



# Information Technology Showcase

## 2019 Projects



Well connected. Right Here.



# Information Technology

## Undergraduate and Postgraduate Projects



### Introduction

Welcome to the compilation of Final Project synopses. These projects are undertaken by Postgraduate and Graduate Diploma in Information Technology students and students in their final year of the Bachelor of Information Technology (BIT), from the School of Information Technology at the WeTec, Whitireia and Te Auaha.

The synopses briefly capture the compulsory 450-hour capstone projects component that is available in both of these programmes. By working with the IT industry and various research and development specialists, students have been able to execute projects at no cost.

### The Qualifications

The School of Information Technology offers a Masters in IT, Graduate Diplomas and a Bachelor of Information Technology degree, with majors in five specialised areas (and an unendorsed option allowing students to design their own degree).

The four specialised areas of the degree are:

- Programming
- Networking
- Software Engineering
- Information Security

Students also have the option to further specialise in their study by undertaking a Masters and double-majors in three areas:

- Software Engineering and Programming
- Networking and Information Security
- Programming and Information Assurance and Security

From 2020 students will be completing our new degree, with 5 majors in the areas of Software Development, Networking and Infrastructure, Cyber Security, Data Science and Interaction Design. This is developed and delivered in partnership with Whitireia Community Polytechnic.

The Postgraduate Certificate, Diploma and Masters, along with the two Graduate Diploma programmes give a range of courses to choose from for a final project.

- Graduate Diploma in Information Technology (Level 7) has further options for students to gain a comprehensive understanding of specialist areas within IT and apply that knowledge by working on an IT project.
- Bachelor of IT students can dip extensively into the Graduate Diploma in Information Assurance and Security (Level 7) courses, and are offered experience in how to integrate security policy, practices and technologies into operational structures and explore the principles of survivability and information assurance, and students are able to use knowledge gained from some of the courses in this programme towards their final Project.

Students have the option of an alignment with many international industry certifications like Cisco, Microsoft, ISTQB, etc., and can utilise some credits from this towards their degree affording further depth and a wider scope in developing their Project.

## **What these projects are really about**

A capstone project, such as this, is intended to allow the student to refine the qualities that make them eminently employable. Our students select their own small teams and projects, and then work in independent teams, setting their own goals and pace in line with the project client needs. Students choose their own technologies, methodologies, and management practices in addressing both Client needs and best industry practices. These projects represent: Adaptability, responsibility, and perseverance.

With this in mind, and the arbitrary limits of 450 work hours we impose, many encounter ‘expert overconfidence’ – and must negotiate and manage new goals as the project progresses. This is a real learning curve for all project students, as in most of their studies our lab exercises are designed to work cleanly, but reality is never that tidy. They face real problems, and develop real solutions.

The other skill the students develop in this project is teamwork. Until this project the bulk of their studies have been individual efforts, now they must form a team, utilise their diverse skillsets, maintain relationships, and rely on others for essential parts of the puzzle – just like in industry!

For most students this project will be the last time they undertake a project from beginning to end – but they do get to experience the many facets of the project lifecycle, and hopefully make better career choices because of it. As the IT industry runs mainly on projects, and has many specialisations within it, this project will help students find their best place in the industry.

## **Supporting the students**

This year the project coordinators were Robert Sutcliffe, Glenda Shaw and Scott Morton. Their task was to find and evolve the projects, thoroughly brief the students, set standards, and support them through the rough patches. They also audited the projects to get projects managerially back on track, co-ordinate all the assessments, and develop this presentation booklet.

The students also had regular access to an academic staff member for advice and guidance on matters ranging from technical, administrative, to relationship management.

## **Highlights of the Year**

The spread of projects this year are quite different to previous years – the defining characteristic this time is business diversity. We had a game developed to aid student orientation, a detailed business analysis based software selection, an application based on Blockchain for validating issued certifications, a revamp of a disaster recovery plan for a bank, development of automated software testing for a local developer, and a slew of app and website developments for small businesses.

Enjoy the show, but please be gentle with them – many of them have had a hard time!

If you have a project idea you'd like considered by the students for a future trimester, please let us know:

Email:

[Robert.Sutcliffe@weltec.ac.nz](mailto:Robert.Sutcliffe@weltec.ac.nz) or [Glenda.Shaw@weltec.ac.nz](mailto:Glenda.Shaw@weltec.ac.nz) or [Scott.Morton@whitireia.ac.nz](mailto:Scott.Morton@whitireia.ac.nz)

## 2019 Information Technology Project Showcase

Project Titles	Student Teams	Advisor	#
<b>Advance Directive</b>	<i>Enoch Tautolo</i>	Sean Thompson	<b>1</b>
<b>Advanced Directive Analysis</b>	<i>Angela Zuba, Krystal Bishop; William Wang</i>	Adrian Hargreaves	<b>2</b>
<b>Anyware Project</b>	<i>Huo Youngpen; Lulu Tian; Gilbert Toloa</i>	Minjie Hu	<b>3</b>
<b>Anyware Project TinyMCE Editor Upgrade</b>	<i>Feng Liang, David Shackleton; Angelique Guanco</i>	Minjie Hu	<b>4</b>
<b>Avalon AG CMS</b>	<i>Annu Baghel; Jibin Jose; Greema Paul</i>	Clement Sudhakar	<b>5</b>
<b>BM&amp;C – Android App</b>	<i>Dan Mota</i>	Chalinor Baliuag	<b>6</b>
<b>Building Management and Compliance (web application)</b>	<i>Kirstel Villanueva; Dexter Balsamo; Angela Kuznetsova</i>	Chalinor Baliuag	<b>7</b>
<b>Case Study Development (Routing)</b>	<i>Elliot Kara; Zhan Luan; Karthi Venkatesaperumal</i>	Drew Duncan	<b>8</b>
<b>Case Study Development (Switching)</b>	<i>Angela Alfonso; Jonathan Ballinger; Max Ignasia</i>	Jeff Echano	<b>9</b>
<b>Casual Jobs</b>	<i>Vijay Karuppiah; Abinaya Murugesan</i>	Reza Moosaei	<b>10</b>
<b>Code: PURPLE</b>	<i>Liam Sharpe; Tatiana Ermakova; Neha Nand</i>	Chalinor Baliuag	<b>11</b>
<b>Compendium Application</b>	<i>Taylor J Everett; Chris Simmons</i>	Scott Morton	<b>12</b>
<b>Configuration of Live Site – NDS (New Desktop Solution)</b>	<i>Puneet Gundli; Kulvir Singh</i>	Ian Hunter	<b>13</b>
<b>Data Remanence Project</b>	<i>Andrew Sharma; Jordan Ash; Lani Lambert</i>	Dr Dax Roberts	<b>14</b>
<b>Digital Corpora by DFIR Sleuths</b>	<i>Corran Cockburn; Abdul Farah; Kurt Knudsen; Rory Wagner</i>	Leonie Trower	<b>15</b>
<b>Enable CMS v1.0</b>	<i>Tatenda Mvere; Issa Farah; Kraig Dongui-is</i>	Ian Hunter	<b>16</b>
<b>Enable CMS V2</b>	<i>Khushleen Kaur; Narminder Singh; Karandeep Singh Sandhu</i>	Ian Hunter	<b>17</b>

<b>Project Titles</b>	<b>Student Teams</b>	<b>Advisor</b>	<b>#</b>
<b>Ghost Detector</b>	<i>Ketan Patil, Sherwin Peat; Balpreet Walia</i>	Reza Moosaei	<b>18</b>
<b>Good Deeds Gamification</b>	<i>Aleisha Perry; Kurt Gentil</i>	Chalinor Baliuag	<b>19</b>
<b>Good Deeds Gamification</b>	<i>Erna Marie Trambulo; Elaine Kuizon; Nino Noel Tolentino; Chanmay Vijay Lele</i>	Reza Moosaei	<b>20</b>
<b>Health Supplements Price Comparator</b>	<i>Navpreet Singh</i>	Clement Sudhakar	<b>21</b>
<b>Ingenium Mobile Application</b>	<i>Abi Harper; Kelvin Lai; Surbhi Sajwan</i>	Chalinor Baliuag	<b>22</b>
<b>IoT Server Room Monitoring System</b>	<i>Andreas Vassiliadis; Marcus Havell</i>	Jeff Echano	<b>23</b>
<b>Journey of Self Discovery</b>	<i>Luis Torino (PM); Gwangwoo Kim</i>	Ian Hunter	<b>24</b>
<b>Jump-It</b>	<i>Aidan Reale-Key; Qingyang Liu; Yunfei Ho</i>	Ian Hunter	<b>25</b>
<b>Life Skills V1.0</b>	<i>Aarju Karki; Joana Sinio</i>	Ian Hunter	<b>26</b>
<b>MBCWeb</b>	<i>Yinan Wang; Thomas Williams</i>	Dr Dax Roberts	<b>27</b>
<b>MySay QR Code Scanner</b>	<i>Chantelle Ward; Mike Love</i>	Dr Sara Bilal	<b>28</b>
<b>National Region Dragon Boating Membership &amp; Regatta</b>	<i>Kulukona Tupou, Jason Pan; Wiremu Sharman</i>	Steve Cosgrove	<b>29</b>
<b>Neurolab Application</b>	<i>Richard Dasan; Scott Curtis; Brianna Winkels; Jason Krieg</i>	Chalinor Baliuag	<b>30</b>
<b>NZISM Web Scraping Project</b>	<i>Kirsten Neustroski; Jack Griffiths; Lachlan Rogers</i>	Reza Moosaei	<b>31</b>
<b>Online Job Broker</b>	<i>Khozema; AlexBrook</i>	Terry Jeon	<b>32</b>
<b>PDMeo Fitness</b>	<i>Joseph Meo; Cameron Wilby</i>	Dr Dax Roberts	<b>33</b>
<b>Postgraduate Research Project Datamining Tools on Cloud: Power BI vs. Rapidminer</b>	<i>Nitikesh Joshi</i>	Dr Reza Moosaei	<b>34</b>
<b>Postgraduate Research Project The Benefits of Using RFID Data in Businesses</b>	<i>Shamkia Khan</i>	Dr Marta Vos	<b>35</b>
<b>Programming Code Analyser</b>	<i>Ke Wang; Obed Medara</i>	Simon Park	<b>36</b>
<b>Project Blue Bell</b>	<i>Keri Solomon; Harshmin Kaur</i>	George Tongariro	<b>37</b>

<b>Project Titles</b>	<b>Student Teams</b>	<b>Advisor</b>	<b>#</b>
<b>Project Hepburn (Hepburn &amp; Associates Website)</b>	<i>Zunedkhan Pathan; Divya Patel; Harsit Kohli</i>	Clement Sudhakar	<b>38</b>
<b>Project SGRANCH</b>	<i>Farouq Fischer; Usman Kiani</i>	Scott Morton	<b>39</b>
<b>Requirement Analysis (Friends of Pataka)</b>	<i>Sheetai Chauhan; Hana Paranihi; Joseph Zuba</i>	George Tongariro	<b>40</b>
<b>Resource Set (Private Cloud)</b>	<i>Richard Shelley; Manpreet Singh; Sarabjeet Singh</i>	Drew Duncan	<b>41</b>
<b>Retention And Disposal</b>	<i>Wei Fu; Thomas Ewers</i>	Chalinor Baliuag	<b>42</b>
<b>School of IT Network Documentation</b>	<i>Sarah Erceg</i>	Simon Dixon	<b>43</b>
<b>Security Tools Rebuild</b>	<i>Cassie Grove; Connor Jack; James Troman</i>	Paul Bryant	<b>44</b>
<b>Smartware Website</b>	<i>Oliver Connor; Siddharth Thakur; Hyuck Yim</i>	Chalinor Baliuag	<b>45</b>
<b>Stocker V1.0</b>	<i>Anto Virgin Joseph Arul Raj; Harish Kotapati; Sukanya Uppala</i>	Reza Moosaei	<b>46</b>
<b>Student Time Planner</b>	<i>Changyu Huang; Andrew Liu; Wenjie Tong</i>	Reza Moosaei	<b>47</b>
<b>Study WelTec</b>	<i>Bhavleen Kaur; Sahil Kaushal; Anudeep Varma Indukuri</i>	Sandeep Vankadari	<b>48</b>
<b>Tattoo Studio Website</b>	<i>Keyur Patel; Darpan Sahija</i>	Simon Park	<b>49</b>
<b>Temple Events Website</b>	<i>Gurpreet Singh; Rohit Jaswal</i>	Glenda Shaw	<b>50</b>
<b>Transport Management (OpsDrivers)</b>	<i>Reza Ghelichkhani, Christie Diedericks</i>	Tony Assadi	<b>51</b>
<b>Virtual WelTec</b>	<i>James Hendry; Neha Arora</i>	Diana Eyes	<b>52</b>
<b>WellyCon Administrative System</b>	<i>Jack Northover; Blair Mackle; Parvin Ghorbani</i>	Sue Scott	<b>53</b>
<b>Zealandia Wireless Network Infrastructure</b>	<i>Aijane Walsh, Phillip Halley; Ruxin Mo</i>	Steve Cosgrove	<b>54</b>

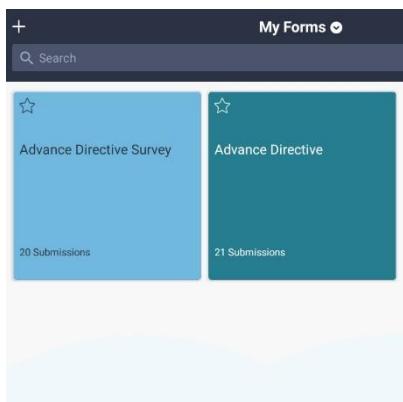


# Advance Directive

By: Enoch Tautolo

Advisor: Scott Morton

Client: Sean Thompson



Advance Directive Questions and Survey



Advance Directive application



Application used to create the survey

## INTRODUCTION

All New Zealanders have the legal right to create an Advance Directive to honour their end of life care wishes, in the event that they're unable to make those decisions in the future. The project involved developing a series of questions and a survey which patients could fill out to create their Advance Directive and give constructive feedback. It is important that when completing an Advance Directive form, patients understand the questions being asked and the purpose of an Advance Directive. The project focused on gathering feedback about the questions and the application, and what can be done to improve user experiences.

## DEVELOPMENT

The project consisted of three parts:

- Developing a series questions that upon answering, would then create the patients Advance Directive
- A survey for participants to take after using the application and answering the questions
- Running a simulated trial to test and gather feedback about the questions and application

The methodology for this project used a mix of both Qualitative and Quantitative methods. The project utilised quantitative methods when developing questions for Advance Directive. It was important that the questions were clear and easily understood as it is an important decision. Close

ended questions were used to gather the necessary quantitative data, limiting users to three answer options; "Yes", "No" or "Unsure". This allowed for succinct results, leaving no room for misinterpretation.

Qualitative methods were used to gather information about user experiences after using the application and answering the Advance Directive questions. A small survey of ten questions was completed to better understand user experiences as well as any pros and cons about the product. The questionnaire survey contained both open and close-ended questions with a comments section for any additional comments.

After a considerable amount of research, it was decided that JotForm would be used for the Advance Directive questions, as well as for the survey. This would allow for two separate set of questions, whilst only using one account. The trial was run on twenty participants, all completing their Advance Directive and user experience survey. I was present during the entire process for any assistance or clarification on the questions or use of the application.

## CONCLUSION

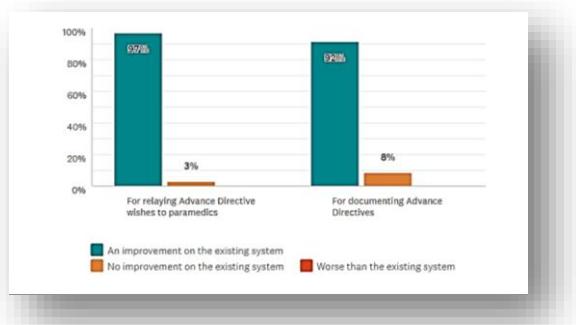
Feedback from the twenty participants have been output into a Survey Analysis document, showing the results of the trial. The questions developed in this project were reviewed by Sean Thompson (client) and multiple health practitioners, who have given their approval to use the questions for patients to create their Advance Directive.

# Advanced Directive Analysis

Team: Angela Zuba, Krystal Bishop, William Wang.

Advisor: Adrian Hargreaves

Client: Wellington Free Ambulance



Results from survey



Survey Monkey



Microsoft Word 2013



Google Gmail

Tools used in creating survey

## INTRODUCTION

This project investigated the need for a **Mobile Advanced Directive Application**. The app would enable patients to make their end-of-life wishes known to paramedics in an emergency situation. Paramedics often need to consider whether or not to resuscitate a patient in cardiac arrest, and local GPs have expressed to Wellington Free Ambulance Management that paramedics are perhaps currently resuscitating too many people inappropriately.

Paramedics often find themselves in situations where they need to make quick decisions as to whether they begin resuscitation or not. Current advance directive forms are very wordy, and they may be set up and not revisited. They are also not readily available to paramedics in an emergency situation. They would like something like a QR code which could be stuck to a client's fridge, one with current medication and one with medical notes/advance directive information, thus readily accessible to the paramedics in an emergency.

## DEVELOPMENT

The objective of this project was to create a survey for General Practitioners to complete which would investigate the need for a mobile advanced directives application. Our client required information from GPs as to whether they believe the proposed app would be a useful tool. If they did not think it would be beneficial, their reasons for this.

## CONCLUSION

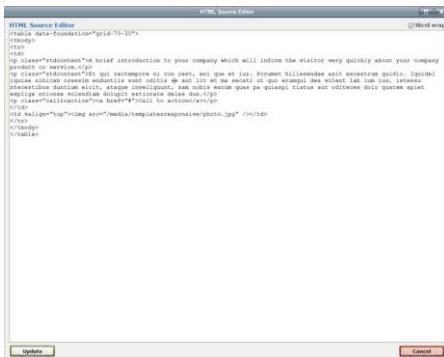
From the survey data we gathered and analysed, we found that GPs are in favour of an Advance Directive Mobile Application. Therefore, we recommend that our client begin development of the Advance Directive App.

# Anyware Project TinyMCE Editor Upgrade

Team: Feng Liang, David Shackleton, Angelique Guanco

Advisor: Minjie Hu

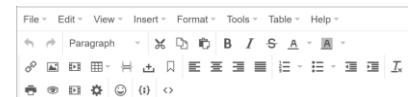
Client: Anyware web marketing



TinyMCE version 2



New version of TinyMCE version 4



Toolbar used for TinyMCE

## INTRODUCTION

Anyware is a web marketing company based in Porirua that pride themselves on Service, Contribution and Simplification when it comes to finding solutions for their clients and their websites.

Anyware provide web site ideas, guidance and support and aim to help small to medium businesses to grow.

## DEVELOPMENT

Our client's content management system currently uses an outdated version of a web editing tool called TinyMCE. Embedded within TinyMCE is a HTML source code editor which currently contains a lack of features and functionality.

TinyMCE is a WYSIWYG (What You See Is What You Get) editor for the web, the term WYSIWYG refers to the displaying of content which can be edited in the form of its visual output, meaning you are seeing the front end design while you are creating it.

TinyMCE offers a simple user interface design and has similarities to other web design tools seen in systems like WordPress.

## CONCLUSION

The project to date contains a complete analysis of TinyMCE and the features put forth by the client and a successful running version of TinyMCE version 4.9.4 with these enhanced features.

We recommend the next team with Anyware continue to troubleshoot the errors that have been reported around google chrome, as it is the clients preferred choice of web browser.

Begin work on the next upgrades for TinyMCE which have responsive tables and image upload feature improvements.

