Analysing the technological factors that determine a successful mobile food and grocery ordering application

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Overview

The concept of the online-to-offline business model has brought the creation of online shopping applications such as mobile food and grocery ordering applications. These applications have brought convenience to many people and have become part of their daily lives. This study has identified the technological factors that determine a successful mobile food and grocery ordering application. Since people used these two types of applications for different purposes, different technological factors were identified among them. For each technological factor, a definition has been provided and an analysis of how it can determine whether an application is successful has been presented. Base on these findings, technology companies that develop these applications can improve these technological factors and make their applications successful.

Keywords: mobile food ordering application, mobile grocery ordering application, performance expectancy, online tracking, information design/quality, product traceability, mobile payment, grocery deliveries

Literature

A. Mobile food ordering application

Mobile food ordering applications can be defined as "mobile apps that smartphone users download and use as an innovative and convenient channel to access restaurants, view food menus, place food orders, and make payments without any physical interaction with restaurant staff" (Alalwan, 2020, p.29).

a) Performance expectancy

If customers perceive that the system will save them more time and effort than conventional ones do, they are more likely to have a positive response and intention towards using a new system (Alalwan, 2020).

According to the findings by Palau-Saumell et al. (2019), performance expectancy has a positive impact on the intention to use mobile applications to order food.

b) Facilitating conditions

Alalwan (2020) have denied the assumption that facilitating conditions would impact the adoption of mobile food ordering application again.

Izzati (2020) have found that facilitating conditions does not have a positive influence on the behavioral intention of using mobile food ordering application.

c) Online tracking

According to the findings from Alalwan (2020), the convenience of online tracking will improve the desirability of using mobile food ordering applications.

Kapoor and Vij (2018) stated that real-time tracking could impact a customer's buying intention on a mobile food ordering application.

d) Information design/quality

Kapoor and Vij (2018) have discovered that information design can influence a customer's intention to order food with a mobile food ordering application.

Lee et al. (2019) stated information quality can positively impact the constant intention of use for customers.

B. Mobile grocery ordering application

Cagliano et al. (2017) have described electronic grocery as the procedure of buying groceries through the internet at home, and then either collect them in-store or at a pick-up point, as well as get them delivered to customer's house.

a) Product traceability

Cagliano et al. (2017) stated that product traceability can assist the reform of business procedures and make e-grocery supply chains more efficient.

RFID technology can support e-commerce processes like customer service, order management, and real-time alert monitoring (Kaur & Kaur, 2018).

b) Mobile payment

Nurfatiasari and Aprianingsih (2017) stated that safety on payment transactions is extremely crucial during online shopping.

Cagliano et al. (2017) stated that understanding the benefits that the implementation of mobile payment can offer to the e-grocery supply chain is the main element for its adoption.

c) Grocery deliveries

Cagliano et al. (2017) stated that time-based home deliveries could be implemented to reduce the loss for companies due to failed deliveries.

De Leeuw et al. (2019) have found two innovations that can be used to solve the issues caused by insufficient logistics infrastructure.

Methodology

In this study, a systematic literature review has been used to answer the research question. One of the reasons for using a systematic literature review is to review the available researches related to an area of interest. Also, another reason for using a systematic literature review is to look for gaps in the area that the research is focused on that could be investigated further (Stapic et al., 2016).

The online article databases such as ProQuest and Google scholar has been used to search for peer-reviewed articles that can be used in the systematic literature review. When searching for articles, the keyword of "mobile food ordering applications" and "mobile grocery ordering applications" have been used. After the technological factors have been identified from the literature, the keywords that were used to search for more relevant articles included "performance expectancy", "facilitating conditions", "online tracking", etc. The title, abstract, and discussion of these articles were reviewed during the preliminary search to find the most relevant articles.

Results

Findings from this research will help technology companies that develop mobile food ordering applications to assess and improve their applications. As suggested by the findings, these companies should improve performance expectancy, online tracking, and information/design quality of their applications. By doing so, they can make their mobile food ordering applications successful.

As suggested by the findings, technology companies that develop mobile grocery ordering applications can improve their applications accordingly. These companies should improve the product traceability of the products being sold on their applications, improve the security of mobile payment, and improve grocery deliveries of these applications. By doing so, they can make their applications to become more successful.

Conclusions

In this research article, it has first identified the research question. The research question was intended to find out the technological factors that determine a successful mobile food and grocery ordering application. In the literature review section, a brief background of mobile food and grocery ordering application have been provided first base on related literature. Then, the technological factors of both mobile food and grocery ordering application have been identified. The search for peer-reviewed articles was conducted base on these factors, and the findings were extracted and analysed from these articles. Finally, the findings have shown that performance expectancy, online tracking, and information/design are the technological factors that determine a successful mobile food ordering application. For a successful mobile grocery ordering application, product traceability, mobile payment, and grocery deliveries have been found as the determinant technological factors.

There are several limitations to this study. Firstly, only articles that were published in English have been reviewed, so it might miss the related studies published in other languages. Secondly, the articles that were used in the literature review were published outside of New Zealand. Thirdly, a systematic literature review was used as the only method of this study, and no interviews were conducted.

All ethical research principles accepted by EIT were followed when conducting this research. As a systematic literature review is the only method for this research, no respondents were involved other than the researcher.

In the future, interviews or online surveys could be used to find out the factors that determine a successful mobile food and grocery ordering application in New Zealand. As the concept of online to offline business models might be new in some countries, it will be useful to find articles from these countries.

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Challenges in Agile Distributed Software development

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Overview

In the recent times agile method is widely used in the distributed software development . Though agile method was originally created for the small teams who are located in a same location, but due to the increase in trend in software development design and Information technology ,it is used in DSD teams.
However, this has created a lot of challenges along with the growth. Number of researches have been conducted to identify the challenges of Agile in the distributed software development unfortunately there are few challenges which remain the same in the years, Though the literature have identified some challenges .
With the growth in the software industry the challenges keep changing . This literature review helped us to identify the communication and collaboration challenges in Distributed Software development

Background

Agile Software Development

The agile software development was found on February 2001. The agile method was developed to overcome the heavy documentation and the tedious process in the traditional method (Fowler & Highsmith, 2001).

Distributed software Development

Distributed Software development describes that group of developers who are spread across multiple locations develop are software product(Shameem et al., 2018)

Communication and Collaboration in DSD.

In DSD as the team members are split in multiple locations, communication and collaboration is important throught the project .Buchan et al. (2019) states that software development needs the teamwork within the team and outside with the other team members and also has dependencies between the teams.

Literature Review

Challenges in DSD

Agile method is designed to work in the small teams which are located together but as teams are located in different locations, there are lot challenges in using agile (Schwaber, 2004).
Shameem et al. (2017) emphasized that communication and coordination in DSD is critical to knowledge sharing between the team members and with the customers
The literature review uses the 5C's (Communication, Control, Cooperation, Cultural and, Collaboration) framework to categorise the challenges (Ghani et al., 2019).
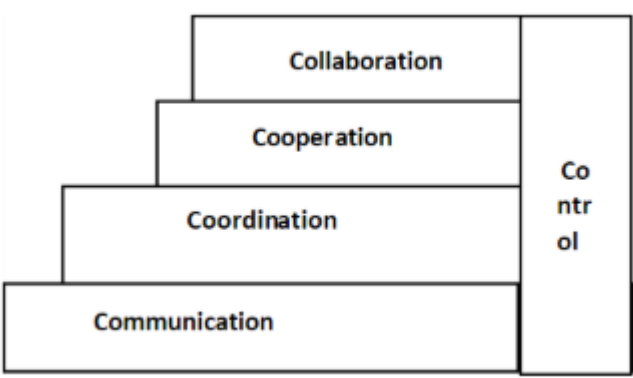
5C's Framwork(Ghani et al., 2019).

Lack of communication

•Communication is critical for any for project .Yaseen and Ali (2019) shows that communication is 81% critical in DSD .
•Communication gets difficult when the team members have different accent which is common in public and private sector organisations (Anwar et al., 2019; Szabó & Steghöfer, 2019).
•Communication issues in DSD also causes delay in the project delivery (Szabó & Steghöfer, 2019).

•Without proper communication requirement gathering , brainstorming gets difficult. Though it is not an impossible solution it still needs attention (Khalid et al., 2020).

Cultural Differences

•Anwar et al. (2019) found that differences in culture has been reported 26% in the literatures and the same issue real software projects.

•Cultural difference affects the knowledge sharing within the team and outside the team(Conboy & Carroll, 2019).

•Cultural difference also impacts the performance of the team (Massago et al., 2018).

Team spirit and Maturity

· According to (Counsell et al., 2020) conflicts and misunderstanding in team was found in the survey. Counsell et al. (2020) also found that lack of team spirit is due to the frustration or political problems in the team.

· Girma et al. (2019) found that product delivery gets complicated when there is no team spirit and maturity in the team .

Temporal Differences

· Temporal difference is due to timing difference, language difference and physical distance.

· According to Szabó and Steghöfer (2019) shows that the temporal difference causes the delay in the response. In case of any email communication from the management would be delayed.

Lack of Trust

· Lack of trust often happens when there is a larger distributed teams and miscommunication between the teams or misunderstanding could cause trust issues (Anwar et al., 2019) .

· Ali (2020) found that key reasons that are influencing the trust issues are poor enculturation, cultural differences, ineffective work policies , conflict issues , ineffective communication.

· Klinc (2018) also found that frequent communication with the remote team members and involving the team with the decision making would increases the trust.

Co-ordination issues between the team

· Dumitriu et al. (2019) states that Lack of co-ordination is mainly caused by combination of other issues such as language difference, Physical distance. Coordination issues not only happens in the team but also among the other cross functional teams.

· Wohlrab et al. (2020) states that Co-ordination is not only due to the temporal distance, but also due to the mixed backgrounds, technologies and the company split of branch.

Methodology

This study uses the Systematic literature Review (SLR). SLR is used to check, verify and critic the research articles created by the researchers (Okoli & Schabram, 2010).
SLR method also helps in improving the quality of the research with the main focus on the proof and the topic . Compared to the traditional method SLR provides a transparent reliable and neutral (Aarseth et al., 2017; Pilbeam, 2013) .
The inclusion criteria for the research is "*challenges OR problems OR barriers OR issues OR risk AND agile OR lean OR scrum OR XP OR Kanban AND in AND Distributed OR global AND Software AND development*", published between 2018-2020 and peer reviewed.
The exclusion criteria is the articles which are not in English and are published before 2018.
After final selection out 60 articles 15 articles were selected .

Discussion

The systematic literature teams are identified in this study.

Massago et al. (20review helped to identify the barriers in agile distributed software development such as lack of communication, cultural differences, lack of trust, team spirit and maturity, temporal differences and coordination with the other teams.

The previous studies has exposed the challenges such as communication , cultural issues and temporal issues but the challenges such as team spirit and maturity , lack of trust and co-ordination between the cross functional 18) also found that cultural difference has not only impacted the coordination of the team but also the performance of the team which is not uncovered in the previous studies.

Lack of trust is another factor which is found in the literature review. Though the previous studies have reported this a impact of the cultural difference it is not been reported as an indiduvual challenge (Shameem et al., 2018)

Shameem et al. (2018) highlighted this challenge only between the client and the vendors. On the other hand , Klinc (2018) states that lack of trust can be any team specially when the DSD teams are in different location and unaware of other team.

Conclusion

Agile Distributed software development is not a simple topic, but it is widespread with the long standing agile and global software development trends. Finding the challenges is an important aspect to be successful.
The findings from the literature review shows that communication in DSD team does not require face to face communication always, rather it should be done with the effective tools
Time zone difference , physical difference, language difference plays a important role in communication.
The research has been done based on the studies and not from organisational perspective.
Future research could be done with an open ended interview and research could also find the solutions for these challenges.

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Identifying the factors that influence adoption of Augmented Reality in Retail Industry

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Abstract

In order to achieve competitive advantage organizations are adopting new technologies like Augmented Reality, to enhance customer interaction. The adoption of Augmented technology in retail is reshaping the instore and online experience of the customers. However, the perception of customers towards adoption of new technologies like augmented reality is not known and to understand their perception this study has been performed. The study has used the motivation, opportunity and ability (MOA) theory model as the base model for research to identify the attributes that influence the perception of customers towards adoption of augmented reality in retail. In addition to MOA model, other research are also identify additional attributes that influence the perception of customers towards augmented reality adoption.

