changing from a Proof of Work model to a Proof of Stake model. The second phase will introduce the concept of sharding the data on the blockchain, which is a concept to reduce the barriers to scalability of the platform.

The transition to proof of stake from proof of work is a change to the consensus mechanism used by the blockchain platform, and the means that a third party is avoided when confirming transactions on the chain and preventing double spend of value. The proof of work system is based upon advanced cryptography which creates output from equations that is unique and immutable. This has been the basis for the majority of blockchain systems and was proposed in the original Bitcoin system of Satoshi Nakamoto. However, some of the major drawbacks to the computational complexity in proof of work systems is the computational power required in the calculations causing large electricity costs and limiting the number of transactions that can be processed in a given amount of time. The mathematical problems must be brute forced to be initially solved, and the design of the system varies the complexity of the problem depending on the available computational power on the network. Another major flaw in proof of work systems is that theoretically if someone can control 51% or more of the computational power of the network, they could manipulate the result of the verification of the transactions, and destroy the immutability of the previous blocks by recalculating them.

In a proof of stake model there is still cryptographic computation, however the load is reduced. Rather than having to compete to be the first to solve a computational problem, any party that wants to create the next block on the chain has to invest an amount of value for the blockchain that they are bidding to verify. These parties can be referred to as verifiers as they are solving the small computational puzzles that are the transactions that are to be added to the block. The reward for producing the next block on the chain is the value of the transaction fees generated by the activity of others using the platform. The chance of winning the transaction fees is based on how many coins have been staked and the percentage of the total pool that they represent. This avoids the theoretical issue of someone controlling 51% of the computational power of the network as brute force is no longer the governing factor in determining who creates the new blocks on the chain. The system relies on it being highly unlikely for someone to control the majority of the value on the platform. As a disincentive to poor verification or fraudulent verification of transactions which would

harm the network, parties risk losing the value that they have staked, making it economically unfeasible to endanger the network.

In the second phase of the implementation of Ethereum 2.0 a process called sharding will be used to break the database into pieces and distribute the pieces across the nodes of the network. This is applying a concept used in managing large centralized databases to achieve scale and manage traffic loads. In terms of the Ethereum blockchain it would involve splitting the network into segments or shards which would hold a set of the account balances and smart contracts of the broader network. Rather than each node having to run the entire ledger, they only need to maintain a smaller section, which allows for the transaction validation to occur in parallel rather than in a linear fashion. This allows for the rate of transactions to be increased and the platform become more practical for long term widespread adoption.

The move to Proof of Stake rather than Proof of Work will also assist in allowing the Ethereum blockchain to be sharded. [7] In a Proof of Work chain, validation of transactions needs the history of transactions, but a sharded database only has part of the history. There are concepts such as a "proof chain" proposed by Peter Todd [8] where the integrity of transactions can be determined without access to the whole database. While this can produce a system that could validate transactions on the client side, the complexity of the system does increase greatly. With Proof of Stake the validation of the sharded chain is made easier because the work required is only required to be done on a proportion of the total number of transactions. [9]

In order to coordinate a sharded Blockchain, a separate chain is used for maintenance and assignment of nodes into their shards. This is referred to as the Beacon chain for Ethereum. The beacon chain uses randomness for shard assignment, manages stake processing and has snapshotting abilities. [10]

The Impact of the changes proposed in Ethereum 2.0 is going to depend on if it solves the speed and scalability issues inherent in current blockchain implementations [11] As the changes are going to be delivered in phases, there is a lengthy rollout period of the Ethereum 2.0 roadmap. Each phase of the roadmap will need to be rolled out before developer can start to build the applications that will make use of the features. There is also a significant amount of the future roadmap that is actually still in the research stages, with no guarantee that the changes will work to improve the speed of the system to the three to six seconds for a transaction.

In a major change such as Ethereum 2.0, there is also a question of what happens with the value of the coins that are currently in the system, as they need to be transferred over to the new technology or replaced by something new. There are several issues with creating a link between the two versions, but if there is a linking in the future, there may need to be manual intervention to reverse transfers of value from the 2.0 chain to the older version if the Ethereum 2.0 chain is broken. [12] It is however likely that the two chains will operate for several years before they are merged together.