# Anyware Project

Team: Huo Youngpen, Lulu Tian, and Gilbert Toloa

Advisor: Minjie Hu

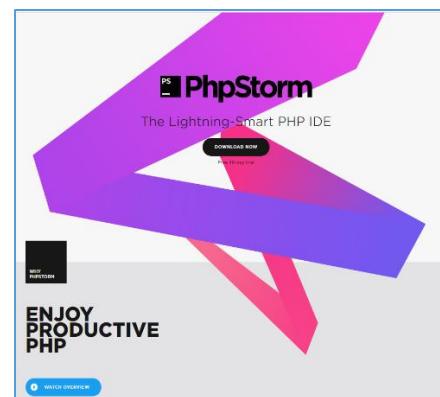
Client: Phil Donaldson



Anyware Website



GitHub



PHP Storm

## INTRODUCTION

Our project group members are Huo Youngpen, Lulu Tian, and Gilbert Toloa. We were assigned a continuing project called '*Anyware, Project Management System Upgrade*' from our project coordinator Scott Morton. This project is for a company called 'Anyware Web Marketing', who specialise in helping small to medium sized businesses with building and maintaining their websites. Throughout the project we reported and worked with our project supervisor Minjie Hu and our client Phil, who represents Anyware Web Marketing.

## DEVELOPMENT

Our goal for this project was to implement a new version of TinyMCE (Web editor) onto our client's test and production environment, to be used by Anyware and their clients, in hopes that the new web editor will help boost functionality and productivity.

Firstly, before we could begin any coding or development on the project, it was important that we researched the previous group's project. We familiarised ourselves with the system that they had built and then began planning on developing and improving on it.

Throughout the project our team used GitHub to help us develop the system. GitHub allowed us to share code amongst each other including the client, control systems, and manage and store revisions of the project.

We then setup our local environment on the Whitireia computers, to be able to conduct testing and begin work on the project.

For this project our team used IDE's (Integrated development environment) to help develop our system and to also help write and test the software. We used 'Atom' for front-end development in javascript and 'PHP Storm' for back-end development in PHP.

After editing and updating different parts of the web editor to suit our client's needs and requirements, we then transferred the system from our local environment onto our clients test environment. This allowed us to conduct multiple tests to ensure that the version we implemented on our client's environment was working as planned and ensured that there were no errors.

## CONCLUSION

In conclusion, we completed the client side work with the updated version 5 of the TinyMCE editor, including all the relevant plugins required by our client. We also completed and implemented the code changes to our GitHub account and have merged these changes onto our client's master branch. The new system has also been implemented onto our clients test environment and has been thoroughly tested.

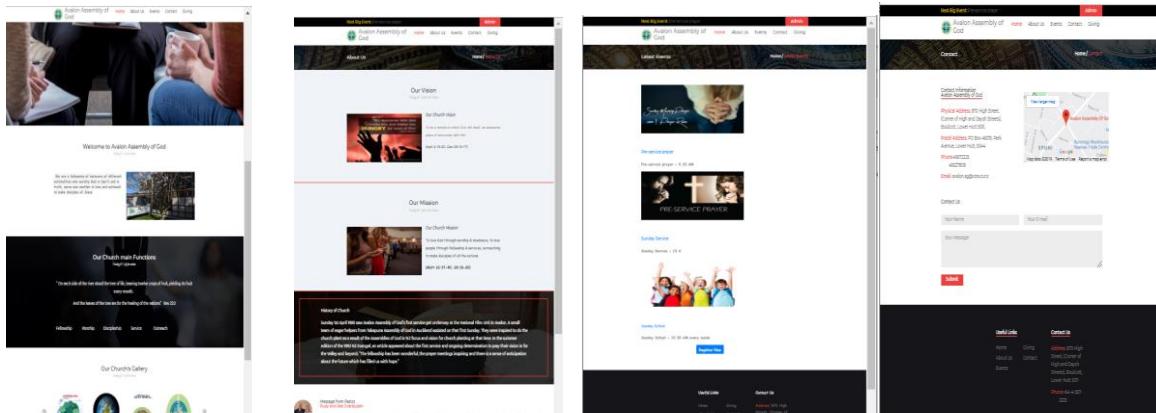
Our client is now able to use, update or make other changes to the system as it has been merged onto their GitHub account. With a few changes, our client is also able to implement the new system onto their production environment if they wish.

# AVALON AG CMS

**Team:** Annu Baghel; Greema Paul; Jibin Jose

**Client:** Rudy Oversluizen

**Advisor:** Clement Sudhakar Swarnappa



Home Page

About Us

Upcoming Events

Contact

## INTRODUCTION

For organisations, having a social media presence or a web application in today's world is not a luxury anymore but a necessity. It is one of the most important assets for a charity because it is often the first point of contact for donors, volunteers and beneficiaries. Our client has suggested to rebuild their website which was not dynamic and communicating well with their followers.

Avalon AG CMS is a responsive web application built using content management system with supporting search engine optimisation and internal search features.

Through built-in CMS features, admin can easily modify the web contents without any developer assistance in the future. Also, the followers of the church can engage with the church programs, can register for the upcoming events and fund raising can be done through the donation page which was set up in the web application.

## DEVELOPMENT

We developed a web application which solves the current issues of the church website by adding dynamism for their website with CMS features. A secure payments page is created to accept and collect donations made to the organisation. The site is optimised to be recognized by various search engines and is hosted to their domain.

We have used Agile Scrum methodology for this project, wherein the product is developed in five 'sprints' starting from preparation of Project Proposal, Product Design, Development, Testing and ends with Product Monitoring and Deployment.

After getting approval for the design, our team started the development of the web application in PHP CodeIgniter platform wherein team could make the design more customised as per client perspective. We have installed XAMPP server and used its built-in MYSQL database environment for working in local machine with 'Sublime Text Editor 3' as our code editor.

Once we finalised our product with the client, we hosted the web application in to the domain provided by the client and tested the host as well.

The Web application is developed with features of: content management system, responsive, search engine optimisation, secure donation page, proper admin privileges with internal search features and event registration section in the website. We did unit testing and functional testing while doing the development and we have done the integration testing once we finished the development in the local machine and regression testing after hosting our product in to the server. We fixed some of our issues and left security of our website for future improvement.

## CONCLUSION

Team can deliver a quality web application 'Avalon AG CMS' for our client with satisfactory output. We have gained real time project experience and could improve our technical skill set and project managing abilities which we believe, are most helpful for our career.

# BM&C – Android App

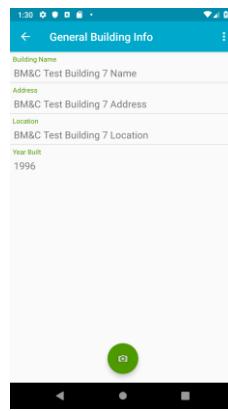
By: Dan Mota

Advisor: Chalinor Baliuag

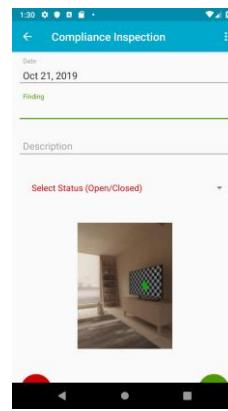
Client: Natasha Baldwin



Dashboard Activity – Building Selection



General Building Information Activity



Compliance Inspection Activity

## INTRODUCTION

The BM&C Android App was commissioned as a proof of concept when the need for improvement was identified by the client regarding the current processes currently in place at the Department of Internal Affairs when conducting Building Compliance Inspections.

The main goal of the app is to facilitate the process by providing contractors with a cloud-based solution for uploading Compliance Inspections findings and photographic evidence of New Zealand Legislation non-compliance.

## DEVELOPMENT

The project was developed using the Rapid Application Development methodology, which is comprised of four phases.

In the *Requirements Planning Phase*, the client was interviewed, and business requirements were gathered to define the scope of the project which was used to generate the project proposal.

In the *User Design Phase*, system analysis and design activities were conducted and Wireframe prototypes created. Prototypes were modified until client signoff was acquired.

The *Rapid Construction Phase* was divided into two iterations, Graphical User Interface Design and Backend Development. Client feedback was requested throughout the GUI Design to ensure the system met their needs. Unit, Integration, Manual and Physical Device Testing tasks were conducted in this phase to ensure quality.

The application was developed using Android Studio, Java programming language, Microsoft

Azure as the database for User Credentials and Building data, and Firebase Realtime Database as the Compliance Inspection data repository. A minimum Android API 18 – Jellybean – is required, thus supporting roughly 95.9% of devices in circulation.

Lastly, in the *Cutover Phase*, User Manuals were created for the installation of the Integrated Development Environment, Testing Environment, Database Toolkits, as well as App installation, usage, and troubleshooting. User Acceptance Testing activities were conducted with client participation, findings documented, and recommendations for the next phase of the project were handed over to the client.

## CONCLUSION

Despite challenges faced throughout the SDLC, the project met the business requirements set by the client within the time frame allocated.

The team was able to expand testing activities from the original plan to encompass all Android API levels supported by the app.

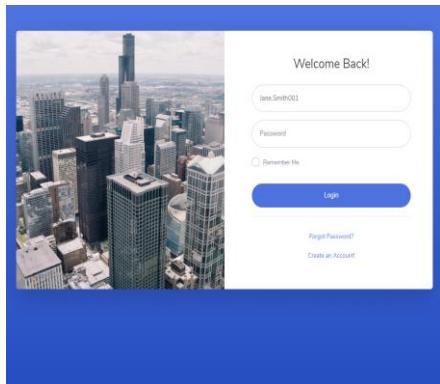
A great deal was learned by experiencing all the different aspects that comprise an IT project. Lessons the team intends to put to good use in future projects.

# Building Management and Compliance (web application)

Team: Kristel Villanueva, Dexter Balsamo, Angela Kuznetsova

Advisor: Charlinor Baliuag

Client: Natasha Baldwin



Login Page

A screenshot of the "General information" page for building "BM&C Test Building 2 Name". The page has a sidebar with navigation links: Dashboard, About Us, Buildings, Reports, Contact Us, Admin. The main content area shows a table with columns: General Information, Contacts, WOF, Building Consent, Asbestos, Electrical, Gas, Fire. Data rows include: Name of Building (BM&C Test Building 2 Name), Address (BM&C Test Building 2 Address), Responsible Office (responsible), Client (Katal), Project Number (project), Building Information (buildinginformation), CS Number (colum), Legal Description (Legal), Max Occupants (10), Fire Hazard Category (A).

General information

A screenshot of the "Reports" page. The sidebar includes links for Home, About Us, Buildings, Reports, Contact Us, Admin. The main area has sections for "Report Selection" and "Report Preview". In "Report Selection", there are fields for "Name of Building" (BM&C Test Building 2 Name), "Client" (Katal), "Asbestos Present" (Yes), and "Report Format" (Building General Information). Buttons for "Generate" and "Download to Excel" are present. In "Report Preview", there is a table with columns: Name of Building, Address, Responsible Office, Client, Project#, Building Information, CS#, Legal Description, Max Occupants. A single row is shown: BM&C Test Building 2 Name, BM&C Test Building 2 Address, responsible, Katal, project, buildinginformation, colum, Legal, 10.

Reports page

## INTRODUCTION

Building Management and Compliance is a web application that provides a tool for centralised data and unified system for easy retrieval and management of business buildings information operated by the Department of Internal Affairs, and its planned extension into private and government sectors. Additionally, automated report generation is included and integrated into the newly created platform.

The application has a dashboard with full information about buildings, a user management, access privileges by user's role and report generation that can be either displayed on the screen or downloaded as an excel file. This application is a cloud-based to ensure that multiple users can access the system at any given time, and that data remains unharmed and secured. BMAC web application was created as a new system to aid the client's efficiency performing her everyday tasks, save resources, and reduce chances of data loss.

## DEVELOPMENT

The project was performed using Scrum framework methodology. The team selected Scrum because of its flexibility, simplicity, and frequent releases along with timely feedback from the client that allowed them to investigate required modifications and address them up-front. This invariably led to a happier client who also ended up with a product that they want and are satisfied with.

The team started by gathering the project requirements and what was needed by the client.

Next step was creating a proposal for the client as an essential part of the project documentation.

After the proposal was signed, the team analysed what the system would be and how the infrastructure of the application will be created such as the functionalities, database, front-end and back-end development.

As part of the system analysis and design, the team started designing the wireframes and prototypes. After the client approved the application design, the group started the development.

At the beginning of the project development, the team has designed and created a database using Microsoft Azure SQL database.

Back-end and front-end development were done simultaneously. The web application contains more than ten individual modules.

At the end of each 'Sprint', the team performed testing and demonstration to the client.

When the development was completed, the final acceptance testing was also performed. The team used different testing methods including unit testing, manual, integration and user acceptance testing. In addition, the group performed automation and stress testing to ensure the application could handle a large amount of traffic.

The final step was in preparing all the necessary documentation such as user and administrator manuals and technical documentation for the client handover.

After client handover, the team prepared the academic handover by completing the documentation, including personal and closeout reports.

## CONCLUSION

The project was completed on time and on scope as requested by the client.

This project was a collective effort, and everyone had a role to play in it to make a satisfying web application which meets the client's business requirement.

The client was impressed with the final product and confirmed that it has matched their expectations for project quality, performance, and functionality.

# Case Study Development (Routing)

Team: Elliot Kara, Zhan Luan, Karthi Venkatesaperumal

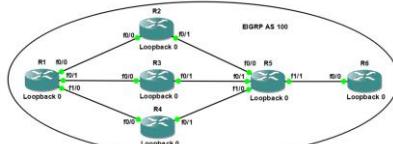
Advisor: Drew Duncan

Client: Sandeep Vankadari

Lab 1. EIGRP Configuration

1.1 Lab topology

1.1.1 Topology Diagram



This shows the topology diagram

1.4.2 Configure and verify IPv4 EIGRP.

1.4.2.1 Refer to the topology diagram, configure the appropriate routers with EIGRP. The following commands on R1 are used as an example. Configure all other routers accordingly.

```
R1(config)# router eigrp 100
R1(config-router)# no auto-summary
R1(config-router)# network 1.1.1.1 0.0.0.0
R1(config-router)# network 192.168.32.0 0.0.0.255
R1(config-router)# network 192.168.33.0 0.0.0.255
R1(config-router)# network 192.168.14.0 0.0.0.255
R1(config-router)# exit
```

Step 10:

- Click on the router image on the left-hand side.
- Click and drag the c7200 image onto the main area.



This shows the configurations

This shows how to set up GNS3

## INTRODUCTION

There was an opportunity to improve the learning outcomes and learning experiences for students engaged in the Networking and Infrastructure (NI7501) course using realistic and current technology case studies.

As a project group we have developed ten networking routing labs to directly replace ten current labs, using the same protocols but with more relevant tools as specified by the client. Each lab has a unique case study which will use realistic situations to help portray and educate students through hands on learning.

## DEVELOPMENT

The development process was based around the scrum methodology. Each sprint consisted of design, develop, test and error correcting two labs. The labs were developed to align with the course outline and follow the current labs as a template.

The labs covered three main routing protocols, EIGRP, OSPF and BGP. The main technologies in the labs include protocol configuration, protocol troubleshooting, and redistribution between multiple protocols.

The content of the first and second labs is EIGRP, including EIGRP basic configuration, EIGRP metric calculation method, unequal-cost load balancing, EIGRP route summarization, EIGRP stub routing, EIGRP IPv6 configuration and troubleshooting EIGRP.

The content of the third and fourth labs is OSPF, including single area OSPF configuration, multiple area OSPF configuration, OSPF route summarization, OSPF special area types, OSPF virtual-link, OSPF network types, OSPFv3 configuration and troubleshooting OSPF.

The content of the sixth and seventh labs is BGP, including EBGP configuration, IBGP configuration, BGP update source, BGP next hop, IBGP split-horizon, MPBGP configuration and troubleshooting BGP.

The content of the fifth, eighth, ninth and tenth labs is redistribution, including redistribution into EIGRP, redistribution into OSPF, redistribution into BGP, redistribution from BGP into IBGP and controlling route advertisement with route-map and route tagging.

## CONCLUSION

The outcome of the project was the completion of the ten routing labs which included tutor and student copies. A GNS3 lab manual was created to aid in the initial setup for students that had not used GNS3 before. These were both completed on-time and satisfied the client.

The project team worked well together. When issues arose, as a group a solution was brainstormed and implemented.

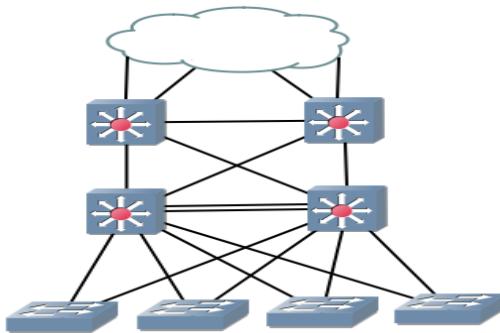
Many lessons were learnt through the project. The project team came to a realisation that there was more than one way to complete this project, there was not one right way. Through careful planning, group commitment and a willingness to do well, the team completed the project to the client's requirements.

# Case Study Development (Switching)

**Team:** Jonathan Ballinger, Max Igasia and Angela Alfonso

**Advisor:** Jeff Echano and Ian Hunter

**Client:** Sandeep Vankadari



## INTRODUCTION

The concept of Case Study Development (Switching) is about the modification of the current Cisco labs and creating switching-related case studies.

The task was to modify the labs to provide students a more analytical approach when working on the exercises.

This essentially means building on from the current labs by adding troubleshooting exercises and by modifying or creating new case studies in connection with the labs.

## DEVELOPMENT

We used GNS3 (Graphic Network Simulator-3) as a base for our work. This software allows testing real and virtual devices in a network environment.

This software allowed our team to test the labs to ensure that the current lab commands work and to alter the configurations to suit GNS3's interface.

We used an iterative Spiral Model during our development which helped us collaborate with our client and for us to test our work. This consisted of a planning; design; testing and evaluation phases.

## CONCLUSION

We were able to complete the planned deliverables but were challenged by our timeline as it saw regular changes which reflected the realities of project.

During development we learned that we should allow more slack, to account for unforeseen challenges.

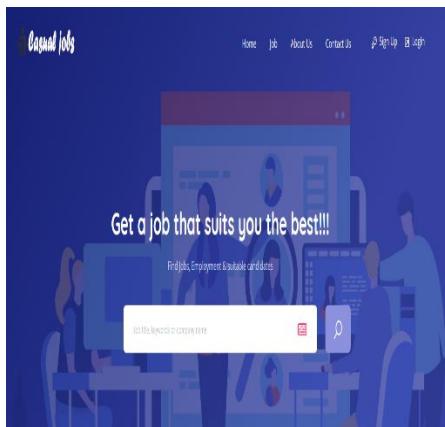
We now know with hindsight that our choice of methodology was not the best for our project. However, we believe that we adapted it suitably.

# Casual Jobs

Team: Vijay Karuppiah, Abinaya Murugesan

Advisor: Reza Moosaei

Client: Clement Sudhakar Swarnappa



Home page of the application



Employer's dashboard



Candidate's dashboard

## INTRODUCTION

Casual Jobs is a web application which provides service for both employers as well as job seekers. Employers can create a profile and post job vacancies in the portal as well as jobseekers can create a profile and provide all the information about themselves. Based on the provided information from the jobseeker's profile page, a CV will be generated automatically.

Finding a casual Job is becoming difficult in today's world. Both employers and jobseekers face a lot of difficulties in the employment process. Existing employment processes is time consuming for both employers and jobseekers. In order to overcome this problem, 'Casual Jobs' uses an automatic job matching algorithm to find the suitable employee for the posted job.

Using this application job seekers can view the jobs that is suitable for them as well as employers can view the suitable candidates for the posted jobs.

## DEVELOPMENT

Casual Jobs has been developed using a framework called **code igniter**. This particular framework has been selected as it is easy to use and also it separates logic parts from the presentation parts. Another big advantage of using this framework is one can make dynamic changes at any stage of the development process. Code igniter is based on **M-V-C pattern**.

The project was done based on the agile scrum methodology. XAMPP server was used as a local host.

Once the design phase of the application is completed, the project team started the development. The challenging part in the development was framing the job matching algorithm. The development process has fulfilled all the client requirements.

We tried to implement all the features expected by the client. There were also some additional features added to the application which impressed the client a lot.

After the completion of development phase, testing was done for the application. Manual testing was done as suggested by the client. The team performed functional testing using the pre-written test cases and test plan. All the testing performed was documented and we prepared a test report based on that.