Literature Review

In order to understand the perception of the customers towards the adoption of AR in retail, the research model of Roy, Balaji, and Nguyen (2020) has been used. The research model of the Roy et al. (2020) has used motivation, ability and opportunity (MOA) theory to study the perception of customers towards adoption of in store smart retail technologies such as AR as shown in Fig 1 below
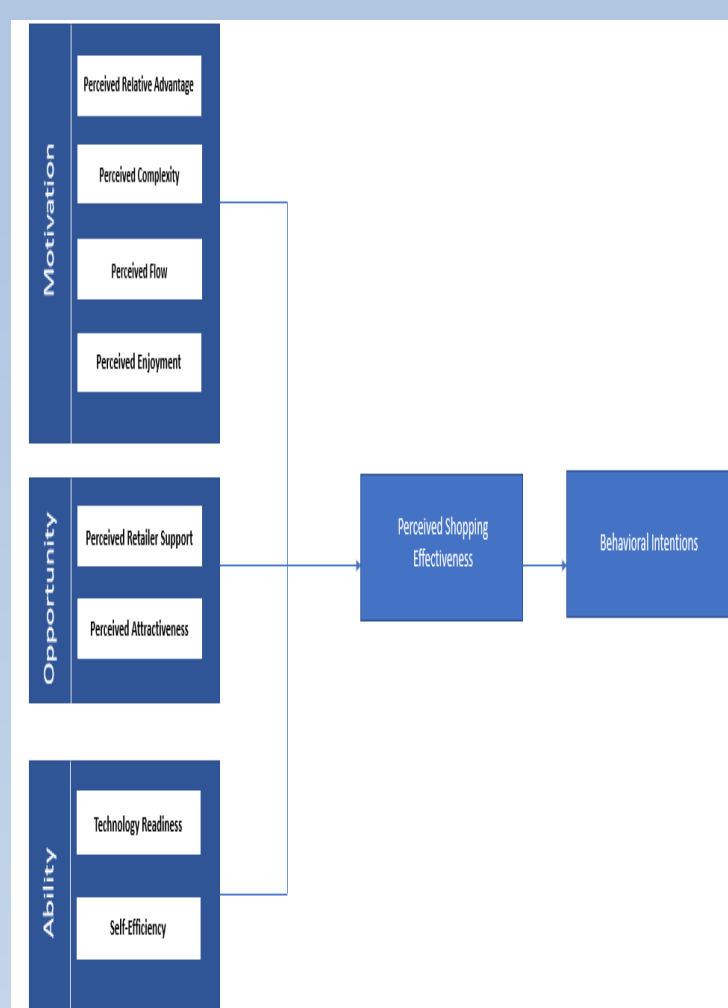

Figure 1 Conceptual research model(from Roy et al., 2020)

In order to understand the additional factors that influence the perception of customers towards adoption of AR in retail, the research of Bonetti, Pantano, Warnaby, Quinn, and Perry (2019); Brengman, Willems, and Van Kerrebroeck (2019) ;Kang (2014); Park and Yoo (2020) is analysed. The additional factors(human computer interaction, perceived ownership, convenience value, mental imaginary)are identified in the research that influence the perception of customers towards adoption of AR in retail

Methodology

The systematic literature review (SLR) method has been identified as an important method to evaluate & synthesis the existing literature (Okoli & Schabram, 2010).The SLR method help in analysing the research question from a broader perspective (Okoli & Schabram, 2010).The current study has been performed using the online research databases of Google scholar and ProQuest. The keywords used in the research are perception of users towards augmented reality adoption", "consumer and augmented reality adoption". The research article found are evaluated on the basis of title, abstract & conclusion. The articles which are most relevant with the research question are selected for the research. The total of 32 articles were selected for the study

Findings

The systematic literature review performed using the research model of Roy et al. (2020) help in identifying the MOA factors(i.e. perceived relative advantage, perceived complexity, perceived flow, perceived enjoyment, Perceived retailer support, perceived attractiveness, technology readiness and self-efficacy) which influence the perception of customers towards adoption of AR in retail. In addition to that the review of the research of Bonetti et al. (2019) ; Brengman et al. (2019) ;Kang (2014); Park and Yoo (2020) identified additional factors which are human computer interaction, perceived ownership, convenience value and mental imaginary which can influence the perception of customers towards adoption of AR in retail.

Discussion

As the adoption of new technologies in retail has increased, organizations these days are seeking more than the involvement of customers and trying to identify the perception of customers towards of new technologies, to increase their return on investment.(Moriuchi et al., 2020). With the increase in online retail activities due to adoption of new technologies, organizations are achieving competitive advantage but also presented with the disadvantage of not having face to face interaction with the customers(Moriuchi et al., 2020).In order to overcome this challenge, organizations are adopting technologies like Augmented Reality(Moriuchi et al., 2020).The use of AR in retail is resulting in enhancing the shopper experience by providing them with a 3D interactive environment (Bonetti et al., 2019).However, Poushneh and Vasquez-Parraga (2017) pointed out that in order to use all these features of AR and provide a more enhanced shopping experience, the well design equipment's are also required that can generated rich augmented quality experience. Also, the retailer support is also required to support the implementation of AR in retail (Roy et al., 2020).

Conclusion

The study has been conducted using systematic literature review .The study identified the MOA factors which influence the customer perception towards adoption of AR in retail. In addition to that the additional factors those are identified during the study, that influence the perception of customers are human computer interaction, perceived ownership, convenience value and mental imaginary. All these factors are found to have positive influence towards adoption of AR in retail, however more experiments will be required to verify the outcome of the study.

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Factors influencing students' choice of online education and teaching strategies

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Abstract

With the popularity of online education, students have more choices in many models of higher education. Online education is seen as a possible solution to meet students' diverse employment needs. The increase in the number of online courses and course enrollments has led to a great deal of research on the factors and instructional strategies that influence online student learning. Based on these factors, this paper discusses how to increase students' satisfaction with online education to increase students' chances of choosing online education, and puts forward some teaching strategies about online education courses. The purpose of this study is to find out the factors that influence students' choice of online education, and to help students have a clearer understanding of the importance of online education in the current educational environment.

Introduction

With the popularity of online education, students have more choices in many models of higher education. The purpose of this study is to find out the factors that influence students' choice of online education, and to help students have a clearer understanding of the importance of online education in the current educational environment.

Research question What are the reasons why students choose online education?

This study hopes to find out the key factors that affect students' choice of online education and analyze them. This paper finds out the main reasons why students choose online education through literature review. Based on these factors, this paper discusses how to increase students' satisfaction with online education to increase students' chances of choosing online education, and puts forward some teaching strategies about online education courses. On the one hand, it is the benefits online education brings to students, which is the main factor that most intuitively shows students' choice of online education. The other aspect is about students' satisfaction with online education. The improvement of satisfaction can represent students' more willingness to choose online education.

Methodology

The research in this paper is carried out through systematic literature review. Systematic Literature review (SLR) is a scientifically validated method that has been used for a long time. It collects all available data according to some predefined criteria to answer a specific research question (Tikito & Souissi, 2019). Literature reviews are an important type of manuscript that provide evidence because they can describe previous work, synthesize and comment on work that has been done, and use the findings of the review to guide practice (Jaffe & Cowell, 2014).

The study was conducted using ProQuest, a search engine provided by an online database, and Google Scholar, which will involve the following databases: IEEE Xplore, ACM Digital Library, ScienceDirect, and Springer. The search keywords were "online education", "factors", "student influence", etc., published in English between 2015 and 2020 and peer-reviewed. The initial search is then evaluated by the research title, summary and conclusion. After reviewing their titles, abstracts, and conclusions, 32 articles were eventually included in the systematic literature review.

Literature Review

The coronavirus (COVID-19) pandemic is having a significant impact on higher education globally. Most schools convert traditional face-to-face courses into an online environment (Joseph, 2020)..

Increased the opportunities of higher education for students
Online education obviously increases learning opportunities for students who would otherwise be unable to attend traditional classes for various reasons (Basilaia, & Kvavadze, 2020).

Increased employment opportunities for students
Online education, regardless of students' personal social status, has the potential to bring students into the career paths they wish to choose in the future (Black, Bissessar, & Boolaky, 2019). Advantages of online education include the acquisition of key skills to be used in a specific employment environment (Calvo, Lyon, Morales, & Wade, 2020).

Tailored courses for students
Online education has many advantages for students: flexibility, cost reduction, time saving and convenience (Hass & Mathew, 2018). These characteristics are often very important for students who have families and jobs and can customize their courses according to their own situation.

Reduced learning costs for students
A study by Black et al. (2019), which surveyed 103 university websites in the US, found that online courses not only cost less than traditional courses, but also cost a third less on average. Both large and small educational institutions charge less for online courses than for on-site ones. There are also many institutions that use open educational resources (OER) to reduce student costs (Black, Bissessar, & Boolaky, 2019).

Good teaching strategies helped students succeed
As more people realize the benefits and challenges of online learning. Therefore, good teaching strategies can better help students complete their studies, so as to promote students' learning motivation in online courses (Xu & Xu, 2019).This is also one of the important factors for students to choose online education. Many students report that they rarely complete online learning courses without clear instructions (Sinha & Bagarukayo, 2019). In online courses, they will need guidance from tutors. Instructional strategies need to be designed by institutions and course mentors to better facilitate the learning environment for teaching and online education.

In the form of literature review, the main reasons for students to choose online education were found, including increasing opportunities for higher education for students, increasing employment opportunities for students, tailoring courses for students and reducing learning costs for students. All these factors are the reasons for students to choose online education. Besides, how can we increase the opportunities for students to choose online education? In Online education, the application of effective teaching strategies by teachers is crucial to the success of Online Learning students (Online Learning Consortium, 2017). Teaching strategies in online education can be understood as methods and activities that educators use to promote, support and enhance students to achieve learning goals. Effective teaching strategies can help teachers and students connect, interact timely and substantively to achieve students' satisfaction with online learning (OECD，2020). Higher student satisfaction with online education means more opportunities for students to choose online education. Therefore, the implementation of effective teaching strategies in online education is particularly important for students' satisfaction.

Teaching strategies include: teachers are always available and responsive to students to provide availability, online scheduling, email response time, and timely homework feedback (Xu & Xu, 2019). Teachers are quick to respond when contacting students via email and social networking software. Teachers and students work together on a schedule to provide online office hours several times a week to help answer any questions students may have. Teachers can schedule time to interact with students on a regular basis, and answering students' questions on the message board helps to keep students engaged and active (OECD，2020. Timely and effective feedback and grading of students will help students to truly understand the course and improve their confidence. In the design of online courses, the interaction and communication between students and teachers should be strengthened. Throughout the semester, students should interact with other students and encourage and support teacher-student interaction. Discussion forums, presentations in online learning activities and their presence in the course will make the course more lively and interesting.

Conclusion

Online education has become one of the most important jigsaw puzzles in higher education. Online education is seen as a possible solution to meet students' diverse employment needs. The increase in the number of online courses and course enrollments has led to a great deal of research on the factors and instructional strategies that influence online student learning. On the one hand, it is the benefits online education brings to students, which is the main factor that most intuitively shows students' choice of online education. The other aspect is about students' satisfaction with online education. The improvement of satisfaction can represent students' more willingness to choose online education. In the form of literature review, this paper finds out the main reasons why students choose online education, including increasing the opportunities of higher education for students, increasing the employment opportunities for students, tailoring courses for students and reducing the learning cost for students. Based on these factors, this paper discusses how to increase students' satisfaction with online education to increase students' chances of choosing online education, and puts forward some teaching strategies about online education courses. Therefore, the benefits brought to students by online education are the main factors for students to choose online education. On this basis, the discussion on perfect teaching strategies will improve students' satisfaction with online education, thus increasing the opportunities for students to choose online education. Combining these two aspects can well answer the research question of this research.

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Smart City Adoption

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Abstract

A large number of the world population is expected to live in the cities in the near future, according to projections. While other mega-cities already are struggling to deal with people's current influx, government agencies would need create smart cities to make these urban areas more liveable and truly sustainable. Adoption of Smart Cities is seen as a smart solution to urban issues.

Smart cities are progressing into a wider interconnected ecosystem, and several services and applications are going on-line in these ecosystems.

Literature Review

Various research has been carried within in the Smart Cities domain. Many of these studies have focused on investigating factors that influence the implementation of innovation, some have premeditated the role of smart cities and their development strategies, while others have identified a number of research areas within smart cities.

Smart cities have been defined as the integrated incorporation of physical, digital, and human systems into the developed ecosystem to ensure a safe, productive, and sustainable future for their people (Wener, 2019). According to Wener (2019) a smart city is a concept, composed primarily of Information and Communication Technologies (ICT), to develop, deploy and enable sustainability practises to address changing socio - economic challenges.

Prior to government, investors and companies begin to adopt a smart city approach and make changes, they need to analyse the important factors that may influence the decision-making process of cities in terms of its wealth, growth, and density. All such critical factors are being used to develop a framework that gives a more comprehensive insight of the smart city initiative (Joshi et al., 2016).

Methodology

A systematic review and evaluation of related academic literature and best practices intended to inform cities to become better places to live and work is used to inform the comprehensive list of factors influencing the adoption of smart cities and their main elements.
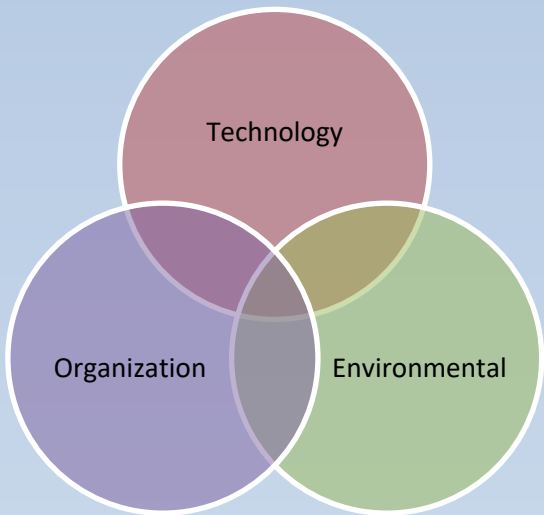
The review of the literature provides the primary ideas and variables from previous research, while the analysis of the approaches and tools helps to formulate some of the themes and provides more information on each element.

Findings

Technology-Organization-Environment Framework (T-O-E)

Technology Readiness
Bremser et al. (2019) and Dewi et al. (2018) reported that the technology perspective emphasizes the attributes of technological innovations that are relevant to an organisation.

Organizational Readiness
Factor that requires the attention of developer, practitioners and or technologist is the organizational factor. Organizational influence is the concept that defines a company such as context, scale and organisational structure that can promote or impede the development of a smart city.

Environmental Readiness
Environmental factor is the last from the TOE framework. Dewi et al. (2018) highlighted that the environmental variable is a representation of all various stakeholders of organisation, such as competing companies, suppliers , customers, government agencies, community organizations, etc., who identify the needs of innovation, the ability to provide resources and facilitate innovation, and the ability to implement innovation. The environmental dimension identifies governance between stakeholders and institutional governance factors.

