A picture containing fruit, flower

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# Introduction

The following report analyses various aspects of the IT industry and how they relate to group members and their career paths. It outlines each member and their experience, analyses industry data and how it impacts each member, as well as the project idea that will be explored through to Assignment 5.

# Team profile

## Introduction

Meet **RECLAIM**, a group of like-minded students working together to produce an application to motivate and assist individuals to reduce their weekly household waste and get the most out of their weekly spending. The name **RECLAIM** has been chosen because it is memorable and directly relates to our message of making the most of household waste and reclaiming materials that would otherwise be thrown away.

The following section of the report will outline the students involved in producing this project and will compare the test outcomes and ideal jobs identified in Assignment 1. Information has been reviewed based on prior feedback and new learnings within the team.

## Personal Information

**Blair Horgan**  
s3868252

text

**Justin King**  
s3266310

I am 38, born and reside in Brisbane, Queensland. My hobbies include weightlifting, hiking, sports motor bikes, electronics and gardening. I manage the family business manufacturing liquid fertilizers for use in Agriculture. My studies have been in Chemistry and Biology and this is the first experience I have with IT. I have a passion for electronics and robotics which was sparked when I was in primary school and a friend’s father who was an electronics enthusiast showed me how to solder and helped me make my first project, a simple blinking light that I thought was the coolest thing in the world. I have no background in the IT industry however I do have experience with coding in Python and use of Raspberry PI. I hope to move into robotics and AI from here.

**Justine Frost**  
s3862333

I am 22 and I was born and raised in Melbourne. Although, my years growing up were split between there and San Diego, as I hold dual citizenship to the United States. Having parents from across the globe definitely comes with perks. Which in this case was my dad, where as my mother’s side migrated from Syria to Australia many years ago. My nationality is an ironic mix that’s for sure. I attended all my schooling in inner city Melbourne and completed my secondary studies at University High School. Completing high school encouraged me to take a gap year, which sent me straight into the work force – and have yet to start in tertiary studies, so here we are! I found myself sinking a few years into a Barista position, which followed a few bar tending and general hospitality roles.

Over the past few years I’ve really embraced and channelled myself a creative side, found an outlet in ceramics, I took classes for about a year and then it became something I just always wanted to do, even when I was occupied at work, I couldn’t stop thinking about going home and getting my hands dirty. It is definitely the most satisfying ways to switch your mind off.

Studying IT was always an option for me, considering my interest has stemmed from when I was a young gal. My dad actually introduced me to it all so it’s been something that has been around for as long as I could remember. In his spare time, or whenever we hung out, he was always showing me some program that he had been making or the latest computer he was building. I have very fond memories of always tripping over computer shells and stacks of motherboards and disk drives. I also loved tagging along to work with him, heading up to the IT department of the National Australia Bank was very exciting, my dad was part of the team that wrote the initial software to start up and develop online banking. Knowing those kinds of job still exist is definitely motivation to get into development.

**Kirby Schwenke**  
s3866528

My name is Kirby Schwenke, I am 25 and based in Sydney. I enjoy spending time with my pets, turning my one-bedroom apartment into a plant sanctuary, walking my way around Sydney, or using my creativity to create anything from a chair to a new planter box. I have previously completed a Bachelor of Management in Events and Leisure and worked in the event's industry since graduating. I was drawn to study in the IT industry as I have always been someone that thrives in an environment that fosters creativity and analytical thinking, and the IT industry presents many opportunities to apply this. I have previously used drag-and-drop website editors to create event and registration websites and often found myself lost in an internet rabbit hole researching HTML and CSS so that I could alter my websites and make them more dynamic and engaging. I have also worked with several technologies including, event registration software, project management software and file management software. I am interested in exploring more of UI/UX Design to improve the usability of software for individuals and industry professionals.

**Stephanie Briggs**  
s3383506

My name is Steph and I grew up on the Mornington Peninsula in Victoria. I was born in Australia and everyone as far back as my great-great-grandparents have been born in here in Victoria. My ancestors mostly originated from Europe with a mixture of Irish, English and German.