As the team consists of only two members it was hard for us during the documentation phase

## CONCLUSION

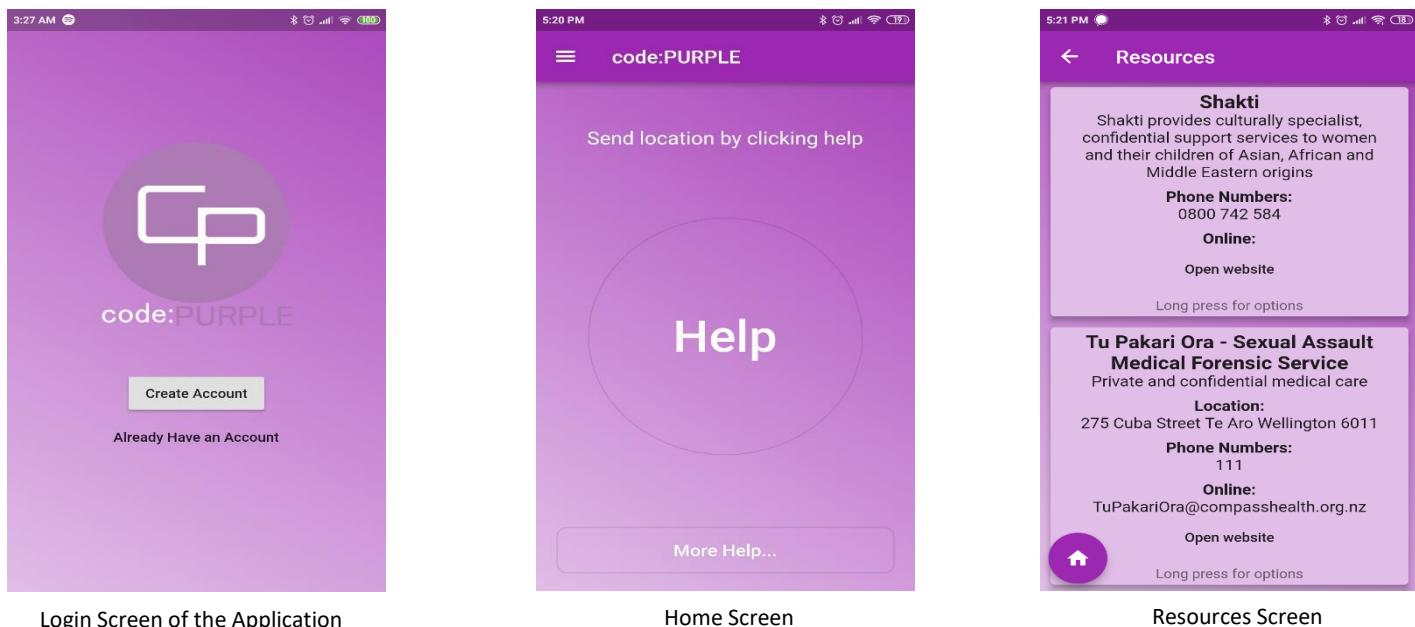
The Project team has successfully completed the project and documentation has been provided for further improvements to the application in the future. At the end of this project, the team gained further understanding of the different phases involved in the project.

# Code:PURPLE

Team: Liam Sharpe, Tatiana Ermakova, Neha Nand

Adviser: Chalinor Baliuag

Client: Tracy Mitchell



Login Screen of the Application

Home Screen

Resources Screen

## INTRODUCTION

New Zealand is a small country, but despite this, it has still managed to be ranked as the best country to live in the past. However, one thing that we should not be proud of as kiwis is that New Zealand is one of the highest ranked countries in the world for domestic violence and abuse. This needs to change.

The **Code: PURPLE** application is designed to allow victims of domestic abuse to quickly and safely call for help from the people they trust the most. The simple interface sends a message with the victim's location to their selected contacts at the tap of a button.

The application also contains resources for where the victims can get more help. This is an essential part of the application as it has all the information for over 15 help centers around the Wellington region.

## DEVELOPMENT

The first decision to make in the development of the application was what methodology we wanted to follow. After a lot of research, we opted for OpenUP due to its ease of use and flexibility.

Next, we needed to design the application. We ran the systems analysis and design phase alongside the development to get instant results and speed up the process of development.

The application itself was developed in Flutter, a new framework by Google which allowed us to develop the code once but generate an application for Android and iOS. It is quite a new framework but worked really well for our application.

The database used was Google's Firebase. This worked well as it is a simple document store database and since both the database and application framework were created by Google, they worked flawlessly together.

Unit, widget, integration, and user acceptance tests were all run on the application to make sure it was up to a good standard.

## CONCLUSION

The application was delivered to the client successfully and on time and was met with great results. It is ready to go onto the next phase and eventually be deployed.

# Compendium Application

Team: Taylor J. Everett, Chris Simmons

Advisor: Scott Morton

Client: Ken Burt

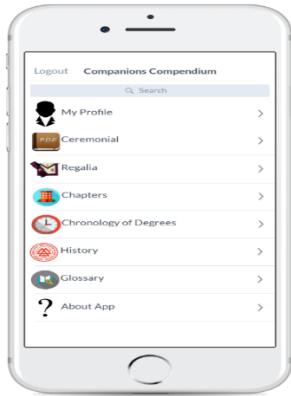


Image of the application



Design of the chapters



Design of the rituals

## INTRODUCTION

This Project was first focused on creating a compendium application for the client and their organization. During our first meeting, we requested a database schema, a blank version of the current websites database, and whether or not their server could support API, none of which has been made available by the completion of this document. This project iteration has been largely impacted by the lack of technical information that has not been provided. The Client has the means to attain this information but requires permission from the council which is still in progress. Because of this, the project has turned into a functional prototype instead of a finished product.

## DEVELOPMENT

This project was to build an application for smart devices for members of the Royal Arch website to view and download rituals, which the users have access to. The application was originally just an idea, the core idea is to modernize members' methods of retrieving these ritual files. The application was also required to be informative to its users in similar regards to their current website. This included a login using the current website credentials, access to their Profile, rituals, history, degree chronology, chapter finder, regalia, about app, and an addition of a glossary.

## CONCLUSION

Initiate project development.

Wireframe layout design, flow, and the look of the application.

Create a paper prototype of wireframes.

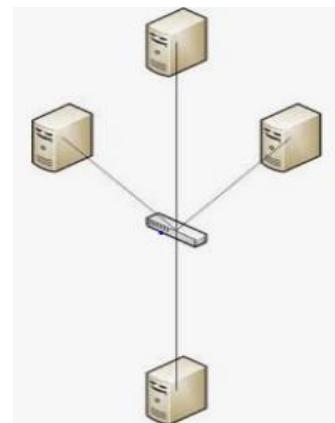
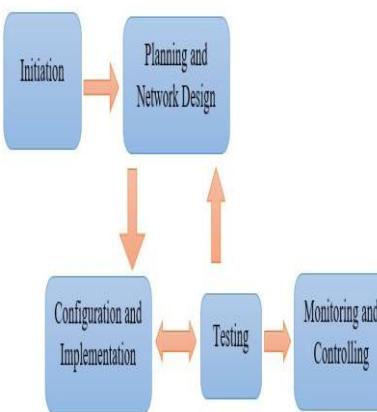
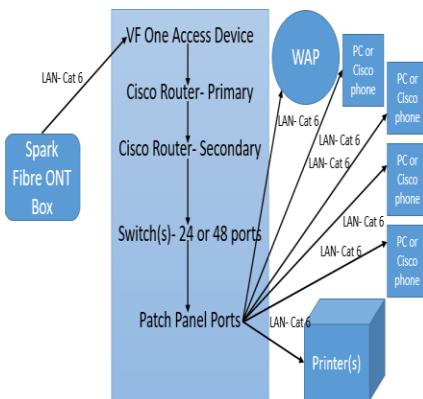
Functional Prototype

# Configuration of Live Site - NDS (New Desktop Solution)

Team: Puneet Gundli and Kulvir Singh

Advisor: Ian Hunter

Client: Andrew Wharakura



## INTRODUCTION

We were developed a project *Configuration of Live Site-NDS (New Desktop Solution)* for New Zealand Housing Corporation (NZHC). In this project we were implemented a live site setup which will helpful for increasing the efficiency for end users with the help of new desktop solution and performance enhancing features.

Over time NZHC's website has become outdated and this showed up in low performance and limitations issues.

## DEVELOPMENT

**Initiation:** In the first phase of this project we set up a meeting with our client regarding the project requirements. After sorting out the client requirements and having discussions on requirements needed we began work on producing a live site setup that had the required up to date features to ensure better performance.

**Planning and Network design:** In the planning and network design phase, our team produced a topology architecture, and once the client's verification of this was given we moved on to the second step where we gathered the data and identified what was required according to client requirements. This then led to the team working on a configuration to build a network with the help of testing access points.

**Configuration and Implementation:** We have completed the configuration and implementation of all devices in a proper manner as per the client's requirement. Documentation related to the implementation and configuration of the network was undertaken at this stage.

**Testing:** We used two types of testing phases. Pre and post testing. For the hardware devices pre and post testing has been done and for the application we only post-testing was completed.

**Monitoring and Controlling:** All the devices are under the monitoring and control of Housing New Zealand Corporation. We worked on the system under their guidance.

**Client Handover:** Our client appreciated our hard work on this project as well as being impressed by our technical specialist work that we provided.

## CONCLUSION

As per requirements of the client this project is long term and has multiple teams working on it. For our part, all activities were completed as per client requirements, and which were presented in the project proposal. Future planning has been recommended to the client.

We are very thankful to all WelTec and HNZC employees who directly and indirectly supported our project.

# Data Remanence Project

**Team:** Andrew Sharma, Jordan Ash, Lani Lambert

**Advisor:** Dr. Dax Roberts

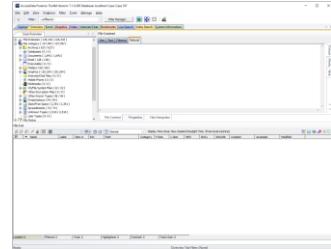
**Client:** Provisionally NZ Security Magazine



Hard Drive in Static Bag



Tableau Forensic SATA/IDE Read/Write Bridge



AccessData Forensic ToolKit

## INTRODUCTION

The purpose of this project was to conduct a thorough forensic analysis on a set of 40 hard drives that were sourced from the second hand New Zealand market. The primary objective being to find remanence of personal and company identifying information. Another goal was to publish a report/article based on the findings of this project with a reputable publisher amongst the information technology and security industry.

This project was undertaken to refresh previous studies and research on data remanence and to show that WelTec is relevant in the forensic space through means of academic publication. It provides an immense level of information based on how people and companies deal with data and if people's behaviours towards data has changed since the last study of this kind. Taking into consideration people's habits towards personal data and if any precautions are taken towards data sanitisation.

## DEVELOPMENT

Firstly, we were granted permission to use the previous students data set to refine our technique and develop our methodology. Our methodology was based off of Dr. Dax Roberts initial methodology which was approved by Dr. Roberts himself as he is an expert in the forensic space.

Then our Project Coordinator, Robert Sutcliffe started sourcing the hard drives from throughout New Zealand. This was done so that we as examiners did not know of the origin of the hard drives. Upon receiving the hard drives, they were numbered for accountability purposes.

We acquired these hard drives in very small batches from Robert Sutcliffe and proceeded to the first step, imaging the hard drives. To prevent contamination of data on these hard drives, we used a forensic tableau that was acquired from Paul Bryant.

Each drive is then associated with a case number and analysed. A form is then created for every hard drive as per case, with its unique identifiers such as serial number and model. The contents of the hard drive are documented and checked by another examiner. The image of the drive and its documentation is then stored securely.

Once all the hard drives were analysed, it was time to make sense of the raw data at hand. The raw data was then analysed and sorted to be reviewed and represented in easy to understand graphs.

Finally, a report was compiled based off of the findings. The report consisted of an introduction, findings and statistics, interesting cases, conclusion and recommendations.

## CONCLUSION

The findings of this project once again validates previous studies that has been done that safeguarding data still remains an issue. We were able to get very valuable information which implies that people and companies alike are still unaware of sanitising their sensitive data.

With the guidance and support of Dr Roberts, this project has been a great success. We were able to compile a report based off the data we collected. More so our report could be tweaked in ways to suit various publishers in the information technology sector.

# Digital Corpora

By DFIR Sleuths:

**Team:** Corran Cockburn; Abdul Farah; Kurt Knudsen; Rory Wagner

**Client:** Paul Bryant

**Advisor:** Leonie Trower



## INTRODUCTION

The Digital Corpora project was developed in response to a lack of available sources of digital forensics training material.

This project aimed to address that concern by creating a plausible case scenario.

The scenario was designed to be an enjoyable and fascinating experience for the students who take the forensic papers taught by the client.

## DEVELOPMENT

The team developed a case based on a scenario involving drug importation.

The development process involved coming up with a realistic scenario that could be used to generate evidence for students to investigate.

In order to create the evidence the development process involved rigorous testing throughout the project lifecycle. This was crucial for the project to have any credibility as the results must be reproducible.

## CONCLUSION

The final product produced was a scenario that would appeal to students undertaking the client's forensics papers.

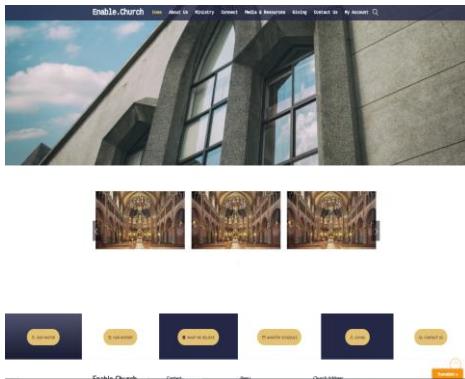
This product provided a multitude of interesting artefacts to keep future users of our work intrigued.

# Enable CMS v1.0

Team: Tatenda Mvere, Issa Farah and Kraig Dongui-is

Advisor: Ian Hunter

Client: Clement Sudhakar



Home Page# 1

Contact Us page # 2

Giving Page # 3

## INTRODUCTION

Enable CMS v1.0 focused on creating a content management system (CMS) based website for a charitable Christian organisation. This system is meant to create and manage digital content without user having to have advanced coding knowledge.

The overall goal for the project was to develop a web solution for the client with a fully functional website interface and an administrator section which works as the CMS interface for the website.

## DEVELOPMENT

The project consisted of four main stages planning, system analysis and design, development and testing. The Kanban methodology was used to allow for a visualisation of the work and workflow.

In the planning stage Requirements were gathered and uses to create a business proposal for the client.

At the System Analysis and design stage development of UML diagrams and interactive wireframes occurred. The UML diagrams described the responsibility for the system and communication that would occur with the user. The interactive wireframes allowed for early testing of design to ensure great usability for the site.

At the Development stage the project was developed using Bitnami WordPress due to limited coding skills between the team, WordPress was selected to develop the project. In WordPress the team were able to find a theme plugin.

In the theme plugin the team were able to find related templates to the client's application, the team used the templates to modify the client expectations.

At the testing stage various testing techniques were used to test the readiness of the site.

## CONCLUSION

The project team was able to provide the client with a product that met most requirements.

Although not all requirements were met they were documented for future improvements that could be added on to this product.

Overall the team was able to gain technical, documenting and managing skills throughout the project life cycle which will be useful in future.

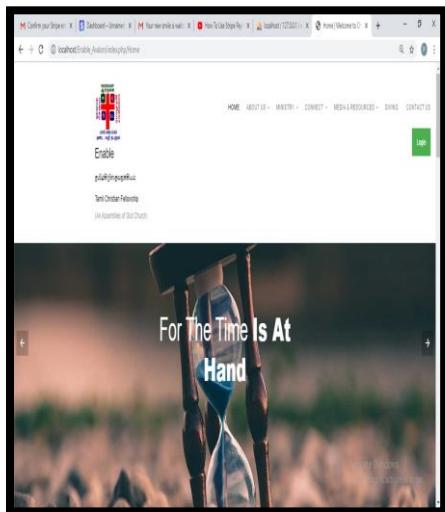
The team was able to collaborate well to ensure a viable product would be produced for the client at the same time gaining good experiences in the process.

# Enable CMS V2

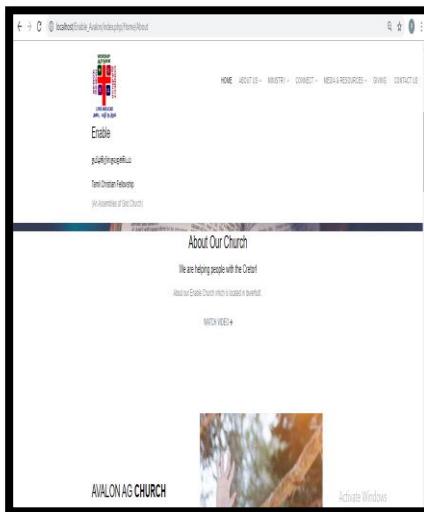
**Team:** Khushleen Kaur, Narminder Singh, Karandeep Singh Sandhu

**Advisor:** Ian Hunter

**Client:** Clement Sudhakar Swarnappa



Home Page



About Us page



Admin page

## INTRODUCTION

Our project name is *Enable CMS V2*. The project was to provide an online platform for a church to reach its parishioners. The church currently only has a very basic landing page and they do not have a donation system where parishioners can donate to the church.

Therefore we have decided to make a website for the church in which people will get to know upcoming church services and events. This will also include prayer sessions and sermons. The team also planned a ‘giving page’ where parishioners can donate money to the church if they wished.

## DEVELOPMENT

First phase of the development stage was to gather the client’s requirements and once obtained the team had to choose the methodology best suited for this project. After considering the different methodologies it was clear that we should choose the Scrum methodology.

### Design stage

Here we had to implemented the system analysis and design component which is a blue print of the website and contains wireframes, use cases etc.

We used Code-igniter and searched for the built-in templates. The website is developed in PHP Storm which is easy to use, and it worked smoothly for our project.

‘Xampp’ was chosen for our server to run the website because it is easy to run and install. It also has a number of tools like Apache; MySQL; PHP and HTML.

We used MySQL database to connect the data of the website into the database. We used CMS in the website which enabled us to insert data from the admin page to main website and database.

### Testing

Testing was undertaken to ensure the integrity of the website. Further testing using User Interface, UX, and Heuristic was also undertaken

Evaluation testing was done to check the quality of the website.

## CONCLUSION

To enable CMS V2 website we successfully implemented to the client’s localhost at their request.

Overall, the project was completed to our satisfaction and within the timeframe allowed.

There is room for future improvements to be made as we could not undertake them all in the time allowed for project.

As a team we learned lot of new things.

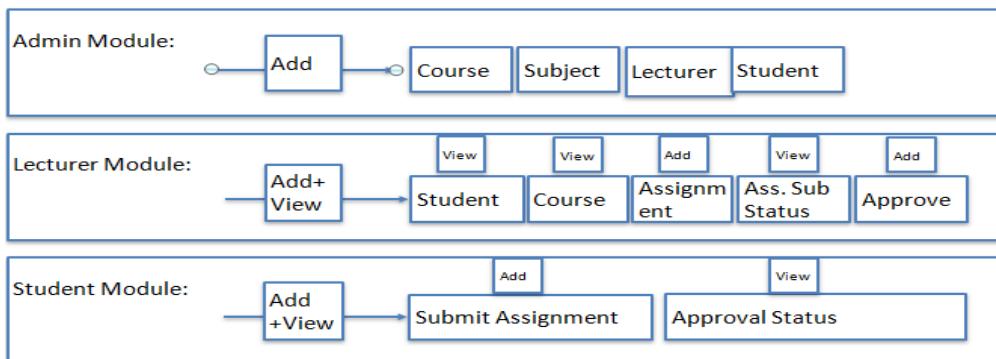
# Ghost Detector

Team: Balpreet, Sherwin, Ketan

Advisor: Robert Sutcliffe

Client: Xanthia Bollen

## Website Module Flow



## INTRODUCTION

Many students, particularly internationals, are using ghost writers for assignments and are graduating without the skills that their qualification claims, this leads to a very poor level of achievement thus besmirching everyone's reputation in the education industry. In this project, our team will collaboratively develop a website which can detect ghost written work and significant changes in writing capability. This will then commence a right of questioning on content and ideas that would reveal a ghost-written paper.