Discussion

For a long time, Smart City innovation has been cited as essential to competitiveness and success in organisations. A broad range of literature has emerged that identifies the common factors shared by innovative organisations and factors impacting the ability of cities to adapt the concept of smart cities. Development of the concept of smart cities in different areas of the globe faces not only organisational and technological obstacles but also funding problems. The TOE framework is much more holistic and industry-friendly, has comprehensive empirical support in the technology field than most other adoption frameworks for more social interaction design that address the issues of the deterministic system (Al-Hujran et al., 2018). By providing a deeper understanding, we can see that changing the dynamics of some factors will influence other factors that may have a positive or a negative impact on the manner in which innovation is handled in an organization.

Conclusion

The study examined the determinants that influence smart urban development and suggested that smart urban development would involve citizen participation in the smart city design process. The relative importance of the citizen's involvement is crucial in the smart city design this is because the goal of this concept is the improvement on the quality of life of the people. Governance, political will, and funding was also seen as a critical and important factor in the development of a smart city. The studies on smart city innovative technology is diverse and complex, covering a wide range of topics and fields of research. This can make it very difficult for practitioners and academics alike to comprehend the broad organisational factors that can influence an organisation's ability to adopt the smart city model. Future studies can investigate other city governments to search other factors not presented in this paper. It is because each organisation has diverse society and issues, and therefore variables used to measure readiness will definitely be different in each organisation.

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The Security Issues of Digital Contact Tracing Applications

PGST8.100 Special Topic

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CONTACT TRACING

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INTRODUCTION

The unprecedented global SARS-CoV-2 in 2020 is a new coronavirus that causes the COVID-19 epidemic and fundamentally alters our lives and working conditions. To address this, many countries around the world are implementing or developing mobile phone applications that can support instant contact tracing. However such applications have also been the topic of discussion due to their security, and privacy concerns. The digital contact tracing presented for intelligent physical distancing has to be effected in controlling the spread of infectious disease. This can only be possible if such applications posses no privacy and security issues. The security threat awareness can impact the privacy-protection behavior of an individual. This article's objective is to review the privacy and security concerns related to digital contact tracing applications. Therefore, the purposed research question is

What are the security issues of digital contact tracing applications?

LITERATURE REVIEW

SECURITY ISSUES
- Architecture-based
  - Centralised
  - Decentralised
  - Hybrid
- Technology-based
  - Global Positioning Systems (GPS)
  - Bluetooth Low Energy (BLE)

Privacy Issues

Snoopers
CONTACTS
AUTHORITIES

Security Threats
- Relay and Replay Attacks.
- Denial of Service
- Linkage attacks
- Disclosure of social graph
- Location Storage
- Enumeration attacks

Privacy Threats
- Metadata exposure
- Explicit Consent and Content
- Misinformation and panic
- Data abuse and fraud

Contact Tracing Privacy Principles by Massachusetts Institute of Technology
- Voluntary compliance. Not to be mandatory
- User Consent
- Timely deletion of data
- Transparent process

Different standards and frameworks

dp3t   PACT   BLUE TRACE   G   Apple   Pan-European Privacy-Preserving Proximity Tracing

METHODOLOGY
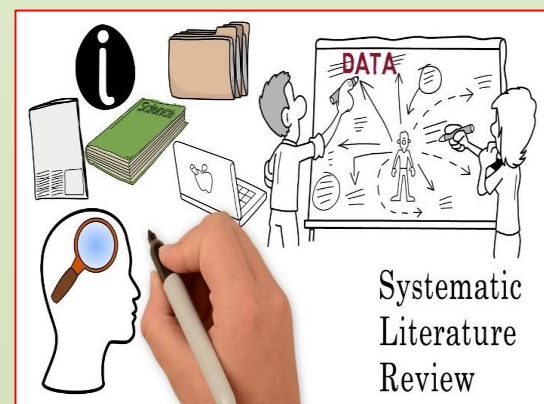
Systematic Literature Review — Peer Reviewed articled from different databases related to research have been collected
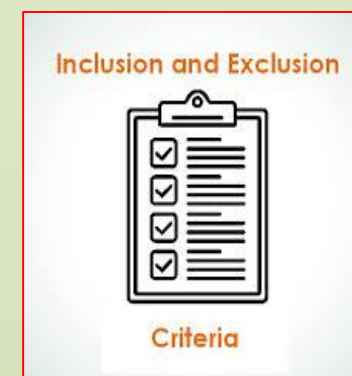
Inclusion and Exclusion Criteria — Articles published in English published in 2020 and peer-reviewed. Purely conceptual articles are excluded

Limitations — Articles in English language, Topic relates to current year and time constraints

No Risk — No risk as the study involved only pieces of literature, that have been obtained legally using different libraries and databases

FINDINGS

Decentalissed architecture is the secure architecture (Magklaras & Bojorquez, 2020).

The BLE is a more privacy designed approach as compared to GPS. (Chowdhury et al., 2020) .

The individual private information is sensitive and thus managing such data is highly important

The security attacks misuse the data and raises a false alarm and panic in the society (Chowdhury et al., 2020).

User de-anonymizing allows the adversaries to harm, to shame, or to extort the person (Gvili, 2020).

The suggested frameworks are decentralized and BLE based. Such as GAP, BlueTrace, DP-3T. The NZ app CovidSafe is also based on decentralized and BLE approach

DISCUSSIONS AND CONCLUSION

The COVID-19 is not going to last forever. But compromising the privacy of the individual for the effectiveness of apps, the consequences may stay longer even after the complete containment of the pandemic. However, for the necessary information, the security and privacy issues need to be addressed properly as these are the significant aspects to many users during such vulnerable times. The compliance of security measures ensures the confidentiality, integrity, and availability of the data and thus enhances the effective use of contact tracing applications to contain the epidemic.

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Fake News Detection Methods

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Abstract

The challenge is to differentiate between legitimate and fake news. Several techniques exist to spot fake news. This paper aims to discuss the already **existing strategies** which can be followed by online users to protect them from fake content and to stop it on the initial stage.

Introduction

The **purpose** of the study is to review the strategies used to **identify fake news**. False information encourages misconceptions among people and can create risk for the democracy of a nation, and therefore, it becomes an essential and challenging task to fight against this threat (Sabeeh et al., 2020).

Research Question: What are the fake news detection strategies to identify fake news on social media?

Methodology

- ❑ A **systematic literature review** is conducted.
- ❑ Keywords used to search for the articles include "**fake news detection**" and "fake news detection strategies.

Findings

Some of the standard fake news **detection techniques** found in the literature include online fact-checking resources, content-based approach, machine learning, deep learning, and hybrid models.

- ❑ Online fact-checking resources
- ❑ Content-based approach
- ❑ Artificial intelligence techniques
- ❑ Hybrid model

Solution: Hybrid Model

Conclusion

This paper suggests more attention must be given towards **information literacy** and creating awareness among online users with relevant information on the identification of misinformation. Action must be done before the damage is done.

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Methods to approach Cybersecurity threats in Cloud Computing

Abstract

The wide adoption of cloud has also increased the spike in threats to the cloud environment. Since cloud works in a cyberspace, the underlying architecture of cloud makes it vulnerable to cybersecurity threats. This paper discusses about possible methods which can be approached in mitigating cybersecurity threats. Methods such as data encryption, authentication and authorization methods, intrusion detection systems and data storage methods are discussed in this paper. Along with it, this paper also lists additional security techniques and controls which can be used in the cloud.

Introduction

Though cloud has various benefits such as scalability, adaptability, cost effectiveness and reliability, it also security threats especially towards data security in the cloud (Wang, 2017). The underlying nature of the cloud's architecture makes it vulnerable to threats and attacks (Sakr et al., 2019). The purpose of this research is to identify the possible methods of approaching cybersecurity threats in the cloud.

Research Question

Research Question: *What are the possible methods of approaching cybersecurity threats in cloud computing?*

Literature Review

Data Encryption: A normal text when encrypted makes it unreadable to anyone unless there is a private key to decrypt the text. Studies Najim and Al-Barzinji (2018) identifies cases where the private key can be hacked, and the attacker can gain access to the sensitive data. Shahid et al. (2020) proposes a multiple cloud file distributed approach which splits the data into multiple cloud server and the private key is stored in a different server, which even if hacked cannot be used since the data is not stored in a single repository.

Authentication and Authorization: Methods such as Identity Access and Management can be used to authenticate the users, validate their access and then authorize them before they access any data stored in the cloud. Beer Mohamed et al. (2019) identified security lapses in this method, since it leads to various attacks such as phishing, session hijacking and data tampering attacks and suggests security model which uses PKI Algorithm. This does not require any additional software or hardware. It uses Intelligent Secure Engine (ISE) which can be installed at the central server. This authenticates each request via a secure token and avoids duplication or timed out requests.

Literature Review (contd.,)

Intrusion Detection System (IDS): IDS can be used to identify any unauthorized attacker in the network layer, VM layer and in a host (Sakr et al., 2019).

Data Storage: Wang et al. (2018) suggests a fog-based cloud storage method, which provides control to the consumer of the data stored in the cloud.

Methodology

The methodology used in this paper is systematic literature review since it provides conclusion based on extensive analysis (Siddaway et al., 2019). A systematic literature review is done based on the previous articles in the same research area. Key search words used are "threats and solutions in cloud" and "solutions to cybersecurity threats in the cloud". The search has been conducted in ProQuest, ScienceDirect and Google Scholar.

Findings & Discussion

The literature review findings helps to identity the methods which can be used by organizations. Data Encryption is a prime method which can be adopted, since it is involved with all aspects of the data – from storing till data transmission. The cost-effective implementation of ISE could add additional security in authentication users. The inclusion of artificial neural network in IDS makes it an interesting method since it can prevent unauthorized attackers from accessing the data in cloud.

Conclusion

It is without doubt cloud computing has changed the way businesses operate, including the user experience it offers to the end users. Its cost effective and easy to adopt approach has helped small, medium and large organization to adopt the cloud. However, it cannot be denied that these benefits also come with risk associated with it. This paper discusses 4 possible methods which can be approached for cybersecurity threats in the cloud. Data encryption forms the prime method which could be adopted to ensure the data in cloud is secure. Since there are certain limitations in each method, adoption of a multi-factor authentication method can ensure unauthorized access are restricted. The intrusion detection system can help to fight against unknown attackers who try to intrude into the network and as well as at the VM layer. While the IAM can be implemented in a lesser cost, the fog-based storage method can provide control to the consumer over the data stored in the cloud, which is one of the concerns of the consumers who adopt cloud services.

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Artworks in Ara

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Introduction

Artworks in Ara is a mobile prototype aiming to introduce a new way of helping Ara students know about the artworks in Madras campus.

It not only contains detailed information about the artworks but also allowing students to create their own connection with the artworks by building users' own footprint and favourite artworks list. Students can also easily search the artworks by name, date or media.

Methods

After identifying the main functions of the app, a wireframe was then designed. The whole prototype was fully implemented by using the MIT App Inventor 2 web application. I chose to use two different Ara green as the theme colour.

As user input data need to be stored and passed from a page two the other, tinyDB was chosen to accomplish this job. To make My footprint and My collection pages more unique, animations were added and a free web tool Piskel was chosen to create those animations. . I conducted the development in an iteration way to fulfil every feature in a similar way from designing to testing code to fully implementing.

Market Research

In order to get connect with users better, gamification concept has been added into the design. There are 8 core drives of gamification. I have built the My Footprint and My Collection pages to take advantage of internal drive of making progress[1].

Output
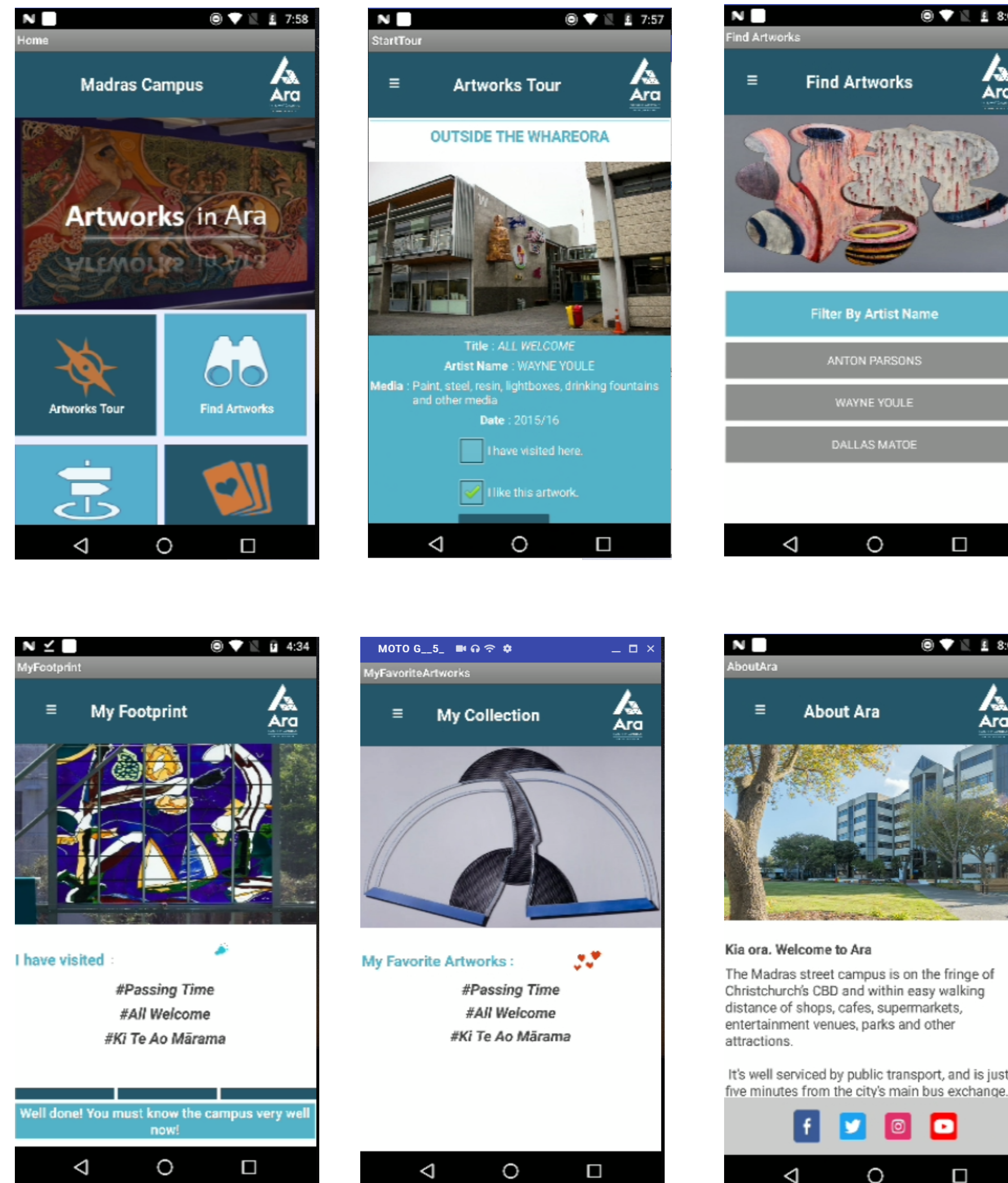
Tools

Reflection

This learning process has guided me through the whole path of developing an application. I always reminded myself focus on the most important part first.