The effects of these changes on individuals will depend on the success of the changes. Blockchain technology has received a significant amount of interest outside of developers and researchers, but

this has had more to do with the media coverage of large dollar values of bitcoin that actual changes to people day to day lives. A potential negative effect of Blockchains for individuals is that the mining of coins requires significant financial investments and will exacerbate the differences between the haves and the have-nots. This is regardless of proof of work or proof of stake systems, as the proof of work requires large inputs of computing power to compete, and proof of stake requires value to gain a share of the rewards.

Clouds, Services, and Servers are in every aspect of online computing today. From simply access you contacts on your mobile phone to maintaining a remote database for a company, it is everywhere.

When diving into what is considered state of the art in this technology there are several companies that offer these services but very few can integrate with minimal issues. Apple's iCloud and Apple ID eco system could be considered one of the most successful implementations of Clouds, Services, and Servers. The iCloud and Apple ID system is almost seamless, a user can add data from one device which will sync to iCloud's servers and then down to a second device with no user interaction most of the time without the user even knowing. To a user the process is instant, from adding the data on the local device, it being accessible on the server, to it finally syncing down to the remote device. Apple uses their Servers to host the iCloud service [13], Music [14] and TV [15] services to name a few. Google and Microsoft both offer full suites like Apple's, but each have their differences and limitations. When it comes to online Cloud suites it is up to personal preference and need. Dropbox is more of a Cloud based service that hosts the files on their server, Dropbox does not offer any other services and choose to focus on one aspect.

When comparing the different options available and what can be achieved via cloud computing it is best to break it down to the relevant services as each service generally has a cloud and server aspect to it. A lot of these are Windows centric like the Tech Radar article [16] on "best cloud storage". Streaming services like music and video fall into the same category but when looking deeper there is more push and information on the video streaming rather than music streaming. This is present in the business insider article on "Best streaming services" [17] and the Cnet article "Best Music streaming services" [18]. Every company has their preferred market and offer their services directed at that market, this also influences what new technology is released and when it is released.

The best way to understand what is new and upcoming is to understands the different types of cloud computing. One of the best resources that explains this an article from Globaldots IT [19].

Looking at previous trends in the advancement of Clouds, Services, and Servers. It is safe to say that any improvements and advancements will be in relation to transfer speed, storage size, and storage price. Increasing speed and size while keeping costs at a minimum is a goal of any IT business. These advancements can be assisted with advancements in Hardware and Software technology, there are several other factors that can influence technologic improvement, but software and hardware is normally the biggest. The current trend is the expansion of use from the consumer level, 70% of all tech spending is expected to be cloud based in 2020 [20], which is a massive amount just in the cloud space alone. As more and more consumers and business move to cloud computing this will place stress on networks, servers, and cloud hardware, thus requiring these areas to advance ahead of the expansion. Certain countries and companies will focus on one of the areas that advance before the cloud computing, while the other areas get left behind (Australia's NBN is a great example of too little, too late). If these advancement in other areas are not completed to an adequate standard it will affect the overall standard of cloud computing thus reducing the total

users which in turn could lower the profit and advancement. This is a crazy circle that can be seen in every aspect of IT Today.

This impact of technologic improvement and advancement can impact everyone that has some form of technology, as almost everyone has a social media account or uses technology that links to the cloud in some way. If this advancement is not done correctly it can cause a great sector of the IT industry to grind to a halt. If users move back to local based media it will have a huge effect on the IT industry, companies like Apple, Google, and Microsoft will not require their large data centres or maintenance employees for those data centres. Reducing the demand on cloud computing would reduce the need for as many help desk staff as there would be a reduced number of users. This all would reduce the company's profit and therefore they would remove their interest in cloud-based computing. This would then remove the ability to work remotely or from home, increase the amount of people traveling to work/school. It is an ever-growing snowball, all because users moved away from cloud-based computing. It could create some jobs in brick and mortar locations, but it would be minimal compared to the job loss worldwide. This would force some companies to close and cease trading resulting in further job loss. Cloud computing is an integral part of the current IT industry and it helps the industry grow to its full potential. Without cloud computing and the way, it has grown Apple would not have moved out of Steve Job's garage, or Microsoft Windows would not be one of the most used operating systems, or Google would not be one of the most efficient search engines. Cloud computing has shaped the IT industry to where it is today.