The Ghost Detector was developed for WelTec to detect ghost written work.

## DEVELOPMENT

- 1) Initially, in the beginning, phase, our team has selected the project and have submitted the bid to the project coordinator. Also, the project proposal has been submitted to the client and has been approved.
- 2) Our team has gathered and confirmed all the requirements from the client-side.
- 3) Project methodology- Our project team chose to implement the agile methodology (scrum)
- 4) Our team has started with the system and design analysis of the website which consists of the prototype, Wireframe, Use Case, Activity diagram, ER diagram, database schema and has been approved by our advisor.
- 5) We had installed the XAMPP server for the website.
- 6) We downloaded 'COMPOSER', which is a dependencies file for the PHP.

- 7) Done with the phpMYadmin Database table creation.
- 8) Used Bootstrap, HTML and CSS for the frontend home page.
- 9) Integrated website with Proofreading tool. With this, we can easily check the result of an assignment online.

The Ghost Detector website has been tested thoroughly including functional testing, integration testing and exploratory testing.

## CONCLUSION

Our team has built a fully functional website to detect Ghost Writing work.

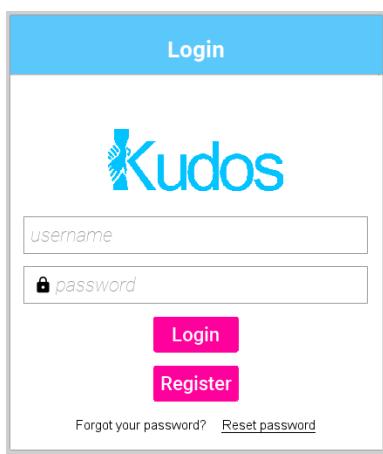
Our client is happy with the website and the team were able to deliver all the deliverables before time. Likewise, the team has produced up to date documentation which can be considered as proof of work completed.

# Good Deeds Gamification

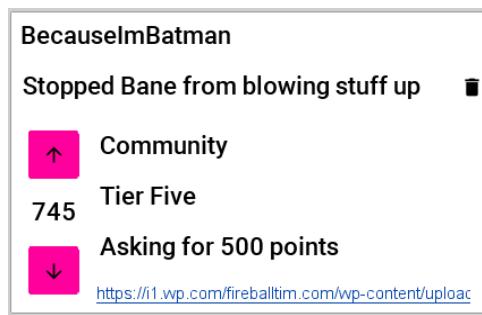
Team: Aleisha Perry, Kurt Gentil

Advisor: Chalinor Baliuag

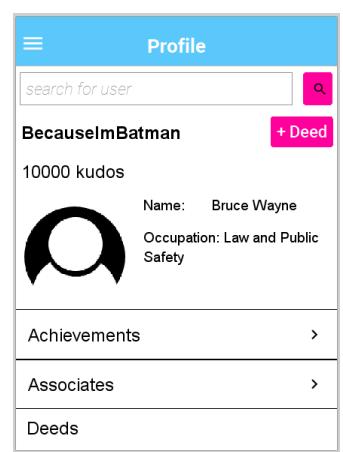
Client: Robert Sutcliffe



Kudos Application Login



Example of a Deed



Kudos User Profile Page

## INTRODUCTION

The Good Deeds Gamification project aims to encourage goodwill within the community by providing a cross-platform mobile application where a user can post a good deed they have performed in return for peer esteem. The client has a strong desire to see an improvement in the level of good performed within a community, and sees the achievement reward system deployed in the gaming industry as a way to encourage the gamer generations to be a part of this.

This project developed the foundation of the app, dubbed Kudos, with account creation and management, a relational database tailored to the app, Deed, Group and Event, Associate, and Achievement displays, and other front-end templates ready for back-end functionality.

## DEVELOPMENT

For the project we implemented the OpenUP methodology. It was well suited for a small team and for the level of communication the client required. OpenUp has four phases of project development:

1. **Inception:** This phase included requirements gathering, client negotiation, and writing the Project Proposal.
2. **Elaboration:** This phase was where a greater understanding of the requirements were established, primarily through Systems Analysis and Design.

3. **Construction:** This phase included all development and testing of the application, where each iteration was a complete development cycle.
  - a. *Iteration One* - During this iteration the skeleton of the application was developed. The user registration, login, and account management were implemented.
  - b. *Iteration Two* - During this iteration the features of the application were developed and built upon.
4. **Transition:** Where the user guide and handover documentation was developed in preparation for future developers.

By the end of the project the team was able to meet the client's requirements, including additional features that were assumed from the client's vision of the final product. This leaves the project in a state ready for future developers to pick up where we left off, giving them a clear guide on how to do so.

## CONCLUSION

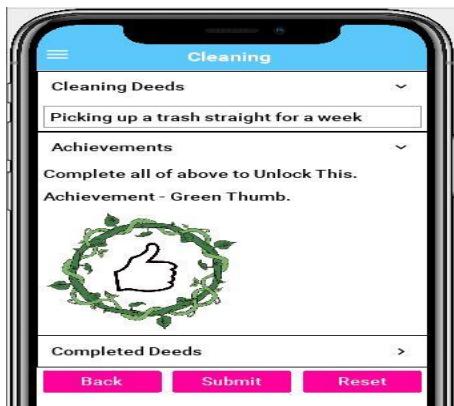
Overall the team used utilised their skill sets, both from what was taught at WelTec and what was researched and learnt during the project. The project team had to learn new technologies fast and focus on time management in order to deliver a high quality product in a short time frame. They were able to do so due to preparations made during the project's inception phase.

# Good Deeds Gamification

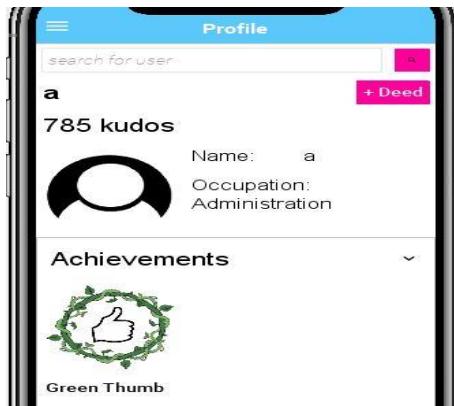
Team: Erna Marie Trambulo, Elaine Kuizon, Nino Noel Tolentino, Chinmay Vijay Lele

Advisor: Reza Moosaei

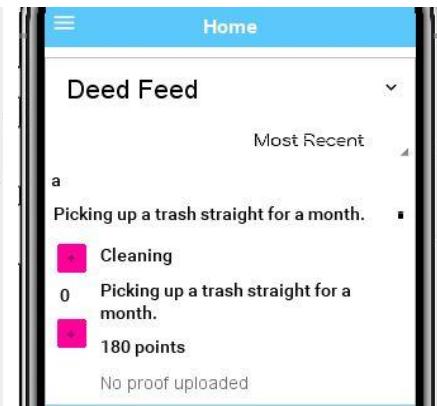
Client: Robert Sutcliffe



Sample Good Deed



Kudos Profile Page



Kudos Home Page

## INTRODUCTION

*Good Deeds Gamification* is initially developed by the previous team, **Byte Me**. This mobile application is named *KUDOS*. It allows users, called associates, to upload photos of good deeds with the corresponding kudos points. Associates can also upvote or downvote uploaded deeds according to their own judgment. The more they post good deeds, the more points they get. An associate can get 'achievements' by completing a certain category of good deeds to compete with other associates.

The group decided to continue developing *Good Deeds Gamification* because it aims to encourage people to do good deeds and spread positive behaviours within the community. It is also a good opportunity for the group to showcase project management skills and technical knowledge in developing a software project.

## DEVELOPMENT

We started the project by studying the previous development of Byte Me and by gathering all the requirements from the client.

The group chose the Kanban methodology for the software development life cycle.

During the development, we set internal rules and regulation as our team guidelines. We agreed to conduct meetings weekly to ensure progress on our project. The team meetings helped us monitor each member's assigned tasks and gave us time to share our ideas and suggestions about the project. The client meetings helped us satisfy client's requirements by giving an update on what

we have accomplished and collaborate on any changes that have to be made.

The advisor meeting guided us throughout the entire development by seeking advice concerning system analysis and design aspects of the project.

As the project continued, the group had issues with the delay in the schedule. To solve this issue, we created recovery plans to enable us to stick to the plans and to keep the project on time.

Our group has four members, one of the challenges we had in a group is that we only have one developer so the other three manage the project in doing project admin, system analysis and design, testing, and documentation. We work together, and we make sure that we accomplished our tasks every day. We have a good working relationship.

The most challenging part is the coding. Our developer took a lot of time in adding some features, in that situation we see the disadvantages of having just one developer in a group. But still, we managed to recover delays by helping each other.

In the last part of the project we did four types of testing - unit, integration, functionality, and acceptance testing. The result of these tests were positive as in general all passed.

## CONCLUSION

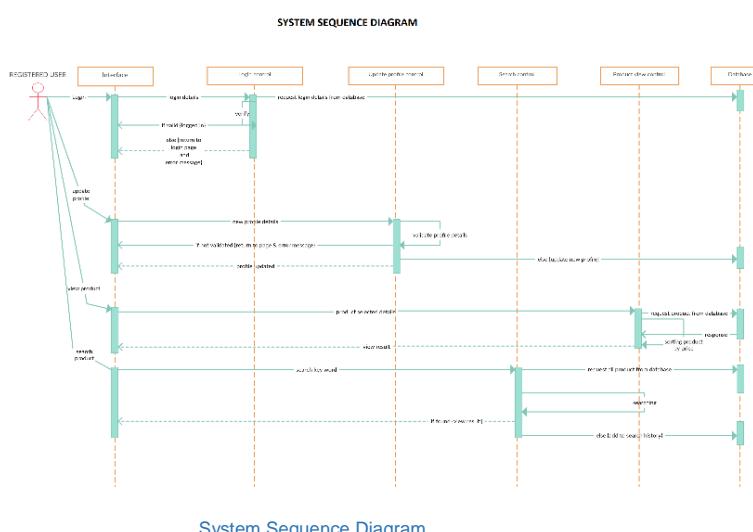
Even though we were not able to accomplish all the client's requirements in the time allowed, the client stated they are still happy and satisfied with the outcome of the project's deliverables.

# Health Supplements Price Comparator

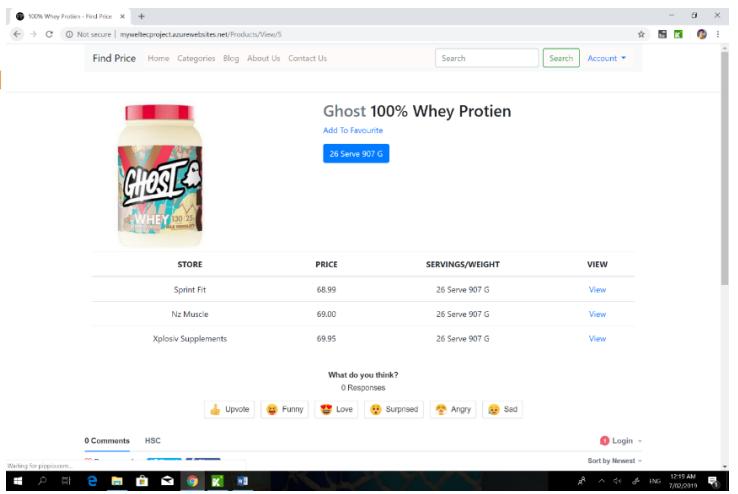
By: Navpreet Singh

Advisor: Clement Sudhakar Swarnappa

Client: Gurpreet Gill



System Sequence Diagram



## INTRODUCTION

The project built a price comparison website for gym supplement products, addressing a gap in the market. This website will help the buyers to compare supplements prices listed on different websites and save time. Visitors can view the latest prices offered by various e-retailers along with discounts deals and best prices across all the e-retailers when searching for the product they desire to buy. The fitness industry is an untapped territory and my client is interested in seizing this opportunity to partner a personal trainer-referral service, leveraging the traffic to monetise and advertise his referral business.

## DEVELOPMENT

The methodology used for this project is KANBAN. The reason for selecting Kanban was that this methodology allows for visual signals if there are any issues with achieving project goals as well as it allows for continuous improvements by obtaining client feedback early in the process. As I was the only team member for this project, Kanban was a better approach than scrum.

The project started by creating a work task list which included all the requirements for the client. I had set work limits to pick up three tasks at any given point and work through the task list. This helped me to stay focus and produce some deliverables which can be shared with the client and get feedback throughout the process.

Extensive testing using external services was undertaken, and proved very valuable in detecting problems.

### Tests included:

1. Penetration test using [pentesttools.com](#)
2. Interface testing automated with [Katalon Recorder](#)
3. Google page insights report

Technologies used included LINQ queries efficiently to retrieve and modify data. I wrote few complex queries where I wrote query inside another query. I used 'Gridbox' for my CSS front-end framework. An Admin Panel 'JSON API' was also developed so it can be called via Ajax to retrieve product information. I learned how important is to secure a website and ways it can hacked or manipulated. SHA256 encryption was implemented on all sensitive data like user password.

## CONCLUSION

All the objectives mentioned above have been achieved. A working solution was delivered to the client within agreed timeframes and all the requirements for MVP have been implemented.

The future enhancements which can help to make this product better.

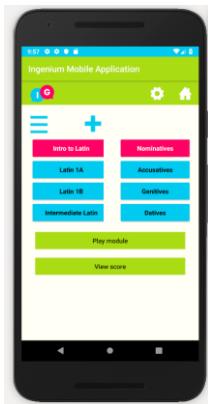
1. Product price alerts for Users.
2. An AI tool to help users to find a perfect supplement for them.
3. Trainers space to share product reviews and fitness blogs.
4. Video reviews for products
5. Product Micronutrients Information

# Ingenium Mobile Application

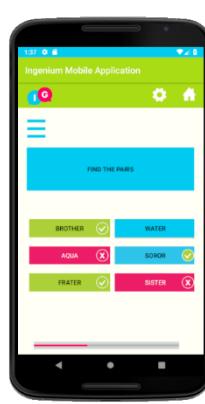
Team: Abi Harper, Kelvin Lai and Surbhi Sajwan

Advisor: Chalinor Baliaug

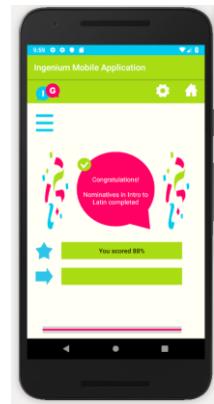
Client: No client



Select a class and module



Play the game



View your score

## INTRODUCTION

Ingenium is an Android application which gamifies the language learning process. The application allows tutors to create custom datasets of language courses they are teaching which the student can import into the application. The application generates games for the student to play through, augmenting language learning materials and adding to the learning experience.

While there are many language learning applications in the marketplace, there is a niche for an application which allows customisable content where the tutor controls the syllabus.

## DEVELOPMENT

Ingenium was developed using Android Studio in Java and features a local SQLite database. Unit testing was performed inside Android Studio, implementing JUnit, Espresso and Hamcrest.

Based on wireframes, UI development began with creating UI components such as buttons and icons. In lieu of a breadcrumb trail to keep track of menu clicks, the UI was designed so that the user can see which options they have selected with a glance.

In the early stages, backend development focussed on reading datasets from CSV files and storing that data in the application. As the application progressed, a local database was added so that the dataset could be read and stored in the database and retrieved when a game is started.

There are four different types of games in Ingenium and the games are randomly generated so that no two games are the same. Some games use a flashcard system, while another requires the user to match pairs of words with the correct translation. Tutors not only include words with their translations in the dataset, but also sentences where the student must identify which word in the sentence is missing.

Since Ingenium allows the tutor to create a custom dataset, the application can manage many different languages. The team have included datasets in Latin and German to showcase the application.

The project followed the OpenUP/Basic methodology which gave the project direction and structure.

## CONCLUSION

Team Ingenium divided the requirements between core and extended requirements. The core requirements were a focus for the project and all core requirements were met. The extended requirements offer a direction for future development of the application.

Ingenium is aimed at users in a classroom settings or environments with a student/tutor dynamic, and the application is intended to enhance the language learning experience. The application is intuitively designed, flexible and customisable, filling a gap in the Android marketplace.

# IoT Server Room Monitoring System

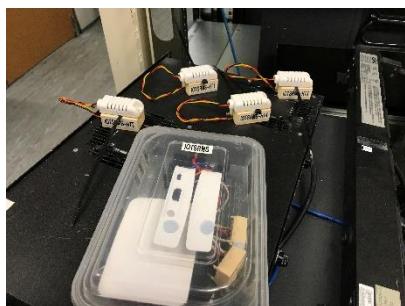
Team: Andreas Vassiliadis and Marcus Havell

Advisor: John Gould

Client: Jeff Echano



The deployed system in B203



The IoT Gateway and Sensor hardware



Historical graphing within the system

## INTRODUCTION

The IoT Server Room Monitoring System (IoT SRMS) is a product which was developed for Jeff Echano so he could effectively monitor temperature and humidity conditions within the WelTec B203 Server Room. The system collects this data with four AM2302 sensors and uses an IoT Gateway solution to pass this data to a Virtual Machine which is hosted on a WelTec VSphere server. The data is stored within an InfluxDB® database and displayed on a Grafana® dashboard. The system also sends email alerts in the event that readings exceed ASHRAE compliant levels.

## DEVELOPMENT

This project was developed using Scrum methodology as specified within the Project In a Box™ Community Edition application. The development of the IoT SRMS fell between the 1<sup>st</sup> of April and 4<sup>th</sup> of June 2019, with this work being broken down into four Sprint periods:

**Sprint 1:** Evaluation of open source database and data visualisation applications to determine which combination would best meet the needs of the client.

**Sprint 2:** Creation of the initial IoT SRMS as a “Proof of Concept”.

**Sprint 3:** Expanding the initial version of the IoT SRMS for additional functionality and preparing the system for deployment.

**Sprint 4:** Deploying the IoT SRMS into the WelTec B203 Server Room and optimising the system’s functionality.

## CONCLUSION

The IoT SRMS was successfully deployed into B203 during Sprint 4, resulting in both client and advisor satisfaction.

The client has been provided with documentation outlining how the system could potentially be scaled in the future and a list of areas which future project students could potentially work on to further expand the functionality of the IoT SRMS.

# Journey of Self Discovery

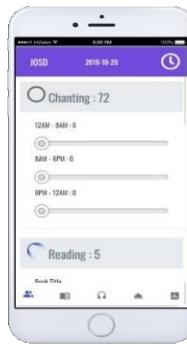
Team: Luis Torino (PM), Gwangwoo Kim

Advisor: Ian Hunter

Client: Sandeep Vankadari



Login page



Recording page



Overview for activities page

## INTRODUCTION

This project is for building a mobile app to record ISCKON devotees' commitments, and the app could figure out the output of their commitments. Those devotees have been already tracking their activity with software of Microsoft office; however it needs to consume lots of hours to input the data, and also that method is hard to manage. Hence the project team introduced a new mobile app to use for the devotees. Now the devotees can record their religious activities such as chanting, reading, hearing, service, and much more service with the new mobile app.

## DEVELOPMENT

The client requirements that the mobile app should operate with multiple operating systems (OS) such as iOS and Android OS, and also the app should run by the Azure cloud service. These requirements were seriously challenging to the project team.