One of the problems I encountered during the process was I did not pay much attention on how to lay out the content the way I wanted in the first place, which made it hard for me to do many changes on design later on when the structure getting complicated.

It took me quite a lot time later to understand and manipulate the horizontal and vertical arrangement in MIT App Invontor2. Therefore, what I would do different next time is to understand the tool I am using before staring the developing process.

Conclusion

This app prototype demonstrates how the artworks details can be presented in a modern and fun way. It also allows the users interacting with the artworks by creating their own footprint and collection list. This mobile app will have many potential users not only the Ara students but also anyone who wants to know the artworks in Ara better.

Reference

[1] https://yukaichou.com/gamification-examples/octalysis-complete-gamification-framework/

Ara Artworks App – Exploring art playfully

Thomas Pilz, BCIT, Ara Institute of Canterbury
Supervisor: Dr Bernard Otinpong

Get the app!

Introduction

Ara´s Maori department requested a mobile application enabling students to explore and learn about artworks on the Madras Street campus.

By applying wireframing and test-driven development using draw.io and the MIT App Inventor 2 platform and utilizing extrinsic motivators a protype Android application has been developed.

Aim

The app was required to be a prototype focused on the Ara Madras Street campus, to comply with the Ara brand specification guidelines and to provide images and information on artworks found on the campus.

Additionally it should have navigational usability and give students the ability to filter artworks by meta information such as artist, year, title and more.

Crucial for the app was a gamification feature to foster a student´s drive in exploring and learning about Ara´s artworks.

Gamification

80% of people use smartphones (Gutierrez, Karla, 2016) and 74% of learners use mobile devices for eLearning (Pandey, Asha, 2018) making apps essential for efficient learning. By combining this information with Gartner Research suggesting that gamification increases a learner´s engagement by 60% (Gutierrez, Karla, 2016), an app with gamification feature seems to be inevitable.

Process

Wireframing was adopted using draw.io to design the user interface and visualize connections between screens of the app. Therefore the app idea was developed further and the actual implementation process following had been prepared.
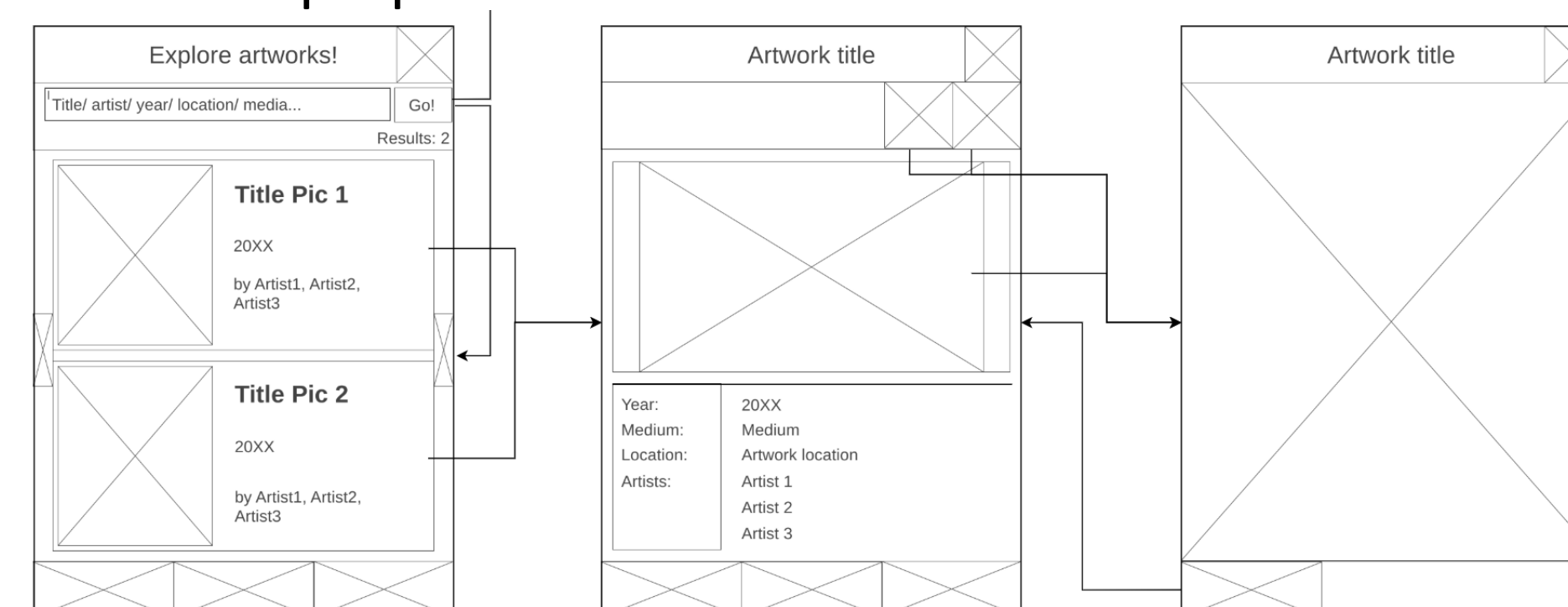
Figure 1: Extract of wireframe created for the app.

The app was implemented on the MIT App Inventor 2 platform utilizing a test-driven development approach. To be specific, that means to create test scenarios first and then iterate over testing and implementation phases until all tests are successful.
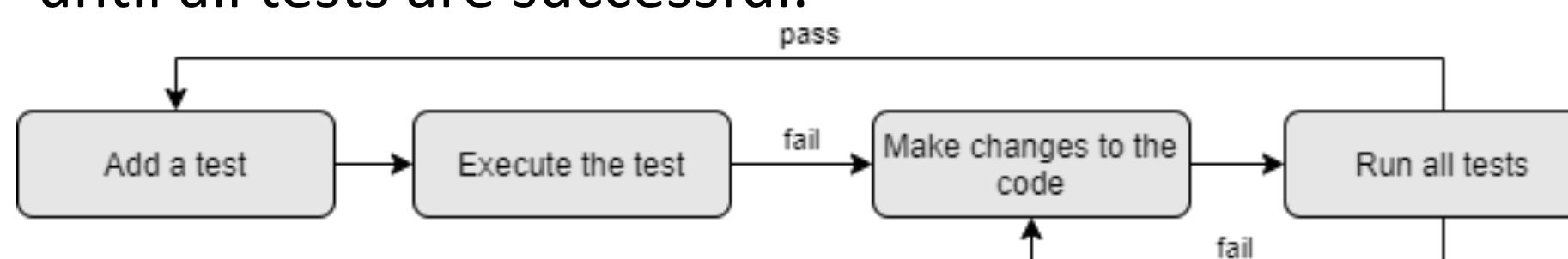
Figure 2: Test-driven development explained.

By utilizing extrinsic motivation, which refers to behavior that is driven by external rewards, the key feature of the app was implemented, allowing students to take photos of themselves in front of Ara artworks and therefore gain progress to ultimately discover all artworks.

Besides that, users can share those pictures, the artworks and information on them or their own drawings created using the "do it yourself" drawing tool within the app.

Last, but not least GPS is used to send notifications when a user is close to an artwork and to enable navigation from a user´s location to a specific artwork

Pictures of the artworks explorable using the app were supplied by Ara´s Maori department.

Result

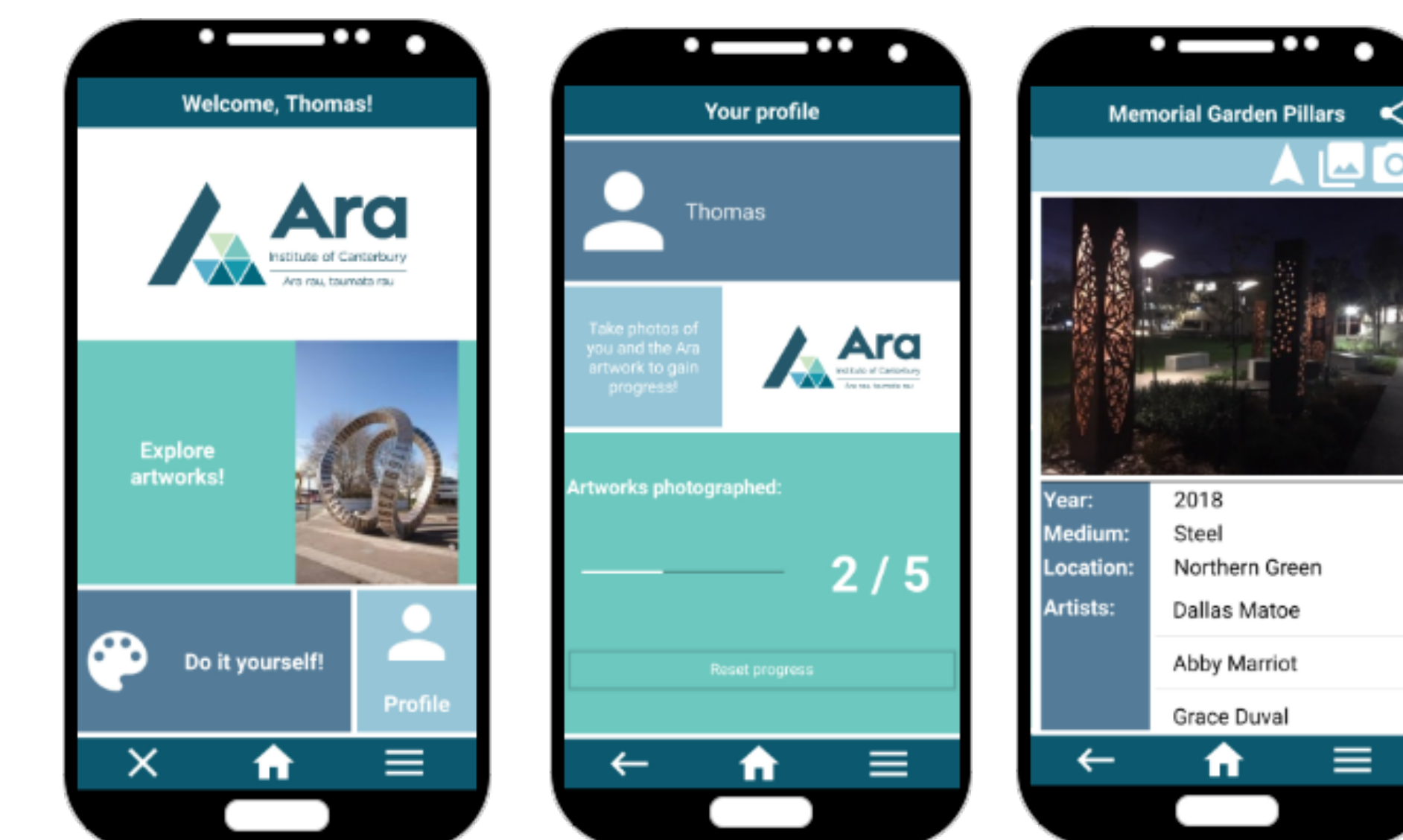The following screenshots show various screens (not all of them) of the first fully functional prototype of the app.

Figure 3: From left to right: screenshots of home, profile and artwork detail screen.

Conclusion and reflection

- Wireframing and test-driven development enable fast iterative prototyping and allow in combination with MIT App Inventor to build powerful apps.
- Gamification is essential to fuel a user´s engagement
- Developed prototype has great potential and offers various options for additional features (login/ location-based features)
- Gamification can be applied to many applications within the education sector to engage learners

References

Gutierrez, Karla (2016, December 1). Mobile Learning Stats that Will Make You Rethink Your Training Strategy. Retrieved June 2 from Shift: https://www.shiftelearning.com/blog/bid/331987/mobile-learning-stats-that-will-make-you-rethink-your-training-strategy.