I have previously attended RMIT a few ago where I completed an Associate Degree and Bachelor in Fashion Design, this being the reason I have chosen to study with RMIT once again. My interest in IT started from quite a young age, but in my early teens was when I really started to enjoy learning about building websites so I started using basic HTML and chat widgets to create websites for my school friends. I hope to be able to gain a further understanding of programming languages and software development throughout my studies as I would like to move into a career in this area. Outside of work and studies I enjoy hobbies such as skateboarding, snowboarding and pottery.

## Team Profile

* Test outcomes for everyone and how this info will be helpful to the group.

## Ideal Jobs

A screenshot of a cell phone

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* A screenshot of a cell phone

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* Comparison of ideal jobs across all group members.
* Para on common elements
* Differences
* Similar or different across the group.

# Group Website

* Link to group website
* Link to repository
* Describe what has been done
* Comments on how the audit trail reflects on group work.

# Industry Data

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The above table outlines the ideal jobs that our team has selected and their position within the burning glass data provided. Out of the 200 jobs listed in the burning glass data, they are all ranked quite high and are sitting within the top 50 job titles in demand. The only job from our team that was not listed in the report was Justin’s ideal job of a Robotics Engineer. This is most likely due to the position being a more engineering based job which requires skills in mechatronics which does not always sit within the IT classification when it comes to job listings.

After doing some further research through ‘Seek’, there was a bit of a contrast in the available jobs currently available under the same/similar job titles.

* User Experience Designer: 960
* Technical Lead: 2,384
* Software Engineer: 2,733
* Mechatronics (Robotics) Engineer: 130

Software Engineer positions seem to be the most in demand out the of four job titles with the Technical Lead positions following closely. The User Experience position still produced a positive amount of job listings with close to 1000 positions in Australia currently being listed. The Mechatronic Engineer position had the least amount of positions currently listed, but this may be due to it being more of a niche area, especially in Australia. It is very interesting to see the change in the amount of positions available now in comparison to the data from 2018 as it has had continued growth over the last couple of years and is only projected to increase for most of the ideal jobs our team has selected.

# IT Work

Text

# IT Technologies



## Clouds, Services and Servers

##### **Introduction**

Cloud computing refers to “the delivery of computing services – including servers, storage databases, networking, software, analytics and intelligence over the Internet” (Microsoft, 2020), or in the cloud. It has paved the way forward for several developments and has resulted in a new set of offerings of services. Cloud computing is encompassed by several service models, including, Infrastructure as a service (IaaS), Platform as a service (PaaS), Serverless computing and Software as a service (SaaS).

IaaS allows companies and individuals to host their servers, storage, and networks on the cloud rather than expensive physical infrastructure that must be maintained, reducing the need for the maintenance of private data centers. This goes a step further with PaaS and Serverless Computing where companies are providing developers with platforms to develop applications flexibly, without worrying about maintaining infrastructure. Serverless computing, has utilized visualization, to allow companies to host numerous servers on one piece of hardware and in this case, the cloud. This then flows on to SaaS where software is stored on the cloud to be accessed anywhere and on any device.

Cloud computing has been imperative in paving the way for developments through its ability to help “lower operational costs, run your infrastructure more efficiently and scale as your business needs change” (Microsoft, 2020).

##### **New Developments**

Clouds, services, and servers are developing and changing at a fast pace, particularly in a world where more people are being connected to the internet every day and gaining access to these services. The globalized society requires users to be able to connect with one another quickly and no matter the distance and transfer copious amounts of data. This has presented a demand for efficient, flexible and secure ways to transfer data to optimize overall organization efficiency and keep us connected to one another. This is particularly present in unprecedented times that call for higher data transfer that results in increased pressure on commercial networks, like with COVID-19 where more people are using the internet to stay in touch with colleagues, friends and family.

**Omni-Cloud Computing**

One of the key developments that is being adapted by numerous companies as of late is that of Omni-cloud computing. It refers to the ability to ‘use multiple devices to complete a transaction or activity – all while being able to access the latest version of the data’ (Bharadwaj 2018). It has developed as a result of gaps in terms of connectivity between different IaaS providers and the complexity of managing multiple systems leading to errors in multi-cloud solutions. For businesses to maintain competitive advantage they must be able to store big sets of data in a ‘secure and seamless connection’ (Digital News Asia, 2020) and be able to draw out analytics to optimize their solutions. Google is currently developing BigQuery Omni which is a multi-cloud analytics system that will connect data across Google Cloud, AWS and Azure for analysis (Digital News Asia, 2020), they will then be able to use this service to obtain data insights to improve efficiency and effectiveness of their company.