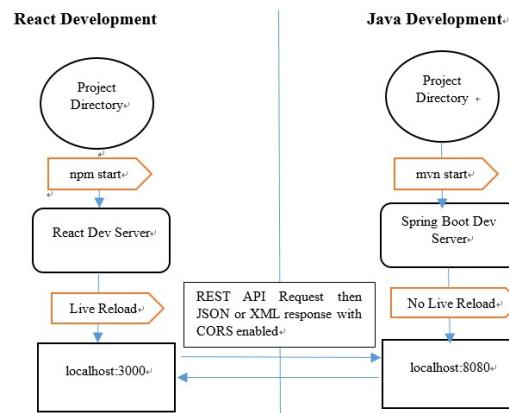
Despite a high level of requirement, the project team eventually found out the solution with continuously researching for it. The solution was the hybrid web app instead of developing an individual native app. The essence of hybrid app is a web application. But the web application could be covered with each OS's native code. This was our team strategy for this project, and it can reduce development hours compared to building two sorts of native apps.

On the one hand, the project team utilised the iterative design model, and the team regularly had met with the client for showing the deliverable output and giving back feedback. With the

feedback, the project team can generate better output.

The notable point is that the project team had introduced a new software architecture which consists of React JavaScript for frontend, Springboot for backend and MSSQL for a database. Those components have a unique feature, which is available for individual development. In other words, there is less interference between developers with the architecture which initially devised for frontend developer and backend developer.

Figure 1. The system architecture of the project



## CONCLUSION

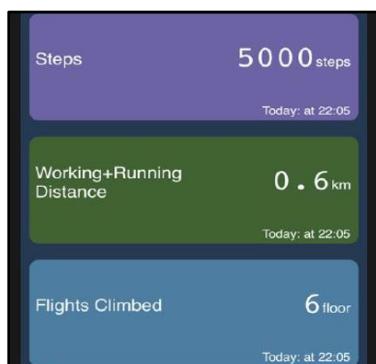
Although the project team had tried to achieve all of the requirements, some rest of works remained. The good point was that the project team well understood the client demands and brought the client satisfaction with the project output. From these lessons and learned, the project team believe IT technology can provide convenience to the community.

# Jump-It

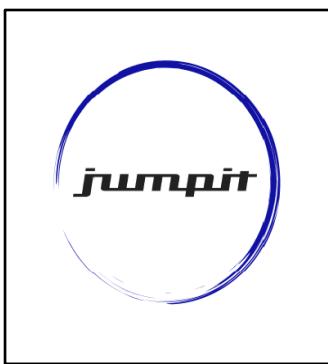
Team: Aidan Reale-Key, Qingyang Liu, Yunfei Hao

Advisor: Ian Hunter

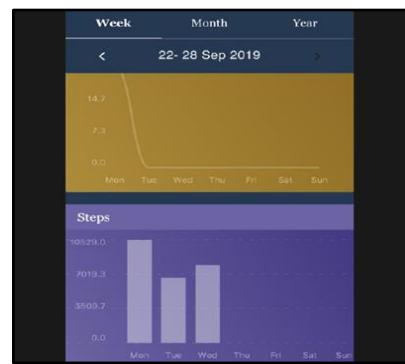
Client: Clement Sudhakar



Workout activities measured



Jump-It Project Logo



Health indicators graphed

## INTRODUCTION

Jump-It is a health management application designed for health-conscious people to plan exercise and diets, monitor physical activity, track health levels, intakes and maintain food lists.

Many people nowadays are increasingly focused on their health and see mobile technology as a way to closely monitor and maintain their health needs. Following Client requirements, our goal was to create primarily a strong interface so that future projects could use it as a starting point to either create more content for the Jump-It application or use it as a framework to create other solutions.

## DEVELOPMENT

In the beginning of the project, we set out to do some research on what applications were already available and what we could do differently to make ours stand out from the rest.

We designed several kinds of system analysis diagrams to figure out how we could achieve the required features and how our system would perform and cooperate between different components. We designed diagrams such as use case diagrams, activity diagrams and system sequence diagrams.

We created two prototypes (one static, one interactive). The design was simple and easy to navigate with 4 main modules (plan, workout, measurement and food). The prototypes were evaluated by the Client and we proceeded with development.

We used a JavaScript framework called React native to develop for two platforms, iOS and Android. This technology helps us share the code on both platforms. We used express.js to develop our backend program to provide the necessary API.

For testing of the application, we did unit tests, integration tests and system tests. We did unit tests when we develop every module in our development phase. In our final testing phase, we finished our integration tests and system tests.

Finally, the developed mobile application underwent a series of user acceptance tests with outside participants to evaluate the usability of the application and whether the interface is acceptable for users.

## CONCLUSION

Our project completed development on 4/10/19 and was delivered to our client on 11/10/19.

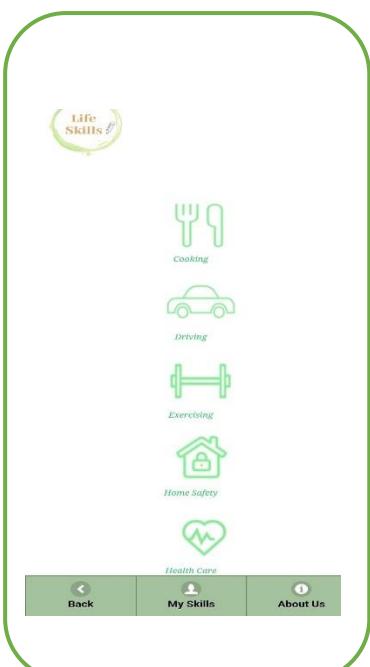
We met all requirements and our client was satisfied with the result. The application can be supported on Android and iOS platforms and a working server was created to help run the application.

# Life Skills V1.0

Team: Aarju Karki, Joana Sino

Advisor: Ian Hunter

Client: Clement Sudhakar Swarnappa



Home Page of the Application



Breakfast Recipes



User's Upload Page

## INTRODUCTION

Life Skills v1.0 is a mobile application that provides users with information related to five basic skills such as cooking, driving, exercises, home safety and health care. All the skills have their own categories and with one click it will take you to the respective pages. This mobile application also allows users to add their own activities related to the skills. For example, if a user has made a new recipe, they can add it to the application along with an image of the meal.

It is difficult to start a new life in a new country or place. It is more difficult when one has just started living on their own without relying on other people. Many new international students come to New Zealand every year for study and everything seems to be challenging, even the basic day to day skills like cooking.

Using this application, users can gain the information that might be useful in day to day life.

## DEVELOPMENT

Life Skills v1.0 has been developed using a framework called appery.io. This particular framework has been used as it has almost all the features to develop Life Skills. The events are easy to use, and functions of this application are not that complicated.

The project was completed using the Agile scrum methodology. The team started initial design followed by prototyping and then the project team started development. The team has met all the requirement as expected by the client.

After the Development was completed, the team perform manual testing and prepared the report based on the testing results. The application has been refined after the testing results.

It was sometimes difficult for the team to manage the documents as it consisted of only two members, however, the team have given their best to manage the project.

## CONCLUSION

The project Team has successfully completed the project and also handed recommendations and further improvements documents for the future project. The team had a rewarding experience working in the project and learnt many aspects of undertaking a project.

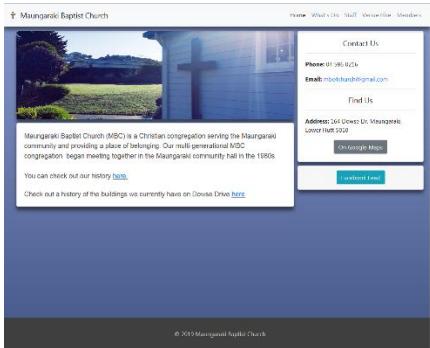
The project experience boosted the confidence of the team members, not only with the technical field but also in terms of communicating with people.

# MBCWeb

Team: Yinan Wang and Thomas Williams

Advisor: Dax Roberts

Client: Maungaraki Baptist Church



Home page

Maungaraki Baptist Church	
Edit Admin	
Aguila Family	Arroyo Family
Christine Aguila Phone: 04-361426 Email: mbcwebchurch@gmail.com Find Us Address: 161 Queen St, Maungaraki Lower Hutt 5012 <a href="#">View Profile</a>	David Arroyo Phone: 04-361426 Email: mbcwebchurch@gmail.com Find Us Address: 161 Queen St, Maungaraki Lower Hutt 5012 <a href="#">View Profile</a>
Rates Family	Bell Family
Jeffrey Rates Phone: 04-361426 Email: jrates@email.com Find Us Address: 161 Queen St, Maungaraki Lower Hutt 5012 <a href="#">View Profile</a>	Sergio Bell Phone: 04-361426 Email: sbell@email.com Find Us Address: 161 Queen St, Maungaraki Lower Hutt 5012 <a href="#">View Profile</a>
Bradford Family	Carr Family
Marilyn Bradford Phone: 04-361426 Email: mbcwebchurch@gmail.com Find Us Address: 161 Queen St, Maungaraki Lower Hutt 5012 <a href="#">View Profile</a>	Elliot Carr Phone: 04-361426 Email: ecarr@email.com Find Us Address: 161 Queen St, Maungaraki Lower Hutt 5012 <a href="#">View Profile</a>
Carter Family	Casey Family
Jeffrey Carter Phone: 04-361426 Email: jcart@email.com Find Us Address: 161 Queen St, Maungaraki Lower Hutt 5012 <a href="#">View Profile</a>	Casey Casey Phone: 04-361426 Email: ccasey@email.com Find Us Address: 161 Queen St, Maungaraki Lower Hutt 5012 <a href="#">View Profile</a>

Members page

Maungaraki Baptist Church	
Edit Admin	
Groups	Events
Aguila Family aguila@gmail.com <a href="#">View Profile</a>	100
Army Family armyfamily@gmail.com <a href="#">View Profile</a>	100
Bates Family batesfamily@gmail.com <a href="#">View Profile</a>	100
Bell Family bellfamily@gmail.com <a href="#">View Profile</a>	100
Bradford Family bradfordfamily@gmail.com <a href="#">View Profile</a>	100
Carr Family car@gmail.com <a href="#">View Profile</a>	100
Carter Family carterfamily@gmail.com <a href="#">View Profile</a>	100
Cassy Family cassyfamily@gmail.com <a href="#">View Profile</a>	100
Conner Family connerfamily@gmail.com <a href="#">View Profile</a>	100
Dewees Family deweesfamily@gmail.com <a href="#">View Profile</a>	100
English Family englishfamily@gmail.com <a href="#">View Profile</a>	100

Members page (Admin view)

## INTRODUCTION

The purpose of this project was to create a website for Maungaraki Baptist Church which fulfilled the needs for a point of public contact with the local community, and a database for managing members, groups, events, email, and venue hire.

The team entered the project with the intention of creating a website that reflected Maungaraki Baptist Church's friendly, active, and capable image to any online visitors.

## DEVELOPMENT

The project began with some coordination among the project team over what the broad layout of the website would be; its pages, features, and back-end set up.

Thomas specialised on the front-end: the website pages, their design, layout, and user interactivity.

Yinan focussed on the back-end: server configuration, data interfaces, and database design.

The practical side of the project started with design, which quickly transitioned to development as the client confirmed their satisfaction with the proposed structure and visual design.

The project was managed with Kanban, a lean and straightforward project management methodology, using OpenProject, a somewhat troublesome web-based project management system to digitise it, and maintain and allocate work packages.

The layout of the website was developed with Bootstrap, a very helpful HTML, CSS, and

JavaScript framework for building modern, responsive, mobile-first webpages.

The website backend was programmed in Node.js, which allowed the team to use their JavaScript programming expertise on the server-side as well as for scripting the webpages.

In the end, the project provided Maungaraki Baptist Church with a satisfying product. A website with a home page for introductory information, a What's On page presenting notices and all the events that Maungaraki Baptist Church has upcoming, a Staff page giving the user an introduction to Maungaraki Baptist Church's current leaders, a Venue Hire page containing a Google Calendar that indicates when the church building is available for event hire, and a Members page which requires a login, where church members can access a church directory, and administrators can manage members and their groups. These pages each have a corresponding admin page which can be used to update and maintain content.

## CONCLUSION

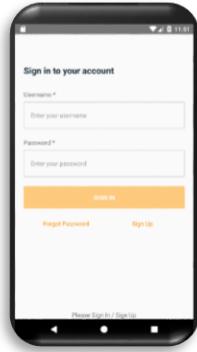
Through highs and lows, the project proved to be challenging, but provided plenty of new web development experience to the team, as well as creating the satisfaction of having given a much-needed customised website to a community pillar at no expense.

# MySay QR Code Scanner

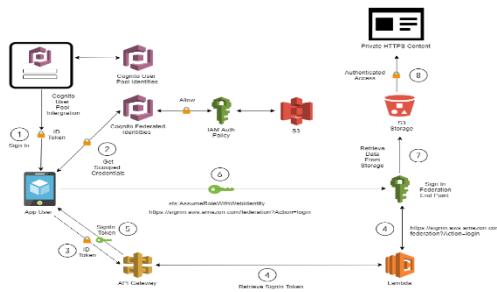
Team: Chantelle Ward and Mike Love

Advisor: Dr Sara Bilal

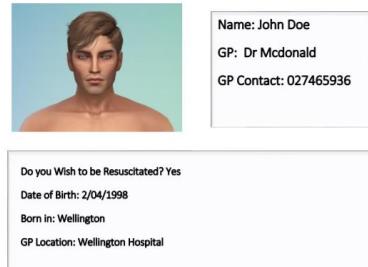
Client: Wellington Free Ambulance



Mobile design



Architecture design



What information is stored

## INTRODUCTION

MySay project was a prototype of a cloud-based application for paramedics to use in an emergency. It has been created for our client Sean Thompson, representing Wellington Free Ambulance and Whitireia Polytechnic. This application allows paramedics to scan a QR code registered to a person, to view their advanced directive.

Advanced directive is a written form to relay if a patient would like to be resuscitated. Currently, only a paper-based directive exists which can be hard to locate or out dated.

Using Amazon Web Services allows for a serverless application with quick and easy access to data stored in the cloud.

## DEVELOPMENT

The project was to develop a functioning prototype of an online advanced directive stored in a cloud infrastructure.

In an emergency, an advanced directive can often be difficult to locate for the patient, so this application will help in gaining immediate access to a patient's advanced directive.

Creating this application will move the paramedics' current design to a cloud based more modern solution, which will reduce the amount of time taken to find the results for an advanced directive for patients.

MySay application gives paramedics, nurses, and GP's secured easy access to patient information stored in an AWS S3 bucket.

## CONCLUSION

MySay mobile application is a functioning prototype which allows registered paramedics to scan patients QR code to view their advanced directive.

This application functions on android devices including tablets and mobile phones as long as there is internet connection to access patient data stored in the cloud.

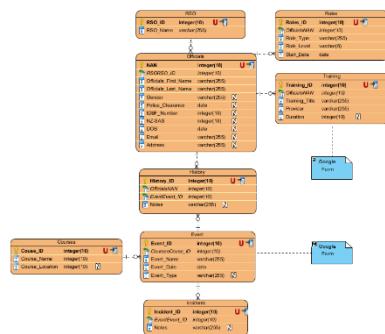
Once a paramedic registers and has been confirmed by administration then a paramedic can sign in the application, scan a patients QR code and view the advanced directive.

# National Region Dragon Boating Membership & Regatta

Team: Kulukona Tupou, Jason Pan and Wiremu Sharman

Advisor: Steve Cosgrove

Client: Jacob de Feijter



Final ERD

A screenshot of a Google Sheets spreadsheet titled "National Dragon Boating Database". The sheet contains a table with columns "A" and "B". Column A is labeled "RSO Name" and column B is labeled "RSO Name". The data consists of 12 rows, each containing a unique identifier and a name, such as "105720 CRDBA" and "109545 Other".

A	B
1	NAN
2	105720 CRDBA
3	109545 Other
4	124578 ADBA
5	143118 ADBA
6	147068 ADBA
7	151407 CRDBA
8	158911 ADBA
9	169643 Other
10	170957 Waikato
11	182598 Aoraki
12	186509 CRDBA

Final Database Table (Officials)

A screenshot of a Google Form titled "Events form". The form contains three fields: "NAN" (with a dropdown menu), "Event" (with a dropdown menu), and "Incidents? (y/n)" (with a dropdown menu). There is also a "NEXT" button at the bottom.

Final Form (Events)

## INTRODUCTION

The purpose of the project was to design and develop a dragon-boat membership and Regatta Management System for the National Dragon Boat Association using Google Sheets and Google Forms.

In the original scope, each member was assigned a club, and then the administrators could build teams for their clubs. Teams will then be broken down into crews for specific events. During the project, the scope was altered, and each member, or official, was instead asked to fill out event and training forms, which could be used to manage where they were regarding progression. The project took into consideration data security, using different permission groups to maintain data privacy and integrity.

A side project was building an interface so that users will also be able to manage their data. The team and client agreed that this would be worked upon if the team had sufficient team.

## DEVELOPMENT

The project development was broken up into six iterations:

### Learning

This iteration was used to understand the technologies used in the project.

### Planning

A development plan was created, including an ERD and Kanban board.

### Initial Development

This iteration was used to develop the bones of the project. Database tables and initial forms were created, reflecting the ERD and more complex processes more tested.

### Initial Review

Review of the initial development.

### Final Development

Links between tables were created, feedback from the review was discussed and some of the tables were modified.

### Testing

The testing phase was designed to allow potential users to test out the forms and for the administration team to test out the database.

## CONCLUSION

This project was developed to manage the National Dragon Boat Associations member's data. Future work includes but is not limited to:

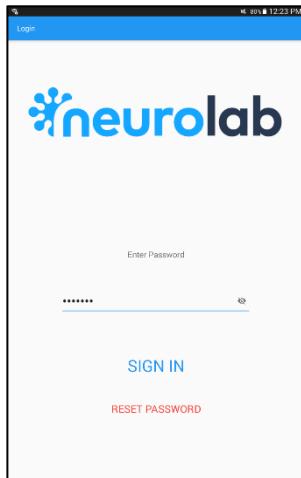
- Creating a reporting system
- Creating an overlaying GUI for data modification
- Completing training form

# Neurolab Application

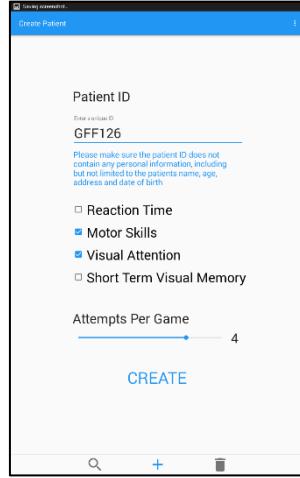
Team: Richard Dasan, Scott Curtis, Brianna Winkels, Jason Krieg

Advisor: Chalinor Baliaug

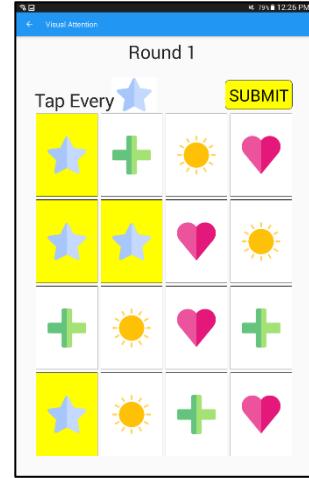
Client: No client



Neurolab Login Screen



Create Patient Screen



Visual Attention Game

## INTRODUCTION

Neurolab is an Android Application developed by Soteria for use in hospital settings. It contains small games for the purposes of measuring patient's physical and mental abilities. Neurolab was developed with assistance from staff at Kenepuru Hospital.

The application has the ability to measure a patient's reaction time, visual short term memory, motor skills and visual attention, and is able to display the results in a graph for each patient in the system.

Neurolab was developed due to many basic measurement tests being performed are paper-based, such as the MoCa test for motor skills. This application focuses on virtualizing these tests to allow for easier access and quicker results.

## DEVELOPMENT

Neurolab was developed using Android Studio. The application uses the Java language and houses a SQLite database. Testing was performed using Espresso and JUnit through Android Studio. GitHub was used for collaboration, backup management and version control.

Soteria followed an Agile methodology with Scrum framework for development. This was done so that the core of the application could be built first, assuring that the team would have something to deliver by project end.

Agile with Scrum also allowed the scope be flexible as the team expected scope changes over the course of development.

Design of the application began with wireframes. The prototypes, created with Balsamiq, contains the layout of each page. These were then evaluated by hospital staff for usability issues before the final design was created.