Pandey, Asha (2018, July 3). How Can You Combine Mobile Learning And Gamification To Create High Impact Training? . Retrieved June 2, 2020 from eidesign: https://www.eidesign.net/how-can-you-combine-mobile-learning-and-gamification-to-create-high-impact-training/

AUTONOMOUS VEHICLES MISSION PLANNER FOR THE SMART MACHINE COMPANY

INTERNSHIP 2019
TSMC CEO - Andrew Kersley

Student - Ivan Zhigalov
Supervisor - Istvan Lengyel

Adjustments for entry points

Add point		Remove point							
WP 1	-	0	+	WP ⇕	0	0	0	0	☑ + ✕
WP 2	-	0	+	Spee ⇕	1	2	3	4	☑ + ✕
WP 3	-	0	+	Actio ⇕	0	0	0	0	☑ + ✕
WP 4	-	0	+	WP ⇕	0	0	0	0	☑ + ✕

Make adjustments

10 m
30 ft

CHALLENGE

Currently, there are several programs for creating trajectories for horticultural autonomous vehicles However, none of the technologies can offer a full range of mission editing features including dragging and dropping points on the map, adding and removing additional points at a certain distance, setting parameters for a specific position. In addition, there is a need to specify the turning trajectory taking into account the minimum radius for a particular type of robot. This paper proposes one possible solution to the described problem.

PROCESS

Initially, for the design of the mission, it is necessary to measure the coordinates of the points in the field. Further, these points will be processed by the server, the total number of lines and the order of their connection will be calculated. At the moment, one so-called skip-3/2 connection algorithm is implemented. The robot starts moving along the first line, then passes three lines and moves along the fourth, on the way back the vehicle passes two lines and then repeats the pattern. The minimum number of lines for this algorithm is eight.

Next, the calculated mission is displayed on the map, and the user is prompted to set the minimum radius of circles for connecting the points and additional points on the trajectory.

The final step of the mission can be changed by dragging and dropping points and exported to the browser console. If the user has an implemented API for interaction with the robot, the functionality of this program can be easily expanded to send a mission to a vehicle directly.

ARCHITECTURE

API Vehicles — Python3 GeoDjango

Vineyard → GeoDjango → JS JavaScript

Python scripts → PostGIS

GeoDjango

PostGIS
Leaflet JS

RESULTS

This project was implemented as a website using the python-based GeoDjango framework and supports the following features:

• Mission creator and editor
• Automatic path planning
• Turning trajectory calculations

• Tasks scheduling along the path
• Any number of additional points
• Four parameters for every point

Ara Artworks – a Mobile App for Ara Students

Yvonne Hierl, Bachelor of ICT, Ara Institute of Canterbury

Get the app
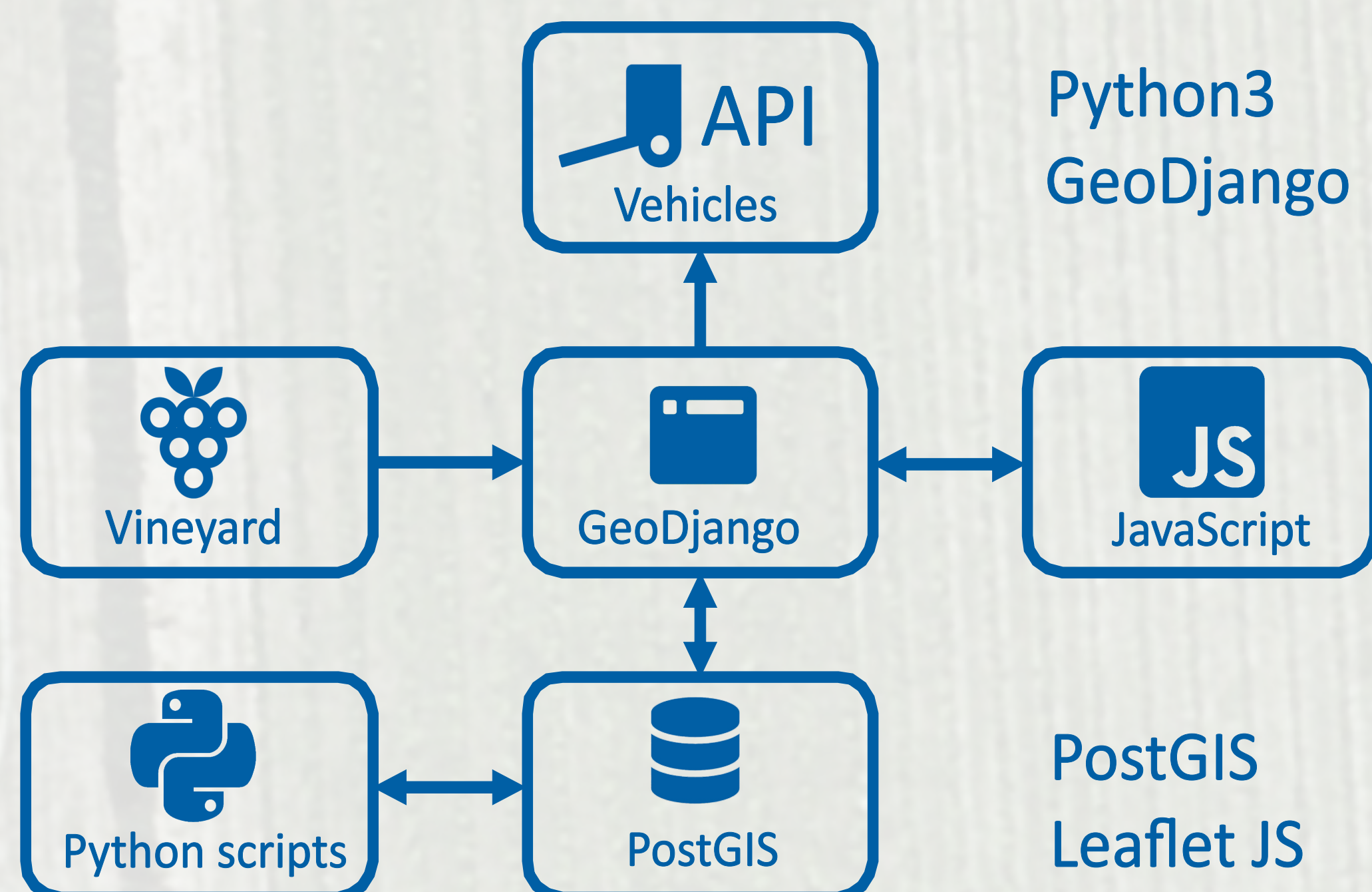
Introduction

The Ara Artworks app was developed to improve the learning and discovery of the art installations across the Madras Street Campus. The app encourages students to become more involved with the artworks by providing a filter function that allows students to navigate through all artworks and retrieve the related information.

Methods

Based on a wireframe, the prototype android app was developed with MIT App Inventor 2. The user can reach all features from the homepage. Besides, all screens a linked together by a hidden sidebar menu.

The app needs access to the storage for social media integration. The user is asked for permission when using the app for the first time.

The user's progress and settings are stored in TindyDB locally on their device. For example the results of the memory game and the favorites list.

Market Research

After researching why a mobile app format would be the best choose for providing information about artworks, it become clear that apps makes students more effective and efficient at learning tasks (Digital Dividend, 2019). Apps are easily available, offer interactive activities and keep students learning without even realizing they are.
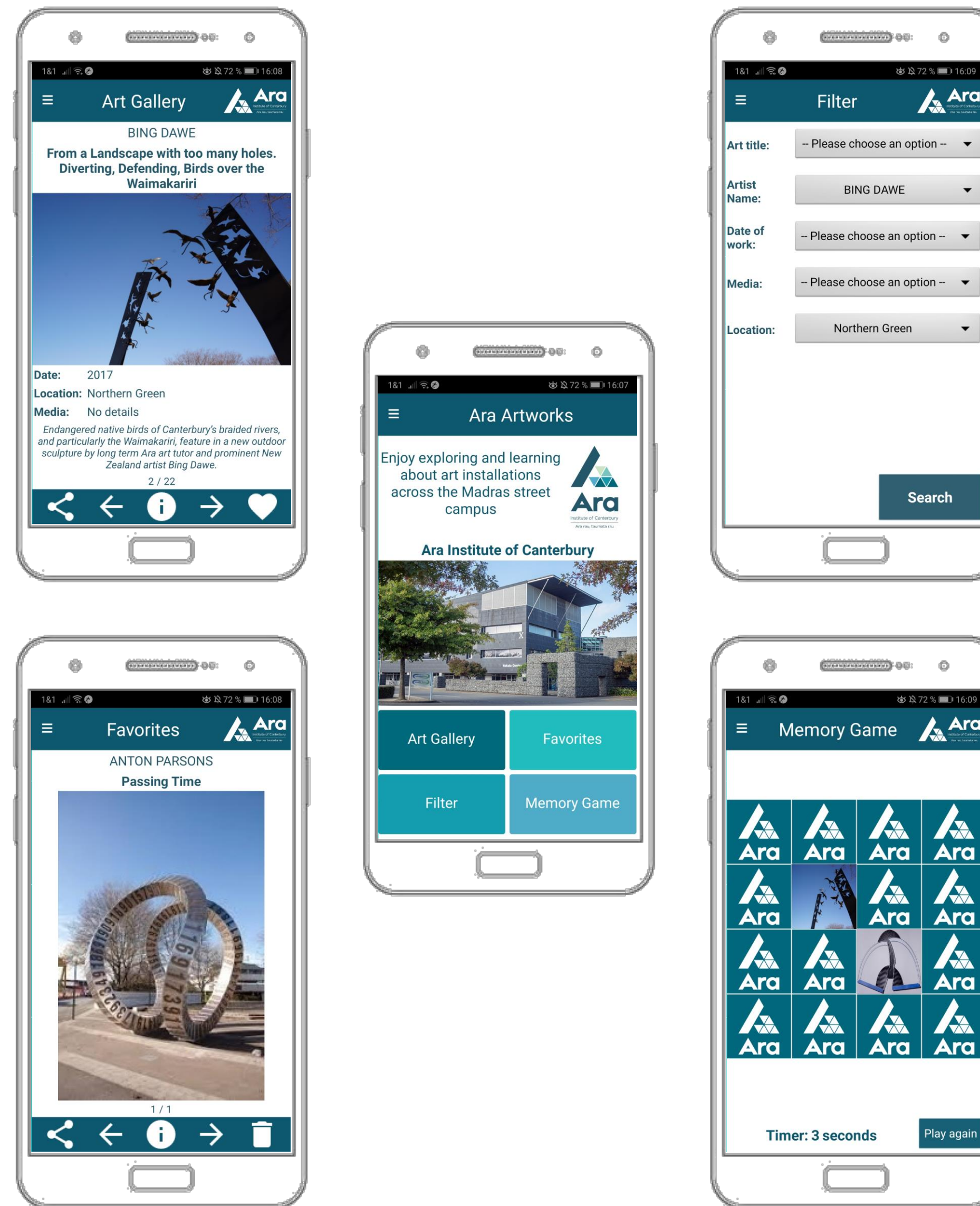
The prototype version provides the following functions:

- Provide images and information about Ara artworks
- Generate favorites list based on user selection
- Filter the artworks based on different criteria
- Include social media integration
- Include an artworks memory game

Reflections

As a student I realized that developing an app involved many revisions. Not everything works immediately. I have learned that testing is a major part of app development, and that a clean code is essential.

I have acquired the following app development skills:

Programming
Testing
Designing
Information Gathering
Clean Coding
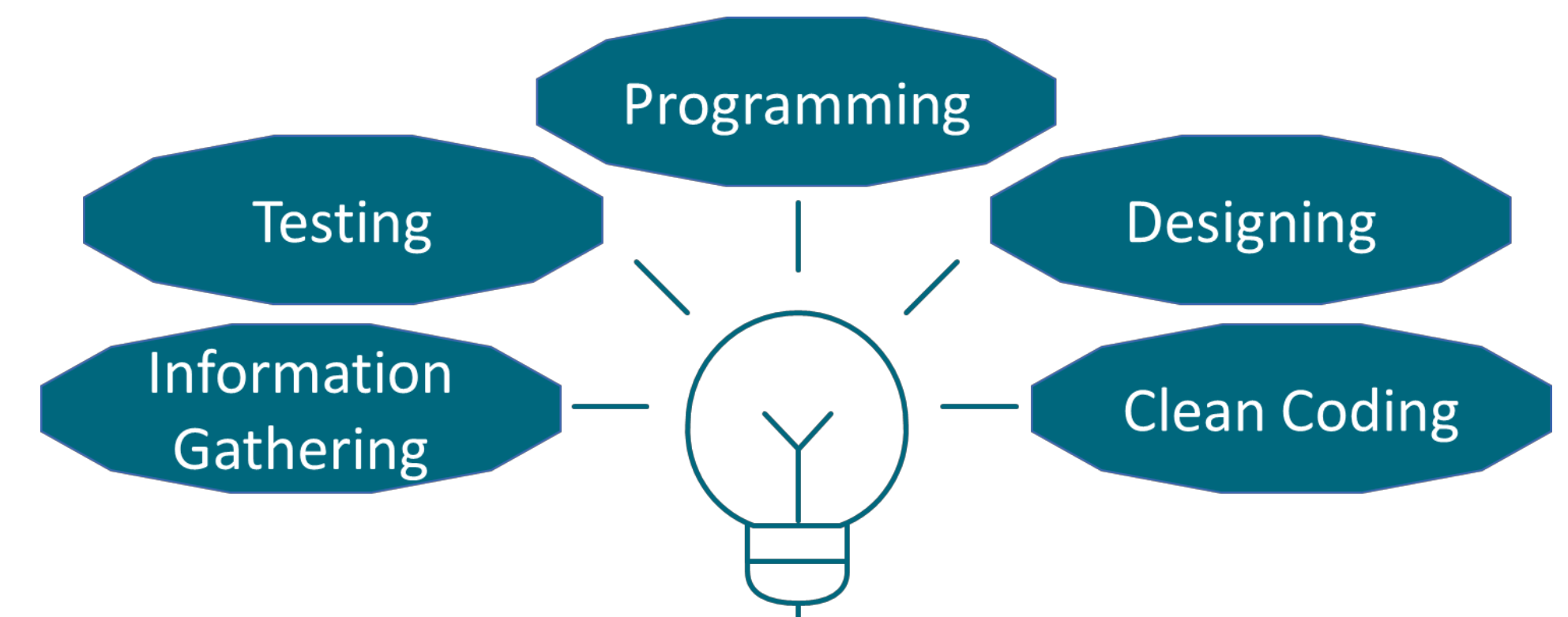
Conclusions

The app offers unique features like a filter or casual game to improve the learning experience. Students can use their own smartphones to explore the works in a much faster way than ever before. The prototype of the app is feasible and has the potential to be available in the Google App Store.