The advancement to any aspect of cloud computing will affect myself and my whole family greatly as we use cloud computing every day. My children's devices are controlled by Apple's screen time and remotely synced from my device to their devices via Apple's Family sharing in iCloud. Improvements in Apple's iCloud service has made it easier to secure and limit a device use, remotely. Server improvements have allowed the security and speed to be improved, this affects every user as it reduces the chance of personal identifiable information being taken and used. Changes to cloud computing affects all users good and bad regardless of what part of cloud computing is changed. Instagram removed the ability to see likes on a post, this caused a lot of people to lose followers and in turn sponsor ship. This can both be considered good and bad depending on how it is viewed and the sort of people it affected, none the less it was a change/advancement/improvement to the way that cloud system worked. Changes to reducing cloud computing would affect the greatest number of users and cause the biggest harm to the IT industry, this is unlikely to happen as the cloud sector of the IT industry is one of the fastest growing sectors [20], and as it grows it allows the entire IT industry to grow and improve. The ability to work from home with minimal issues was only available to a select few 10 years ago, now it is quickly becoming the new normal, yes this has been push along by the current global pandemic but if the infrastructure was not it place it would not have been achievable in such a short period of time.

Cybersecurity

What is Cybersecurity

Cybersecurity is the state of being protected against the criminal or unauthorized use of electronic data, or the measures taken to achieve this [21]. From this definition we can deduce that cybersecurity is not only just a technology it is both a practice and an end result. Without it, all of our data would be available to those who could exploit it for their own purpose.

Cyber criminals can achieve access to secured data with a variety of tools and techniques with some examples listed below:

- Brute forcing passwords with common password lists.

- Taking advantage of known exploits on unpatched systems.

- Social engineering. Tricking someone to give access or give up sensitive information.

- Using viruses.

- Building malware into websites.

Two points worth making here is that cyber criminals will usually implement a whole suite of tools to gain access to a target system, and that most attacks are opportunist based rather than with a specific target in mind. A good example of these points was the WannaCry ransomware attack in May 2017. It used a malware virus, or crypto worm, to lock down a computer by encrypting important data on the infected machine. It then displayed a note demanding a bitcoin payment to release the encrypted files. It did this by using a range of tools and techniques.

Tools and techniques used by the WannaCry malware virus:

- The assumption that many computers had not implemented security patches on the

Microsoft Windows OS.

- Use of the EternalBlue NSA exploit to gain access to these unprotected systems.

- Use of the DoublePulsar tool to load the WannaCry malware.

- WannaCry malware encrypts files and issues ransom.

- Virus then scans local and internet IP addresses to further infect machines.

Due to the fact patches were released by Microsoft before the exploit was weaponised [22], if good cybersecurity had been implemented then the WannaCry attack most likely would not have had a major impact. Without cybersecurity, systems we would not otherwise consider important could be compromised leading to a countrywide shutdown of life enabling services such as health systems, electricity networks and water management. The attack highlighted flaws in software controlling these systems, showing cybersecurity was never initially implemented, or given a high priority [23]. The lack of forethought for security in these systems made them vulnerable to attackers. As Cybersecurity is both a practice and a result, various contexts of 'State of the Art' can exist. Due to this complexity, "State of the Art" could be described as anyone who has the most 0-day knowledge of exploits and potential fixes. This may be a single person in a garage somewhere or an online community that has shared its resources. The professional standard accepted by security specialists are state sponsored organisations who have pooled these types of people & resources together in a strategic deployment. This is done with the intent of having IT systems that are protected against these 0-day exploits and the ability to leverage their cutting-edge knowledge against those who don't. There are various technological solutions available now to combat the threat posed to IT security.

Common ones used by consumers being:

- Antivirus software.

- Passwords and user authentication software.

- 2FA, the use of two pieces of evidence to provide authorisation.

- HTTPS for website traffic encryption.

More professional examples used by Cybersecurity experts are:

- Kali Linux for penetration testing.

- Full disk encryption software.

- Encrypted VPN.

- User authenticated data storage systems, such as Objective.