The core of the application focused on the necessary functionality of the app. This included this included implementing a secure login system the ability to add patients to a database, search through patients in the database, play a game and view the game results in a report.

After core development the team focused on adding as much value to the product as possible. This included implementing a secure login system, three additional games, and the ability to edit and remove patients from the system.

## CONCLUSION

Neurolab is currently in the hands of therapists at Kenepuru Hospital and is looking at being implemented into their routine in the near future.

Neurolab has given the development team experience in the fields of Agile Scrum, Java, software testing and Android development and SQL database development.

The team are looking forward to further opportunities in the field of Android development.

# NZISM Web Scraping Project

Team: Kirsten Neustroski, Jack Griffiths and Lachlan Rogers

Advisor: Reza Moosaei

Client: SSS - IT Security Specialists

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## INTRODUCTON

Government agencies within New Zealand need to be compliant with the security controls specified in the GCSB's New Zealand Information Security Manual (NZISM). The NZISM is a large and mundane document that is regularly being updated and changed. Our client - *Scientific Software & Systems Ltd (SSS) - IT Security Specialists*, have clients that require these controls in the NZISM, in a highly accurate machine-readable format. Which this webpage currently does not provide.

While manually exporting these controls is possible, it is a cumbersome and error prone process. The NZISM Web Scraping Project addresses this business problem by developing an application written in Python that has the ability to bypass a Web Application Firewall (WAF), 'scrape' the NZISM, 'parse' the Hypertext Markup Language (HTML) and export all security controls into a highly accurate, machine-readable comma-separated values (CSV) file.

## Project Life Cycle

### Initiation

The team gathered requirements from the client and presented project proposal document to the client and advisor for approval.

### Planning

Systems analysis and designs were created to depict how the application would be built and run. Initial designs were basic and high-level, as the application matured the designs were amended and become more advanced.

## DEVELOPMENT

Using an agile methodology, the team conducted two week sprints to plan and assign tasks. This helped with the bypassing of the bot protection, parsing of the HTML and exporting the final product to a CSV file.

### Testing

Testing was done by creating a test plan in which test cases were based off. Each function of the code was testing using expected and actual outputs. This helps to support the requirement of this being a machine-readable, 100% accurate output.

### Client handover

The project and all of its relevant documentation was finished and handed to the client on time. The client signed the receipt and took the evaluation and acceptance form to go through and complete at a later time.

## CONCLUSION

The NZISM Web Scraping project was a success. The team solved the client's business problem by delivering a 100% accurate application that met all of the original requirements. Throughout each phase, new challenges tested each team member to think creatively and keep the utmost professionalism when dealing with an industry client.

Looking back on the project, each team member is proud to say they have taken away valuable experience in conducting a successful industry project.

# Online Job Broker

Team: Khozema Rampurawala and Alex Ho

Advisor: Terry Jeon

Client: Tui Bradbrook



Class Diagram



Main page of the system



Student page of the system

## INTRODUCTION

*Online Job Broker* is a web system that will assist students to apply for jobs and help the broker view student profiles and post jobs online the website. Previously posted jobs were viewed on a noticeboard located near the student café. Students had to personally go to the job broker and submit their CVs and these were then uploaded to the clients' website by the job broker. With this online system students can upload their CVs and a copy of their Student ID card directly to the online website with the help of the *Online Job Broker* system.

Employers can post jobs to the website and students can apply for the jobs that are available although are unable to see employer details.

Brokers can see the students' details once they are registered in the system and the list of students who have applied for jobs.

## DEVELOPMENT

The methodology used in this development was an agile process with 'open up' methodology.

There are four development phases used in the project.

Iteration Phase: In this early stage we faced difficulties preparing the system proposal and our methodology was also a problem for us. To overcome these early issues we changed our methodology after the first audits, from waterfall model to open up methodology. We thought of going to Scrum methodology, but because of small team size we decided to remain with an 'open up' Methodology.

Elaboration Phase: We started with the system analysis and design, storyboard and the mock-up

design in this phase, which helped us to create the rest of the documents. Some tasks took more time than planned and this meant we had to change our Gantt chart accordingly, so elaboration phase took longer than expected.

Construction: In this phase the development work of front end and back end was undertaken. We tried using a mobile application using Flutter and Xamarin though were unable to implement the application.

Transition: We completed all the work in this phase, including a test case that was designed so that testing could be done at the beginning of the development phase as our team had a lack of experience in testing and this was a good way to bring us up to speed on testing procedures.

## CONCLUSION

On completion we handed the software to the client who was happy with the outcome despite not being able to finish the mobile application and security components which we mentioned as part of 'future support' where the client will be handing over any required work to new students. Our team would like to thank Robert Sutcliffe, the Project Coordinator, who made himself available when we needed his advice.

The backbone of this project was the advisor, Terry Jeon, who gave us direction on how to organise the documentation, especially the system analysis and design component and the development of the project overall.

It was a big learning curve for our team and we were pleased to finish the project on the allowed time.

# PDMeo Fitness

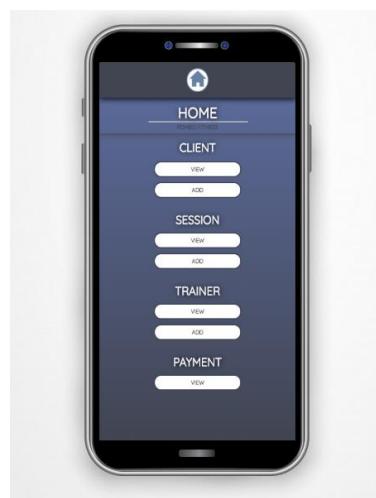
Team: Joseph Meo and Cameron Wilby

Advisor: Dax Roberts

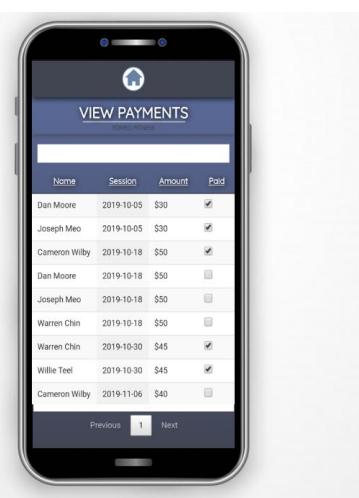
Client: Patrick Meo



Home garage gym



Home page



Confirm client payments page

## INTRODUCTION

The Gym Management System is an application designed for our client to be able to store all his business-related information digitally. Our client works with a small group of other trainers to offer a personal training service from his home gym. The business is growing, and the previous methods of using a physical notebook to store all business-related information was becoming more difficult. The software is a necessary tool to help eliminate the risks and issues paper documentation poses, for example difficulty of creating backups and poor data maintenance.

The application will allow our client to transfer all existing data into the system and will increase the efficiency on how information is added, maintained and managed.

## DEVELOPMENT

The methodology chosen for the project initially started with following the agile scrum approach, which later changed to Kanban due to the simplicity of visually maintaining the projects processes. As we are in a small group of two, Kanban allowed us to collaborate using the tool Trello, which ensured that there were continual improvements and provided the benefit of being able to know where each deliverable is currently situated in the project life cycle - actively knowing what is being worked on and what needs to be done.

The project started by interviewing the client and gathering all information about what current data is being stored within his notebook.

The information gathered acted as a foundation on which the system requirements were developed.

From these requirements the planning phase began, separating the deliverables into two separate categories, backend and frontend. The backend plan consisted of the database architecture and choosing a relational database type (MySQL), whilst performing systems analysis and design for the frontend plan.

In the early stages of the development phase we built the database using a MySQL instance and quickly transitioned into mobile application development. For the application itself we used a tool called Webflow, a web design tool to help assist in mobile design, providing HTML, CSS and JavaScript. With our team's lack of software development experience, Webflow provided great assistance in developing the application. The webserver chosen was AWS, this worked well as both the database (MySQL) and the backend software were able to be stored on the AWS cloud service.

Tests were ran throughout the development phase, ensuring the application met the Clients standards.

## CONCLUSION

The application was successfully delivered on time with client approval. The Client has been provided with further documentation, including installation steps, a user application guide and project recommendations if they wish to further develop the application.

# Postgraduate Research Project

## Datamining Tools on Cloud: Power BI vs. Rapidminer

By: Nitikesh Joshi

Advisor: Dr Reza Moosaei

### ABSTRACT

This paper focuses on data mining tools on cloud platforms. Data Mining is the process of extracting useful information from raw data in the database. Cloud computing offers huge benefits and thus many companies today have already migrated their data to cloud. There is not much research work conducted in big data domain and thus research on data mining tools on cloud platforms will help companies take decisions regarding tool selection for efficient data processing on cloud platforms. This research study is based on two of the most widely used data mining tools on cloud platforms i.e. RapidMiner and Microsoft Power BI. This paper does in depth comparison of the two data mining tools and its integration with cloud platforms. Furthermore, this research also focuses on the benefits and challenges of using data mining tools on cloud platforms. The research does not influence the use of the above-mentioned data mining tools and intends on the comparison between the data mining tools.

### CONCLUSION

Data mining on cloud has huge benefits as it allows the organisations to manage the software and the data centrally and efficiently. SaaS feature of the cloud computing allows the users to pay for data mining software as required and thus provides the cost-efficient solution to big data management on cloud. RapidMiner studio and Microsoft Power BI are the most widely used data mining tools by the organisations today for data management on cloud. Both the data mining tools i.e. RapidMiner and Power BI have benefits and challenges when using it closely with cloud computing. Every organisation has different work strategies and size of data differs from company to company. Hence, the decision regarding which tool to opt for to process data on cloud platforms is solely dependent on the organisation.

### FINDINGS

	Microsoft Power BI	RapidMiner
Features	Data Transformation, Real Time Reporting, Mobile Integration, Collaboration Tools, Activity Dashboard	Data Transformation
Integrations	Microsoft Excel, Sales force cloud, Xero and QuickBooks Online	KNIME, PiCube, Syntec
Platforms Supported	Web Based, Mobile Apps	Web Based
Cloud Platforms Supported	Microsoft Azure and Amazon AWS	Amazon AWS
OS Compatibility	Windows, Linux, Android and iOS	Windows and Linux
Company Sizes	Larger Enterprises and Medium Size Business	Small, Medium and Large Size enterprises.
Clients	Adobe, HP, Rolls Royce, Aston Martin, Metro Bank	Dominoes, Boston Consulting Group, InFocus Corporation
Framework Supported	.Net framework	Java
Performance	Efficient use of memory	Slows down the system
Navigation	Easy UI and is like Microsoft Excel.	Tough for new users to adapt to the UI

# Postgraduate Research Project

## The Benefits of Using RFID Data in Businesses

By: Shamkia Khan

Advisor: Dr Marta Vos

### ABSTRACT

RFID is an e-tagging technology that can be used to provide electronic identity to an object using radio waves. These tags contain a large amount of data businesses can use such as if an RFID tag is attached to a product, it will contain information like the type of product it is, the quantity, the date it was made and their suppliers, etc. An RFID reader will scan the tagged antenna of the product to the business system database so it can be useful for the businesses to use.

This research proposes a research question being: "does RFID data have any benefits on businesses using them?" A systematic literature review was conducted using examples of case studies in different industries and it was found that RFID data does help businesses strive in their performance by using those data in their production processes. There are some limitations on this study as it only focuses on RFID data and only qualitative method is used. More than one reviewer should test the accuracy of the results in this research.

### FINDINGS

The main benefits found in this research are better inventory management, improved business operations, and enhanced information visibility. Better inventory management is achieved due to effective RFID tracking of inventory and other equipment so that businesses know where their assets are to reduce being lost. RFID data also makes sure to record in and out of inventories so that businesses can use that information to order their resources and understand customer demand.

Business operations have been improved through better labour productivity for example as staffs can concentrate on production processes that need human knowledge and activity rather than counting inventories that can be done through RFID data.

Using RFID data can save operational time that would be done manually, reducing extra resource costs and understanding customer demand and therefore increasing profit margin.

Enhanced information visibility is achieved by using readily available RFID data to improve business performance. Using RFID data, businesses can track their products to see what are on demand, and track equipment so they don't get lost.

### CONCLUSION

Overall RFID data benefits the majority of the organisations who uses RFID data technology. As discussed in the literature review section, businesses who use RFID technology don't realise the benefits of RFID data derived from the technology such as where to cut costs, inventory losses and which products and services are in great demand by customers. To answer the research question, a systematic literature review was conducted to understand the RFID benefits from selected articles. Improved information visibility, operational procedures, and inventory management were discovered to be the most common benefits of using RFID data as well as with other benefits. Discussing the application of RFID data from different industries, it is understood that organisations should utilise the best of RFID data to emerge successfully in the competitive market.

# Programming Code Analyser

Team: Ke Wang and Obed Medara

Advisor: Simon Park

Client: John Gould

The image shows a screenshot of the project's website and its back-end infrastructure. On the left, the 'Front-end Website' displays a user interface for static code analysis. It features a blue header with the title 'Static Code Analyser'. Below the header are three main sections: 'C' (with 'GET STARTED'), 'C++' (with 'GET STARTED'), and 'ABC' (with 'GET STARTED'). Each section includes a small icon and a link to parse C language files. The central part of the website has a placeholder text: 'Select your programming language, then upload a file to parse through the analyse'. On the right, the 'Back-end Linux Server' shows a terminal window displaying the output of a clang static analysis run. The terminal shows various warnings and errors related to function definitions and implicit declarations. Below the terminal, there are two file explorers showing the directory structure of the analyzed project.

## INTRODUCTION

Our project's aim was to provide a service to students and professionals, with the ability to have their programming code analysed by means of static analysis.

Static analysis is a way to analyse code without execution, nonetheless checking all pathways of the code.

This service would enable individuals to parse code though an application which would scan the code and provide them feedback on existing bugs.

The analysis software we were using was the Clang Static Analyser. This is free software which is available on Linux based Operating Systems (OS). It is also available on the Mac OS, but this was out of the question as it was out of our budget.

Therefore development began on the Linux based OS.

## DEVELOPMENT

We had a specialist who was focusing on the front-end (website), which would provide a user interface where users can upload a file and then the back-end would obtain the file and parse it through the Clang Static Analyser.

Due to our team consisting of only two members, we divided the entire project between ourselves. One member designed the front-end and all its components, the other designed the back-end and all its components.

As we were a small team of two we also undertook project management roles which proved difficult as we had the project work to accomplish as well as all the overhead documentation which needed to be completed as we progressed through the project lifetime.

Our team worked very vigorously to maintain schedule, but ideally the project would require at least three members, two who could focus on system development and one who could solely focus on documentation.

## CONCLUSION

We were successful in completing two separate systems, a front-end consisting of a web server and a back-end consisting of a Linux Mint MATE server equipped with the Clang Static Analyser.

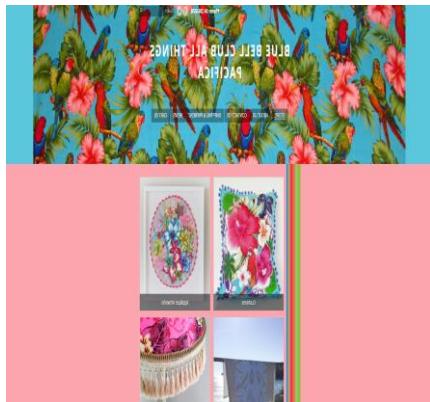
Our initial scope was redefined due to the time constraints. Nonetheless we achieved the redefined scope as mentioned above.

# Project Blue Bell

Team: Keri Solomon and Harshmin Kaur.

Advisor: George Tongariro

Client: Blue Bell Club



Old Design of web site



New design of website



New design of web site

## INTRODUCTION

Blue Bell Club is a local business based in Porirua that creates and sells handcrafted Pacifica themed products. They wanted to start over with a new website because they weren't happy with their current website design and the cost of it. A project team in the previous iteration have completed a full requirements and analysis document outlining all the functional and non-functional requirement for the new website, as well as creating a prototype of what the website might look like. They made a recommendation of using WordPress as a hosting platform.

## DEVELOPMENT

For the research and planning, we looked at available resources on the hosting platform that was recommended by the previous iteration's group, WordPress. We also created working prototypes in a wireframing tool called JustInMind. For the website build, we created a basic design in WordPress and a static build in HTML and CSS using Visual Studio. This was due to constraints we reached. We were not able to do proper testing and feedback with various users and feedback forms as we had initially planned but we did still receive feedback on the designs from the client. We then reached a finalised design that was cleaned up and adjusted in accordance to the client feedback and suggestions from the project team and supervisor.

## CONCLUSION

The client has expressed wishes for further support from the project team beyond the completed work. The next step for Blue Bell Club's new website will be getting a backend and going online. Currently, there are no finalised plans to continue work

# Project Hepburn (Hepburn & Associates Website)

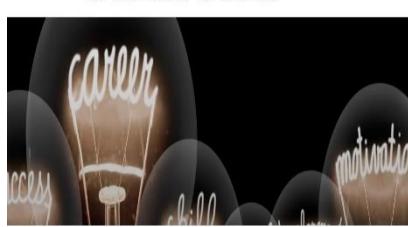
Team: Zunedkhan Pathan, Divya Patel, Harsit Kohli

Advisor: Clement Sudhakar

Client: Campbell Hepburn



Invokengage landing page# 1



Invokengage Homepage # 2



Invokengage About Us page # 3

## INTRODUCTION

The *Project Hepburn & Associates Website* is developed to provide the information about the business services and industry related information to various clients. This website has various tabs and web pages such as 'About Us', 'Our Services', 'Social Responsibility' and 'Why Us?' tabs to accommodate content and images that reflects the client business goals and objectives.

Hepburn & Associates did not have any website previously to provide the information to its existing clients and attract new clients to grow their business and increase their revenue to sustain their business for long term. This website will improve their visibility in the business development and consultancy industry and gives an edge to compete against other service providers in the similar industry.

This website does not have any features at this point, however the client has insisted to keep the website static for information purposes only at this point. The client has several ideas to develop this website and add more features in the future.

This website also has a content management system for admin to add or update the content and images of the website using WordPress CMS platform.

## DEVELOPMENT

The main activities for the team was to identify updated requirements from the client. Once the requirements were updated, it was difficult to decide on the project methodology for the website.

There are several project methodologies available, however after researching and discussing with the team members and advisor, it was decided to implement Agile scrum methodology due to its benefits to improve the teamwork, constantly tracking the project activities and improving the team relationship.

Next phase designing and development, in this phase, our project team began the designing and development phase to keep the project on track. The website is developed using the WordPress template as per client request and content management system was used from the WordPress framework.

To test the website and preview the developed site, the project team opted to use open source XAMMP application stack and developed the database in MySQL database application using 'phpadmin tool'.

The website testing was done to make sure that all the available links are working to a good working standard. The website was tested manually for functional testing and user acceptance testing in order to maintain the quality of the developed website.

## CONCLUSION

The website for Hepburn & Associates was hosted on local host and reviewed by the client on regular intervals and final handover of the successfully completed project to the client was on the 11<sup>th</sup> October 2019.

There are several options available for future development of this website such as subscription-based content, third party payment gateway for subscription, video hosting service and online workshop streaming access through pay per view. The features can be developed and integrated into the website to meet the client's long term business goals.

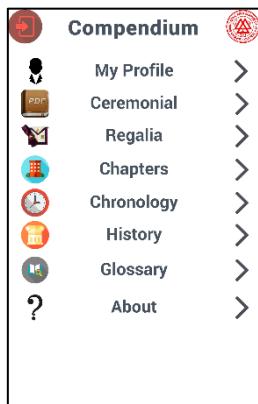
Overall this project was very useful to improve and implement the team's project management skills into practical usage. Each team member appreciated the overall experience of putting this project together for our client - Hepburn & Associates.