References

Digital Dividend. (2019). Retrieved Juni 04, 2020, from Blog Post: Why are Educational Apps gaining popularity these days?: https://www.digital-dividend.com/en/why-are-educational-apps-gaining-popularity-these-days/

android

MIT APP INVENTOR

TinyDB

TaifunFile Extension

Building an IoT Data Hub on Azure

INTRODUCTION

The internet has changed the lives of people altogether. It touches upon almost all facets of contemporary society. It has changed the way information is processed and searched. Connectivity is moreover no more an obstacle. Enabling omnipresent communication and Big Data Analytics hastened the introduction of the Internet of Things (IoT) concept. The Internet of Things is a huge opportunity, with the ability to disrupt nearly all other industries. Companies that can rapidly introduce new ideas to the market would have a distinct advantage in this changing environment. Recently there have been major developments in IoT (Internet of Things) protocol management of various kinds of sensors and industrial devices (Raju & Shenoy, 2016). McKinsey predicts that IoT would have a total economic effect of $11 trillion annually by 2025–around 11% of global GDP by that point. Studies indicate there is even a long road to go before the complete adoption of this technology (Bajer, 2017).

On the other hand, the cloud is well versed with nearly unlimited storage and processing capacity. Thus, it is expected that a new IT model in which Cloud and IoT are two complementary technologies combined would threaten both current and future Internet. Microsoft Azure provides a public cloud computing platform. Their solution including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) that can be used for services such as analytics, virtual computing, storage, networking, and much more (Aceto et al., 2013).

IMPLEMENTATION

To make an internet of things thing useful, it has to be able to connect with the real world. We connect using sensors and effectors. Sensors are things that can detect the change in the outside environment. As temperature, humidity, light, orientation, motion are examples of changes in the external environment that IoT can detect. First, it requires to have some way to connect these sensors to raspberry pi. Typically, that is done by a breadboard. A breadboard is a physical device with wiring inside and usually a plastic frame on top (figure 2).

The central concept in this case study is Sensors , components describe as below-
- Sensors are a module, whose aim is to detect changes or events in the environment and to transferred gather data to the connected electronics device here is Raspberry Pi.
- Data on temperature and humidity are collected Raspberry pi will fetch the data from sensors and send it to the IoT Data Hub
- Data Hub is hosted in the Azure cloud, which is capable of safe communication with millions of IoT devices.
- Then with the help of an algorithm, temperature and moisture data are analysed concerning time in visual studio code.

The flow chart is shown in figure 1

SYSTEM DESIGN

Mainly there are three areas of the web-based simulator-
- Assembly line
- Coding area
- integrated console window

Assembly lines consist of the BME280 sensor and an LED with the connection to Raspberry pi as shown in figure 2. Coding areas give us the platform for online code with Raspberry Pi. This will help collect sensor data and sends it to IoT Hub. And the last area is the Integrated console window (Figure 3), which shows the output of the code.
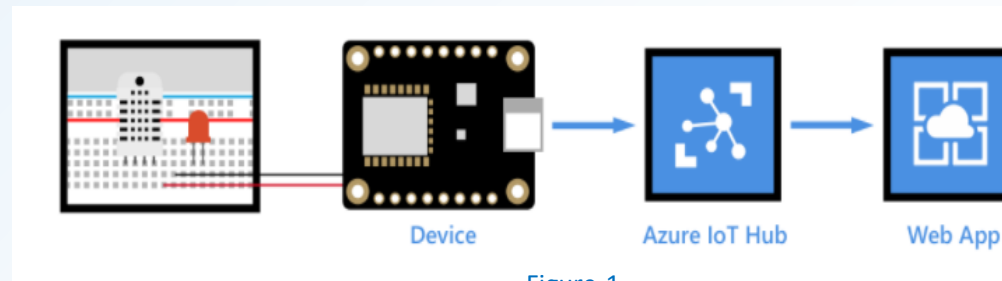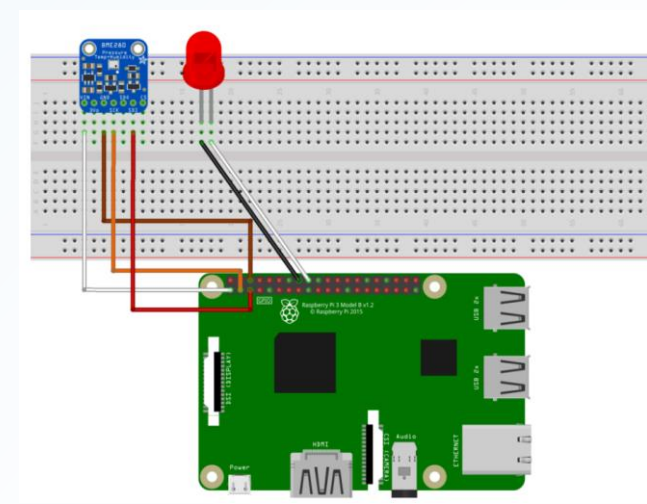

Device   Azure IoT Hub   Web App
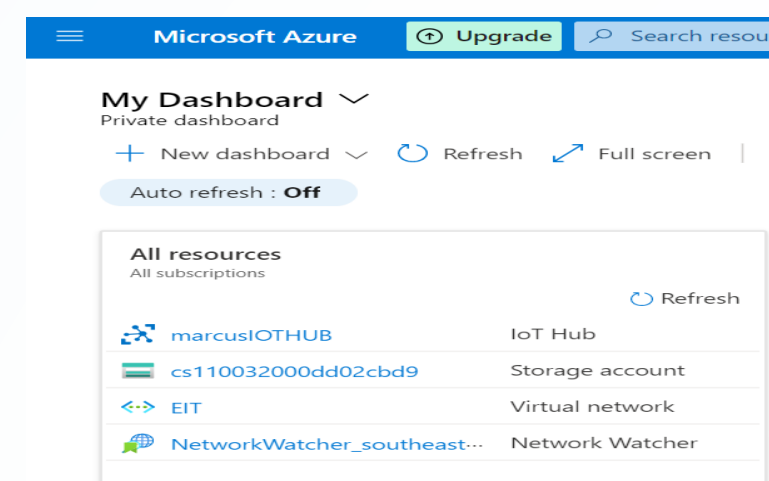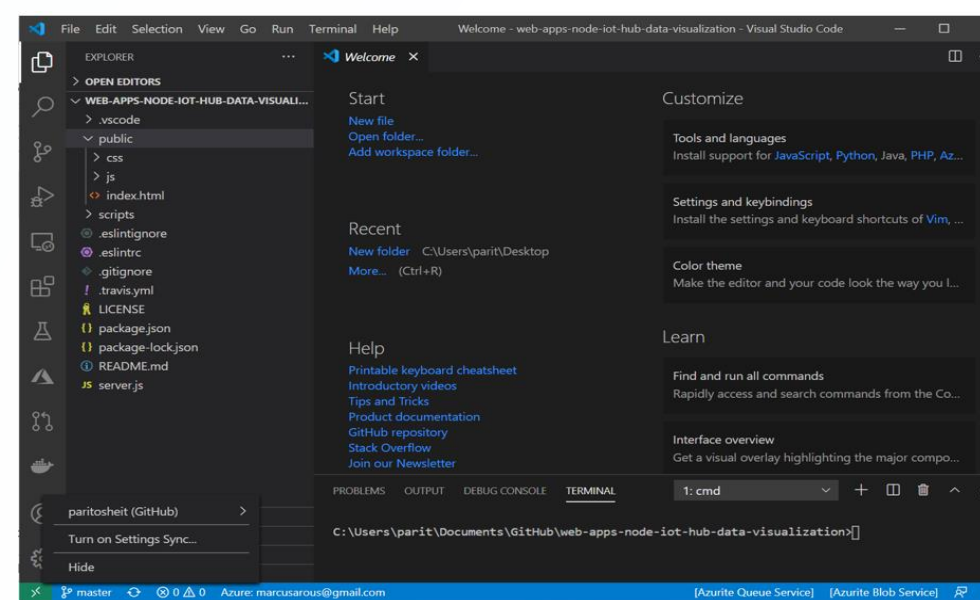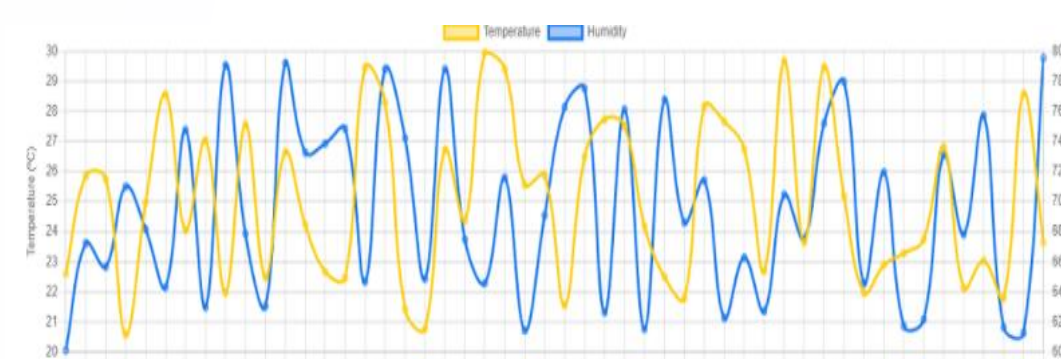
Figure-1

Figure-2

Figure-3

Figure-4

Figure-5

Cloud Setup- First of all, log in to my azure account as shown in figure 4. Then I have created an IOT Hub names marcusIOT HUB to store the information shared by raspberry pi (figure 4). Azure login was created on the email address marcusarous@gmail.com.

The proposed system can be demonstrated with the help of the following steps:
- After creating the IoT hub. We need to give the path of the Azure data hub to the simulator to send the data to the cloud. For that, we edit the code in the coding area with the Azure IoT hub device connection string as below-

  const connectionString = 'HostName=marcusIOTHUB.azure-devices.net;DeviceId=mydeviceID;SharedAccessKey=AQmujKv7lJd22+pb6rEB5dEHs pqqgB93UEOcyCGQR40=';

- Select Run to start the application
- The message received can be read as below-

  Message sent to Azure IoT Hub

  Sending message: {"messageId":6,"deviceId":"Raspberry Pi Web Client","temperature":31.814786482810025,"humidity":70.57599197587723}
  Message sent to Azure IoT Hub
  Sending message: {"messageId":7,"deviceId":"Raspberry Pi Web Client","temperature":29.669614896289893,"humidity":60.83242461676707}
  Message sent to Azure IoT Hub

- Open the web application code in visual studio code. Below the screenshot shows the file structure view in figure 5.
- Configure environment variables for the web app
- Open a web page to see data from your IoT hub.

RESULT- Data output is shown in figure 6. The running plot of the temperature and humidity visualization.

CONCLUSION

In this paper, we have created an IoT Hub in the Azure cloud. From hardware concept to software deployment, and from sensors to the cloud, the overall framework has been fully developed. This model will be used by the application to visualize real-time sensor data from your IoT hub. This solution will integrate the data from multiple subsystems or sensors into one database is presented. The test shows that this approach fits and provides a large amount of setup versatility. Further, the data on IoT Hub can be used for data analyses.

References

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Microsoft. (2019). *Visualize real-time sensor data from your Azure IoT hub in a web application.* https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-live-data-visualization-in-web-apps

Raju, H. S., & Shenoy, S. (2016). Real-time remote monitoring and operation of industrial devices using IoT and cloud. In 2016 2nd International Conference on Contemporary Computing and Informatics (IC3I) (pp. 324-329). IEEE.

CASE STUDY ON MICROSOFT AZURE BaaS

EASTERN INSTITUTE OF TECHNOLOGY

BASIL MATHEW,
ID: 2020001270

INTRODUCTION

Blockchain creates a faster, more efficient way for businesses to transmit, receive, and track orders using secure data. It is the foundation of cryptocurrency trading and is moving into regulated industries such as banking and auctions.