This is a non-exhaustive list of IT security systems in use now, but it does highlight that encryption is the key technology being used. Future Technologies A current and growing concern is the ability of quantum computers to drastically reduce the computational time required to crack current encryption technologies. Use of Public Key Infrastructure (PKI) is of particular worry. Due to this concern, institutions are pre-empting a possible onslaught of encryption breaking by creating quantum proof encryption. This is achieved by using algorithms that cannot be cracked by any type of computer [24].

Impacts.

A recent estimation for a viable quantum computer puts just the hardware at $10bn USD [25]. This means the initial impact of quantum computing will be defined by those who can afford to use these systems and how they use them. If a quantum proof encryption algorithm cannot be found, or if it is found and not made publicly available, this may mean that where a once fair playing field of readily available encryption to all, possibly may only be broken by governments and those with the financial ability to access these quantum-based systems. In this scenario, legislation may be the only way to protect people's privacy rights online, rather than relying on software and hardware. Although, this will not prevent organisations from breaking laws, or governments creating laws to circumvent privacy-based legislation (i.e.: USA patriot act). It is difficult to predict the impact this will have on the general public. One certainty is that the country who leads the way in this new technology will be enabled with a key military and economic advantage over others. If this becomes China, it may tilt the global status quo in their favour [26]. With China already exerting their influence both politically and militarily, if they were also able to crack the encrypted transmissions between the USA and her allies during military operations, it would limit the capacity western allies could exert force in areas contested by China, such as the South China Sea and the greater Indo Pacific region. With China's greater influence in these regions it will be able to further interfere with political policy making ultimately flowing down and affecting the citizens of countries that exist in this region such as Australia, Indonesia, Papua New Guinea and more. Although this example uses China as a scenario, it applies to any country that may wish to exert influence in another nation by utilising quantum computing to infiltrate that nation's encrypted networks. I can see this as a potential threat to all Australian's way of life. Another nation with direct influence over Australian political, business and military could change the way we vote, what is available for us to buy on store shelves and even the freedoms that we all enjoy by living in this country. Even with the future of quantum computing being uncertain, it will still significantly affect the field of Cybersecurity in the near term. It will require the field to be prepared for this potential threat to its existing defensive systems. In 2018 the USA government passed the National Quantum Initiative Act (NQIA) with the intent of accelerating quantum computing research and development, and the Quantum Computing Research Act which focuses on the Department of Defence [27]. With these acts in place, cybersecurity professionals will likely be required at the forefront providing information and education to both defence and academia.

Raspberry Pi's, Arduinos & Makey Makeys

Raspberry Pi's

A Raspberry Pi is a small computer, about the size of a credit card which is low cost. It can plug into a computer monitor or TV and is capable of doing everything a desktop can do [28]. It was created in 2012 by a UK charity who aimed to educate people in computing. The Raspberry Pi runs Linux but provides users with a set of general-purpose input/output (GPIO) pins. These allow users to control electronic components for physical computing [29].

There have been four generations of Raspberry Pi's released, each generation usually has 2 models, A and B, with model A being a less powerful cheaper variant [29].

Right now, the Raspberry Pi has a wide range of functions and uses. From replacing your desktop computer with a Raspberry Pi to building a security system, or even use it to create a media centre to watch your favourite shows and movies, you can even use it productively and for its initial purpose, which is to learn how to code [30].

The sky is the limit for the robust compact Raspberry Pi. The latest generation of the Raspberry Pi released in June of 2019 the Raspberry Pi Model B, has the capability to deliver PC-like performance, it now can output two 4k monitor displays. It boasts 4GB of Ram for the first time. This all is included for a very low price (USD$35 – USD$55) [31].

The biggest impact that Raspberry Pi's have, is the ability to help teach people to code. This was its initial purpose, due to the wide variety of uses it has. Over the past few years, Raspberry Pi's have been popular when it comes to crypto currencies, as they are able to be used to 'mine' bitcoins, by doing intense calculations [32].

One thing which will change in terms of Raspberry Pi's is the improvement of its technology. Raspberry Pi's have four different generations now [31], each of them a major improvement on the last. I think it would be safe to say that the Raspberry Pi will have few things it isn't capable of doing.

The people who will be most affected by the ever-developing Raspberry Pi, are people in the technological world who are learning to code, or people who enjoy coding these robust compact computers to do a huge number of things.