# Project SGRANCH

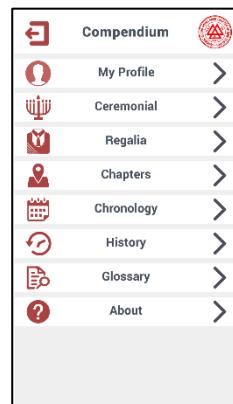
Team: Farouq Fischer and Usman Kiani

Advisor: Scott Morton

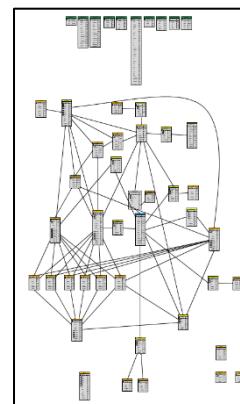
Client: Ken Burt



Homepage - Old Version



Homepage - Current Version



Entity Relationship Diagram

## INTRODUCTION

We are a second iteration group for *Project SGRANCH*. The main objectives within our scope were to design and build a brand new database for our client (Royal Arch) to store their organisation's member data, import some of their existing data, and also to make improvements to the user interface for the mobile app that the first group had previously built. This app was developed for both iOS and Android platforms.

## DEVELOPMENT

To make adjustments to the application user interface, we used Unity. The first iteration group acquired an add-on for Unity that allowed us to easily develop mobile apps.

Unity also allowed us to manually edit code using C# if needed. The two builds that were tested on both iOS and Android devices were also built using Unity.

To develop the new database, we first designed an Entity Relationship Diagram using Microsoft Visio, utilising the initial information provided by our clients.

This ERD was slowly updated from time to time, after multiple meetings with our clients discussing additional tables to be added, design flaws, etc.

Once we had agreed on a final design, we manually built the database using Visual Studio and later published it to a Whitireia's "Pandora Server" so our clients could access it from a remote location.

## CONCLUSION

At the end of our project, we successfully completed the majority of our deliverables promised in our initial proposal document.

All of the bugs that our clients noticed from the first version of the app were completely fixed and they were pleased with the new look of the app.

The database had successfully been built, but unfortunately due to time constraints and lack of information, we were unable to import their existing data to populate the tables.

# Requirement Analysis (Friends of Pataka)

Team: Sheetal Chauhan, Hana Paranihi, Joseph Zuba

Advisor: George Tongariro

Client: Sue Mortlock



Identification of CMS



Comparative assessment of CMS



Recommendation of CMS

## INTRODUCTION

The Friends of Pataka is a small non-for-profit organisation which is looking to have an online system that is either free or low cost and compatible with mail chimp, Xero's accounting system and main Pataka museum website. Currently, they have completely paper-based system which is hard to manage in this competitive world.

This project is being undertaken to provide a solution to our client, Sue Mortlock, who is looking to have an online system which is robust and secure to manage their contents.

In this project, we analysed suitable CMS for our client and suggested one of the best CMS which seems to meet client's requirements.

On completion, project will provide a requirement analysis document containing six CMS and comparison of the best three followed by a recommendation of the CMS that best fits the requirements of the client more closely.

## DEVELOPMENT

In the first iteration, we had a meeting with client Sue Mortlock and gained in-depth understanding about the project. Subsequently, feasibility analysis was done to finalise the requirements and prepared a Project Proposal.

In the second iteration, six Content Management Systems were identified and thorough research was done in terms of features such as cost, security storage compatibility, Plugins, etc.

After the identification phase, the best three CMS, were: Wix, WordPress and Concrete5 which were chosen to do a comparative analysis to find out the best suited CMS for the client.

Finally, based on the comparative analysis undertaken, a recommendation was given to the client.

In Iteration three, the project aimed at completion of all the project documentation and other supporting documents that are required to handover and prepare for the Project/product showcase and presentation.

## CONCLUSION

To conclude the project has allowed us to apply our gained knowledge in a real IT project where we worked as a team and got to know the processes that are followed in real IT projects. Our team completed the project work on time.

The project looked very straight forward from the beginning and was easy to manage throughout the project. However, there were risks involved such as: unavailability of the advisor and team members, though appropriate solutions were identified to overcome those risks.

After careful analysis, this project will provide a foundation for the upcoming phases of the project.

# Resource Set (Private Cloud)

Team: Richard Shelley; Manpreet Singh; Sarabjeet Singh

Advisor: Drew Duncan

Client: Jeff Echano



Home Page for WelTec Private Cloud

A screenshot of a web browser showing the OpenStack dashboard. The URL is https://openstack.weltc.ac.nz/dashboard. The dashboard has a header with the OpenStack logo and navigation links like Home, Instances, and Projects. Below the header is a search bar and a table showing instance details.

Login page for the OpenStack

Instance created by the user

## INTRODUCTION

Resource Set (*Private Cloud*) is an infrastructure project designed to provide a concept of private cloud for the Wellington Institute of Technology (WelTec).

The Resource Set (*Private Cloud*) project was handed over to our client Jeff Echano. The project consists of three types of system users:

- Cloud admin,
- Project admin
- Predefined 'Users' all with different access requirements.

Project Admin group are able to access the OpenStack dashboard and can create the users.

Predefined users are able to create and launch the instances with their configuration using OpenStack.

## DEVELOPMENT

The duration of this project was one of a short lifespan, for this functioned as a time filler when Resource Set (*Private Cloud*) drew to a momentary halt.

The development phase started off with a rough list of potential resources which could be implemented. The resource list was then adjusted after each client meeting.

## CONCLUSION

This project was not able to be completed in the 450-hours timeframe allowed for the project.

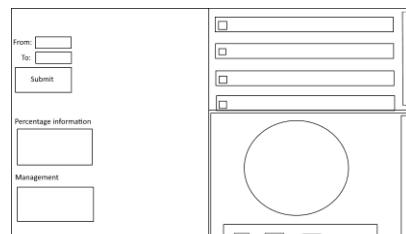
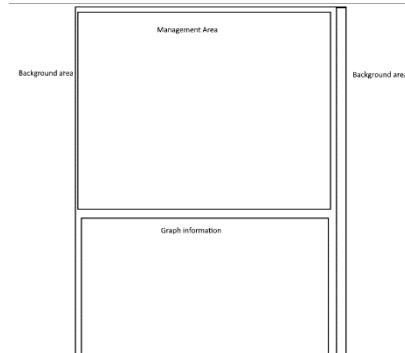
There is the potential for other project students wishing to undertake another iteration of this project to progress further upon later iterations.

# Retention and Disposal

Team: Wei Fu and Thomas Ewers

Advisor: Chalinor Baliuag

Client: InfocentriK (Chris, Leo, Peter)



Finished product

## INTRODUCTION

Retention and Disposal is a project about providing the capability to manage and control documents which are in need of such management. Holding onto unimportant, or unnecessary files not only takes up space, but can also prove to be harmful to your business.

Retention and Disposal aims to provide InfocentriK with the ability to manage their documents while providing an easy to use, and comfortable layout to do it on.

By providing a .NET application through web forms, we have implemented control over files by using C#, HTML, and CSS.

## DEVELOPMENT

Our project was developed following the scrum methodology and progressed by completing work each week and updating our client as we go. Our aim was to finish before the 18<sup>th</sup> October 2019 and to finish with a product that provided our client with the functionality of retention and disposal. The functions wanted included viewing specific documents, being able to manage those documents, create reports dependant on the information selected, and to be able to analyse statistics from the information.

The applications used were Visual Studio 2019 and Micro Focus Content Manager. Content Manager held the information we managed. We used a virtual machine with Content Manager on it while we coded in Visual Studio on our own desktop. By doing this we were able to connect to

Content Manager through the IP, and then display that information through the application.

The start was quite rocky as we weren't completely 100% sure everything was possible, but after a few weeks of testing and communication we were able to confirm it was achievable and get on with our work.

The overall development of the project was interesting for our client and ourselves as it was something that we weren't too confident about at the start. The team put a lot of effort into this project and the end result was an application that was well produced because of our team efforts.

## CONCLUSION

In conclusion, the project progressed well, and even though we were met with surprises, and problems at times we were able to complete the application to our client specifications.

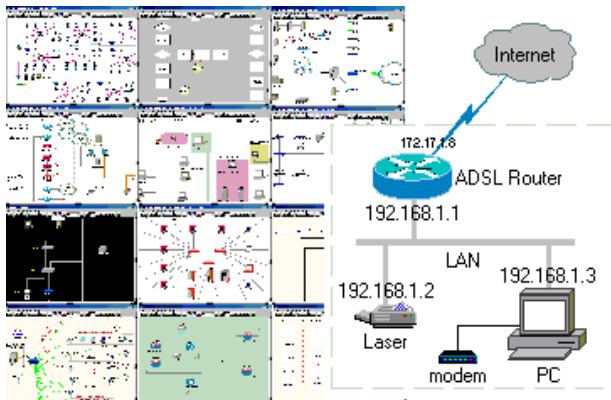
We are happy that we produced the application, and we're glad we had the time to learn how a project can progress and what can happen during one. Since this was, for the most part, our first real project, it was a nice experience, we learnt a lot. Not only did we learn further coding skills, but we also learnt from our experiences on how a project can progress to successful completion.

# School of IT Network Documentation

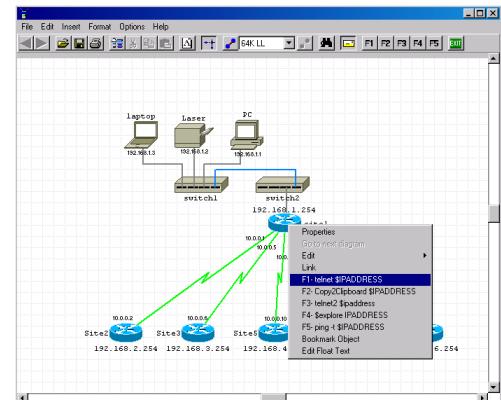
Team: Sarah Erceg

Advisor: Simon Dixon

Client: Geoff Gordon



The only software to fit requirements; Network Notepad



Network overview example using Network Notepad

## INTRODUCTION

The idea to create documentation for Whitireia's School of IT network came about at quite short notice. Projects are usually planned out well in advance, for clients outside of Whitireia. In the case of this project however, extenuating circumstances prevented all that, meaning that Scott Morton and the Whitireia team had to come up with something at short notice.

Networking was the one field I wanted more experience in, having already worked hands on with software and hardware troubleshooting for two years prior to doing the project.

With that in mind, this project was the logical way to proceed.

## DEVELOPMENT

The original project meeting between Simon Dixon, Geoff Gordon and myself was held on 29 July 2019. At this meeting, the scope and general timeframe for the stages of the project was determined.

Geoff's main request for the project was to find a good piece of network documentation software, something that would be better and more functional than Visio, and free. He wanted to hopefully be able to upload switch and router config files to the devices documented if possible, in case of a device failing the document could act as a backup repository.

Simon recommended aiming to also document the network, as at the time it seemed like having just finding the software would be too small of a project.

Project work began, and it very quickly became clear that the scope was completely underestimated, with the software being much harder to locate than originally expected.

The main issue was that there was a lot of potential software out there, but it either wasn't free or it needed to be able to run on the live network to gather information itself.

Only one tool fit the requirements, a piece of software from the early 2000's; Network Notepad. This was a free tool that could store data as required and present it in a far more useful fashion than Visio.

## CONCLUSION

In the end, the project only managed to fully achieve its first original milestone, locating a good piece of free network documentation software.

The project will potentially be continued in a later semester by another student, however as Geoff was happy with the software found, it was not too much of an issue.

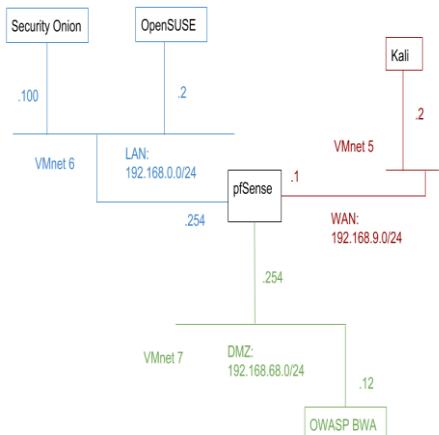
A project with issues is a better learning tool than a project that goes smoothly from start to finish, especially with focusing on making sure that it is all properly documented.

# Security Tools Rebuild

Team: Cassie Grove; Connor Jack; James Troman

Advisor: Paul Bryant

Client: John Gould



The Virtual Environment Topology.



The OpenVAS tool that gave the most issues.



The main machine used.

## INTRODUCTION

Over the period of Trimester 2 2018, in the IA7308 Security Testing and Network Defence course, the students had a difficult time in completing all the lab content provided by the tutor.

Our client, whom is also the tutor, proposed that the team rebuild the lab content with new and up to date versions of the tools and the virtual machines, with new PDF instructions to follow suit.

## DEVELOPMENT

The project team selected the Agile Scrum methodology to tackle the situation in sprints. It allowed the team to conduct daily stand ups for communication and be able to play around with the sprints.

Sprint 1 was to solve the main issue that both students and client were having, and that was the tool of OpenVAS. The team wrote up Test Strategy, Plan and Cases. We found that due to software not all being updated, this caused the issues for the clients students.

Sprint 2 was to update all virtual machines that were used in the environment used. They included the Kali, OpenSUSE, Security Onion, pfSense and OWASP BWA.

Sprint 3 the team was given a list of the average grades that the class of 2018 in each lab. Taking the worst average, the project team took the first

10 and updated the tools, and the instructional PDFs.

Sprint 4 was the final 10 labs, in which the team ran into trouble with one particular lab that included the Snorby tool. The team discovered that the Snorby tool was no longer used in the newer versions of Security Onion, and even reverting back to the older version of Security Onion did not fix the problem. The team made do with what they could, and made a new lab that carries out part of the original content.

## CONCLUSION

The project was to rebuild all the security tools and operating systems as well as write up new instructional PDFs.

The project team has provided a series of updated versions of software that would allow the client to give his future students the experience to play around with up to date security tools and provide a more up to date learning experience.

# Smartware Website

Team: Siddharth Thakur, Conor Oliver, Hyuck Yim

Advisor: Chalinor Baliuag

Client: Cherryann Ninon



Landing Page for Smartware website

## INTRODUCTION

Project is about developing a new website for Smartware because the client wanted an improved website from their previous one. The improved version of their website provides a one stop e-commerce solution to all their customers and these improvements will help expand their business across New Zealand.

## DEVELOPMENT

The project was developed using Vue.js which is a powerful JavaScript framework.

Vue.js allowed the team to develop this project faster and better. Vue.js also came with a set of frameworks that were useful for the full stack development of this project.

The team also used Vuetify which is a UI framework for Vue.js. Vuex was used as a backend framework for this project.

The team used Firebase firestore as their database and to handle authentication and email services.

The team used Jest which is a unit testing method for JavaScript frameworks to carry out Unit testing for this project.

Cypress was used to do e-to-e testing for this project.

The team made use of GitHub to manage the coding resources for this project.

## CONCLUSION

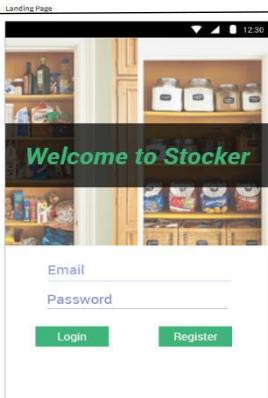
Team Nerdlings managed to develop a working website for Smartware with all the features in the primary scope.

# Stocker V1.0

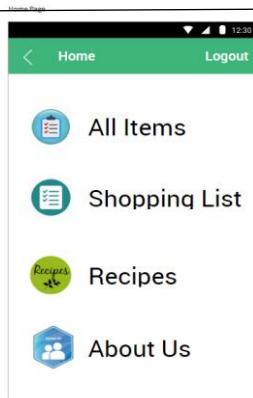
Team: Anto Virgin Joseph Arul Raj; Harish Kotapati and Sukanya Uppala

Advisor: Reza Moosaei

Client: Clement Sudhakar Swarnappa



Stocker Application Landing page



Stocker Application Home page



Stocker Application Recipe page

## INTRODUCTION

Managing grocery purchase and usage is a challenging issue in every household. To overcome this our Client suggested an efficient HCI Solution that could be developed, to have an organised kitchen.

Stocker is an android mobile application which will help the users to manage their kitchen grocery. The main aim of Stocker is to control the food wastage by notifying customers before a product's expiry.

In order to manage the Kitchen grocery we have implemented the following features in this Stocker application, Adding, deleting product information, reminding the users before a products expiry, creating and deleting shopping lists, Two space allocation options, creating and deleting own recipes and Adding, deleting recipe booklets.

## DEVELOPMENT

The Project team planned to solve this problem by starting with a survey, which was conducted to gather the major issues and suggested opinions from various households.

The methodology chosen for this project is Agile Scrum. The product is developed in 4 Sprints starting from development of project proposal, Product Design, Development and ends with product Testing.

After the application design got approved by the client, project team has started the development. Initially project team decided to build the application using Android Studio platform but due

to lack of experience and time we decided to develop the application using app builder.

We started the development using Bubble app builder but after completing 70% of the development we came to know that we can convert the development into APK file, as bubble will not support to generate APK file. Then After a vast research we decided to develop using DropSource app builder.

The Application is developed with features of:

- Add and Delete Product Information.
- Add and Delete Shopping Lists.
- Add and Delete Recipe List/Booklets.

After successfully completing the development, we started the Testing with 100% Coverage done by using the Test Scenarios, Test Cases, Defect Report tracking and Requirement Traceability Matrix to ensure all the client requirements are developed and tested.

## CONCLUSION

In conclusion, the project team work and coordination of tasks contributed to successful completion and final handover to the client with satisfactory output.

With the continuous support from client Clement Sudhakar Swarnappa and advisor Reza Moosaei we were able to achieve all the project milestones successfully.

We gained a lot of knowledge on a Real Time Project and this experience will be helpful towards our future careers.

# Student Time Planner

Team: Wenjie Tong, Changyu Huang, and Andrew Liu

Advisor: Abdolreza Hajmoosaei

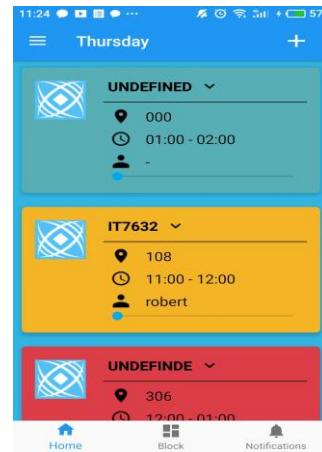
Client: Robert Sutcliffe



Requirements 1



Requirements 2 Product



## INTRODUCTION

Student Time Planner app is a calendar-based time management application which aims to help students to improve their learning efficiency and promote their initiatives.

It also is a timetable allowing students to integrate it to a local Google calendar with notifications.

The production key features will allow students to include:

- establish the working patterns for course
- advice on how student could better manage their time
- integrate courses into their calendar
- report showing whether a student study plan is on track to meet the deadline each week.

## DEVELOPMENT

The first process of Student Time Planner project is to place a bid. It is to get approved project from client then the team can start with the initiation process of contacting client and reaching an agreement and client sign-off.

Phase one is the system and design, the foundation and structure of the project which included use-case diagrams; application structure; CURD diagrams; activity diagrams; wireframe; sequence diagrams; technique architecture and an E-R diagram. These were all checked by the client and advisor. This is then documented along with implementation; testing and training documents that were accepted by the client.

The implementation process of front-end and back-end worked well for the STP team as they

had prior knowledge and skills in this area. Testing was done to ensure the quality of product.

Testing was done through example testing; code testing; case testing and debugging to ensure system working correctly.

A User Guide was developed and will be provided as part of the deliverables.

## CONCLUSION

The Student Time Planner team has achieved all the deliverables and met the client's needs requirements.

Risk management strategy and risk response is a risk analysis and gave solutions on how to handle any current risks and potential risks.

The application testing has been provided by our team during the client handover meeting and the client is happy with the outcome of the project. All the functions have been achieved. The client gave some suggestions for our team that can be utilised on the next iteration of this project.

The receipt list was signed by the client and the Student Time Planner met his expectations. All functions have been accomplished and presented by the STP team.