WHAT IS BLOCKCHAIN

Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system. A **blockchain** is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the **blockchain**.
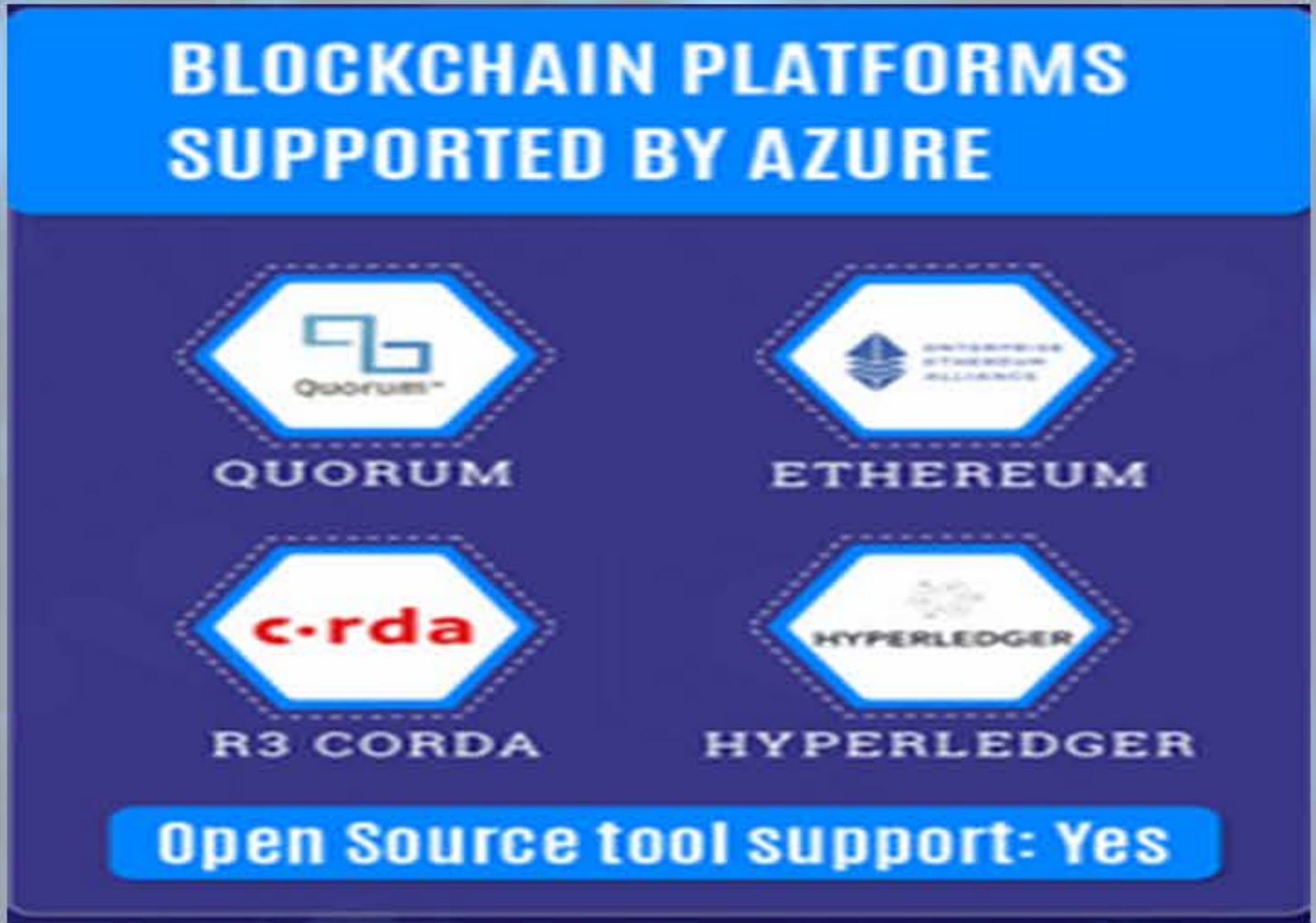
(Lu et al., 2019)

BLOCKCHAIN AS A SERVICE (BaaS)

BaaS provides infrastructure, applications, nodes, distributed ledger, smart contracts, etc. in a cloud platform to setup a blockchain and will manage and host the blockchain of individual organizations.

(Lu et al., 2019)

AZURE BLOCKCHAIN SERVICE

Azure Blockchain Service is a fully managed ledger service that enables users the ability to grow and operate blockchain networks at scale in Azure. By providing unified control for both infrastructure management as well as blockchain network governance, Azure Blockchain Service provides:

- Simple network deployment and operations
- Built-in consortium management
- Develop smart contracts with familiar development tools

AZURE BaaS FEATURES

AZURE PRICING

	Basic	Standard
Transaction node	$.0996/hour	$.318/hour
Validator node	$.0996/hour	$.318/hour
Storage	$.05/month	$.05/month
Blockchain data manager	$.0001/transaction	$.0001/transaction

BaaS HOSTING COMPAISON

AZURE TIER COMPARISON

	Basic Environment for dev/test	Standard Run production workloads
Compute	1 vCore	2 vCores
Storage [1]	5 GB	5 GB
Number of validator nodes	1	2
Number of transaction nodes [2]	1	1
Hybrid deployment support	N/A	Coming soon
High availability	N/A	99.9%
Estimated cost per month [3]	<cost> <cost> per node	<cost> <cost> per node

BLOCKCHAIN PLATFORMS SUPPORTED BY AZURE

QUORUM   ETHEREUM

R3 CORDA   HYPERLEDGER

Open Source tool support: Yes

REFERENCE

Lu, Q., Xu, X., Liu, Y., Weber, I., Zhu, L., & Zhang, W. (2019). *uBaaS: A unified blockchain as a service platform. Future Generation Computer Systems.* doi: 10.1016/j.future.2019.05.051

Onik, M. M. H., & Miraz, M. H. (2019). *Performance Analytical Comparison of Blockchain-as-a-Service (BaaS) Platforms. Emerging Technologies in Computing, 3–18.* doi:10.1007/978-3-030-23943-5_1

Blockchain & FinTech Incubator
Hawke's Bay Group

ABSTRACT

Blockchain technology is an innovative concept that is changing the way financial institute rely on third parties to execute transactions. The Blockchain Association of New Zealand (Blockchain NZ) aims to support the growth of Blockchain technology within the ecosystem of New Zealand. In this case study, the author proposed the initiation of a Blockchain Incubator Group in Eastern Institute of Technology (EIT) located in Hawke's Bay. Microsoft SharePoint is used as the document management and business collaboration solution. The case study aims to create a robust and balanced taxonomy is achieved that target global collaboration with business partners as well as support educational resources for students and Blockchain projects.

TAXONOMY DESIGN

The business functions are broken down to create a balanced taxonomy in a hierarchical structure as shown below. The rational behind this approach is to create a logical and clear location for an item that enable user to be trained quickly. Users can place and retrieve content with minimal difficulty while avoiding the risk of redundancy. The taxonomy can also accommodate new type of content without restructuring and creates shareable resources for different level of users.

Resources	Communication	Business	Staff	Project
Educational • Bitcoin & Cryptocurrency • Presentation • Privacy & Security • Regulation & Standards • Training Video	**Event** • BlockchainNZ • FinTechNZ • InsurTech • Tech Alliance • Member Presentation • Industry Interest	**Business Relation** • Guidance & Regulations • Partnership Contracts • Policy Papers	**Chairman** • Annual Meetings • Committee Contracts	**Communication** • Project Meeting • Status Report
Conference • Call For Publication • Event Agenda • Event Evaluation • Powerpoint Template • Sponsorship	**Marketing** • Membership Invite • Social Media	**Funding & Expenses** • Assets • Sponsorship	**Committee Member** • Membership Application • Communication	**Project Files** • Contract • Funding Resources • Project Proposal • Project Review
Research • Case Studies • Infographics • Market Analysis • Whitepapers	**Conference** • Agenda • Minutes of Meeting • Presentation File	**Legal** • Insurance • Communication	**Operation Team** • Communication • Project Contracts	

METADATA

In additional to existing SharePoint term set, the following metadata has been applied to favour content retrieval and classification.

| Association	Department	Publication Year	Shared With/ Responsible
List of business partners and member.	Business departments: Communication, Education, Research and Incubator Project	Dropdown list between 2000-2019, with No Date option	Lookup list of users and user group

SHAREPOINT IMPLEMENTATION

The site structure consists of one welcome page and two sub-sites namely Incubator Project and Blockchain Resources, based on the welcome page template.

The components and features that have been implemented in the SharePoint includes:

A. HTML and JavaScript Image slider that illustrates EIT as Incubator Group.

B. Announcement application that conveys important news and events about FinTech NZ and BlockchainNZ.
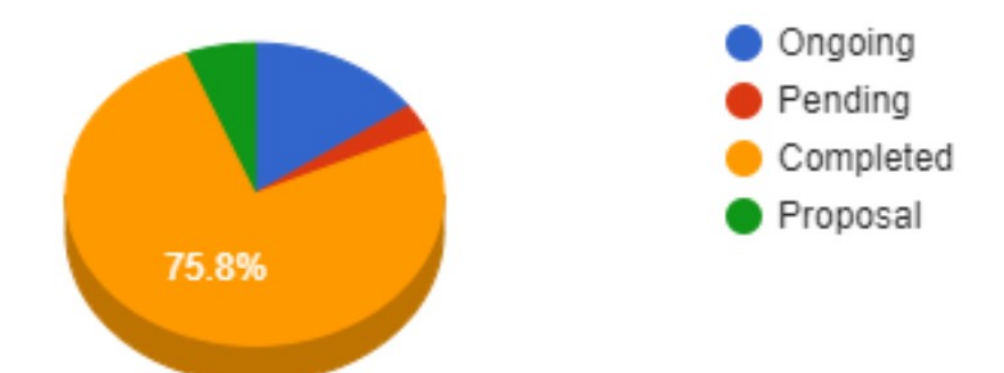
C. Display feeds from social media and logo for the business partners.

D. Contact List of Leadership group, Council Members and Operation Team.

E. Section that provide quick links to Documents, Contact List, Gallery, Discussion Forum and Internal Business Tasks.
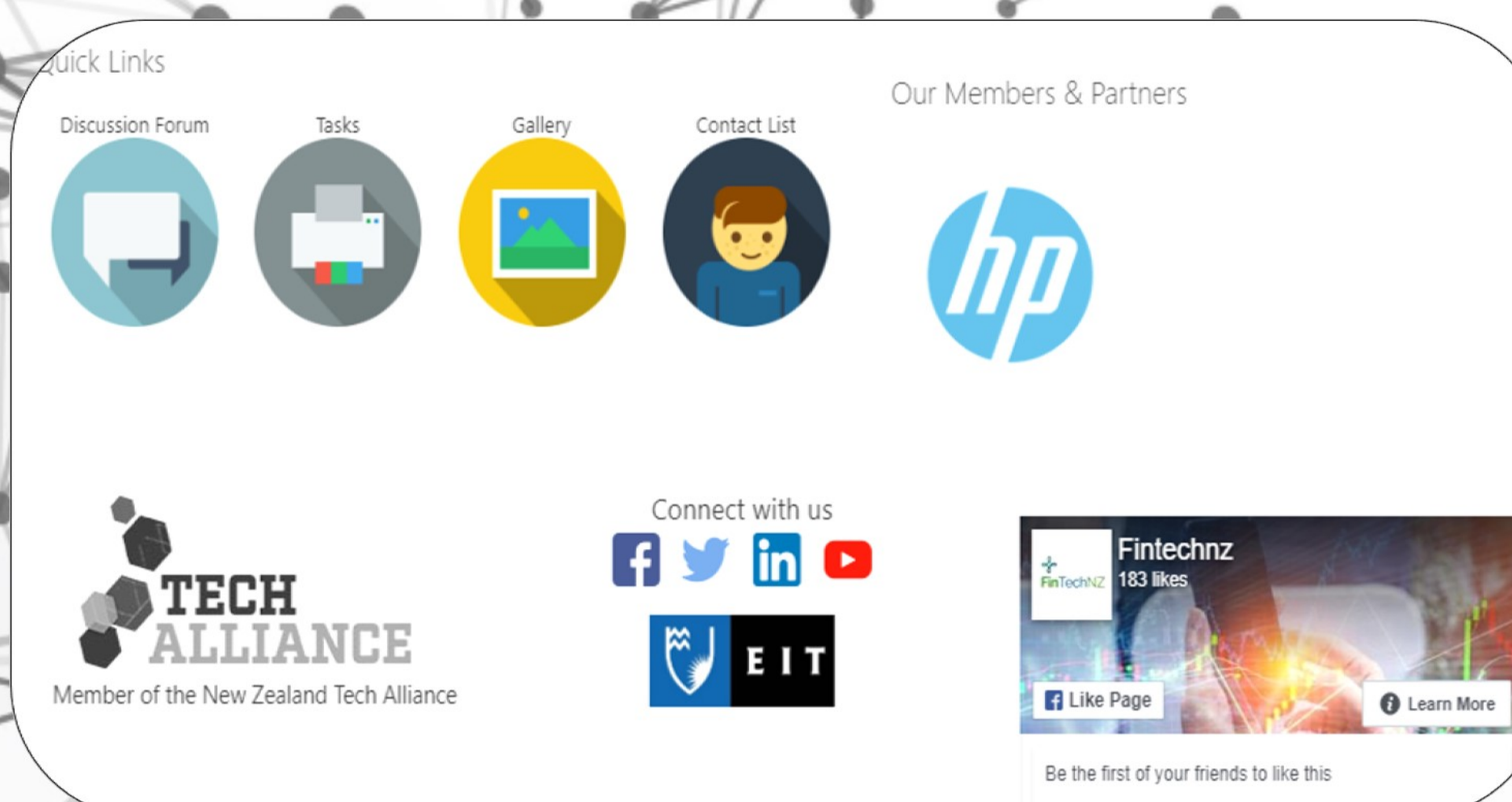
F. Navigation bar providing links to subsites and external Blockchain & FinTech resources.