At this stage, I don't think that the Raspberry Pi is really capable of making jobs redundant or replacing any jobs. You could argue that it could affect some people's jobs, as more people are able to develop the Raspberry Pi into many different technologies that it could stop certain people from using certain services. For example, you can create your own media server using a Raspberry Pi, which could stop some people from using streaming services such as Netflix or Stan

At the moment, Raspberry Pi's aren't really affecting my daily life. I don't use them to help me do anything. I have been very interested in trying to get my hands on one, to try give myself some practise in coding and to spend some time trying to get it to stop Ads on my internet network at home.

It won't have a big enough impact to make anything different for me in the immediate future. Potentially down the track, someone may have discovered a use for Raspberry Pi's that could change the way the world does a particular thing, but at this stage nothing is different.

This would only affect family and friends if it affected me as well. Unless I manage to get my hands on one and set up an ad blocker, then I guess it will affect members of my family as well.

Arduinos

Arduino is a simple computer; it can run a single program at a time repetitively. As a microcontroller motherboard, it is very simple to use [32]. It was initially used as an introduction to programming as an easy tool for fast prototyping, for people who didn't have much of a background in programming. As it is an open-source project, it has endless possibilities [33].

The main use of an Arduinos is for it to perform simple repetitive tasks. Such as, opening and closing a garage door or pushing notifications to twitter [32]. Some other uses include, it is a part of 3D printing, creating a LED light beam that makes a sound when you cover one of the lights, and can be used to send certain twitter posts at the push of a button [34]

The future is very bright for Arduinos, as it has turned the once expensive world of microprocessors and become a widely available easy to use low costing technology. But it is the users that make everything possible. The Arduinos allows for the wide imagination of its users to create projects using it.

In terms of developments, in an interview the co-founder of Arduinos [35], stated that they planned to develop and release their own cloud service. The Arduino IoT Cloud was released in 2019 and is a huge development for Arduino. It enables users to program the Arduino boards via the cloud, by guiding them through step by step, into creating their new project. First by configuring it, and then by coding it [36].

Things that will change is that it makes it a lot easier for people to use Arduinos. It will most affect those who use the boards no matter their level of expertise. It can help both beginners set up a project, as well as helping out the absolute professionals manage all their boards.

In the future it could potentially make some jobs redundant, but this is purely based on the ability of someone creating a project out of the Arduino board.

Again, like raspberry pi's I currently do not use them, so at the moment they do not affect my life, however in the future it could have an impact on my life, depending on the creativity of some Arduino users.

MaKey MaKeys

A MaKey MaKey is project created to inspire people's creativity and combining it with technology. It is a two-sided circuit board that you connect to your computer and then to other objects, then using the objects to control keys on your computer. It uses alligator clips to connect the board to any inanimate object, this could be some Play-Doh, or even a couple of bananas. The alligator clips on the board connect to certain keys, or mouse clicks, so you can pair the objects, so your computer thinks they are key strokes [37]

The imagination of people is extraordinary. The limit of what can be done with these is restricted due to the fact it can only be used to correspond to 18 different inputs, but people's creativity is

what drives the development. Videos of people creating a piano out of their staircase, and people creating a controller for a videogame out of drawings on a piece of paper [37]

Although the MaKey MaKey seems simple, and even as a way to get kids involved and interacting with technology. However, people have managed to get creative with it by pairing it with other technologies. Mixing the Raspberry Pi with the MaKey MaKey has seen creators be able to make keyboard / music players [38].

Developments in this technology is purely based on user creativity and imagination, like a lot of these devices it allows the user to create their projects and help them learn and understand technology. It will mostly affect those who use them, and in terms of replacing jobs it is again up to the user capability, but for now I don't think the MaKey MaKey will be taking anyone's job, except for maybe piano makers...

The MaKey MaKey, now doesn't have any effect on me or anyone around me. Potentially to create a keyboard or music player would be interesting, and fun to create, but maybe in the future when the technology is a little cleaner and easier to manage. But other than that, if someone can create a way to incorporate it into daily life, the MaKey MaKey won't be affecting myself or my family and friends.