# Study WelTec

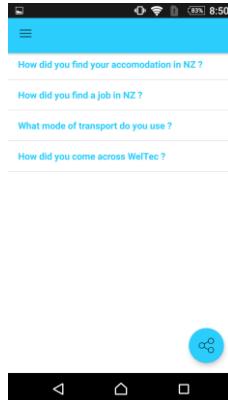
**Team:** Bhavleen Kaur; Sahil Kaushal; Anudeep Varma Indukuri

**Advisor:** Sandeep Vankadari

**Client:** Robert Sutcliffe



Home screen of our android application along with a float action button



Students speak out with queries from the international students



Locations of WelTec campuses in wellington marked

## INTRODUCTION

*Study WelTec* is an android application that would assist the students choose the right programme they would want to pursue at WelTec. Those travelling from overseas for their studies might face an issue of not knowing about the programme contents, and the knowledge they need to have, for pursuing that specific programme. This has been one of the reasons that the international students end up changing their programme after starting with the Bachelor of Information Technology.

Commentaries from the staff and exemplars would help them know something about WelTec's programmes, which would help them choose wisely. The application would display the videos and the messages from the international students currently studying at WelTec which makes it easy for the new applicants to gain from their experiences.

## DEVELOPMENT

**Initiation:** The initiation phase of project was a bit long as we were little confused about the methodology for our project. In the beginning we chose Spiral model but then ended up with Agile V-Model and also, we had to make several corrections to the project proposal.

**Planning:** In the planning phase, we made a rough low fidelity prototype as per the requirements we gathered from the client. We shared our ideas with the client and these were approved.

**Development:** We used android studio to build the app. The database used was MySQL workbench for database development and JAVA Server Pages were developed in NetBeans for the admin front end.

**Testing:** There are three testing methods in our project including Junit testing for android. The

database testing, Junit testing and manual testing for the admin end was also undertaken by the team including manual testing for the android application.

**Client Handover:** Our client was happy with the look and feel of our 'Study WelTec' application. He asked us to mention the achieved and the unachieved requirements in the project which would help for the future development of the application.

## CONCLUSION

Our team is really thankful to Robert Sutcliffe, Senior academic staff member who appreciated and encouraged the idea of making this project and also agreed to be our client.

We also thank Sandeep Vankadari, academic staff member for his help and support whenever there were bumps in our project as an advisor.

We really tried our best to complete the project however due to lack of data integration knowledge we were not able to complete the campus module which we mentioned in the project assessment document.

The capstone project is a very professional course which gave us a hands-on practice on how an actual project is dealt with in the real world. We learned many things like professional documentation, practical knowledge on the development tools, client relationship, and team work to overcome any hurdles during the project.

I would like to conclude by saying that we are glad to be a part of this course.

# Tattoo Studio Website

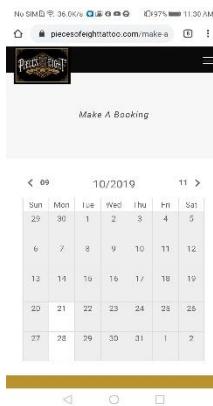
Team: Keyur Patel and Darpan Sahija

Advisors: Simon Park, Robert Sutcliffe

Client: Hayden McCullough



Home/ Event Page



Booking Page



Store Page



Contact us page

## INTRODUCTION

Our main objective to develop a website for a tattoo studio with booking system. Website has a booking page so customer can book an appointment for a tattoo or for other service such as piercings through website. The website creates a digital interface between customers and tattoo artists.

Website provides an online store where customers can find interesting art from tattoo artists. The website also provides information about upcoming events, an artists' page where customers can look up information about their favourite artist and their work.

Website offers an "about us" and "contact us" information providing customers details about the tattoo studio and contact details.

An administration dashboard will enable the client to be able to update or delete events and product availability in 'store'. The tattoo artist information will also be able to be edited by the client.

## DEVELOPMENT

First of all, we gathered client requirements and this led to a crucial part of the team choosing a methodology. We started with a waterfall methodology and changed to Scrum after taking on board advisor suggestions.

The next step was system analysis and design. In this phase we developed groups of documents such as an ER diagram, use case diagrams, storyboard and wireframe. These documents were

created to have a clearer idea of the client's requirements. The website was developed on WordPress. WordPress is free to use. We had faced some difficulties with plugins but later on we managed to overcome that problem.

We used WAMP server as localhost. WAMP server includes MySQL, phpMyAdmin, and apache server.

Testing was necessary and we tested five times including testing on usability, interface, performance, compatibility, security testing. All testing was successful.

## CONCLUSION

We hosted our website successfully on client's domain which was provided to us.

We delivered most of the deliverables to the client on time and successfully.

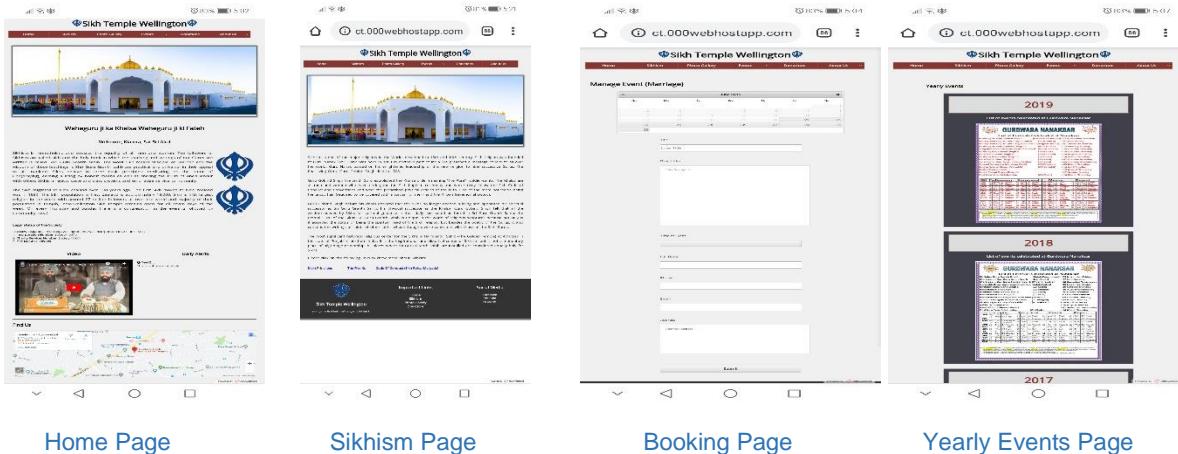
Overall project was good and we learned a lot from our project experiences and working together as a team.

# Temple Events Website

Team: Gurpreet Singh, Rohit Jaswal

Advisor: Glenda Shaw

Client: Satinder Singh



## INTRODUCTION

Temple Events Website is designed to provide a booking system for Sikh Temple (Wellington). The Sikh temple provides various services to its followers including a booking system where followers can book a service at the temple. The *Temple Events Website* will provide an online platform for Sikh temple followers to book a service by visiting this website.

The Temple Events system also provides information about upcoming events including yearly fixed events which are going to be held in the temple. The Temple Events Website will also contain information regarding how to make donations to the temple. A newsletter will also be provided on the home page and will contain new regarding upcoming temple services and events.

Along with providing a user website there will be an administration dashboard where admin can log into and upload and/or modify information shown on the website on behalf of the Temple

## DEVELOPMENT

The primary task for the team was to gather requirements from the client. Once the requirements were gathered it was then important to choose a methodology for the project. As there were a number of option available it was even more important to choose the right one. After some research and discussion our team decided to go with the *waterfall methodology*.

Next, system analysis and design component was undertaken as a blueprint for the development phase.

Our team also prepared a separate requirement specification document to clearly identify the requirements.

The website was developed in PHPstorm, an IDE by NetBeans which is free for students and worked smoothly throughout the project development phase.

The database used was MySQL. It was created using an online tool phpMyAdmin which is easy and simple to use along with apache server.

Testing was done to make sure that the website developed was up to standard. Testing included integration testing, functional testing and user acceptance testing. The tests carried out were in order to check the quality of the website produced.

## CONCLUSION

The temple events website was successfully hosted over a test domain and was delivered to the client successfully and on time.

Future recommendations was mentioned to the client when they were ready for future development of the website.

Overall our team found the experience of the capstone project an informative and interesting and we all learned a lot through developing this project.

# Transport Management (OpsDrivers)

Team: Reza Ghelikhani, Christie Diedericks

Advisor: Tony Assadi

Client: Nick Barrett



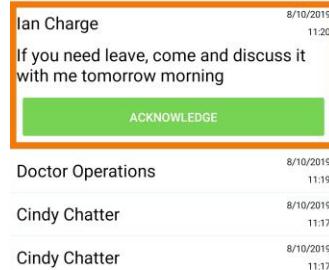
## This is the Daily Brief for this specific depot

Unlike the front screen memo, each depot has its own unique content.

This must be acknowledged by each driver as they sign-in in order for them to progress. They will only have to acknowledge the brief once (unless it is updated, in which case they will need to acknowledge it again).

It can be used to:

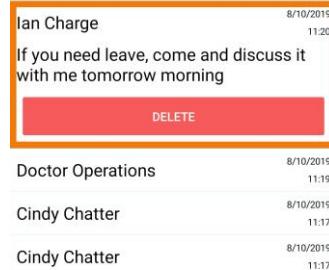
- Inform users of important road conditions
- Health and safety messages



Doctor Operations 8/10/2019 11:19

Cindy Chatter 8/10/2019 11:17

Cindy Chatter 8/10/2019 11:17



Doctor Operations 8/10/2019 11:19

Cindy Chatter 8/10/2019 11:17

Cindy Chatter 8/10/2019 11:17

Depot daily brief page

Acknowledging a message

Deleting a message after acknowledgement

## INTRODUCTION

Transport Management Systems (TMS) is an Information Technology software vendor specifically for the bus industry.

The objective was to create a mobile application for all drivers to view their daily briefs and receive any messages from operations with an acknowledgement feature for drivers and will include a delete feature. This will mean that drivers will have an up to date brief at any given time as they can receive them through their mobile devices and will not have to return to the kiosk whenever they need to be updated.

## DEVELOPMENT

The methodology that was used for this Project is Agile Scrum. The project was broken up into nine sprints for manageability. The team learnt and researched Xamarin as well as the design and development of the application skeleton. A variation of the project was also made as originally the application was coded using code-behind but then changed to MVVM at the request of the client.

Finally, the push notifications or messages from operations were worked on. This was also left for last as an API needed to be finished on the client's end in order to push those messages to the application. These push notifications were sent through Azure Notification Hub.

Throughout the development, the design of the application was altered a few times to better show each feature and navigate from page to page.

## CONCLUSION

Transport Management Systems (TMS) is an Information Technology software vendor specifically for the bus industry that is trying to expand their business by adding functions and features that will simplify business processes and future proof the company.

The list of features set out at the start of the project were successfully implemented and designed, barring one variation that changed the way the application was coded, from code-behind to MVVM.

The project team created a cross-platform mobile application for the client that can currently daily briefs as well as messages and both can be acknowledged by the drivers, showing operations that they have been seen as well as a deletion function for the messages once they are no longer needed.

The final client meeting left the client happy with where the application was and how it was designed and all features were working as intended.

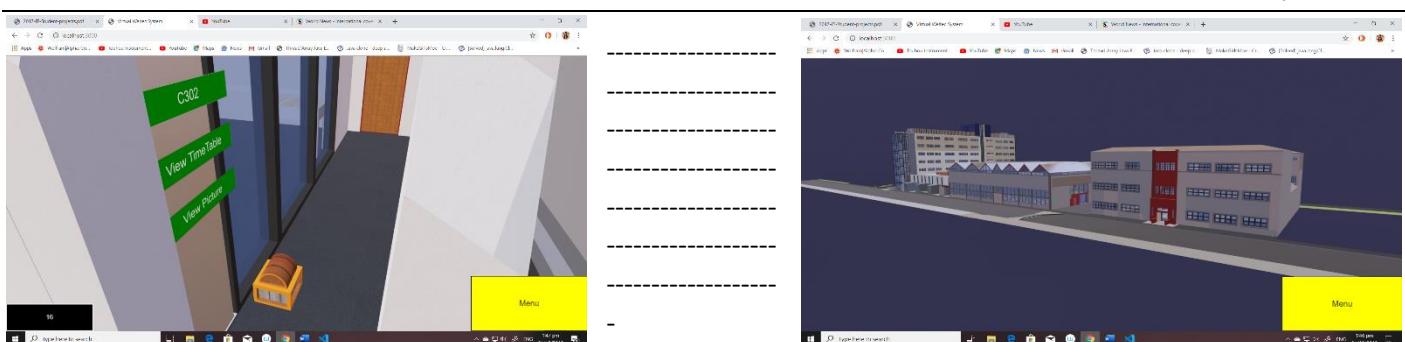
Changing the code to MVVM at the start of the application made it so the application is future proofed and can be managed much easier. From here the client will be able to further change the application and add any features that the company would like as this is just the initial iteration of the OpsCentre mobile Application.

# Virtual WelTec

Team: James Hendry and Neha Arora

Client: Robert Sutcliffe

Advisor: Diana Eyes



## INTRODUCTION

The Virtual WelTec Project goals were to create a Digital recreation of the WelTec campus with the goals of both getting students and potential students familiar with the WelTec campus, as well as to market WelTec by showing potential students just what they can achieve if they choose to study at WelTec. Its goals also were to include virtual reality elements which weren't included in this iteration of the Project. This is a starting iteration of the Virtual WelTec.

The system has produced a set of deliverables. These deliverables are:

- A 3D model of the T, B and C Blocks of the WelTec campus,
- a webserver with a WebApp that allows users to explore and interact to a limited degree inside the 3d Model,
- as well as the documentation necessary for future project teams to continue on with the project.

It was also to include VR and Multiplayer elements that were not included in this project due to the project team running out of time.

## DEVELOPMENT

After further research we decided to make a virtual creation of the WelTec campus using the Babylon.js Framework. After that we started with measuring the WelTec campus, then drew out the layout. We tried to get the model done on time but even with tools

designed so that people with no modelling skill can use, it still took twice as long as expected. While there were early communication issues in the beginning, by around week 7 they were mostly solved.

The development started in the middle and comprised of three sprints, the first sprint was getting the model, system and webserver up and running with a basic controller. The next sprint added in interactive elements, such as buttons on the doors of the rooms inside the WelTec campus, and the last sprint involved creating a treasure hunt game inside the Virtual WelTec System, that can be played at any time and can save high scores to a .json file. It required us to do a lot of learning as the team had little knowledge with the Babylon.js Framework.

## CONCLUSION

We managed to get almost all of the items originally promised in the project with the exception of the multiplayer as the modelling took longer than expected. Despite this, the project client was satisfied with it and signed off the client handover document. The Virtual WelTec system has got the T, B and C blocks done, with some interactions and a simple game and will serve as a basis for future iterations. The Virtual WelTec project was a good opportunity to learn skills that would otherwise not be learnt in other IT projects.

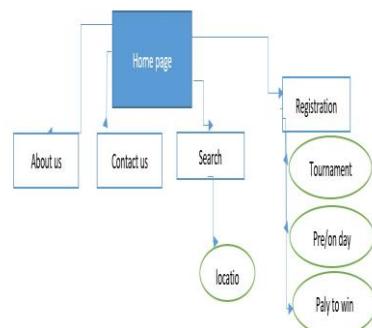
# Wellycon Administrative System

Team: Jack Northover, Parvin Ghorbani, Blair Mackle

Advisor: Susan Scott

Client: Ceedee Doyle

Site map



Site map

*Wellycon test site*

New Zealand's Biggest Board Game Convention

HOME | ON DAY REGISTRATION | PRE-REGISTRATION | PLAY TO WIN | TOURNAMENTS | TOURNAMENTA

Wellycon menu



Wellycon

## INTRODUCTION

Wellycon is the largest tabletop game event in New Zealand that is held annually. Because of the events its popularity has been growing throughout the years. There has been an issue with the administrative side of the event stemming from the 'on-day' ticket sales. The current system being used is a Google document that not all attendees are currently filling out when they purchase tickets. This leads to an inaccurate count of attendees to the event.

The completed project will be a web application and administration tool for the clients of the Wellycon event offering registration of attendees, both pre-registration and on-the-day ticket sales, signing up for tournaments and a play to win system.

## DEVELOPMENT

When we had finished scoping our requirements we then scoped what technology we would use to develop the system. We settled on using WordPress as it has a large variety of plugins that we could use to implement the requirements.

During our first iteration developing the ticket registration system, we had to look at what information was required for the forms of the two systems, on-day registration and pre-registration. Both systems had the same information requirement, but the pre-registration system had some extra optional information that was required to be collected.

After the forms were created, we realised we had an issue with the database plugins which did not allow for the type of storage that we needed, so after some additional research we were able to create a separate database for data storage.

In the second iteration, we added the tournament registration system. This system would be used by pre-registered attendees. The form allowed attendees to input their ticket ID and which tournaments they wanted to take part in.

The final iteration was for the play to win system. For this system, the ticket ID was needed as well as what game(s) attendees played. For each game, attendees needed to give their rating on the game; if they were interested in buying it; if they would recommend it to friends and if they wanted to win it.

## CONCLUSION

By the end of this project, all systems were completed. A lot of what we assumed for this project in the way of how we were going to present the website in the initial phase was very different.

The project was more complicated than we had first thought. At the completion of the project we were able to put into practice what we had learnt over the past three years of our degree study.

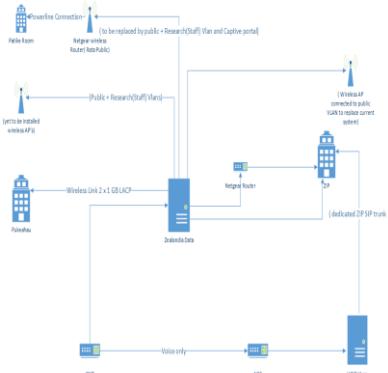
Future recommendations for the next iteration of this project would be adding the game library with check in/out and being able to buy another pre-ticket for just a meal.

# Zealandia Wireless Network Infrastructure

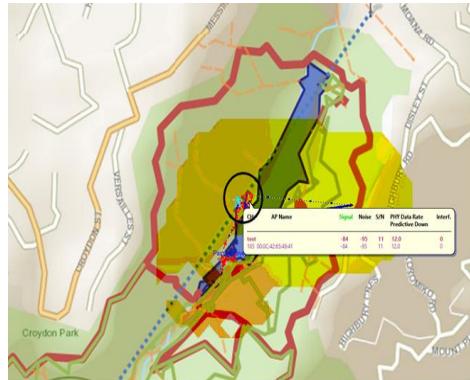
Team: Aljane Walsh, Phillip Halley and Ruxin Mo

Advisor: Steve Cosgrove

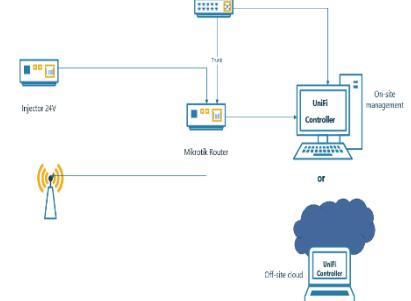
Client: Zealandia



Insert Picture (graphic) description # 1



Insert Picture (graphic) description # 2



Insert Picture description # 3

## INTRODUCTION

To provide a plan that would maximize Zealandia's wireless network infrastructure securely throughout the valley by carrying out the following:

- Research and make a recommendation on security and portal options, with pros and cons.
- Research and recommend locations for APs. *Recommendation based on previous research in 2013.*
- VLAN setup configuration for public, ZIP and corporate networks
- UniFi controller setup with instructions
- Recommendation of Server software to manage Zealandia network

## CONCLUSION

1. Researched on captive portal options and recommended: **PacketFence** and **Untangle**.
2. With the use of 2013 research, potential wireless AP location was identified and justified.
3. VLAN configured for public, ZIP and corporate networks
4. UniFi controller setup with instructions
5. Researched on Server software to manage Zealandia network and recommended **PRTG (Paessler Router Traffic Grapher)**

## DEVELOPMENT

The chosen project management tool for Zealandia is the Kanban methodology. Kanban board is the perfect tool to visually see work in progress and understand the project workflows as well as inspiring team collaboration.

All documentation was collaborated in Google Drive.