G. 3D Google Chart visualization that illustrates Incubator Project statistics for users.
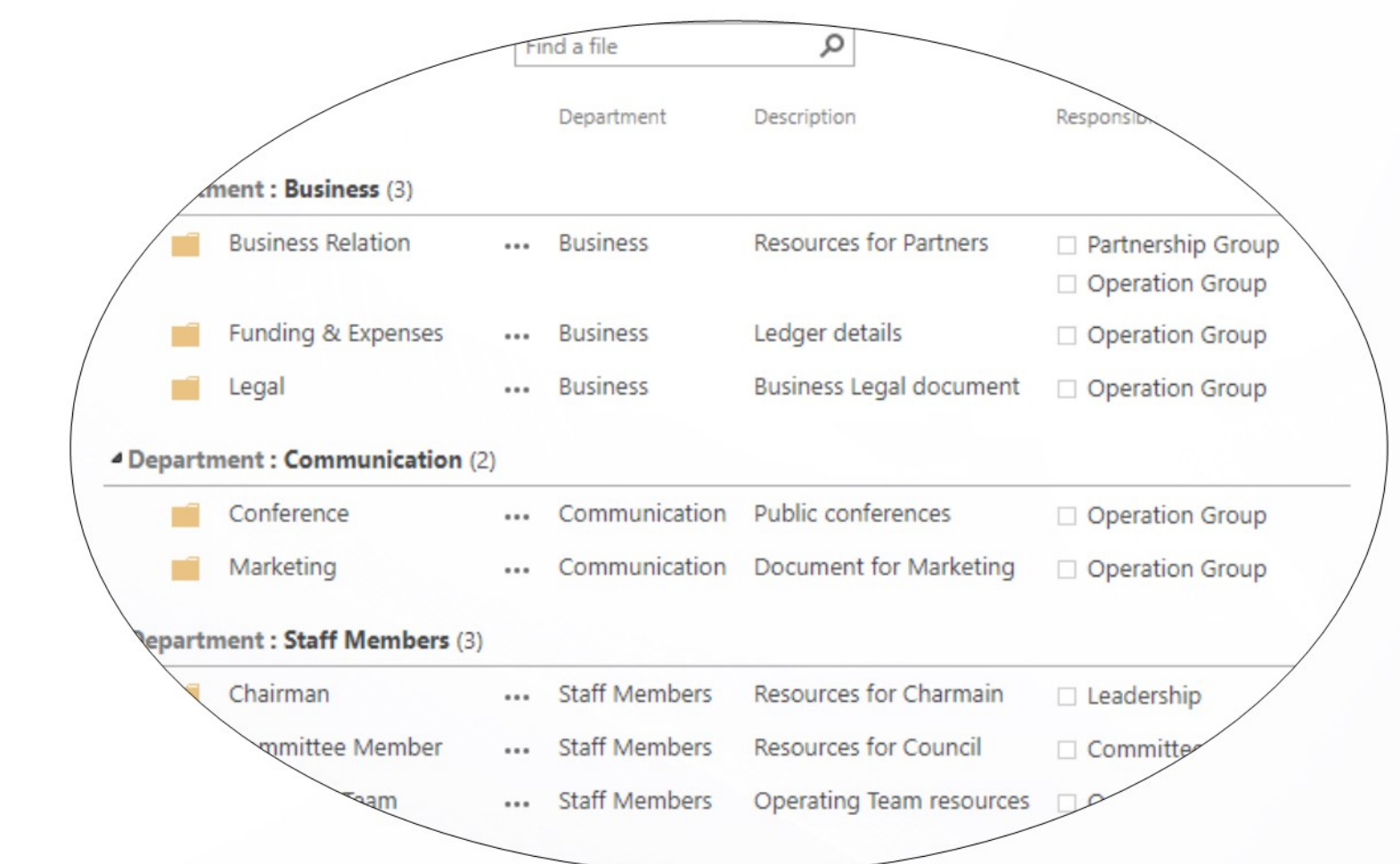
H. Custom view for Top-Level Folders and Sub-folders to enhance comprehensiveness of the users.

CONCLUSION

SharePoint demonstrates an effective approach to manage enterprise content and establish user collaboration. In this case study, a balanced taxonomy is achieved along with visual harmony with Blockchain NZ's website. The overall SharePoint sites create a user-friendly environment with graphics that ease user navigation. The platform provides a way to create and share Blockchain resources with business partners and users. It also enables projects to be managed which could be useful in future for project managers.

Blockchain Incubator, Hawke's Bay, NZ

ITPG 8.800 Enterprise Content Management

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Email: eerturk@eit.ac.nz

Abstract

Blockchain is an innovative solution approach to overcome certain existing challenges faced by industry and society. The purpose of this study is to evaluate Blockchain technology, and develop an incubator in Hawke's Bay (HB), New Zealand (NZ) to be hosted by the Eastern Institute of Technology (EIT).

The study is conducted by understanding technology aspects around Blockchain and its applications, analysing incubator concepts and benefits, existing Blockchain partnership ecosystem in NZ, evaluating technology assessment pertinent to the incubator solution, and developing an incubator contextual taxonomy.

The study has found various merits in setting-up a Blockchain Incubator in HB, NZ to promote innovation culture in this emerging technology domain.

Taxonomy

The proposed taxonomy for the Blockchain Incubator HB is illustrated below. The targeted users are students, academics, local Blockchain communities, and enthusiasts. The rationale behind the suggested taxonomy is to actively support the functions of an incubator, so that innovators can transform the ideas into viable business ventures. The three-tiered taxonomy is envisaged to support broader and deeper needs of incubator requirements.

Notably, a well implemented taxonomy supporting apt incubator needs, as illustrated in the Website, could potentially generate positive user interaction and help to support their objectives. The SharePoint website offers a feature to measure the portal traffic and services frequently accessed by users. This information can be used in production environment to fine-tune the website to remain relevant for the Blockchain innovator community in HB.

| Technology	Business	Networking	Development	Funding	Support
Architecture • Principles • Practices • UX	**Market Research** • Feasibility • Customer Segment • Competition • Potential	**Conference** • Local • National • International	**Certified Training** • Local • Virtual	**Angel Investors** • Local • National	**People** • Talent Search • Screening • Interviewing • Hiring • Onboarding
Feature • Relevance • Benefits • UX • Roadmap	**Business Proposal** • Development • Review	**Events** • Local • National • International	**Courses** • Local • National	**Venture Capital** • Local • National	**Finance** • Accounts • Salary and Benefits • Taxation
Framework • IDE • Open Source Tools • Programming Language • Storage	**Pitch Assistance** • Pitch Development • Pitch Fine tuning	**Meetups** • Local	**Soft Skills** • Business Communication • Business Presentation • Business Etiquettes	**Institutions** • Bank • Government	**Regulatory** • Company Registration • Operational Compliances
					Intellectual Property • Patent Filing • Royalty Negotiation
					Administration • Co-work Space Leasing • Office Space Leasing • Facility Management
					Vendor Management • Procurement Support • 3rd Party Contract Management

Business Assessment

According to Swan (2015), Blockchain is a distributed transparent ledger comprised of transaction documentation in a database which is shared by network nodes, monitored by users, and amended by miners, without the control or ownership by any individual.

Blockchain Incubator HB is an innovation community organization, created at EIT, HB, under its School of Computing. The purpose of this incubator is to promote the growth and success of Blockchain based entrepreneurial ideas.

Zehner, Trzmielak, Gwarda-Gruszczynska, and Zehner (2014) mentioned that the main goal of the incubator is to produce successful start-ups which transform into independent financially viable companies. Such companies could potentially commercialize the solutions and create jobs.

The Blockchain Association of New Zealand (BANZ) is a membership based community group created to support and expand the Blockchain and crypto followers community in NZ (Blockchain NZ, 2019). Subsequently, FinTechNZ (2019) stated that the NZ Financial Innovation and Technology Association is an objective driven organization comprised of members from industry and the wider inclusive community.

Website (Incubator Platform)
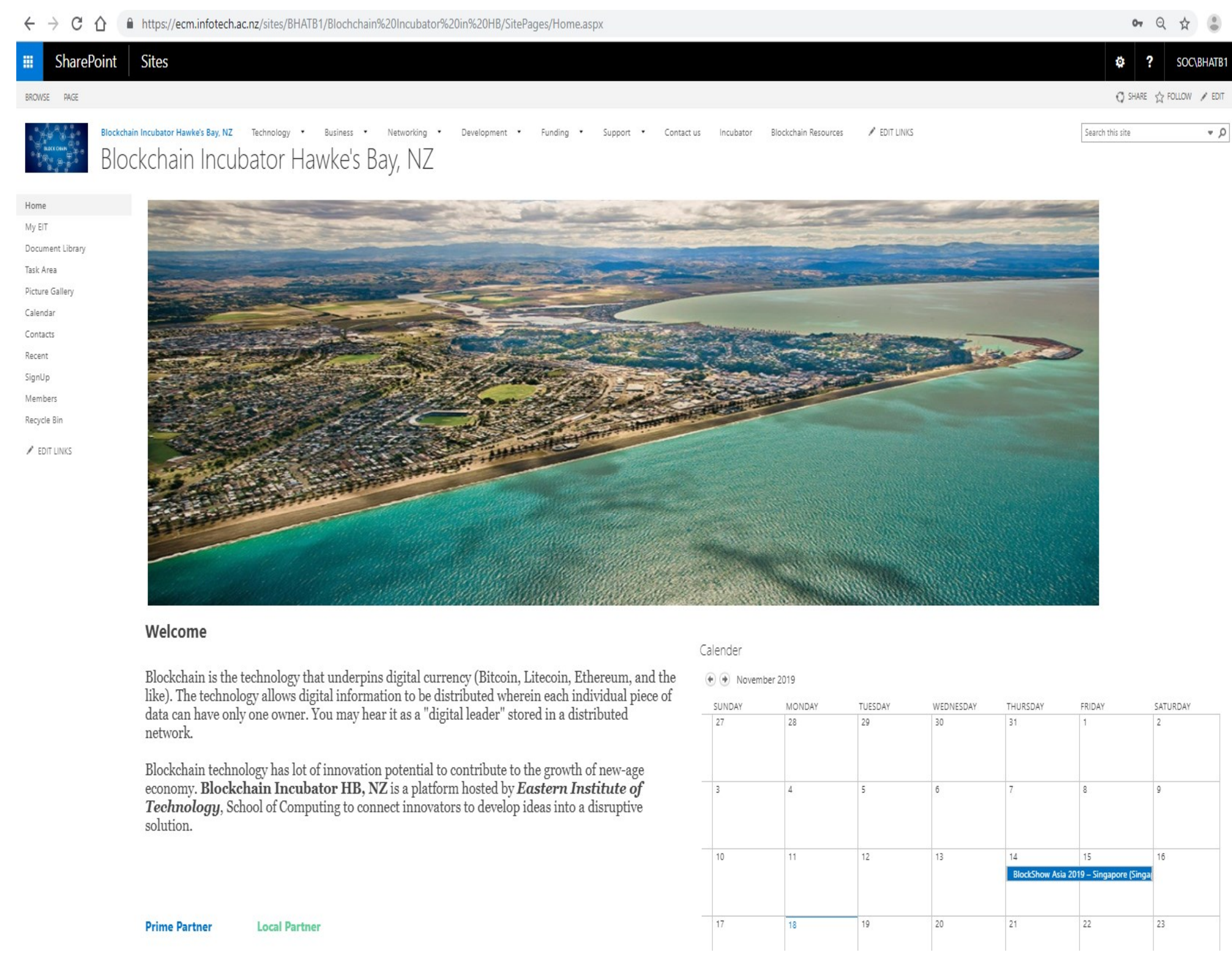
Technical Assessment

By extrapolating the incubator objective into a technology architecture, the prime component proposed at the core of the Blockchain HB incubator is SharePoint. According to Ammari, You, and Robert (2018), SharePoint is a business collaboration platform for enterprises while functioning as an enterprise content management system. SharePoint sites are developed as websites which act as a collaboration platform and central repository for information and documents.

The My EIT login page could be designed to navigate the users to the Blockchain Incubator main site for a wider range of services hosted by the incubator.

Blockchain Incubator HB interfaces with external entities for offering valuable services to the user community such as networking, and development. Then, with a technical customization, Moodle could be interfaced with the Blockchain Incubator HB facilitating an interaction facility within the student and mentor community across EIT departments for knowledge sharing. Further, the Incubator site, by interfacing with the external Blockchain associations such as the BANZ and FinTech NZ, could promote common objectives of Blockchain innovation in NZ.

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Microsoft Power Automate

ITPG8.550 Cloud Based Solutions   Author: Teriwa Graham

SUGGESTED POWER AUTOMATE SOLUTION

Te Taiwhenua o Heretaunga (Taiwhenua) is a charitable trust and Maori Iwi Organisation based in Hastings. The organisation delivers social, health and education services on behalf of funding agencies from Wairarapa to Wairoa with the majority delivered in Hastings.

INTRODUCTION
Taiwhenua to engage with the community to help complete a registration and referral process for support services. The process is predominately a paper-based/electronic document and is to be completed over the phone with the client. The requirement to hand off completed forms to the service team causes heavy reliance of staff to email these through which causes processing delays. The Power Automate Service is used in this case study to automate the current manual process.

WHAT IS POWER AUTOMATE?
Microsoft Power Automate is described as a cloud service that connects different applications that automates tasks for the business (Microsoft 2020). Previously known as Microsoft Flow, this service digitally automates and manages tasks that are usually triggered with user interaction and are often time consuming.

BENEFITS
There are many benefits in using power Automate to help automate business process.
- Little or no experience can be applied when using Power Automate
- Templates are used within the business to ensure consistent approaches to work being delivered
According to Ramalingam (2018), the features that Power Automate provide help business users to improve current productivity through different automation possibilities.

Input client information to Microsoft Form

Select Power Automate Flow Template

Clients information pulls through to online Excel, held in SharePoint

Email notification to advise the sheet has been updated

Populate connections into Flow

LIMITATIONS

Considerations are required for business internet connection speeds, this can affect overall latency for the user and the workflow in use.
Different Licensing Schemes are attractive to different size organisations. This factor financially, can limit the business to adequately licence full staff counts to include the Power Automate Service.

Figure 1. PowerApps and Flow Subscriptions (Microsoft Corporation, 2020)

CONCLUSION
Power Automate offers the business many benefits through automation of manual business processes. The capability to use this service with many other applications helps develop successful business innovation.
The ability to create complex workflows allows huge amounts of capability that can be utilized at present, ensure ownership and the ability for workflows to be modified for future use and align with business change. Highlighted by (Sourceforge, 2020), Pipefy, a competitive comparison service that includes workflow management very similar and capable like Power Automate, but includes beneficial specific prebuilt solutions for areas such as Human Resources, Customer Service, Marketing and Sales and Finance. With many options available to the market, both encourage a different approach to digitizing and automating manual business tasks.

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