**Edge Computing**

Another key development emerging within the clouds, services and servers’ space is the rise of edge computing. Edge computer refers to when “data processing and computing are pushed closer to the “edge” (Petersson, 2020), with devices that produce data, also being the ones to process it resulting in lower network costs and reduced use of bandwidth through the utilization of the increased number of internet connected devices. Developments such as those in artificial intelligence rely on the processing of large amounts of data through the cloud, however, new developments such as AI chipsets that can handle processing on the edge are starting to gain popularity through their ability to obtain better real-time responses and instant computing (Shaw, 2019) in comparison to utilizing the cloud. The advancement in technologies and requirement to process large amounts of data, call for more local alternatives to centralized or cloud-based locations so that data can be processed quicker and cheaper. An example of edge computing can be found in consumer devices such as Amazon Alexa, which utilizes an ‘audio edge processor’ (Young, 2019) to handle functions that were originally handled in the cloud locally, therefore increasing battery life, latency and connection reliability.

##### **Impacts of New Developments**

Developments in the clouds, services, and servers’ space such as omni-cloud computing and edge computing have significant impacts on the everyday lives of individuals in both their professional and personal settings.

**Omni-Cloud Computing**

Omni-Cloud computing, provides the ability to streamline infrastructure as a service providers to allow for quicker data transfer and from any location. For example, this technology provides the ability for data entered such as stock levels in a store to immediately be accessible to a company’s operation team so they can immediately work to rectify the issue. Despite this information being stored across multiple locations, omni-cloud computing works to communicate between different IaaS providers to provide quick up to date information. This hopes to reduce errors and costs with transferring data between two service providers, optimizing the efficiency of a business. The increase in the adoption of omni-cloud computing will put pressure on Infrastructure as a Service providers to streamline their data in order not to be overtaken by big conglomerates such as Google or Amazon and remain competitive within the market. ‘Migration from an Omni-cloud is easy’ (Understanding E-Commerce, 2020) therefore users of multi-cloud have the ability to transfer over with ease, putting pressure on IaaS providers to innovate quickly.

**Edge Computing**

As discussed earlier, edge computing allows for data to be processed quicker and without the utilization of increased bandwidth. One of the key developments that has assisted edge computing in gaining popularity is that of AI chipsets, which allow for devices such as the Amazon Alexa to take their processing off the cloud. These devices have been a game changer for increasing the capabilities of digital assistants and would not have occurred without the help of edge computing. The development of 5G has also brought to life developments such as autonomous vehicles that rely on this network that “have new bandwidth and latency characteristics that will require support from edge-compute infrastructure” (Shaw, 2019). Developers are presented with increased processing capabilities due to edge computing, providing a base for further developments to progress, such as with the example of autonomous vehicles. On the flip side, developments that are enabled by cloud computing such as autonomous vehicles also can create redundancies in industries outside of tech with drivers and truck drivers replaced with these alternatives. Edge computing also reduces the need for on-premise data centers resulting in decreased jobs in the maintenance of this hardware.

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

Cloud computing encompasses a large degree of everyday life with users accessing the cloud daily whether they are aware or not. Similarly, this statement is true for the developments within clouds, servers and services, omni-cloud computing and edge computing as they are integrated into everyday technologies.

**Omni-Cloud Computing**

Omni-cloud computing allows for faster transfer of information, particularly when it comes to business. For example, a restaurant manager of a large conglomerate will be regularly required to provide updates on store KPI’s. With a multi-cloud system this information may have to be interpreted by multiple cloud systems increasing room for error. With the omni-cloud system, this interpretation is streamlined so the information is provided quickly and accurately.

**Edge Computing**

Individuals experience the benefits of edge computing daily, whether it be through digital assistants, smart homes, or wearable tech. Edge computing allows for these devices to process data locally, reducing the pressure on networks and increasing the speed and battery life of these devices. Throughout COVID-19 many people have been experiencing connection issues with their networks, for example, the NBN has seen “data demand increase by more than 70 to 80 per cent during daytime hours”. Without edge computing, these devices would also be taking up a large amount of bandwidth further reducing the speed and capacity of networks.