Project Idea

See the Project idea webpage on the Team website.

https://imagine-dragoons.github.io/RMITA2G15/projIdea.html

Group Reflection

All reflection data has been copied from the Microsoft Teams post that was created for this purpose.

Benjamin King

The one thing that I thought worked brilliantly with our group work was the utilisation of Microsoft Teams. I was pleased to see that it has Linux support, so I was able to use it on my home PC. As it also had an android app, I was able to install it on a tablet and on my phone. This allowed me to continue to work on the assignment and contribute to the discussion during my breaks at work. Although, even with the use of MS Teams, I believe we could have had better communication especially at the start of the assignment. One thing I found surprising was the fact I knew one of the Team members personally outside of RMIT. I found it amazing that two people could end up pursuing similar goals at the same time in their lives, even after many years.

Ty Lynch-Palmer

I think the group for the majority worked quite well the use of Microsoft Teams it has made the organisation a dream and the program is quite a user intuitive. Communication could have been improved and the use of the Teams calls feature might have been a useful and efficient way to do this I think we should have delegated tasks differently as we had missed certain aspects and this may have been avoided with team meetings. I personally felt slightly lost at the start of the assignment but found my way after some time. I was incredibly surprised by the talent in website creation by Ben and Robert. As someone who had no experience in that field, they both have created a lovely looking template for us to add our information too. What I have learnt from this experience is, that while working in an online team it can be difficult at times, but it makes complex and long tasks feel like breeze. Overall, I think we made a decent and team and hope to continue working with each other for future assignments!

Morgan Cassar

I too think that the use of Microsoft Teams was a very effective way to organise everything which we did in the assignment. We were able to manage and delegate tasks through its communication tools, as well as share documents. I too would like to thank the members of our team, everyone I felt did a great job, and were good enough to help each other along the way. Some things we maybe could have communicated a bit better on, but overall, I believe that we worked very well together. Coming into this I did not know how well a group of people who have never spoke to each other could do, but after this it shows that through proper communication and organisation, they can in-fact do a great job.

Douglas Baker

Something that worked well - GitHub - we could all push things into the central repository and collaborate with ease. While there are many different platforms for collaboration and sharing of documents, including Teams, using GitHub worked very well in my opinion.

The group has functioned well, given that we don't really have a leader or formalized structured plan. I agree that we needed to communicate better at the start of the Assignment period which would have given me more confidence, but I believe that for all of us 'life gets in the way' with work and family commitments, and the majority of the team had not used Microsoft Teams before and I believe two thirds of us have never spoken to each other verbally.

Something surprising - the thing that I found surprising is also connected to the thing that I learned - how over hyped the public blockchain actually is. I honestly viewed the hype around blockchain as being related to the bubble of the value of bitcoin, but I never really understood the severe limitations that the platform has. The mathematics behind the blockchain and the immutability is very interesting but providing a system that has such a low number of transactions per second as an alternative to the established financial structures and systems is crazy.

Ryan Williams

I agree with all of the above, considering we had a bit of a quiet start we worked well and got the job done. Ben and I went to school together but have not spoken in about 20 years. Working together was like the old days in computer studies where we would take control of the print queues in all of the classrooms. I feel Microsoft Teams was an asset and without it we could not have done the assessment. GitHub was amazing and I was slightly worried about possible push conflicts (which is its early days, but it has changed tenfold. I think we worked well together using our strengths to ensure we complete the tasks. Overall a pleasant group experience which was refreshing.

Robert Cross

One thing that worked well was utilising Microsoft Teams for communication and breakdown of the assignment tasks. Previously I've used Teams in a work environment where it has been less effective – so it was pleasantly surprising to be able to revisit a tool like this and have success which made the assignment run pretty smoothly. I was surprised at how well everyone has seemed to adapt to using GitHub. Prior to this class I had not used GitHub before and was a little anxious about how difficult it would be to learn and become familiar with a new tool in a short amount of time – plus the added pressure of a group working together to consolidate information. It seems like most of the other team members have also managed to learn how to use GitHub (or probably also had some experience which has benefitted everyone). I learned a lot about job opportunities and what some in-demand skillsets are in today's market. Also, the range of skillsets and interests from everyone in the team was a little surprising – almost everyone had varying backgrounds, interests and ideal career paths going forward.

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