## Cybersecurity

Text

## Blockchain and Cryptocurrency

Text

## Raspberry Pi’s

Text

# Project Ideas

Upon consideration, the team has decided to move forward with the idea of sustainability in the form of an application. Global warming and the environment is an ongoing discussion being had across the world, with countless suggestions and plans of attack to halt the decline of our world. Our aim is to encourage users to be more mindful about their contributions and do their part in the fight towards it. Bringing easily accessible information and education to everyday people is essential in this goal.

The application has a few features, one would allow the user to input their weekly (optional) grocery lists and purchases, the extent of which is completely up to them. If the user decides that they want assistance in ways that they can reduce food waste, they can input these items accordingly. Alternatively, the user can also input any purchases made on items (food or other house-hold items) that come in packaging for material waste purposes.

The food input side would not be restricted to new purchases, if the user already has items in which they are struggling to find what to do with them, these can be entered as well. In result, users would be getting more of their money’s worth out of their purchases and encouraging zero-waste cooking and consumption, there for reducing their food wastage!

This function would provide users with suggestions which would see them through using the extent of their fresh produce where possible. Whether it be recipes that include use of the individual items and their not always desired elements or suggestions in how to combine products from the inputted list in a collaborative way. Users would have the ability to input the amounts of what they already have from previous weeks that are still of use and get the same information, providing a level of education to the user if they are unaware of what is and is not edible from their fruit and veggies!

For non-perishable items (or ones with a little bit longer of a lifespan) with majority left over or completely un-opened, if the user simply does not want to use or necessarily need this item anymore, using their device location, they would be connected to local food drives and charities where these items could be donated and passed on to people who are in need, thus contributing to reducing food poverty.

Another function of the program allows users to input any purchases made on items that have come in packaging. Whether it be cans/tins, boxes, resealable bags, plastic bottles etc, the user will have the ability to enter the quantity in which the material is in. In return, will be presented with a number of different resources.

* Based on location, connect to local reuse and repurpose facilities or locations where these materials can be taken and passed on for better use or to where these materials are needed.
* DIY ideas and ‘how to’ procedures where the user themselves can repurpose these materials.
* Connect user to ‘Clean Up Australia’ or their state’s government/local council resources to retrieve information on how to properly dispose of these items, so that once your weekly trash night comes, the council can sort and recycle/dispose items correctly.

The application would hold an index of the suggestions/recipes/resources that it connects the user to. Although more efficiently would have the ability to scan the web, similar to a reverse image search, with the use of key/’trigger’ words to return pieces of information that are associated with what is entered.

Also included would be the utilization of the device’s camera software, to scan items and barcodes for retrieval of this information, for more of a time efficient experience. This saves the user from having to manually look up and enter all of their desired inputs. This would not limit packaged items, this function could be used on fresh produce as well, all that would be required would be a quantity.

Another use of this tool would be providing an estimated lifespan of your fresh produce, programming the camera to identify indicators of ripeness or optimal quality– giving you a time frame to use the products before they spoil.

Scanning your package barcodes would also return the user information about materials, and how they need to be broken down for proper disposal.

Further development of this application would see the use of Geolocation/location services on the device in which is being used. Allowing this application to be more usable and accessible to people from all over. Location services would also play a crucial part in implementing a forum where communities can come together and contact and hold discussions, for their everyday solutions, advice and ideas. Whether it be to local households or local businesses, it gives individuals an opportunity to be a part of and connect with their community.

Sustainable packaging is where businesses are slowly but surely moving towards. RECLAIM could not only be for the common household, but an application that businesses might deem as useful as they make their moves in keeping up to date and relevant to their customers wanting to support sustainable companies. Businesses that do not already use sustainable packaging for their products, could be provided a platform in which they can connect to already sustainable businesses – and where they can access their eco-friendly products and initiatives.

House-hold sustainability implies that gardening is involved to some extent, RECLAIM would provide a platform for gardeners and gardening businesses to be of service to communities for where they see fit, for either part of the re use of food elements like planting seeds/propagation, or providing information on how composting and food scrap bins.

The list of things that could feature on this application are endless considering the amount of steps that people can take to live more sustainable lives, but ultimately as long as the resources are accessible to people, they are willing to give it a go.

# Group Reflection

* 200 words from everyone – own perception
* 400 words describing following:
  + What went well
  + What could be improved
  + At least one thing that was surprising
  + One thing you have learned as a group.

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# Appendices